Evaluation of an Education Program
Designed for Students with Autism
Who are Chronic Climbers and Absconders

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Graduate Diploma in Outdoor Education, Diploma of Physical Education.

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Abstract

Common behavioural characteristics associated with autism such as short attention span, unusual response to sensory stimuli, and problematic language comprehension, inherently pose problems for the learning process. But for some students with autism, a propensity for absconding and inappropriate and unsafe climbing further detracts from their engagement in the educative process, both during the incident, and possibly for a more extended period if injuries are incurred. These incidents also reduce the learning time of other students who may be injured, distracted or distressed by what is occurring in their vicinity. Further, such incidents necessarily divert teacher attention from their core responsibility: The education of students.

One school in South Australia has introduced a program to address the problems associated with absconding and unsafe climbing by children with autism. The program is offered in a purpose-specific facility (the Correa Learning Unit), the infrastructure and furnishing of which are integral elements of the program. Together the facility, pedagogy and learning experiences were designed to address the characteristic impairments of autism. That is, to address: impairments in social interaction; communication; and restricted repetitive and stereotyped patterns of behaviour, interests, and activities.

The program also sought to provide for the particular abilities of these students, including their propensity and aptitude for climbing and absconding. Opportunities were provided for both indoor and outdoor challenging but safe climbing experiences. Also sensory experiences and materials were utilised as adjuncts to the teaching and learning processes.

The evaluation of this program had two objectives. These were
(1) to determine the intended and unintended program outcomes, and
(2) to determine what factors and processes facilitated or militated against the achievement of intended outcomes.
A program theory was initially developed. This provided a statement of the program inputs, processes, anticipated program outcomes and the hypothesised causal linkages. As a consequence it provided the basis for an effective evaluation design.

Student outcomes were used to focus the evaluation. However, as information could not be elicited directly from students because of their poor verbal ability, other stakeholders were selected as key informants. Using the single case of the Correa program, data were gathered from parents and school staff via individual and focus group interviews. Data were also collected from school documents, observations and visual images.

The evaluation revealed that improved educational outcomes were achieved for most students. Following the introduction of the program, the incidence and severity of challenging behaviours resulting in injuries and distress dramatically decreased. Students tended to be calmer and safer. Both of these conditions were considered antecedents for improved student engagement with the curriculum and thus learning. Improved outcomes in communication, socialisation, and daily living skills were confirmed for the majority of students.

Several implications emerged from this study. First, the school context is critically important in supporting or undermining a program. In this instance, the culture of learning and collaboration developed within the school was crucial in ensuring a range of protective factors for the program. These factors included staffing, staff development, staff well-being, funding, policies, and school leadership. For instance, a collaborative staff development enterprise has ensured that student records provide a more useful and accurate reflection of what is to be achieved for particular students, and that monitoring of student achievement is sufficiently sensitive to gauge small incremental improvement.

A second important issue which emerged from the evaluation is that the current model of service provision from allied agencies is inadequate to support teachers at a level that can inform detailed curriculum planning and implementation. While school staff are trained in special education, they are not adequately prepared for the high level of challenging behaviour with which they need to deal on a daily basis. Nor does their
pre-service training provide the level of disability-specific information needed to guide incremental program development for low-functioning students with autism. Thus routine access to high quality allied professionals such as psychologists, speech therapists and occupational therapists is seen as a high priority by school staff.
Declaration

Thesis Title: Evaluation of an Education Program Designed for Students with Autism who are Chronic Climbers and Absconders

Candidate’s name: ROSEMARY KAYE BADENOCH

This is to certify that
(i) the thesis comprises only my original work towards the PhD,
(ii) due acknowledgement has been made in the text to all other material used,
(iii) the thesis is less than 100,000 words in length, exclusive of tables, maps, bibliographies and appendices.

Signed:

Date:
Acknowledgments

I offer sincere thanks to the following people for their contribution to the completion of this thesis:

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I have also valued the assistance of Lynda Gregory-Badger in the compilation of this thesis.

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My late mother, Vera Miller, who invariably trusted my choices, valued my contributions, supported my endeavours, and took immense pride in my achievements.

*I trust that this research will contribute to educational theory and practice in ways that supports the learning and overall quality of life for students with autism.*
<table>
<thead>
<tr>
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<th>Description</th>
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<tbody>
<tr>
<td>ABA</td>
<td>Applied Behaviour Analysis</td>
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<tr>
<td>ADEC</td>
<td>Autism Detection in Early Childhood</td>
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<tr>
<td>ADHD</td>
<td>Attention Deficit Hyperactivity Disorder</td>
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<tr>
<td>ADI-R</td>
<td>Autism Diagnostic Interview Revised</td>
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<td>ADOS</td>
<td>Autism Diagnostic Observation Schedule</td>
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<td>AIT</td>
<td>Auditory Integration Therapy</td>
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<td>APA</td>
<td>American Psychiatric Association</td>
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<td>ASD</td>
<td>Autism Spectrum Disorders</td>
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<td>CAP</td>
<td>Community Access Program</td>
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<tr>
<td>CIPP</td>
<td>Context, Input, Process, Product evaluation model</td>
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<td>DAP</td>
<td>Delaware Autistic Program</td>
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<td>DECS</td>
<td>Department of Education and Children’s Services</td>
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<td>DSM</td>
<td>Diagnostic and Statistical Manual of Mental Disorders</td>
</tr>
<tr>
<td>DSM-IV-TR</td>
<td>Diagnostic and Statistical Manual of Mental Disorders Revised</td>
</tr>
<tr>
<td>DTT</td>
<td>Discrete Trial Training</td>
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<tr>
<td>EBPP</td>
<td>Evidence-Based Practice in Psychology</td>
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<tr>
<td>FCT</td>
<td>Functional Communication Training</td>
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<tr>
<td>ICD</td>
<td>International Classification of Diseases</td>
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<td>IDSC</td>
<td>Intellectual Disability Services Council</td>
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<tr>
<td>IEP</td>
<td>Independent Education Plan</td>
</tr>
<tr>
<td>IQ</td>
<td>Intellectual Quotient</td>
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<tr>
<td>LEAP</td>
<td>Learning Experiences – an Alternative Program for</td>
</tr>
<tr>
<td></td>
<td>preschoolers and Parents</td>
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<tr>
<td>NCP</td>
<td>Negotiated Curriculum Plan</td>
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<td>NEP</td>
<td>Negotiated Education Plan</td>
</tr>
<tr>
<td>NGO</td>
<td>Non Government Organisation</td>
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<tr>
<td>PECS</td>
<td>Picture Exchange Communication System</td>
</tr>
<tr>
<td>PDD</td>
<td>Pervasive Development Disorder</td>
</tr>
<tr>
<td>PDD-NOS</td>
<td>Pervasive Development Disorder Not Otherwise Specified</td>
</tr>
<tr>
<td>PEP-R</td>
<td>Psychoeducational Profile-Revised</td>
</tr>
<tr>
<td>RCT</td>
<td>Randomised Control Trial</td>
</tr>
<tr>
<td>SACSA</td>
<td>South Australian Curriculum Standards and Accountability</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>SSO</td>
<td>School Services Officer</td>
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<tr>
<td>SCERTS</td>
<td>The Social-Communication Emotional Regulation and Transactional Support</td>
</tr>
<tr>
<td>SERU</td>
<td>Special Education Resources Unit</td>
</tr>
<tr>
<td>TEACCH</td>
<td>Treatment and Education of Autistic and related Communication handicapped Children</td>
</tr>
<tr>
<td>ToM</td>
<td>Theory of Mind</td>
</tr>
<tr>
<td>UCLA</td>
<td>University of California Los Angeles</td>
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<tr>
<td>USA</td>
<td>United States of America</td>
</tr>
<tr>
<td>WCC</td>
<td>Weak Central Coherence</td>
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<tr>
<td>WHO</td>
<td>World Health Organisation</td>
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1.1 The Study in Context

The capacity for schools to provide a curriculum which is accessible to each student is challenging in scope and detail at the best of times. It can become more problematic when applied to particular individuals and groups, such as students with autism who exhibit extraordinary climbing skills and/or are prone to running away (absconding). An accessible curriculum is one which is developmentally appropriate and delivered in a manner which facilitates understanding and application by the learner. To ensure access to the curriculum for all students, schools may need to make adjustments to their policies, curriculum design, curriculum delivery methods, equipment, assessment and the like so that each student can have their opportunities for learning maximised. This thesis answers the question whether modifications to the teaching and learning processes designed for a specific cohort of students with autism who are chronic climbers and absconders, do in fact improve curriculum accessibility, and as a result, improve student learning and safety.

The characteristics of autism, together with any associated behaviours, can impact on students' ability to access the curriculum (and thus learn). The curriculum and the way that it is delivered therefore need to be tailored to the characteristics of autism and to any associated behaviours as presented by individual students. Such tailoring of the teaching and learning processes needs to occur in the interests of both the student(s) exhibiting the behaviour as well as other students in the vicinity. This is because opportunities for learning for all students in the class are temporarily suspended when the teacher needs to attend to challenging student behaviour or while the teacher seeks to engage a specific student(s) with the learning process. Student time spent in off-task behaviour or teacher time spent dealing with the consequences of inappropriate behaviour is time lost to the teaching and learning process. In order for the students to learn, they first must be able to participate in the teaching and learning process. In order for that to happen, they must first be at school and second, calm enough to focus on the educative process. In this thesis it is hypothesised that an accessible, engaging and relevant curriculum will result in optimal on-task behaviour and thus potential for
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student leaning. Such a curriculum needs to be provided in an environment which is physically and psychologically safe for both staff and students.

The extent to which schools actually meet the requirements of individual students may vary enormously. A broad range of factors such as staff knowledge and skills, school leadership, school ethos, resources available and the nature and degree of student disability, all impact on how an individual school/teacher will respond to student needs. Thus not surprisingly, different schools address the education of students with autism and in particular, those who are chronic climbers and/or absconders, in a variety of ways.

This thesis focuses on one school in South Australia which offers a program designed to facilitate curriculum accessibility and thus learning for a particular cohort of students. Specifically it is designed to address the learning needs of students with autism who display extraordinary climbing skill and/or absconding. The program is delivered in a purpose-built facility, which in itself is an integral element of the program. Apart from seeking to maximise student leaning outcomes, the program also seeks to provide a safe working and learning environment for both staff and students. These goals in themselves are certainly not unique for an educational program. But the program under discussion looks to achieve this while simultaneously acknowledging and providing scope for the unique abilities of these students, namely their aptitude and propensity for climbing. This indeed does make it unique. The program operates at Modbury Special School, a day school located in the north-eastern suburbs of Adelaide, South Australia.

There are several important reasons why such a program should be evaluated. First, regardless of the intent of the program, it needs to be in harmony with the broader political parameters operational at Commonwealth, State and Departmental levels. This chapter seeks to provide that context. Second, expenditure of resources for such a unique program needs to be justified at all levels. It is therefore important to ascertain whether the program is successful in terms of achieving its goals and doing so in a cost effective manner. Third, the findings from such an evaluation can inform educational
practice in schools (including the prioritising of resources) and inform practice within the broader educational community.

1.1.1 Legislative and policy parameters

Over the last decade and a half, changes in Western societal values and attitudes towards people with disabilities have been reflected in legislation and organisational policies which seek to eliminate discriminatory practices and foster social justice. In July 1991 the South Australian Department of Education and Children’s Services (DECS) released their Students with Disabilities policy, with its terms of reference being framed by both the South Australian Equal Opportunity Act (1990 amendment to 1984 Act) and the Education Act (May 1991 amendment to 1972 Act). This policy sought to provide a greater range of schooling options for students with disabilities, with integration into mainstream environments encouraged wherever deemed appropriate. It applies to students with physical, intellectual or sensory impairments and/or disabilities in communication and language.

These South Australian initiatives were followed by the 1992 Commonwealth Disability Discrimination Act which similarly legislated that people with disabilities should have equal access to participate in, and contribute to, the full gamut of social, political and cultural activities. Under the Commonwealth legislation, disability is explicitly more broadly defined and includes physical, intellectual, psychiatric, sensory, neurological and learning disabilities. It also covers physical disfigurement and the presence of an organism capable of causing disease in the body, such as HIV. The Disability Standards for Education 2005 was introduced as subordinate legislation to clarify and elaborate the legal obligations of the 1992 Act in relation to education.

Autism is recognised as an intellectual disability under the Commonwealth Disability Discrimination Act, the South Australian Equal Opportunity Act and the DECS Students with Disabilities policy (revised in 2006). For eligibility under the Students with Disabilities policy, DECS requires confirmation of this condition through standardised diagnostic assessment conducted through Autism SA (the peak organisation for autism in South Australia, formerly called The Autism Association of SA) or one of a range of
other multidisciplinary options available in the public or private sector. The assessment is required to be conducted by a psychologist, paediatrician, speech therapist or psychiatrist.

### 1.1.2 Implications of disability legislation for schools in South Australia

Consistent with the legislation referred to above, DECS released their 1994 policy charter ‘Educating for the 21st Century.’ This charter was premised on the belief that:

> All young people in South Australia have a right to gain, through the public schooling system, a broad, balanced education that will prepare them for effective participation in society. Among this group of young people will be students with disabilities who may require support in order to gain access to and participate in a broad, balanced curriculum. (Department of Education and Children's Services, 1994:5)

More recently, the DECS blueprint for action Statement of Directions 2005-2010 reaffirmed commitment to “engage every child and student so that they achieve at the very highest possible level of their learning and wellbeing, through quality care and teaching” (Department of Education and Children's Services, 2005:2). The subsequent revised Students with Disabilities policy accordingly pledges to provide students with disabilities access to “an appropriate curriculum and...effective delivery of services and support [so that they can] participate in learning that enriches their life and maximises their achievements” (Department of Education and Children's Services, 2006:1).

Thus, from a legal, educational, ethical and political perspective, school experiences for students with disabilities should be developed and implemented such that the disability(ies) of any student is not a handicap for him or her to access and participate in the curriculum. Subsequent to these perspectives, a range of schooling options exists for students with disabilities, the spectrum extending from mainstream schooling through special classes, units and schools.

In South Australia, the choice of school placement for individual students is decided by their parents (guardian). When the student in question has a severe disability, parents...
often select a Special School or a Special Unit within a mainstream school as the preferred schooling option as these have a lower staff-student ratio, thus providing the potential for greater individual student attention. Regardless of school choice, the effective education of students with disabilities is dependent on an understanding of the characteristics of the disability, an understanding of how these impact on learning, and an ability to implement teaching methods which are appropriate to individual students. For school Principals, this includes ensuring that a Negotiated Education Plan (NEP)\(^1\) is initiated for each student covered under the policy and that a supportive school environment is provided for the teaching and learning process. A supportive school environment is deemed to include safe premises (Department of Education and Children's Services, 2002).

1.1.3 Evidence-based practice

The current trend to evidence-based practice across a range of fields asks whether methods/practices are indeed the most effective and efficient available, whether they are producing the best results, or whether there is some other practice(s) which ‘evidence’ suggests would be better across one or more indices. Education has not escaped this scrutiny. Educators are being asked, and are asking themselves, whether their pedagogical practices are the most effective to facilitate student learning, whether they provide the best educational opportunities for students, and whether student learning is maximised. In short, whether schools are providing ‘evidence-based education’.

Whilst there is debate about what constitutes ‘evidence’, the narrower interpretation certainly would include scientific research which uses rigorous, systematic and objective research procedures.

Schwandt (2005) challenges the focus on scientific ‘evidence’ to support ‘practice’, suggesting that the reverse order which prioritises ‘practice’ is warranted. Indeed he

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\(^1\) At the time this thesis commenced, the NEP document was called an Independent Education Plan (IEP). The name subsequently changed to Negotiated Curriculum Plan (NCP) and most recently to Negotiated Education Plan (NEP). In the interests of clarity, the term Negotiated Education Plan (NEP) will be used in this thesis to incorporate the current and all pre-curser planning documents.
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refers to a broader definition of ‘evidence-based’ which was first posited in the field of medicine where the concept originated. This broader definition holds evidence-based practice to include the “integration of the best research evidence with...clinical expertise and...(the) patient’s unique values and circumstances” (Straus, Richardson, Glasziou, & Haynes, 2005:1). That is, valid and clinically relevant research evidence is integrated with professional judgement and stakeholder (client) values. In education, this is analogous to educators drawing on their experience and knowledge to make decisions (judgements) in the best interest of the student. Schwandt (2005:97-98) also acknowledges that unlike the narrower interpretation of evidence-based practice (which conforms to positivist criteria applied to a practice site which is ‘in need’), the broader definition recognises that:

Practice is more than a site or context for the application of scientific knowledge. It is compatible with the view that practice is a very complex affair involving the practitioner together with the student, employee, client, patient or service user in a joint decision-making process that involves simultaneous consideration of evidence, professional values, political considerations, and individualised goals. ...Practice in this view is of course, local, contingent and contextual. Yet practice is far more than a specific context....[It is] a particular kind of human engagement that involves one’s dealing with, or interactions with others that unfold in view of some particular understanding of substantive rationality appropriate to the practice in question.

This perspective is supported by Senge, Cambron-McCabe, Lucas, Smith, Dutton, and Kleiner (2000:21) who state that:

All learners construct knowledge from an inner scaffolding of their individual and social experiences, emotions, will, aptitudes, beliefs, values, self-awareness, purpose and more. In other words, if you are learning in a classroom, what you understand is determined by how you understand things, who you are, and what you already know as much as by what is covered, and how and by whom it is delivered.

The research conducted for this thesis will contribute to the professional literature of evidence-based best practice pedagogy for teaching students with autism who are chronic climbers and absconders by conducting a program-specific evaluation. Readers
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of this thesis will interpret the findings in light of their understanding and beliefs of what social science ‘evaluation’ is and should be.

1.2 The Research Problem

The discordant nexus between education provision and the (dis)ability needs of a group of students with autism who are chronic climbers and absconders provoked school-initiated action designed to improve their learning outcomes and safety. This section describes that nexus, the difficulties this nexus created for student learning and safety, and broadly speaking how the school responded to that issue.

1.2.1 The issue

Modbury Special School provides for the education of students with intellectual disabilities, including autism. Many of these students have severe multiple disabilities with significant learning, emotional, healthcare and behavioural needs. Additionally, a subset of the students with autism exhibit extraordinary climbing skills, tending to seek out the highest vantage points available and/or are prone to absconding from the school premises. Both of these behaviours posed duty of care and teaching and learning issues for the school.

The school was built in 1976 as a special school for students who were considered slow learners. Original design features included: raked-joint, exposed brick walls; exposed beams; internal steel support poles; and straw ceilings. The school playground area was enclosed by a low wire mesh fence (Aschberger, 1998). For most students, these design features are inconsequential in terms of student education and safety. However, for students with autism who are very adept at climbing and/or absconding, these design features provided opportunities to climb into the classroom rafters (or roof if outside), and/or abscond at will. Thus the physical environment of the school was unsuitable for these students.
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1.2.2 Impact of uncontrolled climbing and absconding on learning

Common behavioural characteristics associated with autism such as short attention span, unusual response to sensory stimuli and problematic language comprehension, inherently pose problems for the learning process. Climbing and absconding behaviours can further detract from the education process not only because the students concerned are removed from the education process at the time of the incident, but also because the students may injure themselves or others in the process of jumping (or falling) down, thereby further reducing their own learning time and also that of any other student who may be injured in the event. These incidents also create a distraction for other students and divert teacher attention away from their core responsibility, the education of students. For a subset of students at Modbury Special School, these events occurred routinely, usually daily, as evidenced by school records and staff anecdotal comments. These problems existed because of both the inherent nature of the disability and also because of the existing design features of the school physical environment. The resultant challenging behaviour was both symptomatic of the underlying causal factors and the stimulus for the development of the educational program being evaluated in this thesis.

1.2.3 School response to the issue

Whilst student-centred teaching approaches were already in existence at the school, entrenched reliance on a hierarchical decision-making model and a predominance of reactive, individual-focus responses to student issues hindered a whole school, integrated approach to the issue. From a managerial perspective, changes to the operational culture of the school were required if any program designed to address the issue just described was to be effective and sustainable. It was perceived that these operational changes would need to run parallel with, and complementary to, the re-designed classroom program. The development of a proactive, collaborative, systematic and educational approach to addressing problem behaviours was thus deliberately sought. Shared staff ownership of program development was a key concern for school management.
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Shared ownership commenced through a funded action research project in 1997 and also a funded pilot study (the Northern Suburbs Project) in 1998. These small scale research projects explored the nature of the problem and investigated educational responses to it. More importantly, these undertakings comprised an initial step for staff to take risks about and responsibility for their learning. Given the state-wide uniqueness of the program, it also provided safe ground for staff to work with each other in an open and collaborative manner. The application for the action research had been written by the Principal in collaboration with a small number of key interested staff, including teaching staff and a School Services Officer (SSO). This activity also raised the interest of other staff within the school to question the teaching and learning processes which had traditionally been used in the school. For further background on these preliminary research undertakings, see Appendix 1.

Building on the findings of these research activities, a funding application to DECS was made for the erection and furnishing of a purpose-specific facility for students with autism who are chronic climbers and absconders. This application was successful. With the resultant grant of approximately $1 million, a new facility was built. In keeping with naming each class at Modbury Special School after an Australian species of flora, the facility was named ‘Correa Learning Unit’. When the term ‘Correa’ or ‘Correa program’ or ‘Correa Unit’ is used in this dissertation, it is referring to the purpose-specific, physical facility together with the education program operating within it. The program commenced in 2001 and entailed provision of an environment which was “conducive to learning, empowering and develops students who take responsibility for their own learning” (Modbury Special School, 2002:np). Through this changed physical and social environment, it was hypothesised a range of benefits would be achieved for both students and staff.

The construction of Correa was underpinned by a conceptualisation of how education could be improved for students with these particular abilities and needs. The Correa program was not just about the provision of a specialised facility, but rather about providing a learning environment that catered for very unique needs of the students under discussion.
The timing of the events cited in the above paragraphs created a synergy which facilitated the adoption of a range of initiatives to complement the overt re-structuring process. These initiatives included retaining and contracting staff who shared the program philosophy and demonstrated commitment to student learning. A program of staff professional development oriented to building program relevant knowledge and skills was also initiated, with staff ownership of and responsibility for the implementation of decisions paramount. As the outcomes sought by the program were dependent on more than just facilities and teaching per se, this evaluation also investigated the school organisational culture as one of the contextual influences on program effects and as an indicator of sustainability of the program.

Thus, to address the issues of sub-optimal student learning and high incidence of injury to staff and students, the Correa facility was designed and erected to accommodate the education, disability and safety needs of these students. Specifically it was designed to accommodate the behavioural characteristics of autism and also the unique abilities of these students. For instance, because these students were very adept at climbing, varied but safe indoor and outdoor climbing opportunities were provided. However, the design of the facility also prevented agile climbers from climbing to inappropriate locations and prevented students from leaving the school premises at will, thereby placing themselves in danger. This is an important feature because characteristically people with autism do not understand the natural consequences of their actions. A student with autism may not perceive the danger for instance of running across a busy road or venturing into unfamiliar surroundings without the knowledge of his or her carers.

Figure 1 represents the linkage of antecedent conditions referred to in the preceding paragraphs, to the issues which the school sought to address. These issues culminate in the two main problems from the school perspective: student safety and student learning.

Correa was also designed to address the behavioural characteristics of the students through adapting the teaching and learning processes to meet their needs. The school
based these changes on principles associated with sensory integration and applied behaviour analysis. In so doing, this facility and the education program which operated within it, were intended to improve student access to the curriculum and thus the potential for learning and achievement of learning outcomes.

Apart from the purpose specific facility designed for students displaying the characteristics under discussion, all remaining buildings at the school continued to be environmentally unsafe for the group of students under discussion during the entire time that the data were collected for this research.

1.3 The Program

A program can be defined broadly as “a set of resources and activities directed toward one or more common goals” (Scheirer, 2005:321). Using more refined parameters,
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Smith (1989:47) defines the term as a “set of planned activities directed toward bringing about specified change(s) in an identified and identifiable audience.” This latter definition suggests that there are two necessary components of a program, these being:
(1) a documented plan; and
(2) action which is consistent with that plan (Owen, 2006).

Consistent with both of the above definitions, the education experience provided in the Correa Learning Unit for students with autism who are chronic climbers and absconders is aptly referred to as a ‘program’ in this thesis.

Autism is not curable and there is no known single efficacious treatment for autism (Janzen, 2003). Thus, in the absence of definitive epidemiological evidence, education providers for students with autism need to draw on relevant cognitive theories and best practice evidence to construct what they believe to be a worthwhile education program. Indeed we do know that there are behavioural and developmentally appropriate strategies which can lead to changes in the behaviour of these children.

The program offered in Correa is multifaceted. It incorporates a range of interdisciplinary and intersecting elements including the physical environment, pedagogy, behaviour management strategies, support services, staff selection and training, and of course, the target group of students with autism who are educated in Correa. Whilst the physical environment is designed to provide a safe environment, it is also engineered through structural and design elements to be integral to the teaching and learning processes.

The program runs for the duration of the normal school day (including lunch and recess break periods), five days per week. The belief underpinning the program is that by minimising off-task and unsafe behaviours and increasing exposure to a relevant curriculum, student learning and student safety will improve.
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Correa can accommodate up to 10 students. Once accepted into the program, students remain in this multi-age class until circumstances dictate otherwise. For instance, the student’s age may necessitate graduating to a high school, or their behaviour may moderate, suggesting that a return to one of the other school classes may be in order. Alternatively, the family may move the child to another school for any one of a variety of reasons. At the time data were collected for this research, there had been no change in Correa student membership since program inception, nearly two years prior. However, in the years subsequent to that initial data collection period, three students have moved back to other classroom units within the Special School because their levels of (dis)ability were deemed sufficiently improved, two have moved on to secondary schooling options (with special school facilities and programs) and one has moved interstate. Other students have since joined the Correa program once a vacancy in the class had become available.

The Correa program commenced operation from February 2001. In the first year it was staffed by the same staff member (male) who had taught seven of the nine students in the year prior to their commencing in Correa. In the second year of operation, the class was taught by two female staff members, one who taught in Correa for two days and the other for three. At all times a SSO was present in the classroom to support the teacher with organisation, logistical, teaching and management processes.

1.3.1 Program site

Correa is located approximately 70 metres directly across a grassed play space from the remaining Modbury Special School buildings. It was constructed as part of a shared open space campus with Modbury South School (preschool-year 7), yet was clearly visible from the administrative centre of Modbury Special School at the time it was constructed. The shared campus building accommodates a special class from the primary school and two groups from the special school. Correa is one of these special school classes. In the main, Correa functions as a self contained, functionally separate entity. However, it does have internal door linkage to one of the other special education classes and also internal access to the Resource Centre. This linkage allows students to expand their range of interaction when deemed appropriate. Thus, whilst administered,
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financed and staffed by Modbury Special School, Correa is physically part of the shared campus rather than located on the original special school site.

1.3.2 Program elements

The Correa program comprises a number of inter-related elements. These include students, physical environment, curriculum, staff, pedagogy, and behaviour management. Each of these is addressed in the following paragraphs.

Students

At the time of the commencement of this evaluation there were nine students in Correa, eight male and one female. Their ages ranged from eight years five months to fourteen years two months. All students were selected for inclusion in Correa because they met the eligibility criteria. Apart from meeting the school entrance eligibility of having an intellectual disability, staff at the school identified each of the nine students as posing a significant safety risk to themselves and/or others because of their climbing and absconding behaviour which could not be contained elsewhere in the school. Eight of these students were diagnosed as having autism. The parents of the ninth student had not had him tested for autism. However both parents and school staff stated that he demonstrated very obvious characteristic traits of autism, including a heightened anxiety, absconding, obsessive behaviours including obsessive climbing and an inability to adapt to change.

The physical environment

The physical environment of Correa is designed to provide inviting, structured and clearly delineated learning spaces. It includes both indoor and outdoor areas, separated by a transition space. Entry into and exit from the unit is via digital-lock doors. A fixed pane, clear glass, viewing window (approximately 1.2 x 1.8 metres) is located on the same wall as the main entrance door but approximately one metre from it. This window provides visual access both into and out of the classroom. All interior and exterior wall surfaces have a fine-texture rendered finish. Opportunities for climbing are provided in both indoor and outdoor areas. Students are able to access these at any time.
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The indoor area, whilst maintaining an open central activity area throughout the length of the room, also has discrete sections. Some sections can be closed off when not in use, while others are screened by either an internal low curved wall or by the shape of the curved boundary wall. Facilities include: a kitchen (which can be closed off from access and view by a roller door); withdrawal room; unisex toilets (including one with an assisted toilet pan), shower, change table and sluice; secure teacher preparation room; seated learning area with a fixed bench; small teaching spaces; and technology room. While a number of these facilities are not uncommon in special schools, it is rare to find them co-located within a self-contained teaching space. A range of these facilities are shown in Photos 1-6.

Photo 1  Fixed work bench

Photo 2  Fixed eating table kitchen (roller door open)

Photo 3  Fixed table (closed roller door to kitchen)

Photo 4  Kitchen (roller door open)
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Photo 5 Unisex toilet and wash facility

Photo 6 Change table and laundry facilities

Photo 7 Delineated floor surfaces
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Based on a literature search, consultant recommendations and preferences solicited from other students with autism in the school who were verbal, the indoor environment was furnished with colours, textures, shapes, lighting, acoustics and fittings designed to have a calming effect. Preferred colours suggested by the students tended to be muted. Hence, wall paint and floor colours selected for Correa were muted blue-green and ochre colours. The floor was surfaced with different textured materials: partly carpet and partly tarkett multi-face vinyl (a multi-height vinyl surface). The curved black line in Photo 7 for instance, marks the boundary of carpeted floor space (on left) and multi-height vinyl (on the right). Non-buzz fluorescent globes were installed for artificial lighting.

Several wall sections were carpeted so that laminated and velcoed Compic cards could be attached. (Compics [Communication picture] are laminated word and picture cards displaying an icon or drawing plus a word or very short phrase.) On the foreground left wall in Photo 7 is an area where Compics are attached for student use. The fixed workbench and viewing pane can be seen in the distance. In all student areas, the facility is devoid of structures such as cupboards and light switches which could be used by climbers as foot and hand holds.

Indoor climbing equipment provided includes floor to ceiling climbing frames and a climbing wall with modifiable hand/foot holds. A ceiling ladder links abutting walls on which the climbing facilities are sited. This equipment allows students to climb up to and then across the ceiling before climbing back down. The floor space in this area is a deep padded safety pit which meets international gymnastics standards (see Photos 8, 9 and 10). A range of sensory equipment such as hammocks and swings suspended from ceiling hooks, physio balls and foam rockers and logs provide for vestibular movement. These are rotated for use on a regular basis. A blue hammock can be seen suspended from the ceiling in several of the photos (Photo 2, Photo 9 and Photo 10). Unbreakable mirrors are wall mounted. One of these almost reaches the ceiling so that students can see themselves even when at a considerable height from the floor (see Photo 9 and Photo 10).
The interior area of Correa is linked to an enclosed outdoor area via a single horizontally sliding door which is solid in the lower half but toughened glass in the top half. The door, and thus opening space, is 3.8 metres in width. Three sensory pools are located immediately outside the sliding door to the left (see Photo 11 and Photo 12). They are sheltered from the elements and have porthole viewing windows for natural light. The sensory pools are concave circular depressions large enough to accommodate 2-3 persons sitting in each. Rice, shredded paper, pasta, water or other material can be added into these pools for sensory activity. This sensory pool area can be closed off via
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a key lock door to restrict movement to and from the facility. The depressions also are plumbed to the drainage system through a fixture at the base of each depression. This allows the depressions to be drained or hosed out. Also immediately outside of the main indoor space is a fixed outdoor table and bench seat, equipped with a removable umbrella for additional shade when required.

![Photo 11 Sensory pool area (interior)](image1)

![Photo 12 Sensory pool area (exterior)](image2)

The outdoor play space is surrounded by an irregularly curved wall approximately 3 metres in height. This rendered wall is punctuated by five full height sections of clear polycarbonate sheeting allowing two-way visibility to the natural environment and buildings outside of the Correa facility. Each panel is approximately 1.3 metres wide. Two of the five panels are single width panels while the remaining three are double width (totalling 2.6 metres apiece). The central feature of the outside space is a tall climbing structure sited on a raised mound. At its apex, the climbing structure plus mound is approximately 4.7 metres high, with the climbing structure comprising 3.8 metres of this height. The mounded ground space in this area is raised to an overall height of approximately 0.9 metres with the top surfaces comprising 23 centimetre deep
absorbent padding covered with artificial turf. Apart from the views to the exterior environment through the polycarbonate sections of perimeter wall, views over the perimeter wall can be also be gained from the apex of the climbing structure. This climbing structure, together with a section of the perimeter wall and polycarbonate sheeting, is shown in Photo 13. Other statically placed but sprung ride-on equipment also provide rocking (vestibular) sensation on this artificially turfed area. A meandering pathway/bike trail comprising sections of varying textured surfaces circumnavigates the climbing equipment (see Photo 14). A water wall is sited on one interior section of the perimeter wall where water cascades down over a mosaic tiled surface. Staff can control the switching on and off of the water feature from inside the storage room. Storage for tricycles and outdoor equipment is provided in a dual access, secure site which is incorporated into the design of the perimeter wall (Aschberger, 1998). All equipment not in use is stored in specially designed storage areas.

Photo 13 Outside climbing equipment, perimeter wall and fixed seating
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The curriculum

South Australia has a mandated curriculum framework, this being the South Australian Curriculum and Accountability (SACSA) framework (Department of Education and Children's Services, 2008). The scope of the SACSA framework is organised around eight Learning Areas (curriculum subject areas), five Essential Learnings (futures, identity, interdependence, thinking and communication), Equity Cross-curriculum Perspectives, and Enterprise and Vocational Education. Whilst operating within the mandated structure, the curriculum in Correa is individually designed for each student to develop skills and understandings to assist independent living and social functioning. It includes teaching generic skills such as listening and decision making. The curriculum for each student is guided by a NEP. The NEP is an individualised teaching and learning plan jointly devised by staff and families and developed such that it builds on students’ strengths and also addresses their needs. This plan states student specific behaviours, competencies, issues, supports, health needs and curriculum levels. It also articulates the goals that the student will develop over a maximum period of twelve
months before it is reviewed. The curriculum also includes teaching students to self-monitor and self-regulate their emotional state.

**Staff**

The program was staffed by one full-time equivalent teacher, 42 hours of School Services Officer (SSO) support (12 hours funded by DECS and an extra 30 hours funded from the school overall budget), and one hour of literacy support shared throughout the school. Additional support was provided by contracted support services as detailed below (Support services). The SSO position was shared between two staff members across the week.

The number of staff working in the Correa program was determined by a combination of the DECS staffing formula for teaching students with intellectual disabilities and internal school priorities. The DECS base resource allocation for Correa was one teaching staff per 10 students plus 12 hours SSO time. These figures were based on the fact that for the purposes of staff funding allocation, DECS does not regard autism any differently from global disability delay.

Since the year 2000, many South Australian public schools have been financially self-managing. This site-based global budget allows schools to have greater spending flexibility than was previously the case. Using this flexibility, Modbury Special School financed an additional 30 hours of support time for Correa students, thus cumulatively providing a total of 42 hours of School Services Officer time per week. From 2003, two students in Correa were eligible for extra, support staff allocation. Thus since 2003, the Correa unit has been staffed by one full-time teacher and two full-time School Services Officers. For further details on finance for staffing and classroom resources, see Appendix 2.

The program relied on staff being supported by the philosophy and organisational culture of the school. This support was demonstrated, for instance, in the level of classroom assistance, staff training and development, and the negotiation of financial support for external service providers.
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Support services

The program was supported by a range of contracted government and non-government providers. These services include a DECS speech therapist, a DECS disability coordinator and a teacher consultant from Autism SA.

Specifically, the contracted level of external support for the program included:

(1) less than one full day/fortnight consultant teacher/development officer across the whole school (via Autism SA)

(2) 0.5 day/fortnight DECS speech therapist across the whole school

(3) DECS disability coordinator on a needs basis who consults across the school.

Correa is one of 12 teaching units within the school. Thus the level of support from external providers to the program in Correa was necessarily in proportion to competing demands from within the school. The share which Correa received was approximately one fifth of the total time available from Autism SA support services, as it contained one fifth of the total number of students with autism at Modbury Special School. DECS services were shared on an even basis across the 100 students at the school.

The range and extent of the support services provided is determined by the DECS Ministerial Advisory Committee for Students with Disabilities and the school. In the first instance, Commonwealth money is channelled through DECS to the Ministerial Advisory Committee which in turn funds non-government organisations (NGOs) such as Autism SA. Schools then apply to NGOs for the type and level of support required. The NGOs decide their budget allocation depending on breadth and intensity of support required at different sites. Second, DECS have their own support services section and can provide consultant teachers in areas such as behaviour management or disability. Schools apply to their District Office for access to these services and they may be approved after due consideration of competing applications. Lastly, the school can contract independent consultants to provide support to their program in some instances. This is necessarily within the DECS funding and insurance constraints.
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Pedagogy

The pedagogical approach used by Correa staff is eclectic. Staff draw from several theories of learning, including applied behaviour analysis, the Treatment and Education of Autistic and related Communication handicapped Children (TEACCH) model (Schopler, Mesibov, & Haresey, 1995) and social learning theory. These theories are applied in various combinations as determined by the learning needs and disability of each student. Teaching strategies include use of individualised student learning programs and provision for student choice. Teaching is delivered via multiple sensory modes at locations within the unit which are usually determined by the student, as well as occurring in activity specific areas as dictated by the fixed location of some facilities.

Specific teaching strategies used in Correa include the use of modelling, verbal cues, visual cues, prompting, constructive and specific feedback, chaining (to develop more complex behaviour), routines, and provision of structured opportunities to learn and practice developmentally appropriate skills. While some teaching occurs in a group setting, the majority occurs with individual students or small groups of two or three. The teaching is often taken to where the student is, whether this is on a rocker, hammock or floor rather than the usual reverse situation of students being required to be located at a site determined by the teacher. Students can also choose which aspect of their curriculum they want to work on at any point in time by selecting a Compic. The Compic is selected from the carpeted wall area dedicated to this purpose or from their individualised Compic book and then given or shown to another person(s) to communicate. They include such things as behaviours, feelings or general category of activity.

The Correa program is intended to be conducted within a calm classroom environment. Teachers are to use a quiet voice tone and the curriculum includes teaching students strategies to monitor and self-regulate their own emotional state. Students can also make a choice to move to various areas of the facility at any time, but they need to indicate this desire to staff using their preferred visual system.
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Behaviour management

Educators and other professional groups note that high levels of stress and anxiety are common for students with autism as they seek to make sense of their world (Dodd, 2005; Grandin, 1995; Schaaf & Miller, 2005). This anxiety is often portrayed through inappropriate behaviour which at times results in injury to the student themself and/or others in the vicinity. This includes students, staff, parents or visitors within the school environs. Common law deems that teachers have a duty of care to the students. This duty of care extends to the student exhibiting the challenging behaviour and also all other personnel on the school grounds. Thus, in addition to program elements which seek to modify the antecedent conditions believed to heighten student stress and anxiety, specific behaviour management strategies designed to protect, ameliorate behaviour and divert attention as needed, have been incorporated into the overall program.

The Correa program requires all teaching and support staff who interact with the students to use non-punitive behaviour management techniques. These include separating any student exhibiting challenging behaviour from others if necessary (as afforded by building design) and diverting or distracting student focus. They also include teaching students to monitor their own stress levels and to practise self-stress-regulation skills. In the literature, such strategies are referred to as positive behavioural support or non-aversive behaviour management. Antecedent conditions, behaviour and consequences are linked aspects of the behaviour management plan. Environmental design features and teaching strategies designed to reduce sensory overload have been described in the sections above.

Behaviour management also includes the use of a crisis management plan which is designed to keep students and staff safe. This crisis management plan acknowledges that the school needs to de-escalate unacceptable student behaviour promptly and resume normal operations as soon as possible thereafter. In the first instance this may involve isolating the student from the remaining students and staff (such as in the outside space where he/she is still visible to staff).
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1.4 Purpose of Study
This thesis used a single case study method to evaluate the education program for students with autism in the Correa Learning Unit at Modbury Special School. The evaluation had two objectives. These were

1. to determine the intended and unintended program outcomes, and
2. to determine what factors and processes facilitate or militate against the achievement of intended outcomes.

With the unit of analysis being the program, this evaluation sought to assess program outcomes and also enhance the knowledge base for program improvement. I deemed this appropriate given that the program is new, developing and has limited prior models for benchmarking purposes. This orientation has implications for the type of evaluation to be used, with proactive elements being fore-grounded.

A traditional impact evaluation perspective requires the determination of worth or merit of a program, product or other evaluand (object of the evaluation). Clarification of whose values are reflected in the notion of ‘worth’, using what criteria and to what standard, are issues which the evaluator(s) need to grapple with from the outset (Owen, 2006). However this perspective has broadened in more recent years. In relation to a program, evaluation now can include information on the internal mechanics of the program, such as resources, processes and implementation and how these influence the program outcomes. Current approaches also explore how the program could be improved and what it needs in order to be more effective. This thesis has adopted this broader, current perspective, in which the evaluation is intended to determine the effectiveness of the program as well as inform educational practice at both the micro and macro levels. Further background to the selection of this form of evaluation is included in Chapter 3.

1.5 Significance of the Study
Given the aforementioned statutory and moral trend to inclusion, we can expect an increasing number of schools and teachers to be exposed to students with autism in
proportion with an increasing population. This exposure is compounded by Autism Spectrum Disorders being increasingly recognised in the community as more children are diagnosed. Given that a diagnosis of autism is required in order to access relevant services and agencies, prevalence baseline data can enable policy makers, including education providers, plan for timely and responsive service and education provision.

From a review of 28 epidemiological studies of autism and related disorders derived from 14 countries, a best overall estimate of the prevalence of Autism Spectrum Disorders was found to be 0.6%, with prevalence rates negatively correlated with study sample size (Fombonne, 2005). An Australian study commissioned by the Autism Advisory Board on Autism Spectrum Disorders estimates a similar prevalence rate of 0.625% (MacDermott, Williams, Ridley, Glasson, & Wray, 2007). Further, the 2007 prevalence rate for primary school-age children (6-12 years) with autism is 1:160 (MacDermott et al., 2007).

This prevalence estimate, coupled with the belief that all students, regardless of disability, have a right to access a relevant curriculum for their needs, prompts the need for information and best practice in regard to teaching students with autism to be collated and broadly disseminated. Thus, an evaluation of the program offered in the Correa Learning Unit is necessary for the program stakeholders. It is also necessary to help inform educational policy and practice for students with autism in other settings.

1.6 Overview of the Thesis Structure

Chapter 2 is the first of two literature review chapters. It provides an overview of the nature of autism, investigates varying approaches to education for students with autism and also explores the evidence regarding teaching and learning environments which facilitate learning for these students.

The second literature review chapter, Chapter 3, explores the nature and forms of evaluation theory and program theory. These provide a context for the rationale supporting case study as an appropriate research strategy for this program evaluation. Regardless of the research method selected, issues of reliability and validity impinge on the credibility of study findings. Thus this chapter also considers both of these issues as they apply to case study research.
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Chapter 4 focuses on the Correa program theory. It commences with an explanation of the nature and purpose of this approach before detailing the development of the Correa program theory. In the absence of articulated program objectives, a hierarchy of program objectives is initially posited together with the assumption(s) underlying each objective. The theory then elucidates the program context, inputs, processes and finally the anticipated program outcomes which in essence articulate hypothesised causal linkages. In so doing, the Correa program theory constitutes a key tool for the evaluation process because it affords a reference framework from which possible evaluation measures could be formulated. Further, the program theory provides an indication of the way a good evaluation can be designed, as it provides a systematic approach to the investigation including specific evaluation questions and suggested data sources for each.

Chapter 5 provides details of the research methods used to conduct the evaluation. This chapter covers the use of the case study method, the design of data collection materials, the field procedures used (including ethics approval) and the data analysis process.

The inter-relationship of staff and parents with the program are detailed in Chapter 6. Their perceptions of the program goals and the extent to which these were achieved precede an explication of each stakeholder group’s experience of the program: the role each played and the effects of the program on themselves. This chapter also provides details of whether the program was implemented as planned and considers factors which facilitated or hindered the achievement of program objectives.

Chapter 7 considers the extent to which the program objectives were achieved. Given that the program was established to improve safety and learning outcomes for students, investigation of these outcomes then provides the means to determine program effectiveness. This includes a report on how the program affected student security and safety, emotional state, and learning. Evidence for these program effects is drawn from key informant perceptions, documents, photographs and observations.
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The methodological discussion is located in Chapters 8. Challenges to the validity of the findings and the factors which facilitated or militated against the achievement of program success are included in the discussion. This chapter also discusses the role of context in both the achievement of program outcomes and the implications of contextual factors for program sustainability and generalisability.

Finally, Chapter 9 summarises the conclusions and implications of the study.
Chapter 2 - Autism and Education

2.1 Introduction

Improved understanding of emotional and behavioural problems experienced by students with autism has the potential to inform needs-based educational opportunities provided in schools. Documented research can help us understand the nature of the problem, what past efforts have been implemented, what successes and failures these have experienced, what lessons have been learnt and what is still needed.

The term ‘autism’ is used throughout this thesis to refer to the more classic autism, (autistic disorder). Autism is also sometimes also called ‘early infantile autism’, ‘Kanner’s autism’ or ‘childhood autism’. These terms are used interchangeably in the literature.

This chapter commences with a broad review of the literature on educational approaches for students with autism, specifically exploring the effectiveness of comparative programs. It then distils to education programs for the specific cohort of students identified in this thesis, namely students who are chronic climbers and absconders.

2.1.1 Process of literature review

Literature was accessed using a range of methods and sources. Methods included electronic searches, hand searches of relevant journals, searches of reference sections of all located sources reviewed, and personally contacting specific individuals and organisations I deemed may have relevant information. The electronic database searches commenced using broad descriptors of ‘autism’ and ‘education’ and then progressively became more restricted through to ‘climb*’ ‘chronic climbers’ ‘abscond*,’ ‘elope*,’ and ‘runaway behavior’. Other on-line searches included theses and key word searches at the library of Autism SA and in university library catalogues. Information was also sourced from references and books from the personal library of the Modbury Special School Principal, and email contact with international autism associations and personnel.


Chapter 2 – Autism and Education

2.2 The Nature of Autism

The term ‘autism’ is derived from the Greek words ‘aut’ meaning self and ‘ism’ implying orientation or state. The inference was that children with this condition were generally self-absorbed and showed little interest in those around them. ‘Autism’ was first used in reference to a distinct syndrome by American child psychiatrist Leo Kanner in 1943. Kanner (1943) called this syndrome ‘early infantile autism’, believing it to be a psychiatric problem possibly associated with childhood schizophrenia or childhood psychosis. In his initial paper Kanner purported that the autistic syndrome was innate and could be identified by a cluster of nine specified symptoms. He also noted that for the 11 cases he described, the majority of parents were successful in their chosen careers but somewhat obsessive, pre-occupied with scientific, literary, or artistic abstractions and displayed limited genuine interest in and warmth towards people.

Digressing from his initial theory of causation, Kanner (1949) subsequently focused on the parents’ undemonstrative, mechanised and formal mode of relating with their children as a prime causal factor, theorising that the child’s behaviour may be in fact a plea for parental approval. This psychogenic rather than the earlier innate theory gained popularity and persisted through to the 1980’s. However, from the 1960’s, Kanner’s perception of psychogenic causality began to be replaced with various biological and psychological theories. Today, psychogenic theories related to child-parent bonding are no longer considered credible (Richdale & Schreck, 2008; Roberts & Prior, 2006).

Over time, various sites of brain abnormality have been suspected, including the vestibular system, the medial temporal lobe, basal ganglia, the thalamus and the limbic systems (Bauman & Kemper, 2005). Recent neuroanatomical studies have focused more on abnormalities of brain size and growth rates at various developmental stages, and neuropathologic changes in the limbic, frontal lobe and cerebellar areas of the brain. Study results reveal “increased brain weight and volume in childhood, microscopic differences between children and adults, and some evidence of scattered malformations” (Bauman & Kemper, 2005:131). Courchesne (2003) found that despite children with autism having normal brain size at birth, their brain grows at an abnormally fast rate, this increased growth rate beginning a few months after birth. By the time they are four years old, their brain size is equal to that of a normal 12-year old.
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The reason for this is as yet unknown. Whilst our understanding of brain functioning is far from complete, evidence to date suggests that the cerebellum is involved in:

_The regulation of higher cortical thought and emotion [and]...is a modulator of many central nervous system functions...[including] control of shifting attention, anticipatory planning, mental imagery, and some aspects of language processing, all of which have been reported to be impaired in autistic individuals. In addition, the cerebellum is believed to be involved in the regulation of the speed, consistency, and appropriateness of mental and cognitive processing; it may have an impact on every level of behavior, including emotion and motivation, and may be involved in the control and integration of motor and sensory information, functions that are also frequently disordered in autism._ (Bauman & Kemper, 2005:129)

Further, the relationship between the cerebellum, the forebrain and the clinical features of autism is not yet clear.

Despite a large body of literature which describes neural abnormalities and a high co-morbidity of autism with both intellectual disability and seizures (Sadock & Sadock, 2003), a coherent biological theory of autism has not been developed. This is essentially because none of the neural abnormalities are unique to autism, nor found in all individuals with autism. Indeed the relationship between specific areas of the brain, (including the cerebellum) and the behavioural symptoms of autism is unclear. Whilst genetics is believed to be a relevant factor, indeed current research does indicate that autism is a highly heritable disorder, the specific genes (or chromosomal abnormality/ies) for autism have not yet been identified (Bauman & Kemper, 2005; Silver, 1997; Volkmar, Paul, Klin, & Cohen, 2005; Weiss et al., 2008). It is also not understood how genetic susceptibility interacts with environmental factors (National Research Council, 2001). Belmonte et al. (2004:646) concede that altered neural properties may cause problems for normal developmental processes and as such, autism may well constitute “a complex behavioural syndrome many steps removed from the root causes.” Couper and Sampson (2003) similarly acknowledge that there is no empirically based cohesive explanation which details how and why autistic related developmental delay occurs. Indeed, although it was not until the third revision of the American Psychiatric Association’s _Diagnostic and Statistic Manual of Mental Disorders (DSM III)_ published in 1980 that autism was first listed as a distinct disorder,
there is current consensus that autism is primarily biological in genesis and results from some difference in brain development.

2.2.1 Diagnostic criteria

Autistic disorder, commonly called autism, is a Pervasive Development Disorder (PDD). According to the internationally recognised *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR), there are five pervasive development disorders, these being Autistic Disorder, Rett’s Disorder, Childhood Disintegrative Disorder, Asperger’s Disorder, and Pervasive Development Disorder Not Otherwise Specified (PDD-NOS, sometimes called atypical autism). Pervasive development disorders are characterised by:

> Severe and pervasive impairment in several areas of development: reciprocal social interaction skills, communication skills or the presence of stereotyped behavior, interests and activities. The qualitative impairments that define these conditions are distinctly deviant relative to the individual’s developmental level or mental age. (American Psychiatric Association, 2000:69)

Within the pervasive development disorder classification literature, there is considerable inter- and intra- individual variance in abilities and severity, prompting the term ‘Autism Spectrum Disorder’ being introduced to encompass Asperger’s disorder (syndrome), autistic disorder and PDD-NOS. Characteristics of Asperger’s disorder, like autistic disorder, include impaired social relatedness and repetitive and stereotyped patterns of behaviour. But Asperger’s disorder differs from autistic disorder in that the latter includes delay in language development whereas the former does not. A child with Asperger’s disorder also has near normal or normal cognitive development, acquisition of age appropriate learning skills, and adaptive skills (apart from social interaction) whereas a child with autism usually does not (American Psychiatric Association, 2000). Autism is usually not diagnosed until 2-3 years of age and the prognosis is poor (Gresham, Beebe-Frankenberger, & MacMillan, 1999). There is no validated ‘cure’ for autism.

A diagnosis of autism is given if the child meets internationally recognised diagnostic criteria. These criteria are based on observable behaviour. As such, the diagnosis for
autism is multidimensional and subjective rather than empirical or medical. The broadly held view across the literature is that “there is no definitive physiologically based test to reliably indicate the presence of autism and no one particular behaviour is a definitive indicator of autism” (Roberts & Prior, 2006:18). Autism is most usually classified using either the American Psychiatric Association’s Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR, 2000) or the World Health Organisation’s International Classification of Diseases (ICD-10, WHO 1992).

Thus in the absence of more discriminating evidence, autism is generally accepted as “a neurobiological disorder of development that causes discrepancies or differences in the way information is processed” (Janzen, 2003:4). The DSM-IV-TR (2000:75) expresses the diagnostic criteria for autism as:

A. A total of six (or more) items from (1), (2) and (3), with at least two from (1) and one each from (2) and (3):

• qualitative impairment in social interaction as manifest by [4 manifestations listed]

• qualitative impairments in communication as manifest by [4 manifestations listed]

• restricted repetitive and stereotyped patterns of behaviour, interests, and activities as manifest by [4 manifestations listed]

B Delays or abnormal functioning in at least one of the following areas, with onset prior to age 3 years: (1) social interaction, (2) language used as social communication, or (3) symbolic or imaginative play.

C. The disturbance is not better accounted for by Rett’s disorder or childhood disintegrative disorder.

The first section above (A) is commonly described in the literature as a ‘triad of impairments’. At the time the phrase was originally coined by Wing and Gould in 1979, the triad included impairments in communication, social interaction and imagination. The third component of the triad has been modified by subsequent writers from ‘impaired imagination’ to ‘restricted interests and repetitive behaviours’ or ‘lack of flexibility in thinking and behaviour’. This is consistent with the DSM-IV-TR classification where each element of the triad of impairments affects specific areas of functionality, with variation according to age and degree of intellectual impairment.
The impairments discussed above restrict the individual’s capacity to function in a socially adaptive manner. Behaviours include poor social relatedness (such as poor eye contact and lack of social reciprocity), poor communicative skills (such as the absence of speech or imaginative play) and overt maladaptive responses (such as obsessive and repetitive behaviours).

**Issues for diagnosis and assessment**

Autism is not an illness. It is a syndrome. As such it is identifiable via a set of diverse and tremendously variable behavioural symptoms. Not surprisingly therefore, a range of instruments has been developed to enable professionals to diagnose autism (and thus enable families to access relevant funded services) and to assess the symptoms of autism with a view to planning appropriate intervention(s). Yet despite the plethora of diagnostic and assessment instruments, there is universal acknowledgement that further refinement of instruments and assessment methods is needed to improve detection and service provision for people with autism (Lord et al., 2005; Schopler, 2005). A further problem is that across Australia, and indeed across countries, significant differences in how autism is diagnosed, administrative services are maintained and supports offered, makes comparison of national and international data problematic (Fombonne, 2005; MacDermott et al., 2007).

Currently a meticulous assessment for children suspected of being autistic is considered to comprise a multi-disciplinary approach including a comprehensive medical examination, a developmental history and a psychological examination (Richdale & Schreck, 2008). In particular cognitive, behavioural and language assessments may provide information on a child’s functional level.

The function of assessment in relation to children with severe disabilities is to collect data for diagnostic purposes and to assist treatment planning. While numerous psychological tests are available, their capacity to collect qualitative as well as quantitative data is increasingly reflected in the design of a number of them. The Autism Diagnostic Observation Schedule (ADOS) (Lord et al., 2000) for instance uses a structured observation system to assess autistic symptoms. The observation system uses
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scenarios or events designed to be appealing, age appropriate and non-intrusive. The revised Autism Diagnostic Interview (ADI-R) (Lord, Rutter, & Le Couteur, 1994), a structured parent interview designed to gather a developmental history and information on behavioural symptoms, is also useful to elicit information on diagnostic criteria for persons suspected of being autistic (Richdale & Schreck, 2008). While the ADI-R is appropriate for children with a mental age of approximately 18 months to adulthood, a more recent screening tool for identifying children 12 months to 3 years of chronological age at risk of autism has been developed by Dr Robyn Young and associates at the Flinders University, South Australia. This tool is called Autism Detection in Early Childhood (ADEC) and is based on developmental trends which could provide early evidence of autism. Current research consistently shows autism to be most responsive to early intervention and as such, early diagnosis is crucial to providing timely experiences which improve adaptive, communication and other academic skills.

From an educational perspective, measures of cognitive, developmental, language and adaptive behaviour can inform the design of developmentally appropriate educational goals and experiences. Numerous rating scales, checklists and questionnaires are available for diagnostic screening and educational assessment purposes, although each test instrument has its limitations, making test selection in itself a complex issue. The limitations of these test instruments foreshadow a range of problems associated with measuring intervention effects for low-functioning students with autism.

Of those instruments available, some are more suitable for low-functioning children with autism because they do not rely on verbal responses. Examples include the Psychoeducational Profile-Revised (PEP-R: recently available in a third edition) (Schopler, Reichler, Bashford, Lansing, & Marcus, 1990), Bayley-III (Bayley, 2005), the Leiter International Performance Scale (Leiter, 1948 cited in Sattler, 1982), observations, records of progress and parent questionnaires (Richdale & Schreck, 2008). Even then the test results from such sources need to be considered as indicative rather than definitive. The significant difference often found between verbal and non-verbal scores also renders a full scale IQ meaningless for low-functioning autistic students. Further, scores for typically developing children tend to be fairly consistent across IQ
sub-tests whereas this is not the case for children with autism. Children with autism tend to have an atypical profile, with relatively enhanced performance on visuo-spatial type tests such as Block Design or matrices-type tests (Bowler, 2007).

2.2.2 Associated features of autism

Many people with autism also have other problems which compound the characteristic triad of impairments and pose unique challenges for education. Whilst not part of the current diagnostic criteria, DSM-IV-TR cites other features which may be associated with autism, including a diagnosis of intellectual disability, abnormalities in the development of cognitive skills and a range of behavioural symptoms.

Intellectual disability

Epidemiological studies indicate that the median proportion of people with autism who also have an intellectual disability (IQ<70) is at least 70%, with males proportionally over-represented (male:female is approximately 4:1, although this ratio changes with IQ) (Fombonne, 2003; Sadock & Sadock, 2003). These people are usually referred to as having low-functioning autism. The research conducted for this thesis focuses on students with low-functioning autism.

The extent of disability can vary across gender (girls with autism are more likely to have a greater degree of intellectual disability than boys) and different areas of cognitive functioning. Indeed, some children and adults with autism exhibit exceptional abilities in particular areas of cognition or skill (splinter skills), while being impaired in others. Often these abilities are deemed exceptional because they are at a higher level than one would expect relative to the person’s overall functioning, although sometimes they are truly exceptional (Sadock & Sadock, 2003). There appears to be variation in the correlates and predictors of adaptive functioning. Improved cognitive functioning does not mean that there will be a corresponding improvement in adaptive functioning (Liss et al., 2001). This irregular relationship between IQ and adaptive functioning across different levels of cognitive functioning is consistent with a deviant rather than delayed impairment (APA, 2000).
Abnormalities in the development of cognitive skills

Perception, attention and memory are key neuropsychological processes that affect cognition and behaviour. These interdependent processes are usually impaired for people with autism. People with autism often experience difficulties orienting their attention, selecting appropriate levels of detail, changing their focus of attention, maintaining attention, or processing information from multiple sources (Dodd, 2005; Sadock & Sadock, 2003).

According to current psychological thought, memory is best conceptualised as the encoding, storage and retrieval of information (Bowler, 2007). This deceptively simplistic statement however shrouds debate and complexity as to how each of these processes work and relate to each other. For instance, distinctions can be made between different ways of conceptualising memory, such as: between implicit memory (unconscious recollection from past experiences) and explicit memory (conscious recall in order to perform a current task); between immediate memory (spanning seconds), recent memory (spanning minutes to hours) and remote (long-term) memory; or between other such comparative categories.

Working memory is a related concept which incorporates immediate and recent memory. It involves short-term storage of information together with manipulation of that information which is oriented to a specific goal or problem (Bowler, 2007). The concept of working memory can thus be referred to as “the ability to store information for several seconds, while other, related cognitive operations take place on this information” (Sadock & Sadock, 2003:80). In short, working memory can be understood as the short-term storage and manipulation of information in order to perform a task. People with autism tend to have a poor working memory. Their short attention span, poor ability to regulate attention and difficulty in filtering relevant information, affect what information can be perceived, encoded and stored for possible future use. This impairment is also related to impaired executive function (described below).

Investigation into the unusual memory attributes of people with autism generally indicates that they have excellent rote memory and can accumulate vast stores of factual
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information. However their rote recall is symptomatic of memory dysfunction because it doesn’t relate to meaningful purpose, personal detail and/or feelings. Most developmental studies suggest that while working memory tends to improve with age and intelligence, rote memory is generally independent of chronological age and intelligence. Some exceptions to this generalisation occur when the learning task relies on conceptual processing (Renner, Klinger, & Klinger, 2000).

Core impairments in autism include eye gaze, attending, comprehension, generalising, auditory and sensory processing, higher cognitive abilities and learning efficiency. People with autism have difficulty: understanding abstract concepts; modulating and integrating sensory stimulation; synthesising verbal and non-verbal communication; planning and organising tasks; discriminating between available options; making logical associations, extrapolations and choices; filtering relevant information; understanding time and the passage of time; and regulating attention. They also have a reliance on the literal meaning of language and their non-verbal skills are consistently stronger than their verbal skills (Sadock & Sadock, 2003). While children with autism may be hyper- or hypo-sensitive to particular sensory stimuli, visual perception is generally superior to auditory perception (Zarbatany & Feldman, 1981). The condition has been increasingly conceptualised as a different way of processing and comprehending information and social cues. These irregularities can lead to a sense of feeling overwhelmed, confused and overloaded.

In summary, intact perception, attention and memory enable us to live in an adaptive manner. But for people with autism, impairments in these processes cause related cognitive problems which mean that they have difficulty deriving meaning from their experiences. Predictable effects of their information processing irregularities include a poor ability to solve problems and to generalise skills and knowledge. The cognitive strengths of people with autism tend to be rote memory, visuo-spatial skills (Sadock & Sadock, 2003; Zarbatany & Feldman, 1981) and an aptitude for structured routines and rules (Dodd, 2005). People with autism think concretely and literally so it is not surprising that they tend to be more responsive to visual than to verbal cues. Further: information which is chunked in close temporal sequences appears to facilitate comprehension; information can be remembered for a long time; visual information
can be used meaningfully; concrete information and rules can be understood and used (but not necessarily generalised to other contexts); long routines can be learnt and recalled; and attention can be focused on a particular item or topic for extended periods of time (Janzen, 2003).

**Behavioural symptoms**

Predictable effects of the information processing irregularities in autism additional to those discussed above include problems in devising and activating socially appropriate responses. Within a social setting, people with autism may have difficulty controlling the focus of their attention, be unaware of other events in their immediate vicinity, or unable to selectively and smoothly shift their attention to follow the flow of events or communication. As such, the behavioural symptoms of autism may include:

*Hyperactivity, short attention span, impulsivity, aggressiveness, self-injurious behaviors, and particularly in young children, temper tantrums.*

*There may be odd responses to sensory stimuli (e.g., a high threshold for pain, oversensitivity to sounds or being touched, exaggerated reactions for light or odors, fascination with certain stimuli). There may be abnormalities in eating...or sleeping. Abnormalities of mood or affect may be present. There may be a lack of fear in response to real dangers and excessive fearfulness in response to harmless objects. ...In adolescence or early adult life, individuals with Autistic Disorder who have the intellectual capacity for insight may become depressed in response to the realization of their serious impairment.* (American Psychiatric Association, 2000:72)

Further, because of these processing irregularities, the emotional state of people with autism may be incongruent with their environmental context, such as laughing at an inappropriate time or not registering fear when crossing a busy street. Conversely they may be very cautious about something quite harmless, such as taking food out of a lunch box. The implication of these impairments is that students may need to be protected from hurting themselves or others because they do not perceive a danger or the consequences which may be incurred from a particular behaviour. They may also need to have structured learning experiences in order to teach more appropriate responses such as to overcome irrational fear. People with autism may also exhibit major mood swings which may occur for no apparent reason. Alternatively they may maintain minimal mood variation.

*Evaluation of an Education Program Designed for Students with Autism Who are Chronic Climbers and Absconders*
2.2.3 Psychological theories associated with autism

Key psychological theories on the nature of autism have influenced the reasoning for and development of interventions (Jones & Jordan, 2008). Thus, such theories can provide direction for educators when selecting teaching and learning strategies and also when selecting behaviour management strategies for students with autism. Prominent theories relevant to the discussion of autism include Theory of Mind, Executive Function and Weak Central Coherence theory. Each is discussed in the following paragraphs.

Theory of Mind

Theory of Mind (ToM) is described as the ability “to recognise and make inference about other people’s intentions and beliefs...and this ability is regarded as crucial for effective social communication” (Milders, Ietswaart, Crawford, & Currie, 2006:400). Based on psychological tests, ToM has been and continues to be investigated to help explain aspects of cognitive functioning in autism, particularly social communication.

During early childhood, children typically cannot conceptualise that others may perceive something differently to how they themselves perceive it. Nor can they predict someone’s behaviour. This is because they are unable to consider events from another person’s position and rationalise from that person’s perspective. However, between the ages of four and five years, children typically develop more complex reasoning skills. For instance, they can understand that others may hold beliefs different from their own and as a result, may predict the behaviour of others. Such capacity enables a child to engage in deception or to keep secrets. For children with autism however, this is an area of difficulty. As they cannot reason from another person’s perspective, they are unable, for instance, to engage in deception, understand secrets, bluff, or empathise.

Further, typically developing children initially understand an item for what it represents. For example, a box is a box. This is called primary representation. But from about the age of 18 months to 2 years, children typically can imagine (pretend) that the box represents something else, such as a car or cubby house (a secondary representation) (Bowler, 2007). This ability to pretend is believed to be a symptom of the mind’s ability to characterise and manipulate its own attitudes to information. The ability to pretend is believed to be an early predictor of intact ToM. Conversely, the inability to
pretend from during the second year of life may be an early indicator that ToM may not
develop and hence be also an early indicator of the triad of impairments found in autism
(Leslie, 1987). During the first two years of life, poor social communication skills
emerge through an inability to engage in joint attention (sharing attention with others)
and a lack of symbolic play skills (representational use of objects) which normally
develop during this period. These are important predictors of the child’s later capacity
to develop language and social skills (Kasari, Freeman, & Paparella, 2006). The non-
emergence of an ability to pretend, which normally appears in the second year of life,
coincides with the timing when autism is usually first detected (Bowler, 2007).

While ToM may emerge naturally at a later stage of life for people with autism (Knoll
& Charman, 2000), investigations into efforts to teach ToM skills so that adaptive
behaviour can develop as early as possible are currently inconclusive. Currently there is
only minimal evidence to suggest that teaching ToM (and thus empathy and pretence) is
effective or can be generalised to other situations or environments (Knoll & Charman,
2000; Swettenham, 1996). While there is some suggestion that factors such as interest
level may facilitate an improvement in some socially interactive responses, this ability
doesn’t seem to be generalised to produce improved adaptive behaviour in the real
world. Further, some children with autism (those who are older or have higher IQ) do
pass ToM tasks but still have poor social skills (Bowler, 2007).

The implications of their lack of understanding of pretence coupled with impaired social
and communication skills, restricted interests, and the need for sameness, means that
many children with autism do not progress past parallel play. Their play is mainly
solitary and they tend not to share, take turns, or use play items in a functional manner.
Therefore the use of play as a teaching strategy as normally conceptualised is
problematic. However, highly structured play, including using prompts, may be used to
teach children with autism to tolerate proximity to others and this can lead to parallel
then interactive play, including the use of play items in an appropriately functional
manner.
Executive Function

Executive Function is a construct used in Psychology to encompass a set of higher order cognitive processes that underscore goal directed behaviour and problem solving behaviours (Duncan, 1986). It refers to the monitoring and control of behaviour, especially in novel situations (Pellicano, 2007). Bowler (2007:71) describes it as:

*Those capacities that enable an individual to adapt better to their environment by adopting a greater distance from the here-and-now of the situation. Such distancing enables attention to be shifted across different aspects of the task in hand, inhibition of responses that are no longer appropriate and the planning of response strategies.*

Executive Function therefore includes retention of information in a working memory in order to generate a considered response. Most people with autism experience difficulty in doing this as described earlier. In effect, the executive functions which are impaired in autism include “selecting and sorting information and in using the selections as a basis for deciding whether to act or not” (Bowler, 2007:89). That is, people with autism have impaired capacity for filtering and storing information in a short term (working) memory, and then using this information to select an adaptive response. These impairments are believed to underscore a range of behavioural characteristics of autism such as difficulty in switching attention, selecting an adaptive response, making choices, engaging in symbolic play (where objects are used in novel ways), or regulating self-initiated behaviour (Bowler, 2007).

However, varying conceptions of what constitutes an ‘executive’ function demonstrate that this concept is far from being fully developed and understood. As Bowler (2007) suggests, what is conceptualised as one overarching and centralised process may in fact comprise a number of different behavioural processes (such as inhibition, planning or shifting attention), each of which may be dependent on some other underlying process. Even within the Autism Spectrum Disorders (ASD), there appear to be anomalies in some executive function measures. For instance, people with ASD show no impairment on many executive measures, including some measures of inhibition (Bowler, 2007).

For children with autism, their poor executive function is evident in a range of deficits, such as their ability to plan or to disengage and shift attention. These deficits have
implications for educators. Specifically, they suggest the need for a highly structured teaching style including the use of frequent prompts and non-transient cues. Further, it suggests that students are more likely to engage with a learning task if preferred materials and activities are used which provide choice and build on their interests.

**Weak Central Coherence theory**

The Weak Central Coherence (WCC) theory suggests that an impaired ability to form global concepts is perhaps due to a perceptual-cognitive style which fails to integrate local details into a coherent global entity: People with autism tend to see the parts rather than the whole (Burnette et al., 2005). Further, information assimilated as a whole cannot be broken down, analysed and retrieved as sub-units of knowledge. This impairment spans different areas of cognition, such as visuo-perceptual skills and language. But regardless of the area of cognition, context is less likely to be used by children with autism to differentiate meaning compared to normally developing children. As a consequence, they are less likely to achieve coherent understanding in any given situation (Happé, 1997). An alternative explanation may be that children with autism are captivated by local level information but then have difficulty disengaging from it and shifting their attention to the broader picture (Bowler, 2007).

Difficulties associated with orienting attention, selecting appropriate levels of detail, changing their focus of attention, maintaining attention or processing information from multiple sources are then not exclusively associated with executive function. They also are indicative of WCC. It would appear that people with autism have enhanced perceptual processing which frequently, but not always, occurs at the expense of more conceptual processing. This over-selective response affects how they see the world, how they form concepts and how they remember. It may hinder adaptive social interactions, language development and the generalisation of skills to a new environment. An example of impaired concept formation is their pre-occupation with ‘sameness’. If this regularity is disrupted by a novel situation or changed circumstances, then distress is likely to be experienced (Bowler, 2007).

Based on studies with high-functioning autistic subjects, there is also some suggestion that optimism is associated with the capacity for assuming a global perspective, whereas
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depression or anxiety predisposes focus on local detail (Derryberry & Reed, 1998). These behavioural traits suggest that teaching students to monitor and manage their own anxiety levels may help reduce anxiety-related behaviour, improve their ability to adopt a more global perspective, and improve the ability to shift the focus of attention more readily. These traits also suggest that education programs need to use teaching and learning strategies which are motivating for the student (in order to gain and maintain attention), minimise distractions and provide instructional information in an efficient manner.

As for Executive Function, the findings from research into WCC research are by no means conclusive. Some evidence suggests that conceptual coherence of people with autism may be intact, as demonstrated with studies involving children with higher-functioning autism (Bowler, 2007). The issue of whether or not WCC is intact may be more a function of intellectual ability and/or processing style than autism per se.

Thus children with autism tend to focus on detail rather than focusing on overall context. This, together with their tendency not to maximise the use of prior knowledge when making perceptual judgments suggests that information which is presented in a visual, non-transient and spatially organised manner is most suited to their disability traits. In addition, if information is presented such that there is some priming or cueing as to the global context, then this can help them broaden their attention and thus understanding of the overall context (Bowler, 2007). The provision of a simple diagram of a person reclining on the Compic ‘Relax’ card is an example of such priming.

2.3 Approaches to Autism Treatment

Given the undetermined aetiology of autism, the subjective nature of diagnosis and assessment, the variability in range and degree of characteristics, and the non-existence of a ‘cure’, it is not surprising that autism has been and continues to be addressed from a multi-dimensional and multi-professional approach. As no intervention exists to remedy the core symptoms of autism, the focus of all treatment types is to modify aberrant social behaviour and to improve social acceptability and communication (including verbal and non-verbal skills). Medical interventions include the use of a range of psychotherapeutic drugs to ameliorate behavioural symptoms and medication...
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for conditions commonly associated with autism (e.g., epilepsy, anxiety, depression or ADHD). However the widespread consensus across professional domains is that “educational and behavioural interventions are currently considered the treatments of choice. Structured classroom training in combination with behavioral methods is the most effective treatment for many autistic children.” (Sadock & Sadock, 2003:1214)

2.4 Educational Approaches for Students with Autism

Educational approaches (including behavioural elements) and independently provided behavioural interventions have the potential to significantly ameliorate behavioural symptoms and improve social and communication skills, with early intervention a key factor for effectiveness. The range of educational approaches discussed in this section of the thesis is intended to give the reader a sense of the scope and nature of available options. The section concludes by noting the implications of these educational approaches for schools.

Goals for the educative process have abounded for centuries. One goal suggested by Sarason (1990:163) would be for education to “produce responsible, self-sufficient citizens who possess the self-esteem, initiative, skills, and wisdom to continue individual growth and pursue knowledge.” Few would question the value of the goal itself given the centrality of these qualities in determining human well-being. Many would debate the road(s) leading to it and thus implications for the teaching and learning process.

The extent to which such a goal can be achieved has major implications for the quality of life experienced by the person with a disability and also their carer(s)/guardian(s). Wolf-Schein (1996:49) suggests that “the basic goal of education and therapy for children with autism is to re-shape the specific developmental processes found to be disturbed.” But some questions remaining for educators include ‘what are the specific developmental processes which need re-shaping?’ ‘how are they to be re-shaped?’ and ‘how is this to be done to best advantage for each student?’ Prime educational goals for students with autism could include: functional, adaptive social skills including parallel and interactive play; expressive and receptive language skills; functional, symbolic communication competence; increased engagement in developmentally appropriate
activities; improved cognitive and motor skills; and the ability to function independently (National Research Council, 2001).

There is almost universal agreement across the literature that early and intensive educational support is the most effective intervention in autism. Educational support includes addressing behavioural, social and communication deficits. Educational support also includes addressing learning difficulties caused by impaired cognitive functioning, such as impairments in sensory modulation, joint attention, shifting attention, memory, sequential processing, verbal reasoning, developing hypotheses, and context recognition (Lincoln, Allen, & Kilman, 1995). As people with autism are characteristically poorly motivated, educational support includes the emphasis on external (rather than internal) reinforcers for students with autism.

Broadly speaking, education can occur in varied settings, directly and indirectly, with different foci and intentions, and via different approaches or strategies. All ethical research is conducted with the intent of discovering information which can enlighten our endeavours to improve the human condition. As such, interventions provided to experimental groups constitute an educative or training process for the subject, albeit with the short-term primary intention of eliciting information for the researcher and a longer term intention to serve the common good. Taken from this broader perspective, education can therefore occur in discrete events (such as a behavioural trial conducted in a clinical setting), as an individual activity, or as a conglomerate of strategies applied in a non-clinical setting such as a home or school. Accordingly, this literature review includes behavioural and other intervention typologies, regardless of whether they target a specific deficit or take a more holistic approach. It also considers pedagogical principles used to facilitate achievement of student learning outcomes.

Learning outcomes sought through education, such as self-help skills, may be finite and provide distinct benefit to the child with autism and their carer(s). These educational outcomes are relatively easy to measure. Other goals may be longer term, less tangible and the linkage to behavioural benefit more obscure, such as the development of play skills.
While individual learning styles will vary, there are core cognitive characteristics of autism which inform a preferred learning style. Recent research emphasis has been on developing interventions which match identified learning styles and abilities of children and adults with autism. The focus has also been on interventions which are based on individual need, span sites, involve family, and have a functional skills approach. It is theorised that non-observable characteristics which underpin impairments and observable behaviours include sensory sensitivities, cognitive abilities (including visual learning style, attention problems and information processing difficulties), and empathy impairment (including emotional problems, problems interpreting others’ moods and behaviours and joint sharing of attention) (Dodd, 2005). Autism implicitly denotes disordered language development, a lack of social understanding and a concrete cognitive style.

Educational approaches for students with autism need to use teaching and learning approaches tailored to the specific disability characteristics of their students. They also need to be cognizant of and cater for the unique strengths and abilities which these students may exhibit. In reality, school practices are influenced by many other factors, such as staff skills and knowledge, staff ideological and pragmatic beliefs, and operating constraints such as funding, facilities and system operating parameters. The evaluation of an education program needs to consider these as factors which may facilitate or militate against optimal student outcomes being achieved, even if evidence-based best practice behavioural interventions are incorporated into the school program.

Education tends to draw substantially from the behavioural approach, with schooling providing the opportunity to teach knowledge, skills and attitudes which will ameliorate undesirable behaviour. Educational approaches for students with autism, as for all students, need to be consistent with best practice evidence. This includes instruction to teach specific skills and tasks at a low taxonomy level (such as copying) and higher level cognitive abilities (such as generalising or synthesising). Effective instruction may be defined as “instruction that enables students to demonstrate, maintain and generalise competency on prescribed learning outcomes faster than students would be able to accomplish this either on their own or with less effective instruction” (Fredrick & Hummel, 2004:10). Fluency (accuracy and speed), application, maintenance and
generalising of skills, and the ability to work independently are all outcomes of effective instruction. But education, as alluded to earlier in this chapter, also serves a much broader purpose. Schools need to prepare students for post-school life. Thus the contribution that schooling can make to improve the quality of life in both the short-term and the long-term should be a central goal of the educative process. Quality-of-life dimensions commonly include emotional well-being, interpersonal relations, material well-being, personal development, physical well-being, self-determination and social inclusion rights.

Dempsey and Foreman (2001) provide a literature review of educational interventions for students with an Autistic Spectrum Disorder. Their review includes studies which encompass sensory-motor therapies, applied behaviour analysis, communication therapies, multi-treatment programs and play and group therapy. Variability in individual behavioural characteristics, difficulty in controlling treatment variables and problems with detecting small but potentially important behavioural changes are cited as inherent methodological difficulties associated with evaluating group treatment approaches and programs. Nevertheless, in acknowledging the difficulties associated with treatment programs and their evaluation, and in the absence of more precise disability details, Dempsey and Foreman (2001:113) concur with the Autism Society of America (1998) in advocating that “the most effective current approaches to autism in children include early intervention, low student-teacher ratio, individualised instruction, and family involvement.” These approaches are commonly associated with, but by no means restricted to, Applied Behaviour Analysis (ABA) approaches.

Roberts and Prior (2006) also reviewed the research literature for effective models of best practice in the management of children with autism spectrum disorders. Their report provides a comparative evaluation of programs for children with autism, detailing biological, complementary and alternative medicines, psychodynamic and educational interventions. The educational interventions reviewed encompass behavioural interventions, developmental interventions, therapy based interventions, sensory-motor interventions, combined interventions such as TEACCH, other interventions, and family based interventions. These authors stress that in order for education to be effective in producing worthwhile outcomes for these children, the type of education placement,
teaching methods and curriculum content all need to be considered as inter-related elements which are addressed simultaneously. The authors collated key elements which were common across the programs they reviewed. These elements were curriculum content, a highly supportive teaching environment, generalisation strategies, predictability and routine, a functional approach to challenging behaviours, and transition support and family involvement. In addition, other important strategies which were included by some but not all of the programs were: use of visual supports; sufficient intervention intensity; a multi-disciplinary collaborative approach; the inclusion of peers; emphasis on independent functioning; and addressing obsessions and rituals (Roberts & Prior, 2006:80-82). The dominant approaches relevant to the teaching of primary school aged students with autism are discussed in the following sections.

2.4.1 Developmental approach

Developmental interventions, sometimes called normalised interventions, focus on the child being able to develop positive relationships with others: to develop attention, social relatedness and logical thought. Developmental interventions also aim for the person with autism to experience a range of feelings. As its name suggests, this approach attempts to normalise the intervention as much as possible, preferably using child initiatives and spontaneity in communication to guide activity. Emphasis is placed on using the child’s focus of attention and motivation to improve the child’s understanding of language sequences. Teaching tends to occur in child-led or directed interactive activity.

Investigative and comparative studies of developmental approaches that have been conducted provide some evidence of the direct and indirect gains from normalised interventions. Comparing the effectiveness of teaching individual target behaviours and pivotal responses, Koegel, Bimbela, and Schreibman (1996) found that only with the latter were positive interactions on all four interaction scales (level of happiness, interest, stress and style of communication) achieved. Further, parents trained in naturalistic techniques were “visibly happier, more interested in interacting with their child, less stressed, and more pleasant in their communication style” (Koegel, R. L. et al., 1996:323). However, a likely confounder is that following training, parents are
likely to feel that they themselves have been supported and thus feel more positive in managing the behaviour of their child. Nonetheless, a later study by Koegel, Camarata, Koegel, Ben-Tall, and Smith (1998) similarly found that while both discrete trial and normalised treatments improved speech intelligibility, only the latter achieved functional use of targeted sounds during generalised assessments.

More recently, a critical review of eight controlled ABA studies comparing discrete trial and normalised language interventions with language criterion responses, found that the latter were more effective for young children with autism. Normalised interventions were described as comprising “loosely structured sessions of indirect teaching with everyday situations, child initiation, natural reinforcers, and liberal criteria for presentation of reinforcers” (Delprato, 2001:321).

These studies are suggestive of the superiority of normalised behavioural interventions for developing a range of language responses. However, while studies on discrete components of this approach have shown encouraging results, there is little rigorous, independent research evidence to indicate effectiveness for the approach overall (Roberts & Prior, 2006).

2.4.2 Behavioural approach

Behavioural approaches are based on operant learning theory and refer to behaviourally based therapy designed to modify behaviour. Given the plethora of behavioural approaches available, only those most pertinent to students with autism will be discussed in this dissertation.

During the 1960’s, behavioural psychologists started to apply principles derived from learning theory and in particular, the operant psychology of B.F. Skinner (1904-1990). Operant behaviour is behaviour which is:

*Functional, adaptive, voluntary behaviours that are more or less likely to occur in a given setting as a result of the interaction of three factors: the child’s motivational state,... the child’s history of learning associations between behaviours and their environmental consequences,...*[and]* the
As such, operant conditioning includes both antecedent cueing and post-response reinforcement. When the principles of learning theory are applied systematically to increase or maintain behaviours, teach new skills, generalise or transfer behaviour, modify the learning environment and reduce interfering behaviours, this is called applied behaviour analysis (ABA) (Roberts & Prior, 2006). Deriving their definition from the basic principles of behaviour, Cooper, Heron, and Heward (1987:14) define ABA as:

_The science in which procedures derived from the principles of behavior are systematically applied to improve socially significant behavior to a meaningful degree and to demonstrate experimentally that the procedures employed were responsible for the improvement in behavior._

ABA is indeed premised on the interconnectedness of antecedent conditions, behaviour and consequences (the ABCs of behaviour), that is, on the interplay of individuals with their environment. Consistent with these understandings, unless otherwise noted, the term ABA is used throughout this dissertation to refer to behavioural interventions in this more general sense. Behavioural interventions aim to eliminate those environmental and psychosocial elements which have been demonstrated to precipitate undesired behaviour and at the same time, teach skills believed to reduce the incidence of undesired behaviour, such as teaching students with autism to tolerate proximity of other people, to recognise and self-manage anxiety, and to learn communication and social skills. The Correa program which forms the basis for this thesis includes strategies for improving motivation, involving families to promote generalisation of skills, providing an appropriate learning environment and behaviour management techniques, all of which involve elements of ABA.

Behavioural interventions have been subject to more evaluation studies than other intervention types, possibly because they are more amenable to such a process. Based on a review of more than 1000 studies conducted in the 1970s, Meyer, Hingtgen, and Jackson (1981:435) concluded that _“the overwhelming evidence suggests strongly that the treatment of choice for maximal expansion of the autistic child’s behavioral_
repertoire is a systematic behavioral education program.” From a later review encompassing 251 scientific studies, Matson, Benavidez, Compton, Paclawskyj, and Baglio (1996) similarly recorded the substantial effectiveness of behavioural techniques across a range of target behaviours. Green (1996) in the same year reviewed a range of early behavioural intervention studies conducted with children with autism up to the age of five years. She concluded that applied behaviour analysis techniques “can produce large, comprehensive, lasting, and meaningful improvements in many important domains for a large proportion of children with autism” (Green, 1996:38). Similar positive findings were concluded from meta-reviews conducted by Hall (1997) and Jordan, Jones, and Murray (1998).

In a recent review of social-skills treatments for children with autism spectrum disorders, Matson, Matson, and Rivet (2007) noted the increasing number of treatment studies being undertaken in this area, with some 90% of these being single case experimental designs typically involving two to four children in each. Their review of 79 studies was limited to ones involving children 12 years of age or younger. These authors report modelling and reinforcement to be the most popular intervention approach investigated.

ABA programs or interventions are based on a pre-treatment behavioural assessment (such as a functional analysis) to record baseline information on discrete behaviours and environmental events. Functional analyses tend to be clinically based and apply principles of operant conditioning to establish the relationship between stimulus and response. These analyses therefore afford comparative baseline data and the basis for program design. Once the conditions which prompt and support a particular (usually undesirable) behaviour or group of behaviours have been accurately assessed, a functional substitute can be chosen. Modifications to the antecedent conditions and reinforcing consequences are then implemented in order to increase the incidence of more desirable (substitute) behaviours. That is, an analysis of behaviour can lead to a behavioural intervention being designed which increases desirable behaviours and simultaneously decreases aberrant behaviours (Braithwaite & Richdale, 2000). Skills are then analysed into their component elements and this then forms the basis of a
teaching program designed to increase, reduce, maintain and/or generalise target behaviours (Roberts & Prior, 2006).

ABA tends to focus on ‘socially significant behaviours’ and can include both modifications to existing behaviours and teaching new skills. Socially significant behaviours include reading, social skills, functional communication and adaptive living skills. Adaptive living skills include skills necessary for independent living such as toileting, eating and food preparation, personal self-care, domestic skills, and the functional use of time, money and work skills. An ABA approach to autism regards the establishment of communication skills as a primary goal because this ability underpins many of their other short- and long-term educational goals (Barnes-Holmes, Barnes-Holmes, & Murphy, 2004). ABA is incorporated into a number of other multi-approach programs, such the TEACCH program, the Higashi approach and in mainstream and special schools (schools for students with disabilities).

Sasso et al. (1992) conducted school-based experimental functional analyses of aberrant behaviour with two children with autism. Two classroom teachers were involved in the selection and implementation of the interventions, using event recording and interval recording as a dual system of logging data. These data collection and analysis methods are consistent with common school and research practices. An observer/researcher was present for 50% of the investigation time, providing a reference for teacher collected data. Based on their findings, Sasso et al. determined that the “rated acceptability of the teacher-conducted assessments remained high from pre- to post-assessment measures, with increases in acceptability occurring for classroom analysis” (Sasso et al., 1992:820). As such they concluded that researchers may have “underestimated the social validity of classroom functional analysis techniques.” Compounding the lost potential for schools to capitalise on their unique positioning to effect change, Kimball (2002) noted from his later series of studies that despite instructional practices based on the principles of behaviour analysis repeatedly demonstrating the capacity to ameliorate the symptoms of autism that hinder learning, there appears to be a reticence by schools to adopt these ‘proven’ methods of instruction. Kimball does not offer any explanations for this reticence. Lack of relevant training in conducting functional analyses, funded
staffing levels and competing demands on teacher classroom time may be contributory factors.

In comparison to full functional analyses, contemporary ABA education and training is generally based on a functional assessment. Functional assessment involves observing, recording and analysing data detailing the nature, frequency, duration, time, context and perceived stimulant for the maladaptive behaviour. The shift in focus of the contemporary ABA approach includes: changing the environment in order that the effects of problem behaviours are rendered ineffectual or irrelevant; the use of more naturalistic approaches, such as pivotal response training (based on core or pivotal behaviours); adopting a natural language paradigm; and incidental teaching. These approaches are discussed below. The focus in contemporary ABA approaches is on teaching socially adaptive pivotal behaviours and skills, preferably in a naturalistic setting, whilst simultaneously minimising or eliminating maladaptive behaviours. Enhanced communication and language development is fore-grounded in this approach (Horner, O'Neili, & Flannery, 1993).

ABA approaches include a number of strategies, such as modelling, visual supports, prompting, shaping (reinforcing responses which proximate the desired response), chaining (linking behaviours to form a sequence), and graduated guidance (Anderson, Taras, & O'Malley Cannon, 1996). Schools can also use these strategies, but unlike in a therapy situation, schools necessarily teach these skills either in a focused manner or incidentally. This blending of controlled, incidental, situational and contextual learning is consistent with Bandura’s social cognitive theory (Bandura, 1977) which emphasises the variety of situational factors in the social environment which affect self-efficacy and learning. This broader perspective also validates the role that professional educators can play in both the assessment and intervention processes for students with autism. Teachers are ideally placed to implement non-clinical interventions based on ABA approaches: they can assess the antecedents to and consequences of behaviour. They can also manipulate both with a view to changing student behaviour. Parents are also strategically placed to contribute both to formal therapy for their child and to provide informal education in their home setting.
In recent years parental involvement in the educative process has been afforded elevated status, with a considerable body of research supporting parents as an integral component of ABA treatment approaches. Koegel, Schreibman, Britten, Burke, and O’Neill (1982) compared the effectiveness of behaviour modification programs for children with autism when the parents had received associated training in behavioural principles, with the outcomes for children when the parents had received no such training. They found that improvements were generalised to the home setting only for those children whose parents had received training. Similarly, parental training was demonstrated by Harris, Wilchik, and Milech (1982) to produce significant improvements in the child’s language and also parental knowledge and skills. Thus the development of strong school-home partnerships, including training parents in the use of behaviour management and teaching strategies (interventions) used at school has the potential to maximise student outcomes through the parallel use of such strategies in both school and home environments. It also can provide behavioural reinforcement across settings, thus promoting generalisation of skills.

While several classroom-based ABA studies have been conducted over the last 22 years, each reporting positive results, the findings are considered inconclusive due to methodological constraints (such as no pre- and post-test scores, sampling methods not explicit, no control group and minimal description of the intervention goals and program) (Fenske, Zalenski, Krantz, & McClannahan, 1985; Harris, Handleman, Gordob, Kristoff, & Fuentes, 1991; Sallows & Graupner, 2005). Based on their pertinence to this dissertation, three Behavioural approaches are discussed below: Discrete Trial Training, Pivotal Response Training and the Natural Language Paradigm.

**Discrete Trial Training (DTT)**

Discrete Trial Training (DTT) is a single cycle behavioural intervention in which a specific skill is explicitly taught in a one-to-one treatment using a logically stepped, highly structured process, with each successive stage not being introduced until the previous stage is mastered. Only a limited amount of information is provided at any point in time. The three step DTT process includes instruction (with associated non-verbal cues or materials), response and a reinforcing consequence. Believing intensive intervention to be the preferred treatment approach, Dr Ivor Lovaas and colleagues at
the University of California Los Angeles developed a time intensive (40 hours per week) ABA-based intervention (commonly called the UCLA model) using this technique. The term ABA has tended to be usurped by supporters to refer unilaterally to the Lovaas DTT behavioural approach.

In the UCLA model, parents were trained in the use of the Lovaas ABA approach in order for them to support their child with an intensive, early intervention, home treatment program. This program was called The Young Autism Project. It was internally evaluated in 1987 and showed positive results. A follow-up investigation by McEachin, Smith, and Lovaas (1993) demonstrated that of the nine students from the original study who achieved the best outcomes, eight could not be distinguished from normal, typically developing adolescents. While the original evaluation was not conducted by an independent researcher, the subsequent research was conducted blind as to the child’s treatment status. Nonetheless, both the original Lovaas study and the McEachin et al. follow-up study have drawn considerable criticisms including that: commencement of one control group was delayed six months thus these subjects were developmentally older at their time of commencement in the study; reduced stability of IQ measures with young children especially children with autism; methodological problem of different IQ tests being implemented at different stages of the evaluation and also at pre- and post-test stages for some subjects; considerable time variation before follow-up with control and intervention groups (up to 3-5 years difference); variations in the use of contingent aversives; questionable validity of IQ measures across time for young children (amenable to considerable environmental differences); the sample gender ratio being opposite to the population norm for autism; non-random assignation to control and experimental groups; and non-random allocation of subjects to different treatment groups (Gresham et al., 1999).

In order to improve the power of the findings of small scale studies, a multi-site Lovaas replication Early Autism Project was initiated. The early results from one site showed that following three to four years of intensive Lovaas-style ABA intervention, significant achievements were made, with approximately half of the preschool children with autism acquiring “near-normal functioning in language, performance IQ and adaptability. Ninety-two percent of intervention children acquired some language.
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Control children who received special education showed no gains in IQ or adaptability” (Couper & Sampson, 2003:424).

Also based on the Lovaas discrete trial training model, Eikeseth, Smith, and Eldevik (2002) conducted a controlled trial in which the intervention group received intensive behavioural treatment in a natural setting. In this instance however the intervention group did not receive aversive treatments (as had the early Lovaas interventions), and the control group received eclectic, best practice special education of the same duration, intensity and level of therapy supervision as the intervention group. Both intervention and control groups operated within a primary school setting. The behavioural intervention included parents working alongside therapists during intervention. Parental participation was deemed a key element of the intervention as it facilitated school, home and community extensions of the intervention as parents became more knowledgeable and skilled. The control group received an eclectic mix of treatments incorporating elements from TEACCH and sensory motor therapies. On all scores (performance IQ, communication and adaptability), the intervention group surpassed the control group children. Importantly, this study showed that behavioural interventions can effectively be used in a natural setting.

More recently, in a pre-post experiment, Sallows and Graupner (2005) investigated the outcomes of a clinic-directed, intensive, Lovaas-style behavioural intervention with less intensive parent-directed, Lovaas-style behavioural intervention. Across a range of measures (cognitive, social and academic measures, adaptive behaviour and language), the outcomes for both groups were comparable, suggesting that interventions may not need to be as intensive as recommended in the original Lovaas study. This is an important finding for two reasons. The first is that it adds credence to teaching skills in a functionally contextual manner (a common criticism of DTT); second, most children with autism in Australia do not receive intensive behaviour programs due to their significant cost to families (Couper & Sampson, 2003). While schools are currently not funded to provide intensive behavioural programs (to the level suggested by Lovaas) regardless of the level of student disability, evidence supporting the effectiveness of a less-intensive behavioural approach which can be conducted in a naturalistic setting can
Pivotal response training

One of the common characteristics of autistic behaviour is the failure to be able to generalise learnt behaviours to another setting. During the last fifteen years researchers investigating generalisability of specific skills have noted that teaching pivotal behaviours provides a means to do this. Matson et al. (1996:442) describe pivotal behaviours as those which “when modified, result in collateral changes in other behaviors constituting the same response class as the pivotal behaviors.” Koegel, Koegel, Hurley, and Frea (1992) found that by using a self-management strategy to teach social communication skills, improvements in non-targeted social behaviours and also decreased disruptive behaviour were achieved. This study was conducted in a clinical setting using fading prompts and positive reinforcement with a sample of four students. As demonstrated by the incidental and natural language paradigm (discussed below), if these skills are taught in a natural context and use peers, siblings or parents in treatment, then generalisation is enhanced (Koegel, Dyer, & Bell, 1987).

Natural language paradigm

Koegel, O’Dell, and Koegel (1987) investigated comparative approaches to improving verbal language acquisition for non-verbal autistic children. Using a multiple baseline design, the two subjects were exposed to a discrete trial program for an extended period of time (2 months for one child and 19 months the other), followed by the introduction of the natural language teaching intervention. That is, a language program which approximates a natural speaking situation, such as using verbal and non-verbal cues provided by the subject as the basis for instructional interaction. It was found that only after the natural language paradigm period commenced were consistent and lasting verbal improvements detected. Skills were also generalised to other settings only from the natural language paradigm intervention. In the natural language paradigm, the child could choose the stimulus items (which were age appropriate items commonly found in the child’s natural environment) and these then formed the basis for communication. In a later study which compared two intervention conditions, one using a naturalistic and
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the other an Analog (more traditional, structured ) approach, Koegel, Camarata, Koegel, Ben-Tall, and Smith (1998:241) demonstrated that “although both methods effectively increased correct production of the target sounds under some conditions, functional use of the target sounds in conversation occurred only when the naturalistic procedures were used during intervention.” A single case study playground-based investigation by Sigafoos and Littlewood (1999) supports this contention as a behaviour chain interruption strategy was successfully used to teach a 4-year, 8-month child with severe communication impairment to request continuation of play.

In summary, there is fairly general consensus that behavioural approaches, regardless of whether they are delivered in individual therapy sessions or in schools, are the most effective intervention options currently available for children with autism. Despite controversy about the relative effectiveness of particular types of behavioural interventions and programs, as well as interpretation of specific research findings, there is overwhelming agreement over time and across the research literature that behavioural interventions have produced positive outcomes for children with autism.

The effectiveness of the behavioural approach in improving cognition, communication adaptive and social skills has not escaped the notice of educators. Schools have adopted, modified and blended behavioural with other approaches to suit school curricula and student management foci. Early and intensive educational and behavioural intervention is recommended for students with autism in order to maximise ameliorating effects (Roberts and Prior, 2006).

2.4.3 Sensory motor approaches

Sensory processing impairment is an associated feature of autism as outlined in DSM-IV-TR. It is defined as the inability of a person to meaningfully integrate and appropriately respond to all the sensations being experienced at a given point in time. It is theorised that this sensory processing difficulty causes behavioural coping mechanisms to be induced. These mechanisms are generally labelled as sensory sensitivities. Sensory sensitivities include hyper- or hypo-sensitivity of one or more of the five senses (hearing, smell, sight, touch and taste) and/or of the fundamental vestibular (balance) and proprioceptive (perception of body position and movement)
senses. For instance, investigating the effects of fluorescent and incandescent lighting on children with autism and intellectually disabled children, Fenton and Penney (1985) found that children with autism have a significantly higher rate of engagement in stereotypical behaviour (such as arm flapping, rocking, toe walking or banging and tapping) when exposed to fluorescent lighting compared to incandescent lighting. This changed behavioural pattern was not observed with intellectually impaired but non-autistic children exposed to the same environmental lighting conditions.

Sensory motor therapy may be provided through a delineated modality (such as touch pressure, vestibular or auditory stimulation), either as a sole treatment type using a prescribed schedule, or incorporated into a broader sensory integration program. This type of therapy relies on the assumption that the individual may be over-aroused or under-aroused by normal levels of sensory input. It further hypothesises that in response to this state of over or under arousal, the individual may engage in behaviours to moderate the level of environmental stimuli they receive. These assumptions have led to notions that if these sensory issues are addressed, then educational outcomes and communication may be improved. Indeed, over the last two decades there has been a surge in the range and application of sensory therapies in the treatment and education of children with autism to ameliorate characteristic behaviours (Grandin & Scariano, 1986; Mailloux, 2001; Williams, 1992, 1994). However, empirical studies on sensory and motor development in children with autism are limited and are often criticised for methodological flaws such as small sample sizes, confounding treatment or education programs, investigator bias, or difficulties with data collection (Baranek, 2002; Roberts & Prior, 2006). The following sections discuss two dominant sensory motor approaches: sensory integration and auditory integration therapy.

**Sensory integration**

Sensory integration is defined as the organisation of information received through our senses in order to form perceptions, behaviours and learning (Ayres, 1979; Cook, 1990). As is depicted in Figure 2, sensory learning is predicated on the belief that these senses and perceptions underpin higher order developmental abilities.
Figure 2  The development of learning neurological foundation
Adapted from Taylor and Trott in Williams and Shellenberger (1996)
Advocates of sensory integration theorise that sensations are registered by the body but that the central nervous system (the limbic section of the brain in particular) has difficulty processing this sensory input and thus perceptions are not formed in the usual way. Further, they theorise that because we receive sensations from multiple sources simultaneously, sensory overload occurs (Tonge, Dissanayake, & Brereton, 1994) and this manifests as hypersensitive or hyposensitive behavioural reactions to these sensations. According to sensory integration theory, hyposensitive behavioural reactions are withdrawal behaviours, such as being non-communicative or engaging in ritualistic activities which may be self-abusive or self-stimulatory. Hypersensitive reactions include oppositional behaviours such as biting, hitting, scratching, vomiting, spitting or kicking. They also include running away (absconding/eloping) or removal of clothing and footwear (being tactile defensive).

Sensory integration therapy seeks to shape sensory processing capability and thus improve the facility for learning (Arendt, MacLean, & Baumeister, 1988). Emphasis is placed on the role of vestibular, proprioceptive and tactile stimulation to neurodevelopment and hence behaviour. This includes touch and movement stimulation through activities such as swinging, spinning, body brushing, deep pressure massage, and balance activities. Occupational therapy is predicated on the belief that it can improve sensory integration by creating more efficient neural pathways particularly in the vestibular and proprioceptive systems, and in so doing, develop a more discriminating and efficient central nervous system.

Amongst the paucity of empirical studies, an evaluation by the Australian Society for the Study of Intellectual Disability (1996) found that an interactive multi-sensory environment facilitated new skills for students with severe and multiple disabilities, with some evidence of generalising to another environment. Houghton et al. (1996) similarly found that using a multi-sensory environment in a school setting facilitated new skills for children with severe and multiple disabilities.

Despite a range of studies reporting significant improvements being made using sensory integration training (Larrington, 1987; Ray, King, & Grandin, 1988), these studies tend to be discounted in the research literature on the basis that they lack experimental rigor.
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(Arendt et al., 1988; Dempsey & Foreman, 2001; Hoehn & Baumeister, 1994; Roberts, 2004). However it should be noted that there are limitations on the application of rigorous experimental methods in educational and social research. For example: matched control groups are generally impossible to find; the need for informed consent of participants renders random selection a mute point; and threats to internal and external validity through such factors as the inability to isolate a single ‘treatment’, ‘dosage’ effects and the duration of treatment, will always render findings suspect when viewed through the experimental lens.

Further clouding the issue, some studies (Brody, Thomas, Brody, & Kucherawy, 1977; Jenkins, Fewell, & Harris, 1983) also show gains in the control group, perhaps indicating that non-treatment confounders or even normal development are also important in producing positive effects. Thus benefits attributed to sensory integration therapy may in fact be based on the principles of behaviour modification, with positive reinforcement and conditioning (or some other confounder) being the critical variable underpinning improved test results. It may be that the unknown variable influencing results is the essentially positive focus of the intervention therapist/teacher - student relationship that is the trigger to improved outcomes. The removal of reinforcers for maladaptive behaviours is also suggested as contributing to improved results (Ottenbacher, 1982).

Auditory integration therapy

Auditory integration therapy (AIT) was devised as a procedure to improve atypical sound sensitivity for people with behavioural disorders including autism. It was founded on the assumption that auditory hypersensitivity contributes to behavioural and learning problems (Berard, 1993; Roberts & Prior, 2006; Sinha, Silove, Wheeler, & Williams, 2006). AIT involves listening to electronically modified music for 10 hours conveyed through headphones for two half-hour sessions per day for 10 days.

A review of AIT studies was conducted by Sinha et al. (2006). Of the 278 studies identified, six were investigated in detail as only these satisfied the methodological criteria set for the review. Three of these studies showed no improvement resulting from AIT, while the other three did. A large sample study by Bettison (1996) was one
which did report significant improvements in behaviour for both the auditory training intervention group as well as for the comparison group which received structured listening provided under the same treatment conditions as the intervention group. There was no non-intervention control group for this study. Bettison suggested that the lack of difference between the improvements recorded for both groups may be indicative of some other unidentified factor acting in common in both situations.

Link’s (1997) case study of AIT intervention with three boys evidenced no improvement in their sensitivity to sound and minimal effect on behaviours or cognitive skills. This finding is partially consistent with an earlier three-month AIT study by Rimland and Edelson (1995) in which subjects were paired as closely as possible on the basis of age, sex, hearing sensitivity and history of ear infections. One member of each matched pair was then randomly assigned to either the control or experimental group. AIT sessions were conducted with the experimental group twice daily for 30 mins per session. While no consistently significant improvement in sound sensitivity was found, there was a decrease in aberrant behaviour and auditory problems in the experimental group as indicated by parental responses to the Aberrant Behavior Checklist and the Fisher’s Auditory Problems Checklist. The matched control group showed no change on these indices. If the foundation premise of AIT is correct, then the filtering of sound frequencies should have produced some effect on outcomes, but it did not, either for the experimental or control groups. This again suggests that some other confounder may have produced any improvement in the aberrant behaviour or that the sample may not have been predisposed to sound sensitivity.

Further, the scientific community has expressed doubt regarding whether an audiogram is a valid measure of sound sensitivity (Smith, 1996). This means that any results measured in such a manner should be questioned and as such, it is perhaps more accurate at this stage to say that the effects of AIT on sound hypersensitivity are undetermined rather than that it has nil effect.

2.4.4 Communication focused interventions

Language and communication difficulties are characteristic of autism. These include impaired non-verbal skills such as an inability to recognise and appropriately interpret
body language, gestures, tone of voice, facial expression and nuances in communication. Teaching communication for social interaction, functional living and independence therefore constitutes a pivotal educational goal for people with autism. Working with a speech pathologist to enhance communication skills, including at least some spoken language, is essential.

In addition to verbal communication, functional communication is also taught. Functional communication is defined as “a set of procedures designed to reduce challenging behaviour by teaching functionally equivalent communication skills” (Mirenda, 1997:207). These procedures include the use of visual strategies, augmented communication devices and manual signing.

Visual supports are used in speech-language therapy conducted by speech therapists. They also form an integral component of multi-approach programs which can be implemented at home, school, or training locations. Augmented communication strategies are used not only to teach verbal language per se, but also to extend the range of non-verbal skills and assist learning and communication, even if the child with autism has reasonable speech skills. But while these modes of functional communication serve an important role in facilitating communication, they have not been show to contribute to verbal development (Roberts & Prior, 2006). Four types of communication focused interventions are discussed below: visual strategies, PECS, functional communication training and facilitated communication.

**Visual strategies, including manual signing**

Real objects, pictorial representations, iconic symbols, manual signing and devices which generate speech are used individually or in different combinations to facilitate expressive and receptive communication. These serve a functional role for the child with autism but are not meant to be a replacement for teaching verbal language. Given that people with autism tend to have better visual-spatial than auditory skills, it is not surprising that these strategies are included as key components of communication and general education programs. While preliminary positive outcome effects are reported from using these approaches, their effectiveness is yet to be confirmed in large comprehensive studies (Roberts & Prior, 2006).
PECS

The picture exchange communication system (PECS) was developed by Bondy and Frost within the Delaware Autistic Program (DAP) to teach young children key communication skills, including initiating communication. PECS is based on the exchange of pictures, symbols, or photographs for real objects. The use of pictures in this approach is different to that used in other programs in that children are taught how to give a picture of a specific object to another person in exchange for that object. The picture thus serves to initiate communication by the child (Frost & Bondy, 2000; Jordan et al., 1998). Bondy and Frost (1994) reported that during the period 1990-1994, 85 young children (average age 3.5 years) entering the DAP with no functional speech or alternative communication systems were taught to communicate using PECS. The authors claimed that nearly all subjects learnt to use at least one picture within one month of commencement. They also claimed that 59% of those who used PECS for more than a year acquired speech as their sole mode of communication, and 76% were able to solely use speech or speech in conjunction with augmented or with a picture-based system as their dominant communication modality.

Despite its widespread use, there is little well-controlled, evaluative data on the effectiveness of PECS, with research methodological constraints, a reliance on anecdotal reports and reports based on the experiences of the PECS authors compromising research findings (Bondy & Frost, 1995; Mirenda, 2001; Roberts, 2004). Although lacking a control group, a study of 31 children over 14 months by Schwartz, Garfinkle, and Bauer (1998) demonstrated improvements in communication functions which were also generalised to other settings. Sixteen of these 31 children had autism. Forty-four percent of the intervention group developed spontaneous non-echolalic oral communication, described by the authors as “robust verbal skills” (Schwartz et al., 1998:152). Further, children who did not acquire verbal communication demonstrated improved communication functionality. No follow up was conducted to determine longitudinal effects of the intervention.

Using a single case study, Kravits, Kamps, Kemmerer, and Potucek (2002) investigated the effects of PECS on spontaneous communication and social interaction. They found increases in spontaneous language and increased intelligible verbalisations in two of
three settings. But because PECS was initiated in parallel with a social skills enhancement program (confounder), it was not possible to attribute or apportion the increased interaction with peers to either intervention.

Using a randomised control trial (RCT) research design, Howlin, Gordon, Pasco, Wade, and Charman (2007) investigated the effectiveness of two-day expert training provided to teachers in the use of PECS. The researchers found that the rates of student initiations and use of symbols in the classroom did increase when the teacher had been trained in the use of the PECS approach. However, the treatment effects were not maintained with the one intervention group with whom follow-up was conducted, and no other communication improvements were noted.

The PECS program is open to criticism because despite demonstrated improvements in verbalisations, these effects have not been sustained. The focus of the PECS program remains on functional communication via a highly structured, visual modality rather than verbal speech (Roberts & Prior, 2006).

**Functional Communication Training (FCT)**

Functional communication training (FCT) includes both an assessment of the purpose served by a problem behaviour and teaching new communication skills which have functional equivalence. The current focus on functional communication, including the use of augmented and alternative communication techniques, is authenticated by a review of 21 FCT studies conducted between 1985 and 1996. This review found that following FCT, 85% of the collective cohort \((n=44)\) exhibited "an immediate and substantial reduction in the frequency of the target behavior" (Mirenda, 1997:222), with another 7.5% \((n=4)\) showing a gradual reduction in the incidence of challenging behaviour. The remaining 7.5% \((n=4)\) showed no effect of the training.

In a single case study \((N=1)\), Braithwaite and Richdale (2000) found a rapid and clinically significant reduction in the incidence of aggression and self-injurious behaviour once an alternative mode of communication was taught. Their findings are consistent with earlier investigations into the effectiveness of FCT as a means of rapidly reducing aberrant behaviours (Day, Horner, & O'Neill, 1994; Durand & Carr, 1991).
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FCT is also reported by Roberts and Prior (2006) to currently be the preferred approach to managing challenging behaviours in children with autism.

Facilitated communication

Facilitated communication involves physically prompting the person with autism to point on a communication board or type on a computer. This approach suggests that as the skill is learnt and communication improves, the prompts are progressively faded. However, there is no evidence to support this approach. Indeed the literature acknowledges that facilitated communication may have a counter effect of teaching reliance on the facilitator for both the process and content of communication. It may also facilitate computer dependence as the medium for communication (Bebko, Perry, & Bryson, 1996; Roberts & Prior, 2006; Shane, 1994).

2.4.5 Multi-approach programs

Multi-approach programs by definition use more than one approach and method. Of these, the TEACCH program is probably the most well known, although others include the Learning Experiences – an Alternative Program for preschoolers and parents (LEAP), the Social-Communication Emotional Regulation and Transactional Support (SCERTS) model and the Giant Steps program. Neither the LEAP nor the SCERTS models will be discussed in this review as the former is specifically designed for preschoolers and their parents, and SCERTS is a service provision model. Both therefore fall beyond the scope of this thesis.

Each of the multi-programs discussed below provide elements which can be incorporated into school teaching and learning programs. But given the range of variables operating in each school, it is not surprising that they differ quite considerably in what elements they choose to adopt and how they are utilised. These variables include a lack of definitive clarity on the nature of autism, and the often conflicting or at least ambivalent research data available on effective practice for children with autism. Three multi-approach programs are discussed in the following sections: Division TEACCH, Giant Steps and Daily Life Therapy.
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Division TEACCH

TEACCH is a university-based project founded in 1971 by Eric Schopler at the Department of Psychiatry within the School of Medicine, University of North Carolina, USA. The TEACCH program is really a composite of what the program developers perceived to be the best available approaches and methods. The main goal of TEACCH is to prepare people with autism to live and work more effectively at home, school, community and, if appropriate, work environments. Focus is placed on teaching communication skills, social awareness and independence. Guiding principles include improved adaptation (through education and modification of the environment); parent collaboration; assessment for individualised treatment; skill enhancement (including development of staff and parent skills), cognitive and behaviour therapy and generalist teaching (The National Autistic Society, 2005). TEACCH can be delivered as a home-based or centre-based program which can span pre-school aged children to adulthood.

TEACCH uses individualised, structured teaching designed to meet the child’s educational needs. This includes: small classrooms; an emphasis on a structured learning environment; visual teaching techniques; curriculum focus on enhancing communication and social skills in various modalities; special training on leisure and pre-vocation skills; application of behaviour theory for managing behaviour problems; and teaching for transfer of learning to other settings (Schopler & Mesibov, 1988). Elements of the TEACCH program are commonly found in special education classes and schools, particularly the use of visual strategies to facilitate communication and inform students what they are to do.

TEACCH also uses the perceived learning style of the child as the basis for structuring the teaching/learning process. Teaching occurs in a highly manipulated environment which addresses the child’s uneven profile of skills and deficits, including organisational, memory, communication and auditory processing problems. For instance, distinctly different locations are used for different activities, class and individual student schedules are employed, and visual activity cues act as prompts. Consistent work routines are used to compensate for temporal sequencing difficulties experienced by many children. Students who are low-functioning are provided with greater structure, more limits and more cues to compensate for their less developed self
control and skills of independence. Collaboration between professionals and parents in order to ensure that routines and cues used in the home are consistent with those used in the classroom is seen as a key element of the program. To this end, the TEACCH program involves the training of parents as well as children (Mesibov, 2002).

Efficacy concerns are again raised in relation to the evaluation of multi-approach programs, such as TEACCH. Demonstrating the effectiveness of such multi-factorial programs, particularly when oriented to longer term goals, is problematic from both the dual perspectives of research design complexity and timeliness of results. Evaluations which focus on short-term, defined milestones or precise student outcomes are customary because they provide a timely measure of program effectiveness. But this does not capture other important elements in the educative process which are more problematic to assess, such as elements of the affective domain and longer term goals.

Rigorous efficacy studies of the TEACCH approach are scarce. Schopler, Mesibov, and Baker (1982) investigated the effectiveness of TEACCH in the classroom by examining the outcomes for 647 students who were either currently enrolled or had recently left the program, 51% of whom had been diagnosed with autism. Three comparative groups were included in the study, each with different levels of involvement in the program. Self-completion survey responses from parents indicated that significant improvements had occurred and that those children with the most involvement in the program demonstrated the most improvements. However, the methodological concerns (including the research not being conducted by independent researchers, no control group and non-random selection of participants) render the research results inconclusive (Dempsey & Foreman, 2001; Gresham et al., 1999). More recent positive results in adaptive behaviour, perception, motor and cognitive performances attributed to the TEACCH program reported by Panerai, Ferrante, and Caputo (1997) are likewise tempered as there was no control group in their study. In a subsequent study, Panerai, Ferrante, and Zinale (2002) matched two groups of eight students by gender, chronological and mental age, and diagnosis (autism and intellectual disability). Matched pairs were then allocated to either the TEACCH program (experimental group) or a regular school program with a support teacher (control group). Over a one-year
period, improvements were noted in both groups but significantly more so for the subjects in the experimental group.

The results of a study by Ozonoff and Cathcart (1998) which investigated the effectiveness of a TEACCH home-based program showed significantly more improvement for the experimental group compared to the control group. The control group was matched for gender, age and ethnic background, but the allocation to groups was non-random. As all children from both the experimental and control groups were also attending day treatment programs, the results provide a defacto comparison of the two programs. Those children receiving the in-home TEACCH program (intervention) evidenced superior skill improvement: approximately three to four times the rate of development produced by the baseline ABA program. But the research results are again questionable as there was no monitoring of the TEACCH program in the home to ensure integrity of the intervention and level of intervention intensity, or whether effects were due to parental involvement rather than some other factor.

The Autism-PDD Resources Network which provides an online support community forum for parents of children with autism go further, criticising the TEACCH program as detrimental because it provides a protective environment for the child and thus curtails mainstreamed social development. However, many aspects of the TEACCH program can be implemented in schools, regardless of the extent of venue-specific special education provision. Thus, this criticism is not valid for alternative education contexts where school choice and hence extent of mainstream social development has been decided by parents in full knowledge of the nature of the school program offered.

Whilst these results (as indeed others canvassed in this chapter) may be inconclusive from an experimental research design perspective, from an exploratory study perspective they can be seen as providing a positive result on which more rigorous designs might be built.

Giant Steps

Giant Steps is another multi-approach program which uses behavioural methods but draws from sensory-motor theory in an effort to ameliorate the effects of autism by
developing sensory skills. It uses a broad range of professionals, such as speech therapists, occupational therapists, special educators and music therapists who ‘shadow’, or maintain proximity with the students throughout the structured school program. It also seeks continuity of program between home and school by training parents. Whilst there is no independent research to verify program effects, the program claims “a 95% success rate in teaching children to speak within three years” (Dempsey & Foreman, 2001:112).

**Daily Life Therapy**

Daily Life Therapy is the basis for an education approach called Higashi. The Higashi philosophy is oriented to achieving harmony of mind, body and spirit, to develop intellectually, physically and emotionally in order to attain or approach independence. While academic skills, fine arts and physical education are highlighted, a prime goal of Higashi schools is to reduce aberrant behaviour, believing that physical exercise, group work, music, art, drama and “rigorous control of challenging and inappropriate behaviours” (Howlin, 1997:60) are key strategies to achieve this. The vigorous physical exercise program is designed to release endorphins (and thus reduce anxiety), improve stamina and develop coordination. Principles of sensory integration and vestibular stimulation underpin the choice of exercises (The National Autistic Society, 2005). The Higashi approach uses some behavioural principles, such as the use of prompts, prompt fading, ignoring problem behaviours and practising replacement behaviours. The use of discrete trials and language training are not emphasised (Smith, 1996). Parents report short-term and often a very marked decrease in aberrant behaviour with improved compliance, although long-term and independent monitoring of outcomes has not been conducted.

**2.4.6 Research issues**

The debate over preferred educational approaches for students with autism is far from being concluded, with effectiveness and efficacy findings from both quantitative and qualitative studies being routinely questioned.

The almost complete lack of randomised controlled trials (RCTs) in this area is testament to the problematic nature of controlling for the heterogeneous variables.
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inherent in the disability and evident in the behaviour of people with classic autism. Using a randomised control design pilot study with a sample of 28 children, Aldred, Green, and Adams (2004) investigated the effects of a social communication intervention compared with routine care alone. The intervention was based on educating and training parents in adaptive communication strategies, which they were to use with their child at home for an hour per day. The authors report significant treatment effects on social-communicative assessment measures. Thus this suggests that parents can effect positive intervention outcomes for their child without undue financial hardship.

In a two-year prospective study involving community-based early intensive behavioural intervention (1:1 treatment using discrete trial teaching) and specialist nursery provision (eclectic developmental and behavioural teaching practices) for 44 children with autism, Magiati, Charman and Howlin (2007:804) found no relationship between overall progress and treatment type. Indeed, “the VABS Daily Living Skills domain was the only variable that differentiated between the groups after two years” and the mean difference of this at follow-up was small. However treatment fidelity was not assessed and there was considerable inter-individual variation in responses. Indeed the lack of group differences in this study may reflect real-world versus more tightly controlled clinic-based intervention settings.

Difficulties associated with imposing rigorous experimental standards on interventions which occur in non-clinical settings are widely acknowledged in the literature. Indeed, Smith (1980) comprehensively articulates a range of circumstances when it is not even desirable to use experimental designs in evaluation. These include when the situation in which the study is conducted is very difficult to control, when the treatment is non-standardised and when little is known about the causal relationship being investigated. Thus we need to be wary that we do not dismiss an intervention because experimental methods are inadequate to investigate it, and because qualitative research is judged by standards more applicable to experimental research methodology.

Treatment efficacy studies are also difficult, expensive to carry out and can have limited results due to methodological constraints, such as small sample sizes, subject variability, maturation and difficulties in recruiting for a no-treatment control group.
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(Kaplan, Polatajko, Wilson, & Faris, 1993). These limitations are deemed significant impediments to the validity of any results generated through experimental means. But failure of an approach to be validated empirically does not mean that it is ineffective. It means that the efficacy of the intervention is not demonstrated. Validation of treatment efficacy requires tightly controlled longitudinal experimental designs involving random assignment to intervention and control groups, standard treatment protocols, use of independent evaluators and procedural integrity. The effectiveness of an intervention approach by way of contrast is demonstrated in the settings in which the intervention is given (Gresham et al., 1999). Thus, efficacy may not be proven but effectiveness may be.

It would be a brave soul to declare a definitive statement of comparative effectiveness of educational approaches for students with autism. The elusive aetiology and the individual variability of autistic behavioural characteristics compound the problems created by less than ideal, at best quasi-experimental research designs rife in the literature. It would also appear that many perceptions by experienced professionals and parents are discounted in the literature because the research in which they are reported is judged by criteria adopted from an experimental model perspective. However, if no matched control group is genuinely possible in school-based research because it is impossible to isolate the plethora of known and unknown variables affecting each student, then the best researchers can hope for is a quasi-experimental design, and even this would have a multitude of confounders. It could also be argued that on ethical (or even legal) grounds that a random controlled trial is not appropriate because we would not want to jeopardise a child’s development if an intervention believed to yield positive results, was withheld.

Methodological difficulties do not in themselves negate the effectiveness of a particular intervention. Perhaps the way forward as Chambless and Hollon (1998) suggest, is to establish treatment efficacy via the use of single case experiments. In order for single case experiments to provide efficacious data, they must establish baseline behaviour over time and the treatment effects need to be confirmed in studies replicated by other independent researchers. In addition, these authors concur that “quasi-experimental and nonexperimental designs can be fruitfully used to address questions of clinical
utility” (Chambless & Hollon, 1998:14). They define clinical utility to be effectiveness. Another strategy to determine validity of findings is to look for replication of research findings from studies which use contextually appropriate standards of rigor. Given the breadth and complexity of literature related to interventions and educational approaches to students with autism, it may be helpful for teachers to have access to a greater number of standardised evaluations of school-based programs which detail the content and process of the educational approach adopted. This would allow cross program comparison for both short- and long-term effects. Also, as our knowledge improves we may find that there are sub-categories of autism and/or different phenotypes which then inform more targeted treatments and approaches to education. In the meantime, teachers need to use the best available evidence from all sources as they construct learning experiences for their students.

2.5 Implications for Schools

A major goal for all schools should be to maximise student learning. This can be facilitated by attending to the antecedent conditions and pedagogical principles which support student learning, in short to a behavioural approach to the teaching and learning processes. In this instance, the behavioural, social, and communication deficits and abilities of individual students comprise elements of the antecedent learning conditions. Therefore, in order to optimise student potential for learning, educators need to align their pedagogy and the physical environment to the characteristics of autistic disorder, its associated features and its splinter skills.

Learning opportunities provided to students become the vehicle via which educators seek to generate appropriate learning outcomes. A school-based educational approach can comprise multiple concurrent interventions, the inclusion of each being justified by the research and best practice evidence literature. Such necessarily composite educational approaches create difficulties for researchers when trying to delineate the effectiveness of one approach over another via an experimental research design. For instance, perceived program effects may be due to an independent confounder such as a quiet voice tone, or a focused and positive relationship which develops between the recipient and person providing the intervention, rather than the planned activity per se.
A distillation of the literature reveals significant commonality in what is described as ‘effective’ programs for children with autism, regardless of the philosophical orientation of the program or the child’s idiosyncratic response. Of these, early and intensive interventions which target behavioural and communication difficulties are especially important. Specific ‘effective’ program characteristics which have been mentioned previously but bear repetition include:

- Individualised, autism specific curriculum content which focuses on attention, compliance, imitation, language and social skills
- A highly supportive and comprehensible structured teaching environment
- Systematic instruction including the use of visually based cues
- Specific strategies to promote generalisation of newly acquired skills
- Predictability and routine for students
- Challenging behaviours addressed using a functional communication approach
- Support for children in transition stages, such as from preschool to school environment
- Family members are supported and collaborative partnerships with professionals involved in the delivery of treatments are facilitated

(Dempsey & Foreman, 2001; Howlin, 1997; Iovannone, Dunlap, Huber, & Kincaid, 2003; Koegel, R. L. et al., 1996; Panerai et al., 2002; Rapin, 1997; Roberts & Prior, 2006).

Further, key skill domains to be addressed in curriculum content in order for education to be considered an effective intervention include the “ability to attend to elements of the environment, ability to imitate others, ability to comprehend and use language, ability to play appropriately with toys, and ability to socially interact with others” (Roberts & Prior, 2006:80). However, a lack of guidance in the selection of student specific, effective practices is noted (Iovannone et al., 2003). There is also a focus on pre-school and early childhood intervention practices (up to 8 years of age), but a comparative dearth of similar research for older students (junior primary through secondary school age). The focus on early intervention is oriented to developing life skills because this is considered more likely to succeed and be cost effective compared with life-long crisis management (Howlin, 1997).
Despite the limitations of individual studies, it is widely accepted that programs based on a behavioural model have the broadest empirical validation for teaching students with autism (Arick et al., 2003). This model can be applied to the environment in which the students are educated, strategies used to engage students in the educative process, and reinforcement of learning across home and school environments. Schools can routinely include contemporary ABA approaches in their repertoire of teaching and learning experiences for children with autism, develop close liaisons with the child’s carers to ensure consistence of approach between school and home, and can capitalise on teachers’ positioning to conduct functional assessments as an integral part of their ongoing monitoring of students.

The following sections on teaching and learning style, environment, motivation, family collaboration and behaviour management discuss how the research literature informs teacher professional practice in each of these areas.

2.5.1 Teaching and Learning Style

Teaching is an inexact science. Teachers draw from psychology, curriculum theory, discipline-based knowledge, their own experience and other sources when planning and implementing their program. However, it is crucial for students with autism that the pedagogy teachers adopt deliberately attempts to engage those students in the learning process. Engagement can be regarded as “the amount of time that the student is attending to and actively interacting with his or her social and non-social environments” (Iovannone et al., 2003:157). It is deemed to be one of the best predictors of positive student outcomes. To engage students in the learning process, teachers need to draw from the available research literature regarding the disability characteristics, specific strengths (including splinter skills) and impairments, and developmental stage of their students. This includes teachers attending to antecedent conditions such as social stimuli, which impact on student learning and behaviour (Jordan, 2008).

The implication of the impaired attention and memory abilities of children with autism as discussed earlier (see 2.2.2) is that teachers cannot rely on conscious recall or
generalisation of skills by students with autism in order for adaptive behaviours to be initiated. Teachers also cannot rely on students’ ability to draw on their past experience to conceptualise how retrieved information is best used in a particular situation. Instead, highly structured learning activities including frequent prompts will be needed to direct and remind. Teaching and learning materials need to be structured and include the use of symbols, colour coding, pictures and schedules (Association for Science in Autism Treatment, 2005; Iovannone et al., 2003). Further, the use of materials and activities which build on students’ interests and provide choice are conducive to learning for students with autism. The strategies outlined in this paragraph can be classified as antecedents to learning, and as such, are core elements of a behavioural approach.

One of the predominant characteristics of people with autism is their poor ability to generalise novel learning. It is theorised that generalisations occur when there is recognition that a particular item is similar in important ways to a known existing class/category of items. Minor perceptual differences are not used to detract from the global mode of classification. As such, adaptive behaviour is enhanced when each new situation is not treated as if it were totally new (Bowler, 2007). Educators of children with autism thus need to make associations explicit. They also need to reinforce them across a range of situations. Working in partnership with parents provides a means by which skills and knowledge can be reinforced in different environments, thus facilitating the generalisation of skills across different environments and contexts.

People with autism have a preferred input modality, this being visual rather than auditory (Sadock & Sadock, 2003; Zarbatany & Feldman, 1981). Therefore the use of pictorial representation (visual cueing) is likely to be more effective than abstract verbalisation in developing their memory skills. Visual cues, unlike verbal cues, have the added benefit of being non-transient. Auditory input is hampered by processing problems and the transience of verbally delivery input, both of which compound problems associated with memory. Given the poor working memory of children with autism, a teaching style which delivers information in a string of verbal instructions will therefore militate against comprehension and task completion. Pictorial representation, however, builds on their preference for visual cues, as do gesture, sign language, real
objects, or photographs. However, these pictorial representations also need to be delivered as discrete items or as a short string of information.

The impaired ability of students with autism to select and sort information also confirms that task descriptions need to be sequenced using small, clearly defined steps which teach specific skills in a logical order. Further, this information should be provided in a non-transient visual form, such as a posted visual display. Depending on the level of support needed, an appropriate instructional style may include having a visual schedule of activities, using clearly defined areas of the classroom, carefully delineated choice provision, and using facilitated transitions. Materials would also need to be readily accessible and labelled. Other teaching strategies reported in the literature to be effective include very concise directed verbal instructions, provision of contextual and visual prompts and using students’ strengths and interests as motivational cues (Mesibov, 2002; Roberts & Prior, 2006).

The focus of curriculum content which teachers provide for students with autism should be based on skills that are most relevant to improving that person’s quality of life and independence, particularly for post-schooling years. The students’ assessed competence in social and functional communication as well as competence in daily living skills can guide the selection of curriculum content in these areas.

### 2.5.2 Environment

There are a range of classroom environment conditions identified in the literature believed to facilitate the teaching and learning process for students with autism. It is suggested that teaching and learning needs to be positioned and planned so as to minimise distracters, furniture needs to be fixed yet developmentally appropriate, teachers need to have visual access to all areas of the teaching/learning spaces, and boundaries need to be clearly defined. It is also preferred that the teaching space has good natural, rather than fluorescent lighting. If fluorescent lighting is to be used, then non-buzz fluorescent globes are preferred. These environmental considerations represent antecedents to learning and thus are behavioural program elements.

For students with low-functioning autism, and in particular those who are absconders and climbers, the facility needs to also include ready access to an appropriately
equipped bathroom, have provision for safe climbing opportunities, have few strategically placed but child-proof exits, provide minimal opportunities for hand and foot holds, and have minimal or no electrical outlets in the areas accessed by students.

Jones (1988) suggests that the environment in which the child with autism is educated needs to be engaging because this promotes adaptive behaviour, provides a preferred context for teaching, and is a disincentive for undesirable behaviour. He broadly defines an engaging environment as “one in which there are ample antecedents for engagement, rules of the engagement permit and encourage engagement, and engagement responses are consistently reinforced” (Jones, 1988:184). Logan, Bakeman, and Keefe (1997:482) maintain that while “engagement does not measure student learning directly, ...it is positively correlated with achievement on standardized tests...[and] the engaged behaviour of students with disabilities is the single best indicator of academic gains.” Further, this perspective is supported by a large scale study (N=100) conducted by Reese, Richman, Zarcone, and Zarcone (2003). They found that adjustments to the environmental conditions, teaching new skills which serve the same function as challenging behaviours, and reducing anxiety such as through “establishing predictable routines, helping children cope with change, that might produce anxiety by visually displaying what is going to happen, and practicing alternative coping behaviors such as relaxation” (Reese et al., 2003:90) can reduce the incidence of challenging behaviours. Examples of such modifications designed to reduce the incidence of challenging behaviours include establishing predictable routines, providing visual displays of what is going to happen, and teaching coping behaviours such as relaxation.

Using an empirical control/intervention study, Nordquist, Twardosz, and McEvoy (1991) investigated the effects of classroom reorganisation on both students with autism and staff. The environmental reorganisation included a re-apportioning of space such that play space was increased at the expense of instructional space and the intervention group play space incorporated an outdoor as well as indoor area. Further, the indoor spaces for the intervention group were reorganised with clustering of activity types, such as art, gross motor, toy, reading and music areas. Nordquist et al. noted that in the intervention group, non-prompted use of play materials occurred more frequently and
students complied with a greater proportion of adult instructions. Staff were also observed to be more affectionate and interacted with students in a more congenial manner. This type of space delineation is supported by Jones (1988) who suggests that the environment for children with autism should be open plan but organised into specific and clearly delineated activity zones which evidence minimal physical and visual barriers. Jones further suggests that due attention be given to lighting, acoustic and ventilation requirements, equipment, and signage.

In addition to the teaching and learning which occurs at school, parents can choose to pay for various treatment and education approaches to improve the life chances of their child. These services can be contracted during the pre-and post-school years and at non-school times during the years of compulsory schooling. Children can be taken out from the school in order to attend privately provided therapy or sometimes these sessions may be provided on the school site. But within the domain of school-based education, schools need to utilise best practice evidence to cater for the varied needs of their students. They do not have the luxury of waiting until the definitive best approach(es) is/are confirmed beyond dispute before initiating their service.

2.5.3 Motivation

Motivation is an area of study which describes factors which affect the amount of effort a person is likely to apply in a given direction. It is a key element of any educational program because if a student is motivated to engage with the learning activities, learning is more likely to occur. In essence, “to be motivated means to be moved to do something” (Ryan & Deci, 2000:54). Motivation is inextricably linked to the concepts of reinforcement and reward and as such, relates to behavioural approaches inherent in the teaching and learning processes.

The construct of motivation can be differentiated into intrinsic and extrinsic motivation. This differentiation is based on the varying reasons or goals which prompt an action. While there is variation in how intrinsic and extrinsic motivation is defined in the research literature, the former generally infers doing something because it is inherently interesting or enjoyable to do so. An intrinsic reward is mediated by the person themself and it is associated with high-quality learning and creativity. Extrinsic
motivation on the other hand refers to the use of externally mediated rewards or penalties in order for a separable outcome to be achieved. In contrast to motivation, amotivation can be described as lacking the intention to act. A person who is amotivated lacks a sense of personal causation and lacks intentionality (Ryan & Deci, 2000). Children with autism who are non-responsive to classroom educational goals could be described as amotivated. Typically students with autism are poorly motivated to learn.

The characteristic unresponsiveness of children with autism means that motivational strategies routinely used to good effect with mainstream students, such as cooperative learning, curiosity, or challenging existing beliefs, are ineffective when applied to these students. The impairments associated with autism militate against abstract, reasoned or intrinsic motivational strategies. Instead, motivational strategies need to be systematically programmed and to permeate the teaching and learning processes (Koegel & Koegel, 1995). Given that students with autism tend to have poor intrinsic motivation, the use of external rewards (such as choice of activity, food, or extra computer time), is a key teaching strategy.

Teachers of students with autism therefore have an extraordinary responsibility to construct conditions for learning which stimulate engagement with the learning process. Visually structured teaching, task variation and variation of stimulus materials, reinforcer type, reinforcers and reinforcing attempts as well as target behaviour achievement, and consistent work routines are supported in the literature as conducive to the learning style of students with autism (Matson et al., 1996; Mesibov, 2002; Schopler et al., 1995). All of these can be classified as extrinsic motivators. Most are directly applicable in the classroom. Play can also be used as an extrinsic motivational tool in an interactive approach to enhance sociol/emotional, cognitive, and communicative development. The use of age-appropriate activities or toys; extrinsic rewards; and the prompting, modelling and reinforcing of affection and social interaction have been demonstrated as behavioural motivators conducive to the development of peer interaction (Hall, 1997).

The research also supports choice of stimulus items as effective extrinsic motivators. Improved response patterns (participation, initiation, interest, quantity and speed) and
reduced incidence of disruptive behaviour occur when the child is provided with a choice of stimulus item (Dunlap et al., 1994; Koegel & Koegel, 1995; Koegel et al., 1987). Similarly, when they investigated the influence of child-preferred activities on autistic children’s social behaviour, Koegel, Dyer et al. (1987) found that social avoidance behaviours had a strong inverse relationship to child-initiated preferred activities. Dunlap et al. (1994) likewise found in a classroom based case study \(N=1\) that there was a strong correlation between choice provision and both reduced disruptive behaviour and improved task engagement; no follow-up was conducted. Findings from the studies discussed here suggest that choice and/or prompting child-preferred activities result in increased motivation and thus could be used as an approach to teaching and learning for these children. Such techniques are important for children with autism who typically are not intrinsically motivated as discussed earlier.

Another strategy to improve student engagement is the use of small group or individualised instruction. Logan et al. (1997) investigated the relationship between engaged behaviour and classroom or teacher variables for students with severe disabilities in mainstream elementary classes. In their small scale empirical study they found that one-to-one, small group and independent instruction were each significantly superior to large group instruction in terms of engaging students in the educative process.

Thus, the role of the teacher in manipulating the environment so as to engage students is amplified when teaching students with low-functioning autism. This includes how the learning is structured, resources used, and curriculum content. Carr, Reeve, and Magito-McLaughlin (1996:405) suggest that “social attention, social avoidance, tangibles, sensory stimuli and endogenous opiates” are all positive reinforcers for students with autism.

### 2.5.4 Family collaboration

Family collaboration is an essential element of teaching style. It serves several important functions including facilitating the expansion of strategies to the home environment thus assisting generalisation of student skills, providing new information to parents so that they are better informed and more empowered to implement effective
strategies in the home, and enabling school staff to consider the student’s home context and preferences when planning and implementing the individualised program. As discussed in 2.4.2 student outcomes are improved when parents have received training so that behavioural reinforcement occurs across settings, thus promoting generalisation of skills.

Parents have a vested interest in maximising the functional independence of their child because it increases the future options for both parent and child. Family-professional collaboration and partnerships is evidenced in the literature as one of several systematic methods for improving the outcomes of behavioural interventions (Harris et al., 1982; Koegel et al., 1982; Koegel, R. L. et al., 1996; Roberts & Prior, 2006). In particular, intervention programs for children with autism are significantly more effective when parents have received associated training in behavioural principles.

Routine teacher-parent communication which occurs usually on a daily basis in special schools can be extended via a program of parent education. Parent education comprising one-off events or a developmental series of sessions is oriented to increasing parents’ understanding and skills regarding autism per se, the school’s philosophical stance, the teaching and learning strategies adopted at school. It holds the potential for consistent motivational and reinforcement strategies to be used both at school and in the home as parents emulate school-based education strategies. Such consistency of approach across settings increases the potential for improved range, effectiveness and generalisability of student educational outcomes, including moderated behaviour (Koegel, Koegel, & Schreibman, 1991). Schools can also provide information about other services available to parents, thus expanding their knowledge of people and organisations they can access.

### 2.5.5 Behaviour management

As discussed earlier in 2.4.2 Behavioural Approach, managing student behaviour includes structuring antecedent conditions for learning and using consequences to reinforce responses. Consequences include positive reinforcement, negative reinforcement and punishment. Collectively the latter two are referred to as aversive strategies.
Based on current behavioural theory, educative practice for managing the behaviour of students with autism focuses on non-aversive strategies (antecedent conditions and positive reinforcement). Non-aversive behaviour management is an ethical strategy which includes proactive and reactive elements (or in Skinner’s terms, antecedent and consequent stimuli). Proactive elements include: identification and minimisation of preceding and concurrent variables which may trigger an adverse response; positive reinforcement for socially and educationally valued behaviours; using teaching strategies designed to teach more appropriate ways of behaving; teaching self-monitoring and self-stress-reduction techniques; teaching functional communication; and teaching skills related to daily life. Attention to the contextual environment in which students are taught is also an important antecedent in view of the role it can play in affecting student behaviour. Reactive elements include positive reinforcement, negative reinforcement and extinction. Extinction strategies are ones which provide no reinforcement for the effects of challenging behaviour. These are executed using a neutral disposition. Examples of extinction strategies are distraction, diversion, or physical separation of others from the student displaying the behaviour until such time as he/she does not pose a threat to others in the vicinity. The research indicates that these methods are appropriate for students with developmental disabilities who exhibit a variety of aggressive and self-injurious behaviours (Koegel, Koegel, & Dunlap, 1996; La Vigna & Donnellan, 1997). Where behaviour management is effectively executed in a classroom, the teacher creates a set of routines and antecedent conditions to produce desired student behaviour which is then positively rewarded. Manipulating the environment such that a challenging behaviour is rendered ineffectual is an example of an antecedent condition, as is using a deliberate motivational strategy.

Functional assessments that evidence a clear link between: social-communicative function and disruptive behaviours such as aggression, self-injury and self-stimulation (Koegel, Koegel, Kellegrew, & Mullen, 1996); the renewed focus on antecedent stimuli; and the Australian legislative changes (see Chapter 1) affecting behaviour management strategies appropriate for use in schools, have led to a surge in the use of non-aversive behaviour management practices for students with autism. This movement coincided with an increase in the educative focus of behaviour management strategies and also the
use of motivational strategies to teach functional communication. It is worth commenting that this swing to non-aversive behaviour management is not universally accepted by all behavioural scientists (Carr et al., 1996; Lovaas, 1987; Matson & Taras, 1989). Nor does the attention afforded to antecedent conditions preclude the use of consequences. In fact positive reinforcement as a consequence is highly valued by educators.

Carr et al. (1996:405) writing with regard to the role of consequences applied to problem behaviour acted out by people with developmental disabilities, note that while:

> [A] wide variety of positive or negative reinforcers can change the likelihood of problem behavior, the most commonly studied consequence for managing problem behavior concerns the contingent application of aversive stimuli, that is, punishment. There is a large literature that demonstrates that the contingent application of a variety of aversives (e.g., electric shock, forced inhalation of ammonia fumes, cold water mist in the face, overcorrection) can produce short-term suppression of severe problem behaviour ...[but that these] lack the educational focus and systematic prescriptiveness that is the most distinctive feature of conceptual behaviorism.

Students spend much of their formative years in school. Thus, because of their extended contact with children for most days of the year, educators are well placed to routinely teach students appropriate ways of behaving through the application of a school policy which applies consistent and humanistic behaviour management practices. Further, formal education occurs in a naturalistic setting and can include parents as co-contributors to the behavioural approach adopted.

Educators of students with developmental disabilities, and especially students presenting with chronic and severe behavioural problems, are faced with management and education challenges which many would find unenviable. Managing severely disruptive and self-injurious behaviour is a key concern for teachers of students with autism, whether they teach in a mainstream or special school. It is of concern from a learning perspective and also a duty of care perspective. Teacher concerns relate to both the student exhibiting the behaviour and also other students who are in the same learning environment. It is also of concern for the welfare of school staff.
Chapter 2 – Autism and Education

In mainstream schools the use of logical and verbally explained consequences has merit. However, for students with autism, such a strategy is potentially ineffectual when the student cannot perceive the natural consequences of an action (such as injury which may occur from jumping to the ground or onto another person from a high location). Nor is it appropriate when the student cannot follow the conceptual logic of the explanation. Attention to the antecedents of behaviour (as discussed in 2.4.2 and 2.5) thus looms as a crucial factor to minimise challenging behaviour, and in so doing, to foster the potential for effective education.

2.6 Educational Approaches for Students with Autism who are Chronic Climbers and/or Absconders

Absconding may be defined as “repeated attempts to leave designated areas without permission or supervision” (Piazza et al., 1997:653). Alternatively it may be defined as “running or walking away from a caregiver without consent” (Tarbox, Wallace, & Williams, 2003:239). This behaviour poses a particular risk for students with autism because it exposes them to potentially life threatening situations, particularly as they are usually unable to discriminate safe and unsafe situations. It also may detract from classroom learning for both the child concerned (because of their absence from class) and other students (as teacher attention is necessarily diverted from core educational activities). This is also true for the behaviour of students who routinely seek to climb to unsafe heights and locations.

I could find only very limited research which investigated approaches for managing students with autism who are absconders (also referred to as elopers) and none which investigated chronic climbing. None of the research found was conducted in a school setting, despite schools’ duty of care responsibilities. Instead the focus was on researching the use of functional analysis and reinforcer assessments to generate an appropriate approach for managing and reducing absconding behaviours.

Investigating absconding poses inherent methodological problems for researchers. In terms of validity, if the investigation is conducted in a naturalistic environment, preventative measures need to be taken to ensure the subject is not in danger when they...
run away or climb to dangerous locations (threat to internal validity), but if the investigation is conducted in a controlled environment, naturalistic reinforcers are unavailable and the artificial reinforcers may not match those naturally occurring (external validity may be compromised).

Using functional analyses of elopement behaviour and reinforcer assessments to guide treatment packaging, Piazza et al. (1997) investigated treatment effects administered to each of three children selected for their study. Each child had been diagnosed with a developmental disability. The ABAB treatment design was delivered in a relatively controlled indoor environment (a self-contained classroom in a paediatric hospital). Results indicated that “reinforcer assessments may have been useful in identifying either the functional reinforcers for elopement or those that served as effective substitutes” (Piazza et al., 1997:670). The functional analyses and reinforcer assessments were then used to successfully reduce elopement. Similar findings were obtained in a replication and extension functional analysis study (N=3) by Tarbox, Wallace, and Williams (2003). The investigations occurred in an indoor environment analogous to the typical setting in which absconding occurred for each respective subject. Tarbox et al. found that absconding was maintained by positive reinforcement (tangible or attention) but decreased with the use of non-contingent reinforcement for one subject and with reinforcement of independent communication and blocking elopement for the other two subjects.

These studies described in the preceding paragraph were extended further by Kodak, Grow, and Northup (2004) who demonstrated in a single case experiment (N=1), that modified functional analysis and non-contingent treatment of a child with ADHD exhibiting elopement behaviour could be conducted at an outdoor setting (sports activity). The functional analysis showed that elopement was reinforced by attention. Non-contingent positive reinforcement only was provided during the control period. Following elopement, non-contingent attention and verbal questioning occurred during the retrieval period, after which a short time-out period was applied during which no attention was paid. Positive reinforcement was provided for compliant behaviour. This treatment resulted in an immediate and substantial reduction in elopement behaviour. However, this subject had no intellectual disability and no pervasive development
disorder. Further, during the control period when she was not retrieved following
elopement, she resumed engagement in the sports activity of her own accord. (An
observer was on hand to ensure she did not leave the area.)

2.7 Chapter Summary

Autism is a non-curable neurobiological disorder which causes differences in how
information is processed. It results in characteristic impairments in social interaction,
impairments in communication, and restricted repetitive and stereotyped patterns of
behaviour, interests and activities. Autism is diagnosed on the basis of behavioural
symptoms which may be some distance removed from the root cause and no
intervention exists to cure the core symptoms of autism.

This chapter has reviewed the main educational approaches for students with autism. It
has shown that the predominance of literature has focused on behavioural approaches.
Further, the research suggests that behavioural approaches are more effective than other
approaches which could be used in an educational setting to produce sustained
amelioration of symptoms. Early and intensive intervention is consistently identified as
critical to long-term outcomes. High priority goals for educating children with autism
are improved socially adaptive behaviours (including communication), and functional
independence.

The blending of what we know about the characteristics of autism and the evidence-
based approaches to ameliorating symptoms have been applied in various combinations
to educational settings, informing choices regarding the physical environment,
curriculum content, teaching style, approaches to learning, and behaviour management.
The research for this thesis will investigate one such approach to the education of a
specific cohort of students, these being students with low-functioning autism who are
chronic climbers and absconders.

School-based program evaluation holds tremendous potential to provide timely and
relevant feedback to a range of stakeholders at a range of levels in the education sector.
But evaluation conducted in a school cannot control the multitude of contextual
confounders. Nor indeed may it want to if it is an exploratory study as is the case in this
instance. Hence the next chapter (Chapter 3) considers the literature on evaluation theory and program evaluation theory as conceptual underpinnings of school-based research.
Chapter 3 - Evaluation Theory

3.1 Introduction

The multitude of models and theories available to evaluators necessitates conscious or tacit choices regarding the purpose and nature of an evaluation which in turn informs the evaluation model selected. That is, an evaluation model needs to be based on a defensible rationale. Chapter 3 provides the context from which the Correa evaluation model was drawn, and as such, acts as a prelude to Chapter 4 which specifies the Correa program theory.

3.1.1 Problems in evaluating intervention effects

Chambless and Hollon (1998) stipulate that a treatment can only be labelled ‘efficacious’ when its efficacy has been demonstrated in a controlled study, preferably a RCT or a carefully designed single case experiment, and the trial has been replicated by at least one independent research team who similarly find treatment efficacy to be proved. These authors believe this standard of proof is necessary to avoid erroneous conclusions being drawn based on an aberrant finding, model mis-specification or inferential error with a single trial study, even if it is a RCT. Similarly, Siev and Chambless (2007:519) deduced from their meta-analytic study comparing the relative efficacy of cognitive therapy and relaxation therapy in the treatment of generalised anxiety disorder and relaxation therapy, that these two efficacious active treatments may have common factors apart from the active treatment which render them to be effective, and that indeed there is “the possibility that researchers have yet to identify a core feature of the psychopathology and how to treat it.”

Shadish, Cook, and Campbell (2002) likewise argue that results may not be replicable in a comparison experimental study because it is in fact the detail of the implementation which is crucial to treatment success, not solely the intervention treatment per se. The isolation of a variable in experimental conditions necessarily excludes many contextual factors which exist in the naturalistic conditions. It may be that one or more of these external factors impacts on the
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outcomes produced by the variable in this different setting. This explains why a
given causal relationship “will occur under some conditions but not universally
across time, space, human populations. ...To different degrees, all causal
relationships are context dependent, so the generalization of experimental effects
is always at issue” (Shadish et al., 2002:5).

Treatment effectiveness in a RCT does not necessarily ensure that the same level
of effectiveness will be achieved when the same intervention is applied in the
community setting (Lord et al., 2005). Across-site replication is an alternative
research design approach, but again confounders such as the difficulty in
matching groups and the confounding effects of other situational elements renders
findings questionable.

A program which is evaluated under highly controlled conditions may be
efficacious in terms of statistical significance (effective under ideal experimental
conditions and findings replicated by independent researchers). But in the
pragmatic normal environment in which it is applied, it may not be effective
because some unidentified aspect of the contextual conditions is a key factor
influencing intervention effect, either positively or negatively. A study that
focuses on narrative explanation can be equally efficacious in terms of increasing
our understanding.

Proponents of ‘realistic evaluation’ such as Pawson and Tilley (1997) argue that
causation cannot be reduced to a set of mechanistic operations which are
methodologically driven, as occurs in experimental research. Instead, they argue
that evaluators need to explore the how and why a program has the potential to
cause change. The actions of stakeholders are considered basic to program
effects and even then, change can only be activated in favourable circumstances.
They further contend that the concept of a program producing outcomes needs to
be replaced by one which perceives a program as “offering chances which may
(or may not) be triggered into action via the subject’s capacity to make choices”
(Pawson & Tilley, 1997:38). This realistic evaluation approach recognises that a
host of variables network to produce the outcomes which indeed do eventuate as a
result of the intervention. Consequently evaluation needs to be sensitive to and reflect this complexity as it seeks to inform the thinking of policy makers and other program stakeholders. This complexity includes subject receptivity.

Unlike many clinical interventions, social and educational programs such as Correa, are usually not static, but evolve and adapt to changing circumstances and as such, are not amenable to being tested under quasi-laboratory conditions. Thus while RCTs provide the benchmark for scientific investigations, they are not universally applicable to the evaluation of all evaluands, nor do they suit all evaluation purposes. For instance, they are not usually applicable to evaluations conducted by practitioners or to studies designed to inform programs conducted in a normal life setting, such as the Correa program. They are not a preferred option for researchers investigating school-based events or multi-component programs because the interplay of contextual variables presents methodological challenges from an experimental perspective which will always undermine the credibility of results.

Thus, evaluators should be cognizant that political and organisational constraints shape social and educational programs. Social programs tend to ameliorate social problems incrementally, with stakeholder characteristics being a key mechanism for translating program change into social change. A very narrowly focused experimental design cannot encompass such a broad range of issues.

### 3.1.2 Evaluation of educational programs

The choice of research method for any given research is a task dependent on a range of factors, some of which can be controlled, and some of which cannot. The inherent challenge to educational research, including the evaluation of educational programs, is that while control groups can be used, precisely matched groups and assertions of direct cause-effect relationships are usually not possible. Apart from differences in individual student characteristics, schools are also unique. Despite operating within overarching organisational, political and policy frameworks, they are affected by a myriad of macro- and micro-mediating factors which operate from outside and within their confines. Hence research conducted
in a school needs to employ a method which can draw from a range of variables. The research method also needs to have an internal logic that guides the choice of design, data gathering tools, data analysis and reporting. Evidence needs to be reliable and sought from whatever sources are available, subject to pragmatic limitations. As Patton and Patrizi (2005:37) state, “programs are developed and evaluations conducted within some societal, cultural, political and economic context. The context affects what occurs and is important for interpreting evaluation design and use.” Thus it is not surprising that a range of evaluation models and theories have been developed, each of which articulates a different perspective which could possibly be used for the present evaluation.

3.2 Evaluation Theory

There is no universally accepted definition of the term ‘theory’. However, it can generally be described as providing “a body of knowledge that organizes, categorizes, describes, predicts, explains, and otherwise aids in understanding and controlling a topic” (Shadish, Cook, & Leviton, 1995:30). This understanding of the term can be applied to both evaluation theory and program theory. Evaluation theory is concerned with understanding evaluation in general terms, whereas program theory is the explication of the theory of action for a specific program; specifying what a program does, and how these actions are meant to achieve the program’s intended outcomes.

Evaluation theorists and practitioners have written extensively over recent decades, providing evaluators with an evolving array of choices at all stages of the evaluation process. Taxonomies variously classify evaluation models according to such criteria as methods used or underlying assumptions. This classification coupled with the emergence of an increasingly diverse range of evaluation models have allowed evaluation designs to be tailored to the context of the evaluand and the purpose of the evaluation. Program evaluation reflects this diversity. While there is a commonly perceived hierarchy of evaluation models in terms of generating robust data, it is also fair to say that while robust results are always desired, the evaluation model selected may be dependent on a broader range of factors than just the elimination of potential confounders. Speaking in
support of matching investigative methods to the question to be answered, Schopler (2005:709) cites a 2005 Presidential Task Force on Evidence-Based Practice in Psychology (EBPP) draft report which concedes that “perhaps the central message of this task force report...is the consensus achieved among a diverse group of scientist, and scientist-clinicians from multiple perspectives, that EBPP requires an appreciation of the value of multiple sources of scientific evidence.”

One of the earliest evaluation models developed was the objectives-based approach pioneered by Ralph Tyler in the 1930s. Scriven’s formative and summative evaluation dichotomy espoused in the 1960s was one of the first to expand on Tyler’s model and this has subsequently been followed by a range of models, designs and foci which now proliferate the evaluation literature. The varied requirements of funding agencies and legislation have helped foster diversity in evaluation approaches. Specifically, evaluation approaches now include orientation to the servicing of different stakeholder needs, to different types of programs, and to the evaluation of programs at different stages and for different purposes. As a consequence, evaluation methods and models reflecting differing discipline and service frameworks have evolved to accommodate different needs and different evaluation contexts.

Well conducted randomised clinical trials (RCTs) are deemed to be the gold standard in providing efficacious data on which scientific advances are built. The strength of RCTs lies in their characteristic isolation of individual variables for testing purposes. However RCTs for evaluations may not be as ideal as previously thought for two reasons. The first is that an as yet unidentified factor may be influencing treatment effects, even in a clinical study. Secondly, the treatment effect may not be transferable to a normal setting because of the influence of this clinical confounder or some other unknown factor(s). A variable which passes for cause in experimental research, may in fact be insufficient cause by itself to be credited with deterministic causation, and as such is guaranteed only to be what Mackie (1974:62) calls an inus condition. ‘Insus’ is an acronymic term for ‘insufficient but non-redundant part of an unnecessary but sufficient
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condition’. An inus condition exists when the variable under investigation is embedded in a larger set of conditions (which may not even be known to the original researchers) in order for effectiveness to be replicated in other settings (Shadish et al., 2002).

But positivist experimental designs now sit alongside other designs which recognise that not all interventions are conducive to traditional quantitative research, or even quasi-experimental research (Stevahn, King, Ghere, & Minnema, 2005). Theorists who argue for the accommodation of alternatives to experimental design evaluations believe that the latter do not capture important issues such as those associated with practical constraints, situational demands or accumulated wisdom. Case-studies are examples of such alternative evaluation designs.

The purpose and methods used to conduct program evaluations espoused in the literature reflect respective writers’ implicit or explicit evaluation theory. Regardless of the model, approach or design used, Shadish et al. (1995) suggest that evaluators should be aware of their underpinning conceptual framework which should address the following key questions:

- **social programming**: What are the important problems this program could address? Can the program be improved? Is it worth doing? If not, what is worth doing?
- **knowledge use**: How can the results be used quickly to help this program?
- **valuing**: Is this a good program? By which notion of ‘good’?
- **knowledge construction**: How do I know this? What counts as a confident answer? What causes that confidence?
- **evaluation practice**: What is feasible within the constraints operating? What is my role: educator, methodological expert, judge of program? What questions should I ask? What methods should I use?

(adapted from Shadish et al. 1995:35)
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3.2.1 Evaluation paradigms
Different evaluation theorists and practitioners advocate varying paradigms for evaluation. The term ‘paradigm’ refers to the broad epistemological position adopted by the researcher and this is dependent on a range of factors, such as the purpose of the evaluation, cost and ethics. The paradigm chosen also may depend on the stage of development of the program: whether it is a pre-intervention, pilot, on-going or completed program. While partisan approaches do exist, there is increasing evidence in the literature acknowledging the value of different paradigms: There is no one perfect paradigm which produces the ‘true’ result.

The first task therefore is to select the purpose of the evaluation and then the evaluation methods which best suit that purpose (Mark, 2003). For instance, some evaluation theorists argue for a paradigm which uses practice as a conceptual framework: The human dynamics inherent in that practice constitute the heart of what a program is and thus the core of what should be evaluated. An evaluation using this paradigm would need to explore what is valued, by whom and for what reasons. The results of such an evaluation could contribute both at the local program level and the more general policy level, the latter of which could then both inform and regulate practice and also support the supply of resources necessary for effective practices to operate (Schwandt, 2005). Others may argue for a user-focused evaluation which foregrounds stakeholder needs. A user-focused evaluation paradigm requires evaluators to engage with and directly address the needs of the primary audience of the evaluation.

Pawson and Tilley’s (1997:63) paradigm of realistic evaluation argues that social programs are “undeniably, unequivocally, unexceptionally social systems. They…comprise the interplays of individual and institution, of agency and structure, and of micro and macro social processes.” These authors argue that the context in which the program operates (C), plus the mechanisms of the program itself (M) combine to produce the program outcomes (O). All three are therefore necessarily key elements in the evaluation process, with the primary focus being what works for whom, and in what circumstances. The social reality in which the program operates is recognised and accommodated. In essence,
evaluators subscribing to this paradigm highlight the complexity and multi-dimensional context in which a program operates, which in turn has implications for how these programs are evaluated. Unlike paradigms which have a positivist base, Pawson and Tilley’s approach to program evaluation does not necessitate a control or comparison group. While RCTs seek to prove association, realistic evaluation requires explication of the causal process. The focus then of realistic evaluation is to help understand and report the CMO configurations and to attribute the outcomes within the context of the program and its operating mechanisms. Pawson and Tilley’s social and contextual perspective is supported by Guzman (2003) who adds that program evaluations should serve social justice functions, and that as such, they need to accommodate constructivist methodologies.

Building on the same theoretical construct, Virtinen and Uusikyla (2004) suggest that a socially embedded course of program intervention would include people who, with specific intentions and on the basis of a defined situation, develop a program (for beneficiaries) which is implemented by other persons who likewise have their own intentions and definitions of the situation. The beneficiaries similarly have their intentions and perceptions of the situation. As a result, the program effects are influenced not only by those who conceptualised and initiate the program, but also by the various other players associated with all stages of the program implementation.

The notion of a social program being a social system is further supported by Rossi, Lipsey and Freeman (2004) who incorporate program context and usefulness of program evaluation in their definition of program. They define it as:

The use of social research methods to systematically investigate the effectiveness of social intervention programs in ways that are adapted to their political and organizational environments and are designed to inform social action to improve social condition. (Rossi et al., 2004:16)
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The notion of assessed worth of a program as determined by appropriate standards or criteria, and the use of the evaluation for some worthwhile purpose, are central to this conceptualisation of program evaluation. The question is what standards should be used to determine merit, and whose values are reflected in these standards? The identification of different stakeholder goals, beliefs and assumptions can help clarify these items, as consistency in stakeholder perspectives provides an indicator of perceived program coherence across stakeholder groups and also a greater likelihood for program support.

The above discussion provides an example of the types of concerns which are addressed by evaluation theorists who assert varied and often conflicting perspectives on the topic of evaluation. It is the evaluator who then needs to make a judgement as to what model to use. The skill is to choose one which best suits the context and purpose of the evaluation and yet also provides reliable data. That is, the evaluator needs to select an evaluation design based on defensible criteria. Program evaluation paradigms (classification systems) can assist evaluators in making this choice. Ultimately, evaluators need to decide on the paradigm for their evaluation on the basis of their explicit or implicit theoretical perspective.

3.2.2 Theory-based evaluation

Christie and Alkin (2003) embrace such a conceptual framework for evaluation as that outlined by Shadish et al. (1995) when they argue that theory-based evaluation can usefully employ the underlying program theory to steer the evaluation activities and provide a framework for measuring program effectiveness. That is, the program theory holds centre stage in the evaluation process. Crano (2003:153) concurs, believing that “construct validation requires a theory, an understanding of the hypothetical network of causal associations and non-causal relationships among variables.”

Other writers similarly acknowledge the interrelationship of program mediating factors and recognise the potential for evaluation to serve more than one function (Cronbach, 1982; Pawson & Tilley, 1997). This latter perspective invites
consideration of a broader conceptual base for conducting evaluations. It also reflects an ethos that appreciates the potential for evaluators to provide feedback to stakeholders in ways that contribute to their decision making and program improvement. If we acknowledge that evaluation can not only determine merit, but also can contribute to understanding of mediating influences affecting program outcomes, then the position of program theory as the key element in the evaluative process is assured. This is regardless of whether the focus of the evaluation is on program development, implementation, impact, or all of these. It also positions evaluators in a broader role, one which includes serving educative and utilitarian functions.

Not all theorists subscribe to the value of theory-based evaluation. Scriven (1994) for instance does not support this approach. He argues that the primary function of evaluation is to establish the merit of a product or program, and not the reasons why it is valued as it is. He plausibly therefore concedes that the development of a program theory is subsidiary to the process of evaluation. But Scriven’s argument does not negate the value of theory-based evaluation. His argument is more concerned with the opportunity/cost of evaluation resources; that is, with pragmatic constraints. As such, his argument should not be used to justify discarding evaluation theory as a tool for program evaluation.

Cook (2000) also is critical of theory-based evaluation. He argues that at any one point in time there can be a multitude of possible versions of the theory. As such, he would argue that the model needs to be open (and therefore incorporate reciprocal feedback loops), that the timelines for outcome achievement are uncertain, that partially valid measures generate ambiguity of result, that epistemologically theory-based evaluation does not accommodate falsifying between competing models which each fit the data, and lastly that there is no valid means of determining whether changes attributed to the program would have happened anyway.

Counter arguments to Cook’s (2000) criticisms include for instance den Heyer’s (2002) temporal logic model, the use of stakeholders to indicate the earliest
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possible timelines for program effects, triangulation of data, and the use of theory as a tool to guide the evaluation rather than the theory being an end in itself. Cook’s suggestion of using a well matched comparison group, preferably using random assignment to assist identifying causal effects, is problematic for research conducted in schools, given the range of contextual confounders at both the organisational and individual levels.

3.2.3 Program evaluation

Owen’s (2006) classification theory for evaluation, and in particular his distinction between operational categories of evaluation, provides a constructive orientation and methodological direction for program evaluators. Several of his evaluation forms are appropriate to the research conducted for this thesis because they can be conducted while the program is operating. Further, each of Owen’s evaluation categories encompasses different foci and issues, thus potentially facilitating usefulness of the results to a broad range of stakeholders. Of the forms discussed by Owen, clarificative, interactive, monitoring/impact forms of evaluation are appropriate to the Correa research.

Clarificative evaluation

In the early 1960s Cronbach first introduced the idea of re-orienting evaluation so as to help educators improve their decisions about how to educate. Stufflebeam and Webster (1981) extended this idea to conceptualise evaluation as a process which could help educators make defensible decisions designed to meet students’ needs. These authors aptly named this approach a ‘decision-oriented’ evaluation study. Owen (2006) would call this clarificative evaluation. As its name implies, it is used to provide developmental feedback to program developers and implementers such that they can make timely adjustments to affect program outcomes. It can also be used to clarify and unravel the complexities of a program: an important process to inform an evolving program. For instance, it can illuminate program design (including program delivery), identify the intended outcomes and how the program is designed to achieve them, identify how well the program is designed to achieve its underlying rationale, identify what the program elements are and which need to be modified so as to maximise intended
outcomes, and identify what aspects of the program are amenable to a subsequent monitoring or impact assessment. Lack of fidelity of the implemented program to what was planned is not necessarily indicative of program failure. It may be that the program was adjusted for some good reason. A case study evaluation should capture any such modification of the actual program from its conceptualised plan and the reason for such modification.

Such systematically assembled data can be used for several purposes. It can provide enlightenment to a range of stakeholders, including those concerned with design and/or implementation aspects of the program such as managers, service providers and sponsors. For large, complex and multi-site programs, this information may be particularly useful and may be used as a basis for subsequent program modification (Patton, 1997; Weiss, 1983). Thus, clarificative evaluation is:

Concerned with analysis and specification of the logic or theory of programs; establishing the feasibility of program design; encouraging consistency between program design and implementation; and providing a basis for subsequent program monitoring or impact evaluation. (Owen, 2006:192)

Program theory (sometimes called program logic) is a key evaluative tool used in this research.

As one form of clarificative evaluation, program theory provides a theoretical model which states program objectives explicitly and arranges them in a hierarchical manner to indicate the progression from proximal to distal objectives. These objectives are then documented together with the assumption(s) underlying each and the activities planned to achieve them. As such, program theory is concerned with program design, and in particular, the means-ends hierarchy, which in turn provides insight into the rationale supporting causal argument.

Interactive evaluation

Like clarificative evaluation, interactive evaluation (sometimes called participatory evaluation), is appropriate for programs which are still developing. It recognises that those working at the local level have the most intimate
knowledge of program issues and operating parameters, and as such, are best positioned to understand situational problems and deal with them appropriately. That is, those working at the local level collect data related to the program in a systematic manner, and after due consideration, use this information to refine and/or re-orient the program. Such an approach creates a culture of learning for the organisation within which the program operates. Interactive evaluations also explicitly incorporate the values perspectives of various stakeholders when program effects are reported.

**Monitoring/impact evaluation**

Programs are devised and implemented in order to produce some benefit for a defined population. These benefits can be measured at various stages of the program, for instance at the end of a pilot program, during an on-going program, or at the conclusion of a program.

Monitoring evaluation provides an on-going, systematic means of determining whether a program is being delivered effectively to the target population. It can include evaluating key aspects of both process (implementation) and outcome (impact) aspects of the program. Program process evaluation, a component of monitoring evaluation, is concerned with whether the program is being implemented as intended: whether there is program integrity. As such it is also complementary to determining the impact of a program. Outcome monitoring in comparison is concerned with evaluating the effects of the program. That is, what effect has it had on the social conditions it was intended to improve? (Rossi et al., 2004). For evaluators, there is then a clear linkage of this monitoring process to program theory.

Program process monitoring generally serves a managerial function, providing demonstrated accountability through the documentation of processes and performance. For the program being evaluated for this thesis, this translates to evaluating program fidelity including the extent to which program implementation including service delivery to students is consistent with the model specified in the formal program logic, compliance with legal and professional...
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policies and parameters, articulation with other agencies, cost effectiveness, and service shortfalls.

Whilst process monitoring evaluation provides a level of accountability through systems analysis or performance management systems, it also has the potential to also inform program improvement. Typically, monitoring evaluation uses a log-frame format which details program inputs and outputs. But alternative methods for monitoring programs admit a broader range of performance information than can be obtained solely from performance indicators and other quantitative measures. Performance stories, based on a tentative program logic but which incorporate judgements are such an example of an alternative monitoring technique (Owen, 2006).

An impact evaluation, whether it be conducted as a summative or formative event, includes determining the range and extent of program outcomes (both intended and unintended), providing evidence of cost-benefit value of the program, and informing future decisions regarding program replication or extension (Owen 2006). Approaches consistent with impact evaluations include “objectives-based; needs-based; goal-free; process-outcomes studies; realistic evaluation; and performance audit” (Owen, 2006:255).

There are various ways that impact evaluations can be conducted. Certainly designs which seek to reduce many competing factors which may otherwise contribute to the changes in the target population are highly regarded. Robustness of results is strengthened when we can say with greater certainty that the changes are due to the program and not to some other factor. The critical issue is “whether the program produces desired effects over and above what would have occurred rather without the intervention or, in some cases, with an alternative intervention” (Rossi et al, 2004:235).

However, as discussed earlier, there are other evaluators (Cronbach, 1982; Funnell, 1997; Owen, 2006; Pawson & Tilley, 1997), who would claim that it is not always possible, or even desirable, to conduct evaluation in this manner.
They argue for alternative methods which capture the broader context in which the program operates because in reality, program components do not exist in isolation, but exist within a multi-factorial milieu. This is not to say that individual components of a program should not be isolated and rigorously evaluated as to their effectiveness. It is through this process that program designers can select what they believe are the most appropriate methods to be included in a broader program. Nevertheless, there is also a place for evaluating whether, on balance, a multi-factorial program has had some effect on a defined population.

Pre-requisites to conducting an evaluation of program outcomes include that the evaluator(s) has well articulated program objectives, and that the program is sufficiently underway and in a sufficiently complete and final form to have a reasonable chance of generating the intended effects. The next stage is to demonstrate causality and/or effectiveness, depending on the purpose of the evaluation. Undeniably a multitude of factors interact to determine whether a social program does in fact produce the outcomes it seeks to achieve or not. It could be argued for instance that maturation alone may account for changes in student learning and behaviour, especially if the students are within the age range for primary school attendance. In order for the results of an evaluation to be credible, it must generate results which show that changes in student learning and behaviour are additional to what one would expect through normal maturation processes.

3.3 Reliability and Validity

Regardless of the research method selected, issues of reliability and validity will impinge on the credibility of study findings. Thus, it is pertinent to consider both of these issues, and specifically, the application of each to case study research.

3.3.1 Reliability

Reliability may be thought of as a measure of the extent to which the results could be reproduced if the data collection procedures were repeated: a measure of
procedural consistency. It is a necessary but not sufficient criterion for data acceptability. However the case study approach is not as amenable to precise replication as a quantitative approach. The case study conducted for this thesis sought to achieve reliability through four main avenues. The first was by providing contextual and program detail such that another person could replicate the evaluation process. Second, reliability was sought through collecting data from multiple sources in relation to each student. This provided a means of cross-checking outcome data at the individual student level. Third, reliability was sought through including as much raw data in the results reported as feasible. Lastly, reliability was sought by cross-checking the study findings as interpreted by myself as the researcher, with school staff. That is, efforts were made to ensure that the data as recorded were an accurate reflection of participant perceptions and information.

3.3.2 Validity

Validity on the other hand provides a measure of how well the results provide a true and accurate measure of what the study was designed to measure. The standard measures usually cited throughout the research literature are those developed for measuring the validity of positivist research. But increasingly researchers such as Lincoln and Guba (2000) argue that the concept of validity is conceptually flawed and that it is really authenticity or trustworthiness that is being sought. As such, they argue that the criteria for measuring trustworthiness of results should be appropriate to the paradigm being used. Bryman (2001) supports this line of argument and proposes that qualitative research be judged by alternative criteria for validity than those advocated for positivist research. He suggests that this trustworthiness be measured by four criteria, these being credibility (which parallels internal validity); transferability (which parallels external validity); dependability (which parallels reliability); and confirmability (which parallels objectivity).

Broadly speaking the concept of validity is used in several different ways. These include: measurement validity (sometimes called construct validity), external validity, internal validity, and ecological validity (Bryman, 2001). Measurement
validity and ecological validity are both more applicable to quantitative than qualitative research. Measurement validity is relevant when needing to be sure that “a measure that is devised of a concept really does reflect the concept that it is supposed to be denoting” (Bryman, 2001:30), while ecological validity is concerned about whether findings from research conducted in an artificially contrived environment are applicable in the context of normal everyday settings.

**External validity**

External validity is necessary for findings to be generalisable beyond the current study. To achieve this, a study needs to determine whether there is any systematic bias such as the inclusion of key environmental variables as a constant in the study but which will not be constant in replications of the study in other settings. External validity is a crucial concern for experimentalists, but does not hold the same status for qualitative research where generalisation is often of secondary or marginal importance compared to understanding the interconnectedness of the study elements.

Criticisms of case studies include that they do not lend themselves to external validity (and thus generalisability), that they lack rigor and reliability, and that they are more prone to evaluator bias. Positivist researchers can claim external validity of research design based on probability-based statistical theory. Case study researchers cannot similarly argue for external validity on probabilistic grounds as the research design is conceptually different. They can argue that their findings are generalisable on a priori grounds provided the study is well conducted, takes into consideration all the major causal factors, and explicitly considers the factors that support and negate the likelihood that study results will be reproducible in similar circumstances. For instance, if the study findings are supported by the existing published literature, then it shows that the issues are significant and worthy of further investigation. Second, if the study persuasively makes a case for causal pathways that would plausibly apply in other instances, then the findings can be generalised. The high level of detailed knowledge that is available in well-conducted case study investigations provides that evidence of causal linkages. This is often referred to as ‘thick description’ (Ryle, 1971;
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Smith, 1980). Third, any causal linkages hypothesised from the case study can be tested with subsequent research which may well be of a more positivistic nature or otherwise have access to probabilistic arguments for generalisability. In this case study for example, specific and finely articulated pedagogical principles and environmental conditions are supported in the literature as key factors which impact on learning for students with autism; the study generates knowledge based on many detailed observations of student interaction with their environment. Lastly, if we understand which parts of the context enhance or inhibit the achievement of program objectives, then this informs the generalisability of the program to other locations.

Thus, if this study demonstrates that, for instance, the combination of participant selection, constructed teaching environment and staff training are key determinants of program outcomes, and if these elements are reproducible at other times and places, then provided other important contextual elements are similar, it is likely that the findings will apply in other instances.

Further, given the heterogeneity of the underlying condition and behavioural symptoms of autism, any one education/treatment approach may benefit some but not all those included in the program for reasons we do not as yet understand. While evidence from an individual case study does not constitute a satisfactory level of evidence to argue any measure of generalisability, the level of confirmation improves with successive individual case studies which report similar findings.

Internal validity

Internal validity needs to be intact for effectiveness to be confirmed, and as such, is important for qualitative as well as quantitative research. The higher the internal validity, the stronger the authority with which we can say that the results are due to the intervention and not to some other cause. But the study also needs to be sensitive enough to detect the likely extent of any effect (and thus avoid Type 2 errors) as well as accurate enough that it does not attribute effect when indeed there is none (and thus avoid Type 1 errors), in order for internal validity
or credibility to be confirmed. Generally a case study will have better internal validity than a RCT, especially in the case of a complex social or educational program where the intervention is difficult to define and almost impossible to distinguish from contextual factors.

Perspectives on how to achieve internal validity vary, with the role of context and confounders epistemologically contentious. To achieve internal validity from an experimental perspective, a study seeks to identify and remove other potential threats (rival explanations) to the validity of the findings beyond the intervention itself, such as the influence of environmental factors or bias in the selection of participants. Thus experimentalists seek to strip all context from a study apart from the intervention. Alternatively they may seek to identify the contextual elements such that each can be measured separately or collectively. Naturalists on the other hand deliberately seek to identify the detail of the context and reflect it in the study findings, believing that it is indeed the context which constitutes crucial mediating influence (Pawson & Tilley, 1997). The latter recognise that all social programs are introduced into an existing set of social conditions and that the program may well work because of the configuration of these conditions. Rather than trying to eliminate contextual factors, naturalists seek their inclusion. It is precisely this contextual detail which is particularly important in this research where indeed it is difficult to differentiate the program from its context. Internal validity therefore refers to the validity of any claims about a particular intervention made as a result of the research efforts. It is also a measure of causal relationship: a measure of the demonstrated functional relationship between intervention and the target behaviour. It is the primary consideration in deciding whether the program effects are due to the program and not some other explanation.

Convergence of program outcomes as measured via differing data gathering techniques provides one method to ensure internal validity in qualitative research. This may be referred to as the triangulation of program outcomes. Other methods of checking internal validity include checks of the data and tentative interpretations with stakeholders from whom the information is sought, gathering
data over a period of time, peer examination, participatory or collaborative modes of research, and clarifying the theoretical orientation and assumptions at the outset of the study (Merriam, 1998). In the absence of higher order confirmatory data, case studies, and in particular case study evaluations, can also use sequenced logic models as a pattern matching strategy (Yin, 2003).

Threats to internal validity include poor instruments, mis-specification or lack of explanation of detailed causal linkages, failure to consider other causal factors such as alternative parallel interventions, subject maturation or some other unanticipated confounder. Because case studies try to identify and incorporate case detail in an overt and explicit manner, they hold a greater possibility of detecting such unanticipated confounders than a research design which deliberately attempts to factor out such confounders.

Maturation for instance could be deemed a significant confounder in the Correa study because the students remain in the program for an extended period of time. (The actual period is student specific, but for the student cohort included in this study, the period has ranged from two to seven years.) As Correa is a primary school class, the students are undergoing fairly rapid developmental change, particularly as they approach adolescence.

In this investigation, interviews were conducted with the teacher who taught seven of the students in their pre-Correa year and then was appointed as the inaugural teacher for the Correa program. His perspective afforded a level of moderation of the threat of maturation by providing a direct comparison of outcomes achieved by these seven students in the years immediately pre- and post-Correa introduction. He also had many years experience in working with students with autism that enable him to provide a comparative indication of the effects of the Correa program in comparison with an expected range of maturation. As these data were obtained retrospectively, they cannot be treated as pre-intervention data and thus do not provide the basis for selecting a pre-post research design.
Methodological rigor

Methodological rigor influencing internal validity and reliability was achieved in this study via a range of techniques. First, the case study research method selected was appropriate for the context of the study, its purpose and the intended audience. Second, rigor was achieved by ensuring that interview questions were unambiguous and provided for a broad range of perspectives, issues and information to be canvassed. Third, as the recording of data needed to be accurate and trustworthy, responses were clarified as the interviews progressed, with the data being scribed as well as recorded on audiotape. Fourth, the collection of data was systematic rather than serendipitous, with interviews occurring at set times, using similar interview methods and similar recording of responses, all of which were subject to systematic analysis. All transcribed data were coded so that they are traceable by source. Fifth, the triangulation of data from different personnel and different sources strengthened the robustness of inquiry results.

Qualitative research also needs to include interpretive rigor in that the researcher needs to collect sufficient data as warranted by the research question. But how do we know if we have enough data? The answer is likely to be when the researcher believes that the findings from multiple data sources answer the questions arising from the pre-defined program theory, and when sufficient breadth of information has been collected to answer the research question (Bryman, 2001). In this instance the cross referencing of data from different stakeholders at the individual student level, the comparison of this with school records, and the referencing of findings to the program theory were all means of doing this.

Methodological rigor is also provided via the use of an audit trail for verbatim staff and parent responses used to illustrate discussion points throughout this thesis. Where this occurs, each quote is followed by a bracketed code, comprising a series of letters and numbers, such as (IS4). This code enables each quote to be tracked to its source. The interpretation of the letter codes is as follows:
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‘I’ Individual interview
‘F’ Focus group interview
‘S’ Staff
‘P’ Parent
‘B’ Stakeholder specific section (Section B) of the individual interview schedule

Following these letters either one or two numbers can be found. The first of these refers to the question number on the relevant questionnaire schedule. For individual interview responses, there also is a second number which indicates the student number to which this response refers.

Bias

The role of the researcher is critical in the conduct of case studies. The researcher certainly needs to be clear on the conceptual framework of the study and have well developed research skills. But he/she also needs to be sensitive to information which may challenge the mainstream perspective, to delve deeper, as well as to be able to register the nuances of conversation and non-verbal communication and act on these when appropriate to do so. The researcher needs to take care that bias is not adopted in the data collection, recording, analysis and reporting processes. Open-ended questions in interview schedules, the inclusion of a multiple of stakeholder perspectives, and the recording and coding of all responses help ensure that such bias in the selection and recording of information and perspectives is minimised. The ability of the researcher to perceptively analyse the content of conversation is also crucial to avoid evaluator bias.

In relation to this study, I am external to the development and implementation of the program being evaluated, but did mentor an action research process undertaken by a small group of staff some years earlier. This earlier process comprised a formative stage in the development of the Correa program. My mentor role included meeting with a group of the staff on several occasions (namely the Principal, a class teacher, a School Services Officer and an advisory teacher from Autism SA). At these meetings my role was to help the group
clarify their research question and other research processes rather than assist the actual development of their conceptual ideas. I was not at any stage a consultant on the development of the intervention. However, knowledge gained through the mentoring experience has helped me understand the conceptual underpinnings of the program. Such prior involvement also had the potential to influence the results of this study through my selection and analysis of data, or bias in the reporting processes.

Efforts have been made to minimise this source of bias by routinely cross-checking information with multiple stakeholders. The provision of a draft of the study findings to stakeholders for them to check that it accurately depicted their recollections of conversations, perceptions and responses has been used in this study to avoid evaluator bias. On several occasions, staff chose to expand on what had been reported, thus adding clarity and depth to the findings, such as with the content of the curriculum and teaching methodology. Staff also elaborated on the student reporting processes and how these had evolved over time. There were no instances where staff or parents thought that their views had been misrepresented. The transcribed opinions of parents and teachers and the provision of direct quotes from them in this thesis were also attempts to minimise interpretive error in recording and relaying their views. Of the staff who participated in the earlier action research project, the only one involved as an informant in the current research was the Principal.

It is acknowledged that recall bias is a potential research confounder as the accuracy of interview data is dependent on the observation skills and accuracy of recollection of all stakeholders included in the study. The process of conducting individual interviews with a minimum of two, information-rich informants per student was an attempt to reduce this source of bias.

It is also acknowledged that there is a potential for perceptions gained retrospectively to over-estimate program effects as subjects recalibrate assessment of past performance so as to cast the present findings in a better light (recall bias) (Hill & Betz, 2005). Research suggests that this recall bias decreases
when there is no motivational tag which ensues from over-estimating program effects. However there is evidence indicating that “this method is useful when the goal of the evaluation is to assess individual perceptions of change” (Arnold, 2006:264). In this instance, it is possible that staff may overestimate program benefits because considerable time, effort and expense has been invested in this education program, which is believed to be in the best interests of students. However, it could also be theorised that because staff are motivated by concern for student welfare and learning, they will present a realistic appraisal of program effects, and thus there is no real motivation to overestimate program effects. Parents on the other hand, have a vested interest in presenting the program effects realistically so their child receives the best outcome from their schooling as possible, (unless they are in denial about the extent of their child’s disability).

Bias may be introduced into the research results via data collected from documents. Inaccurate and unreliable recording of Accident and Incident Reports, changes of reporting procedure or criteria for reporting, and incomplete document retrieval constitute potential sources of bias. School reports can also introduce bias through inaccuracies, omissions, changes to reporting parameters or reports which lack categorical and criterion consistency.

3.4 Research Design

Both the assessment of children with severe disabilities and the evaluation of social programs suffer inherent methodological problems. Because communication is one of the core impairments of autism, low-functioning children are unable to participate in verbal response style investigations. An alternative means of gathering information is required, such as observing the naturalistic behaviour of the child.

Thus it is not surprising that naturalistic methods, including case studies, have been preferred to the more formal experimental designs when evaluating school-based educational programs for children with communication impairments.
3.4.1 Case study method

Case study method allows answers to the ‘what’ and ‘how’ questions of program effectiveness because it allows the research to draw from the breadth and depth of available evidence using a variety of data collection methods. It enables an evaluation to determine the outcomes as well as the processes and mediating factors affecting the achievement of those outcomes. In effect the case study provides a framework within which a range of qualitative and quantitative research methods may be nested.

While different writers have varying perspectives on what comprises a case, conceptual commonalities allow the term to be variously defined without compromising the integrity of interpretation by another. In a case study, the ‘case’ which is investigated is usually classified as a noun. For instance, a case may be an entity such as a school, a product, a person, or an identifiable group. A ‘case’ may also be more conceptual in nature, such as a service (e.g. health service) or a program (e.g. training program) (Stake 2006). One definition of a case study is provided by Yin (2003:13). He defines it as “an empirical inquiry that (1) investigates a contemporary phenomenon within its real-life context, especially when (2) the boundaries between the phenomenon and context are not clearly evident.”

By way of comparison, Merriam (1998:xiii) defines case study from a qualitative or naturalistic stance, describing it as “an intensive, holistic description and analysis of a bounded phenomenon, such as a program, an institution, a person, a process or a social unit.” Despite their different perspectives, both Stake (2006) and Merriam acknowledge the concept of interdependence: sometimes it is impossible to meaningfully dissect an entity to be researched into discrete components, each of which is to be studied in isolation. Stake argues that in case studies the focus of attention is the case, not the constituent population or sub-units. Nor indeed is it the individual methods by which the case is operationalised. A ‘case’ according to Stake has “organic systemicity” (Stake, 2006:2); it is an integrated entity. The emphasis in a case study is on depth of understanding. Idiosyncratic detail and contextual complexity are used to
enlighten, not confound the research findings. These perspectives on the nature of case study as a research design are consistent with Smith’s (1980) argument that a research method needs to be appropriate to the evaluand, the purpose of the study, the context, and pragmatic constraints.

In acknowledging that evaluand and context cannot always be distinguished, Yin (2003:14) extends the definition of case study to incorporate data collection and analysis, and theoretical framework. He states that the case study inquiry:

\begin{enumerate}
\item \textit{copes with the technically distinctive situation in which there will be many more variables of interest than data points, and as one result}
\item \textit{relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and as another result}
\item \textit{benefits from the prior development of theoretical propositions to guide data collection and analysis.}
\end{enumerate}

A case study method can be profiled as being dependent on the triangulation of data from multiple sources, being contextually rich, and including single case study research as well as multiple case study research (Yin, 2003). The precise case study design is determined by the purpose it is to serve. A causal case study evaluation requires presumed causal links to be substantiated by the field evidence. This usually necessitates a multi-step process which reflects the detailed complexity of the case and also attends to the direction and complexity of causal linkages. Although case studies benefit from theoretical development to guide data collection and analysis, the level of specificity required in the theoretical construct is of a much lower order than would be required in a RCT trial. In short, case studies provide a comprehensive research strategy which is appropriate to particular circumstances, including educational research.

\section*{3.5 Chapter Summary}

Ultimately, evaluators need to choose an evaluation method which is practical, feasible for their purposes and which will produce results which are both useful and credible. The research conducted for this thesis is the evaluation of a school-
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based educational program for students with autism who are chronic climbers and absconders. In this program, a range of strategies have been specifically identified and implemented for this target population and we want to know whether there have been any benefits to these students, their families and staff. The issue then becomes: Can the changes be attributed to the program and not to some other factors? As Powers (1988:160) states:

Like the developmental disorder itself, the behavioral assessment of autism is multidimensional. Specific manifestations of autism make necessary consideration of multiple sources of data and verification of progress in social, communication, perceptual and motor domains. No one method of data collection is adequate; rather behavioral assessment utilizing many methods with subsequent determination of areas of congruence, strengths and needs is most beneficial to treatment planning.

Powers thus reinforces the necessity for multiple methods of data collection for this research as student outcomes were used to inform the program outcomes.

In essence, there exists a range of methodological issues affecting the credibility of evaluation research findings. In general terms their credibility is dependent on the research design selected and the rigor with which it is implemented. The research design needs to be on balance one which is most appropriate to the nature and purpose of the investigation. Further, the research method needs to be reliable and valid.

A case study method was selected for this evaluation because it enables measures of program effectiveness to be ascertained within the normal operating context of the program. Contextual detail was deemed important for understanding why the program produced any outcomes detected. However, before turning to the application of case study method to the current research, it is necessary to look at the role and development of program theory on which the research design is based.
Chapter 4 - Correa Program Theory

4.1 Introduction

Program theory is concerned with program design, and in particular, a means–end hierarchy. Hence this chapter has been included to provide a statement of the anticipated program outcomes, the hypothesised causal linkages, and in consequence, to provide a basis for an effective evaluation design.

While the terms ‘program theory’ and ‘program logic’ are often used interchangeably in the research literature, some evaluators use the terms depicting inherent differences. (For further discussion of program theory and program logic nomenclature, please see Appendix 3.) For the purpose of this evaluation, the term ‘program theory’ will be adopted. It will be used in accordance with the more expansive understanding of the term, thus including the assumptions underpinning the program. However, when discussing the concept of program logic or program theory from the perspective of different writers, fidelity to their nomenclature will be maintained.

There was consensus amongst school staff that the Correa program theory model as articulated in this chapter represents the program in a coherent and accurate manner.

4.2 Program Theory

A program theory represents a program’s ‘theory of action’: a set of causal linkages that cover not only the relationship between lower and higher order objectives, but also the relationship between the program’s activities and immediate outcomes, various steps in the program’s activities, and so on. Steps in the causal sequence may be conveniently labelled as ‘activities’, ‘processes’, ‘immediate impacts’, ‘ultimate outcomes’ and so on, but these terms only represent an attempt to put infinitely variable elements into conveniently labelled boxes which are sequenced in a lock-step manner. The outcomes and impacts which are depicted discretely on diagrams are in fact on a timeline continuum of program effects. Evaluation of program effects (outcomes) determines the extent to which the program objectives were achieved and whether hypothesised causality can be substantiated. This sequence is depicted diagrammatically in Figure 3.
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Figure 3  Program theory model

It is acknowledged that program theory nomenclature varies from discipline to discipline. Thus in the interests of clarity, the following meanings will apply in this thesis:

• Context: needs, problems, opportunities
• Inputs: investments
• Processes: sometimes called program ‘activities’
• Outcomes: short-term, tangible, observable program effects
• Impact: long term program effects (ultimate outcomes)

The program theory model (Figure 3) combines the Context, Input, Process, Product evaluation model (CIPP) (Stufflebeam, 1971) with temporal program effects. It encompasses the program effects towards the right hand end of the diagram (processes, outcomes and impacts) and the mechanisms of the program towards the left hand end (context and inputs). The objectives hierarchy is also implicit in the right hand end of this diagram. Program processes (and associated immediate outputs) and outcomes tend to occur after a shorter time frame than would program impact. They also tend to be more proximal to the intervention in the causality chain. Program impact is used in this thesis to refer to distal program effects which generally occur after some considerable time lag from the time of intervention, and as a result of several steps in a lengthy causal chain. Thus, the program theory represents an if-then statement whereby if particular inputs and processes are implemented, then certain outputs would follow and from these in turn, outcomes and impacts would be expected.
4.2.1 Program theory and causality

The concept of causality has stimulated considerable debate in the research literature, with questions posed as to whether or how it is captured in the evaluation process. A causal relationship is deemed to exist if the cause preceded the effect, the cause was related to the effect, and no reasonable alternative explanation can be offered to account for the effect (Shadish et al., 2002).

While a program theory can be used to infer causality, it does not indicate a timeline for the achievement of program outcomes and impacts, other than that they occur in a chronological sequence. Program theory also uses the concept of proximal to distal program effects to indicate length of the causal pathway from the intervention. Proximal effects are those that happen more directly as a result of the intervention, whereas distal effects occur via a longer causal pathway. It is possible for proximal and distal outcomes to happen simultaneously or at a similar time. In short, temporal positioning usually but not necessarily infers causal proximity to the intervention.

Sridharan, Campbell, and Zinzow (2006) reasonably suggest that stakeholders who conceptualise, develop, implement and receive a program are best positioned to indicate the earliest time when outcomes at specific levels may be expected. This is relevant for evaluation purposes because the evaluator needs to be cognizant of realistic timelines for possible changes to have occurred and thus the feasibility of being recorded at the time the evaluation is conducted. As such, some knowledge of approximate timelines for expected change is relevant for assessing causal attribution (Cook, 2000). Stakeholder input then needs to be sourced on this point so that an evaluation does not denigrate a program which simply has not had sufficient time for the earliest possible outputs and outcomes to be registered. Even so, Sridharan et al. caution that it may be difficult for stakeholders to have a realistic timeline for achievement of program outputs if the program is highly innovative or not well designed. In the Correa program the recipients (students) are not well placed to indicate anticipated timelines for program effects, but relevant school staff (program initiators, developers, and providers) are better informed to do so.
Chapter 4 – Correa Program Theory

A causal tracking process is needed to build a strong, evidence-based case for causal attribution. This process includes determining the level of certainty required given pragmatic constraints of the evaluation, conducting a goal free search for all potential (or possible) outcomes, conducting an inductive exploration for the causes of those changes, exploration of alternative explanations, and testing the complete set of possible causal connections (that is, testing the revised theory model). This causal tracking process recognises that social and educational programs inevitably change and it is important that the program theory reflects any such changes that may occur in the program. Changes of this type are frequent in complex social and educational programs.

In addition to clarifying the cause-effect sequence, a program theory facilitates scrutiny of the program rationale and conceptualisation to determine whether the program goals and objectives are plausible to the social conditions they are intended to improve. A program theory also facilitates scrutiny of whether the rationale constitutes a credible approach to achieving that improvement (Rossi et al., 2004). Nonetheless, it must be remembered that program theory is only a tool to assist the evaluation. It is not an end in itself. Indeed, an evaluation driven by program theory may miss unintended program effects because it is too focused on what is intended to happen according to the program’s theory.

Rossi et al. (2004) dissect the concept of program theory to include three interrelated components. These are (1) program impact theory, (2) services utilisation plan, and (3) the program’s organisational plan. These authors clarify that the first of these is causal theory because it tracks the assumptions underpinning a cause-and-effect sequence in which particular program activities are the instigating cause of certain social benefits: the program effects. However, the difficulty remains to link any perceived effect with the efforts of the program. The problem is that there are often many confounders impinging on a social condition which are not under the control of the program. The second component tracks the assumptions on which implementation of the program is based, taken from the perspective of the recipient. The organisational plan maps the assumptions supporting managerial aspects of the program. In short, what is needed and why? This includes inputs required (such as human, financial and physical
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resources) and provision of other antecedent conditions (such as political liaison and approval). It also includes the selection of program activities and functions. Oftentimes the program theory is not explicitly and/or completely documented, or even espoused by those who initiated the program. Weiss (1997) calls this a ‘tacit’ program theory. Other writers refer to it as an implicit or assumed theory. Thus one of the early tasks of evaluators who use this approach is to develop a comprehensive program theory from a variety of sources which explicitly identifies the program components, activities, objectives and target populations in a systematic manner.

Using the program theory as a basis, an evaluator can generate questions and collect data to test the linkages connecting means to ends. Therefore in the absence of a control group, program theory can help establish causality by showing progress towards proximal and distal outcomes. The causal language needs to be broken into three steps, these being:

1. Has a change actually occurred (improvements, deterioration, side-effects)?
2. What is the evidence that the change was due to the program and not some other factor?
   (a) statistical comparison with equivalent control group
   (b) step-wise information on program process.
3. What are the realistic threats to validity? (Campbell, 1975).

If we are clear on the multivariate nature of a program, the contextual circumstances in which a program is delivered, and we know how effective it is in a given set of circumstances, then we are in a much more informed position to be able to offer meaningful comments regarding the circumstances under which the program has been found to be effective. In other words, “what works for whom and in what circumstances?” (Pawson & Tilley, 1997:85). Other people can then more readily draw inferences as to the aspects of the program which may or may not be able to be transferred to their setting because of contextual similarities or differences.

It can also be argued that the benefits of a detailed program theory include a “more strategic view of how ...actions contributed to positive outcomes” (McClintock, 1990:11). The effects of mediating factors had been raised some years earlier by Cronbach (1982) and what Pawson and Tilley (1997) writing more recently call ‘micro-
mediating processes.’ Evaluation which includes examination of program processes seeks to capture these mediating elements. McClintock (1990) further suggests that since the 1980s, program theory has been of central importance not only for illuminating internal program mechanisms per se, but also “their dependencies on broader organizational and political processes” (McClintock, 1990:1).

4.2.2 Purpose of program theory

Program theory can undoubtedly provide the basis or framework for evaluation. It is preferable for the program theory to have been generated by the program developers and implementers prior to the evaluation occurring, but this is often not the case. It may need to be developed by the evaluator at the outset of the evaluation. This theory can document the conceptualisation of the program and also the logic of program linkages. Additionally, for evaluation purposes, the program components need to be sufficiently specific to minimise ambiguity and tolerate scrutiny. General issues which should be addressed in the evaluation include: (1) how well the program goals and objectives are defined; (2) whether they are feasible; (3) whether the change process presumed in the program theory is plausible; (4) whether the program components, activities and functions (structure and process) are well defined; and (5) whether sufficient resources have been provided to support implementation of the program as intended (Rossi et al., 2004). It should be noted that for the results of an evaluation which uses program theory to be robust, the theory needs to be well developed and reasonably accurate.

Program theory can be used to establish the precise nature of an evaluand, enable agreement amongst all major stakeholders as to the nature and purpose of the program, and ‘capture’ an evolving program at a given point in time. It is also a useful tool to clarify objectives and assumptions underpinning a program and to guide the selection of program activities (processes or interventions) to achieve the outcomes sought. Implicitly, an evaluation which uses program theory provides a means of ascertaining whether the assumptions underlying the program are correct or not.

Program theory can also assist impact evaluation by comparing actual program outcomes (as measured through data collection) with those expected from the program theory. In effect, the program theory anticipates particular outcomes and provides the
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criterion for impact evaluation. In so doing, it evidences the extent to which outcomes have been achieved and thus allows judgements of merit. This is particularly useful when no pre-test or control group exists to provide baseline data against which program effects can be measured. Program theory is also useful in cases where program objectives have not been clearly articulated, which will render any subsequent impact evaluation problematic.

The program theory serves a dual purpose. It is intended to both facilitate the evaluation process and inform program refinement. Regardless of purpose however, the more clearly defined the program goals, the greater the potential for effective evaluation. While program logic in itself does not enable attribution of causality, it does provide a statement of the logical connections on which the program is presumed to be based. This logic can then be tested to see if the program was delivered in the intended manner. This information can also be triangulated with data from other sources to seek confirmation that the logical connection between intervention and outcomes is verified.

Thus, using program theory as the evaluation framework, the Correa program’s effects can be gauged by various criteria, such as stakeholder perceptions of the program processes and outcomes, timeliness of inputs, alignment of program outcomes with outcomes achieved via other studies reported in the research literature, levels of student and staff safety, and the extent to which a learning culture has been adopted within the school.

4.2.3 Development of a program theory

The evaluation literature describes a multitude of ways of developing the program theory, although the notion of a relationship between program intention, process and effects is the central concept. The method selected may be dependent on the developmental stage of the program, for instance, whether the program is still being designed, is operational or completed. The program theory may be developed from different sources, such as documents or informants or both. The program theory may also be represented in different structures and terms, such as via a series of proximal to distal outcomes or perhaps as inputs, processes, outputs and outcomes. But in each
instance, the articulation of a detailed sequence of a cause-effect relationship then both
guides and provides benchmarks for the program evaluation. Rossi et al. (2004:141)
indicate that a good program impact theory “describes a cause-and-effect sequence in
which certain program activities are the instigating causes and certain social benefits
are the effects they produce.”

The literature also demonstrates subtle definitional variations on the terms ‘outputs’,
‘outcomes’, and ‘impacts’. These terms generally correspond with sequential
immediacy of changes produced by a program. Effects which occur most directly from
the program activities are often called the proximal or immediate outcomes, whilst those
furthest along the causal chain are called distal or ultimate outcomes The more distal the
change from the time of intervention, the deeper the behavioural and societal effects
(den Heyer, 2002), but the more difficult it is to ascribe causality.

From the perspective of the Correa program, outputs may be perceived as the program
‘deliverables’ intimately linked to particular processes. For example, the amount and
nature of staff training or the resources provided or developed for the teaching and
learning process could reasonably be seen as an output, closely linked to that particular
process. Outcomes may be perceived as the immediate tangible and observable effects
brought about by the intervention, such as fewer accidents and reduced rate of
absconding. A program impact refers to long term (more distal) behavioural and
societal effect, such as improved quality of life for the Correa students, their family and
staff. Despite the importance of these longer term impacts for stakeholders and
program developers, they are sometimes not included in program evaluations because of
the considerable time lag between the intervention occurring and the emergence of the
impact.

The Context, Input, Process, Product (CIPP) evaluation model referred to earlier in
relation to Figure 3, is an early type of program logic model which also articulates
program effects in a temporal manner. Originally designed for pro-active evaluation,
Stufflebeam (1971) has argued that the CIPP model is also applicable for retrospective
accountability. According to Stufflebeam both the pro-active and post-hoc orientations
provide structured frameworks for the collection of data relevant to the evaluation.
Chapter 4 – Correa Program Theory

purpose, thereby enabling informed judgements to be made regarding program improvement and/or value. These orientations are depicted in Table 1.

Table 1 Use of the CIPP model for pro-active and retrospective evaluation

<table>
<thead>
<tr>
<th>CONTEXT</th>
<th>INPUT</th>
<th>PROCESS</th>
<th>PRODUCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROACTIVE (Decision Making)</td>
<td>Objectives</td>
<td>Solution strategy Procuderal design</td>
<td>Implementation</td>
</tr>
<tr>
<td>RETROSPECTIVE (Accountability)</td>
<td>Record of objectives and bases for their choice</td>
<td>Record of chosen strategy and design and reasons for their choice</td>
<td>Record of the actual process</td>
</tr>
</tbody>
</table>

Adapted from Stufflebeam (1971)

Funnell’s (1997) version of a program logic model uses a two directional matrix which provides for a vertical flow of temporal program effects (proximal to distal) and a horizontal flow of program components. The seven program components included are: (1) an outcomes hierarchy, (2) success criteria and definitions of terms, (3) factors that are within the control or influence of the program and are likely to affect the extent to which the outcome is achieved, (4) factors that are outside the control or influence of the program and are likely to affect the extent to which the outcome is achieved, (5) program activities and resources used to control these types of factors, (6) performance information required to measure the success of the program in achieving desired outcomes, and (7) comparisons required to judge and interpret performance indicators. This comprehensive model seeks to explicitly accommodate not only the temporal sequence of program effects but also contextual factors which impact on the level of success achieved at each stage of the causal chain.

Also based on the causal sequence, den Heyer (2002) developed a temporal logic model which incorporates a series of feedback loops which are shown as modified iterations of the initial linear causal connection. The first linear sequence commences with a statement of the program context, identification of the target population, goals, assumptions, objectives inputs, activities, strategies, outcomes and indicators. Each subsequent iteration commences with a statement of the program context change,
interim assessment, and modifications, before being followed by the same remaining elements as the first iteration. Thus this model, shown in Table 2, enables a chronology of the evolving program and the reasons why the changes were initiated.

Table 2 Temporal logic model for conveying the program story

<table>
<thead>
<tr>
<th>Program Planning Stage</th>
<th>Program Context</th>
<th>Target Population</th>
<th>Goals</th>
<th>Assumption</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Objectives</td>
<td>Inputs/Resources</td>
<td>Activities</td>
<td>Sustainable Strategies</td>
</tr>
<tr>
<td></td>
<td>Instalment One (add date here)</td>
<td>Program Context Change</td>
<td>Interim Assessment</td>
<td>Modifications</td>
</tr>
<tr>
<td></td>
<td>Objectives</td>
<td>Inputs/Resources</td>
<td>Activities</td>
<td>Sustainable Strategies</td>
</tr>
<tr>
<td></td>
<td>Instalment Two (add date here)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(den Heyer, 2002:27)

In order to incorporate these feedback loops it would be necessary to monitor the program at regular time intervals and then make timely adjustments to the program. Such program modifications can be detected retrospectively for evaluation purposes if they have been noted in school records such as in the agenda items and minutes of staff meetings, in program documentation, or can be recalled by stakeholders.

A hybrid of the models depicted in Tables 1 and 2 was used to understand the effects of the Correa program for students, their families and staff. It was also used to ascertain the success of the program from different perspectives, such as student safety, duty of care, learning, student behaviour and stakeholder experiences in dealing with the problem.
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The articulation of the Correa program from implementation to expected effects is one of three separate processes which together clarify different but complementary and interrelated aspects of the program. The other two processes are: (1) the development of an objectives hierarchy which details the proximal to distal objectives, and (2) identification of the assumptions underlying each objective.

4.2.4 Objectives hierarchy

An objectives hierarchy is based on the development of a chain of objectives as proposed by Suchman (1967). In reality it represents a continuous series of objectives which spans the implementation-focused immediate objectives through to the long-term impacts (ultimate objectives), with the former logically preceding the latter (Patton, 1997). The temporal assignation of objectives also indicates hypothesised causal linkages. That is, the achievement of the ultimate objectives is contingent on achievement of the more proximal objectives. For this reason, it is easier to attribute causality from more immediate outcomes than more distal ones.

Ultimate (long-term) objectives are the highest order program goals. They are often the impetus for a program being developed in the first instance and may only become measurable after the passage of considerable time. As broad statements of intent, each of these ultimate objectives incorporates a compilation of sub-component knowledge and specific skills. In the case of Correa, these composite elements provide the basis for more proximal objectives which are more amenable to monitoring via the routine student assessment processes. Teachers planning for the teaching and learning process use these shorter term objectives to guide their selection of pedagogy, curriculum content, resources and assessment.

The immediate objectives which underpin more distal objectives of the Correa program are the construction, furnishing and maintenance of an appropriate facility designed to meet the disability and ability needs of students with autism who are chronic climbers: the Correa facility. Medium term objectives include the ability of staff to select and effectively implement pedagogies which best support learning for these students. The medium-term objectives are also dependent on the development of a developmentally appropriate curriculum for each student. Both the immediate and intermediate objectives...
objectives underpin the achievement of the ultimate (long-term) objectives. The above discussion of the Correa objectives hierarchy is summarised in the Table 3.

Table 3  Hierarchy of program objectives

<table>
<thead>
<tr>
<th>IMMEDIATE Objectives</th>
<th>INTERMEDIATE Objectives</th>
<th>ULTIMATE Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Provide appropriate infrastructure and resources to meet the disability needs of students with autism who are chronic climbers.</td>
<td>1. Improve student safety.</td>
<td>1. Improve students’ quality of life.</td>
</tr>
<tr>
<td>2. Provide a developmentally appropriate curriculum for each student.</td>
<td>2. Increase student learning.</td>
<td>2. Students become more functionally independent.</td>
</tr>
<tr>
<td>3. Implement curriculum using appropriate pedagogy.</td>
<td>3. Reduce student sensory sensitivity.</td>
<td>3. Improve educational outcomes for individual students.</td>
</tr>
<tr>
<td>4. Improve staff knowledge and skills for teaching students with autism who are chronic climbers and absconders.</td>
<td>4. Students take increasing responsibility for their own learning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Strengthen school-home partnership</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Facilitate consistent approaches to learning at both school and home environments.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8. Improve staff work satisfaction.</td>
<td></td>
</tr>
</tbody>
</table>

The assumptions underpinning each objective can be sighted in Appendix 4.

From an evaluation perspective, it is important to track the program objectives from each of the above groups because this enables the evaluator to determine whether the implemented program has maintained fidelity with the planned program, the extent to which objectives were achieved, and the causal relationship between program elements.
4.3 Correa Program Theory

The Correa program theory is a theory-in-use causal model. That is, the causal model being tested in this evaluation is the causal model on which the program activities are based (Patton, 1997). In this instance, no explicit statement of the program theory had been recorded by the program developers, and as the program continued to evolve over time, it was important that a program theory be developed so as to encapsulate the program as a constant as it existed at the time when this research commenced and achieve consensus between informants as to what the program actually was.

4.3.1 Development of Correa program theory

As part of this evaluation, the tacit program theory developed by Correa staff was elucidated by myself via a literature search, a review of school documentation, and discussion with school staff including the school Principal. This elucidation occurred principally at the commencement of the evaluation process.

Stakeholders were an important source of information for the development of the Correa program theory as they were most closely linked to the inner workings of the program. The stakeholders included staff who initiated and taught the program, school managers, and parents. This process enabled staff to reflect on the program as planned, the program as implemented, and any differences between the two. This ensured that the evaluation addressed the program in the form it was delivered at the time the evaluation occurred.

Staff involvement in the process of developing a program theory has certain beneficial results. Benefits include that staff feel engaged with the evaluation, that they accept the legitimacy of the outcomes being evaluated, and consequently they are more likely to implement any changes recommended.

A further source of information for developing the Correa program theory was through my observations of the program. The resultant program theory is shown in Figure 4.
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One of the key factors precipitating the development of Correa was the inadequacy of the existing school buildings to provide a safe learning environment for students. Thus the physical environment was necessarily a key consideration in the design of the new

### Figure 4  Correa program theory

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Processes</th>
<th>Outcomes</th>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Purpose specific infrastructure and other resources (e.g. funding, equipment) provided</td>
<td>(1) Individualised developmentally appropriate curricula developed and implemented</td>
<td>(1) Calmer students</td>
<td>(1) Improved student quality of life</td>
</tr>
<tr>
<td>(2) Staff</td>
<td>(2) Multi-faceted teaching pedagogy applied</td>
<td>(2) Students more engaged with curriculum</td>
<td>(2) More functionally independent students</td>
</tr>
<tr>
<td>(3) Students</td>
<td>(3) Sensory materials available for use by students</td>
<td>(3) Fewer student injuries</td>
<td>(3) Improved educational outcomes</td>
</tr>
<tr>
<td></td>
<td>(4) Non-aversive behaviour management applied</td>
<td>(4) Student absconding decreases</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5) Strategies for school–home links developed &amp; implemented</td>
<td>(5) Student learning increases</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(6) Staff development program devised &amp; implemented</td>
<td>(6) Students engage with curriculum more frequently &amp; for longer duration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(7) Support mechanisms for staff devised</td>
<td>(7) Decreased staff stress</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(8) Support services accessed</td>
<td>(8) Fewer staff injuries</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(9) Parent education offered</td>
<td>(9) Parent knowledge of program increases</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(10) Parents adopt home strategies in harmony with program philosophy and techniques</td>
</tr>
</tbody>
</table>

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facility. Exemplifying the contingent and conditional relationship between context and intervention, the physical environment of Correa was engineered to provide the physical setting for the program but was also conceived as a key element of the program itself (Pawson & Tilley, 1997).

Thus there are two inter-related aspects of infrastructure. The first is the structural design of the facility. The second includes the manipulable elements of the facility as they are used in the teaching and learning process. The former of these will be discussed in 4.3.3, Program inputs, while the latter will be discussed in 4.3.4, Program processes. In each instance, the focus will be on how each of these differs from what one would expect in a normal special school and on how each is tailored to the needs of students with autism, in particular, those students who are chronic climbers and absconders.

4.3.2 Program context
It should be noted that the program theory is embedded in a broader context of social processes and conditions which act as a mediating milieu on program implementation.

Context is a necessary but not sufficient condition for program success. In order for an innovative school program to be success oriented, it needs to ensure that it: is consistent with the broader national, state and organisational agendas; is designed to meet a perceived need such as a service shortfall, designed with prioritised components to give a sense of sequenced development; is based on the best available knowledge; and is feasible within operating and resource constraints. Table 4 provides the contextual framework for the Correa program. It also includes relevant evaluation questions together with data sources from which answers were sought.
### Table 4 Contextual framework and evaluation questions

<table>
<thead>
<tr>
<th>CONTEXT</th>
<th>EVALUATION QUESTIONS</th>
<th>DATA SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>National &amp; State Level</td>
<td>• Are the program objectives consistent with Commonwealth and State disability discrimination legislation for student with autism?</td>
<td>• Commonwealth &amp; SA legislation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• DECS Students with Disabilities policy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• School policies</td>
</tr>
<tr>
<td>Organisational Level (DECS)</td>
<td>• Does the Correa program address duty of care requirements and disability needs for students with autism who are chronic climbers and absconders?</td>
<td>• Commonwealth and state government disability legislation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Inspection of program documentation</td>
</tr>
<tr>
<td>School Level (Correa Program)</td>
<td>• Are school policies, practices and organisational climate consistent with State and Commonwealth legislation and best practice evidence?</td>
<td>• School Principal</td>
</tr>
<tr>
<td></td>
<td>• What organisational, resource or other constraints operate to enhance or restrict program implementation?</td>
<td>• School staff</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Research literature</td>
</tr>
</tbody>
</table>

A comparison of current national and state legislation, organisational policies and pre-program school practices can help resolve whether there is indeed any shortfall in the education experiences and thus potential outcomes for these students. If there is a discrepancy, then it can be rationalised that a need exists for a change in the status quo in order to better address the needs of these students. Correa was developed in response to such a perceived need.

Information about the context was located in formal school documents, records of school-based research (action research plus involvement in a pilot project designed to investigate models of service delivery that blended speech and occupational therapy into school-based curriculum as referred to in Appendix 1), submission for funding documents, and unstructured staff interviews. The ‘Study in Context’ section of Chapter 1 describes the problems and needs of both students and staff. Context also relates to generalisability. If we understand which parts of the context enhance or inhibit the achievement of program objectives, then this informs the generalisability of the program to other locations as argued in Chapter 3.
4.3.3 Program inputs

Program inputs are the pre-requisite investments necessary to establish the program and maintain its viability. Broadly speaking these program inputs include:

- Infrastructure and resources intended to meet the disability and education needs of students with autism who are chronic climbers/absconders
- Staff
- Students with autism who are chronic climbers/absconders.

Whilst many of the factors affecting program achievement are controlled from within the school, others are not. Each of these factors can either directly or indirectly support or undermine the achievement of the program goals. Factors within the domain of school-based decisions include: direction on building design; selection of equipment and other classroom and teaching resources; selection of staff and students for the program; the nature, frequency and impact of the staff development program; the structure, mode and nature of liaison with parents/caregivers; selection of curriculum content; selection of teaching methods; behaviour management practices; and school ethos which supports or undermines the program. Factors outside the control of the school which also impact on the quality of the program include the DECS designated staff:student ratio funding formula for students with intellectual disabilities (discussed in Chapter 1), and the availability, quality and frequency of allied support services.

As raised earlier in 4.3.1, only those aspects of infrastructure which are deemed to be additional to what one would expect to see in a standard special school have been included in this section as program inputs. A number of these design features were stated and shown in Chapter 1.

Correa classroom design is intended to restrict inappropriate climbing and provide facilities for challenging but controlled indoor and outdoor climbing opportunities. Whilst climbing equipment is common in most primary and special schools, the height and location of climbing equipment in this instance was not common. For instance, the climbing equipment is sited indoors as well as outdoors. It was constructed to enable variety in the climbing route taken, such as variable hand and foot holds on the climbing walls and multiple routes to the apex of the exterior climbing equipment, (see photos 8,
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9, 10 and 13 in Chapter 1). The climbing facilities were also built to maximise height and thus the climbers’ visual perspective.

The internal area of Correa was designed to provide: different spaces where students could work yet be sighted by staff at all times; maximal use of natural lighting; digitally locked exterior doors; an absence of power outlets and light switches in the general areas accessed by students; kitchen, bathroom, and laundry facilities included as integral elements of the facility; and viewing windows enabling visual access between distinct spaces, such as between the general teaching area, technology room, and teaching preparation area. Other design features not commonly found in special school facilities include varied textured floor surfaces and provision of opportunities for varied gross motor vestibular movement such as swinging and rocking as integral elements of the teaching and learning environment.

The second program input is staff. As the overall number of student enrolments at the school has not altered as a result of the Correa program being established, no additional teaching or support staff were appointed to the school. Thus staffing the Correa program involved selecting staff who indicated a preparedness to work with this group of students, and whom the Principal deemed to have appropriate professional and personal qualities for the task. The professional criteria included being qualified and registered as a teacher, preferably in special education and with knowledge of autism. Personal qualities included that the staff member be generally calm and resilient by nature.

Apart from the classroom teaching and support staff, staffing related to the Correa program also includes school managers. This is because the operating structures, school ethos, and decision making processes are dependent on the direction or lack of it provided by organisational leadership. In particular, the skills, knowledge and values of the Principal and others in the school leadership team steer the direction of school policies and practices, and set the tenor or culture of the school. For instance, school policies and the prioritising of school funds provide an indication of leadership values. Facilities for, and the program of, staff development also provide insight into how this activity is valued.
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The third program input is the students. Students were selected for inclusion in the program based on specific criteria, and as such, their selection forms part of the program’s inputs. As stated in Chapter 1, the criteria for selection included having an intellectual disability, and having been identified by school staff as posing a significant safety risk to themselves and/or others because of their climbing and/or absconding behaviour.

Each student brought to the program idiosyncratic capacities for learning, including receptivity, biological limitations and individual strengths. Each also operated within a unique set of circumstances which could impact on their ability to learn, including medication, attendance, and their respective home environments. The home environment for each student comprised a set of factors which could variously interact with formal program elements. For instance medication, single or dual parent guardianship, language spoken at home, number of siblings, and receptivity of parents to the educational program offered in Correa, all have the propensity to influence program outcomes. As guardians of the child, parents were likely to have differing expectations of the program, carer responsibilities, levels of involvement with day-to-day school activities, and interest in and capacity to access and share information.

4.3.4 Program processes

Program processes are activities (such as pedagogical practices or materials), selected for the Correa program with the belief that particular short- and long-term outcomes will ensue. Broadly speaking they include curriculum, staff development, and pedagogy. Staff consultation, research, writing, meetings, teaching strategies, classroom practices, and school-home liaison all directly or indirectly relate to the delivery of the education program and are thus encompassed in this discussion of program processes, although they might equally well be conceptualised as outputs linked to these processes. The reader is also reminded that the use of infrastructure elements in actual teaching and learning activities constitutes a program process, and as such, are included in this section.

Selection of developmentally appropriate curriculum content for individual students, the timing and mode of delivery, and the close association of curriculum with sensory
experiences for students are key program processes. The selection of content was governed by the curriculum parameters set by the mandated SACSA Framework in South Australia and the learning needs of each student. The curriculum priorities for each student were also negotiated with parents and recorded in the NEP documents. Relevant support services such as the Special Education Resources Unit (SERU), speech therapists, Autism SA and DECS Guidance Officers were to be used as required.

Staff professional development is an important process for supporting effective program implementation. It necessarily bridges conceptual and functional levels. A broad ranging professional development program includes building a sound knowledge base, such as learning more about students’ behavioural symptoms or managing student behaviour. This knowledge can be gleaned from internal school activities, input from experts invited to the school, or from the existing literature. A professional development program also includes improving and expanding the range of teaching skills used in the classroom so as to improve student learning outcomes.

To achieve sustainability, the program needs to activate strategies to ensure that the quest for long-term program goals persist and the achievement of program outcomes is not dependent on the drive of a limited range of personnel. This includes securing recurrent funding sufficient to support program maintenance and the development of a school culture which supports the program philosophy. Thus, at a broader level, the staff development program also includes building the skills and knowledge of the school leadership team so that their own modus operandi is consistent with, and supportive of, the philosophy of the program. Investigation of current school practices, scanning the research literature, and sourcing comparative international programs which can inform program development demonstrate a school committed to sound educational practice. For instance: the use of systems thinking to develop a learning organisation; facilitating staff ownership of the program; fostering strong school-home links (including parent education); aligning school policies and procedures with program goals; fostering collaborative decision-making processes; and delegated spending on resources are all oriented to program sustainability and the potential to maximise student learning outcomes. Maintenance of staff well-being is also important to ensure on-going staff commitment to the program.
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Teaching strategies need to build on student cognitive strengths of having good rote memory, visuo-spatial skills, and an aptitude for structured routines and rules for the teaching and learning process as profiled in Chapter 2 (2.2.1). The teaching processes also need to build on funded knowledge that noise, a poor ability to discriminate information from competing sources, and problems in switching their focus of attention have the potential to detract from students’ ability to effectively engage in learning activities. Further, the use of routines and the explicit teaching of self-care skills are oriented to long-term program goals.

The behaviour management style used in the program is premised on structuring the antecedent conditions and providing positive reinforcement. Motivational strategies include providing an inviting, encouraging play environment; providing sensory activities (including a varying array of equipment for vestibular movement); and in the main, structuring the learning so that students can sequence their own learning activities throughout the day. Motivational strategies may also include allowing the learning activity to occur at a location selected by the student, whether they be suspended in a hammock, on a rocker, in a sensory pool, at the computer, or stretched out on the floor.

4.3.5 Program outcomes

Program outcomes include temporally sequenced program effects. This can include both planned and unplanned outcomes, be they positive or negative.

Broadly speaking, the anticipated program outcomes for Correa students include improved safety, improved sensory tolerance, and increased learning. They also include a reduction in staff stress levels. In order for these to occur, more proximal program effects include that students are calmer, that they do not miss school through behaviour-related injury, and that the students engage more frequently and for longer periods with the learning process, thus increasing their propensity to learn. Furthermore, learning for students with autism occurs in small incremental steps. The measurement of their improvement therefore also needs to be sensitive to such relatively minor improvements.
Calmness as an emotional state is theorised to be an important program outcome which underpins a range of other outcomes. For instance, it is theorised that if students are calm, then they are less likely to have violent outbursts, less likely to injure themselves or others, less likely to be distracted from learning activities and less likely to provide a distraction for other students. Such program effects may be evidenced in the documented frequency and severity of accidents and injury incurred at school, in teacher observations of the proportion of time which student spend in productive learning time, and in the skills and knowledge demonstrated by students.

Improvement in each student’s ability to communicate in a functional manner is also a high priority program outcome. This outcome may be evidenced in improved verbalisation at the individual student level, increased number and frequency of spoken words, the functional use of Compics, demonstrated understanding of what is said to them, an improved ability to respond appropriately to others, and improved ability to read.

Another priority for program outcomes is improvement in self-care skills. A student may learn to dress him or herself if the clothes are selected and laid out in a regular manner for them. Or when at school the student may be able open his or her lunch box but not put a hand inside to take the food out of the box in order to eat it. Mastery of such steps is an indication of incremental but significant improvement which indicates progress towards more distal outcomes.

For absconders, program outcomes may relate to an improved ability to relocate themselves with decreased supervision and without running away. Similarly it is anticipated that the provision of safe but challenging opportunities for climbing, coupled with a reduction in student anxiety levels will reduce the incidence and severity of student and staff injuries. It is hypothesised that reduced anxiety is conducive to their being able to increase engagement with the curriculum and thus improve learning outcomes across a range of domains.

Program outcomes which extend to the home environment are that a close and productive working relationship is formed between the school and parents. It is
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hypothesised that such close collaboration will assist parents to use teaching and management strategies in the home environment which are consistent with those used in the Correa program. As discussed earlier in 2.5.4, Family collaboration, if parents use evidence-based knowledge and skills at home which parallel those used at school, then there is a greater likelihood of student skills being generalised across settings. Parental attitude to the Correa program, attendance at information sessions, use of communication and management strategies in the home which replicate those used at school, and their sense of valued involvement, all provide indications of the program outcomes with regard to developing and strengthening the school-home liaison. Improved parental knowledge and skills has the added benefit of helping to alleviate parental anxiety and stress, thus increasing their feelings of control and well-being.

An important characteristic of a program such as is being evaluated in this study, is that it is sustainable. The capacity for program sustainability can be indicated by staff commitment to the program, the level of administrative support for the program, and the ability of stakeholders to adapt or modify the program when warranted. If it can be identified that certain modifications should have been made but were not, then this is an indicator that the program may not be sustainable because it cannot self-regulate to achieve the outcomes sought.

4.3.6 Program impact

The long-term outcomes sought for students include improved quality of life, functional independence, and improved educational outcomes. Whether or not the first two of these objectives are eventually met is likely to become most evident as the student matures and graduates to post-compulsory schooling life. These outcomes are premised on the belief that individuals who can function independently and participate in the broader community will have improved quality of life.

The Correa program theorises that in order for students to be functionally independent, they need to learn a range of daily living skills such as self-care, understanding time and currency, and being able to communicate. They also need to be able to relate to others in a socially acceptable manner. Thus regulating and managing their own anxiety level
are important life skills. Indicators of progress having been made towards these ultimate outcomes include observable changes as listed earlier in Figure 4.

4.4 Using Program Theory to Inform Evaluation of the Correa Program

Development of the Correa program theory has been discussed in the preceding sections of this chapter. This section demonstrates how the theory was used to inform the evaluation process. In general terms this theory was used to guide the development of questions designed to ascertain program fidelity, the extent to which intended program outcomes were achieved, what factors and processes facilitated or militated against their achievement, and to detect any unintended outcomes. To investigate these focal areas, it was important to look at the attitude of parents and staff plus the behaviour of students. The codes shown in Table 5 below are provided to assist the reader gauge the temporal sequencing (flow) of the Correa Program Theory depicted diagrammatically in Figure 5.

Table 5 Correa flow chart codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Program Element Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Inputs</td>
</tr>
<tr>
<td>IMO</td>
<td>Immediate Outcome</td>
</tr>
<tr>
<td>INTO</td>
<td>Intermediate Outcome</td>
</tr>
<tr>
<td>UO</td>
<td>Ultimate Outcome</td>
</tr>
<tr>
<td>Numbers 1-8</td>
<td>Discrete program elements</td>
</tr>
</tbody>
</table>
Chapter 4 – Correa Program Theory

Evaluation of an Education Program Designed for Students with Autism Who are Chronic Climbers and Absconders

OBJECTIVES HIERARCHY

CONTEXTUAL INFLUENCES
Chapter 4 – Correa Program Theory

For the purposes of demonstrating the role of program theory in guiding the evaluation, several key elements of the program logic were selected for elaboration into evaluation questions in the following paragraphs. One example has been taken from each of the inputs, processes, outcomes and impact categories.

One of the key program inputs is that a purpose specific facility be funded, designed, erected, furnished and maintained such that it catered for the ability and disability needs of these students. Evaluation questions then necessarily relate to what the design features of the facility actually were, how these related to the students’ ability and disability needs, and how accessible the facility and its resources were to students. Specific questions included: ‘What security measures exist to prevent students from absconding?’ ‘What design features have been incorporated to complement student learning needs and behavioural characteristic, specifically opportunities for safe but challenging climbing?’ ‘To what extent are the facilities accessible to students?’ ‘To what extent do the students use the facilities provided?’ ‘What funding is provided to support on-going maintenance of facilities?’ ‘Is the level of funding sufficient to operate the program as intended?’ ‘What other type of facilities would be useful to include in Correa?’ Data sources identified to answer these questions included observation, semi-structured interviews with the Principal, individual and focus group interviews with staff and parents, photographs, and document inspection.

A strategic process to support successful program implementation is that the range and depth of staff knowledge and skills relevant for working with students with autism be increased (see 1.3.2). Thus this evaluation needed to determine whether a staff development program existed, and if so, ‘How was the program decided?’ ‘How often did it occur?’ ‘Was it was developmental in structure?’ ‘Where did the professional development training occur?’ ‘Was the training regularly attended by all staff?’ ‘Was the content of the professional training was perceived to be useful by staff?’ and ‘Was the training was evaluated, by whom, how often, and whether the results of such evaluation were shared with staff?’ Data collection methods to ascertain this information included interviews with staff, semi-structured interviews with the Principal, observation, and inspection of professional development program records, including feedback sheets if available.
Chapter 4 – Correa Program Theory

One of the immediate outcomes sought by the program was for students to be safer. That is, that students not abscond and that they experience fewer and less severe periods of challenging behaviour which can result in injury to students and staff. It was hypothesised that if student sensory sensitivity was decreased and they become more sensory tolerant, then this will be evident in calmer behaviour. It was further rationalised that if they are calmer, then they are less likely to miss school through injury, and they are more likely to engage with the curriculum and thus improve their potential for learning. Evaluation questions relevant to ascertaining whether students were in fact calmer include: ‘Have students changed in any way as a result of being in Correa?’ ‘What behaviours become evident when students experience sensory overload?’ ‘What behaviours would be deemed unacceptable for each student?’ and ‘Has there has been any change in the frequency and/or intensity of these behaviours?’ Answers to these questions were sought via individual interview and focus group questions with parents and staff, inspection of school documents (Incident/Accident Reports, Critical Incident Reports and Incident Reports), and via a semi-structured interview with the Principal.

One of the major longer term intended program outcomes was that the students become functionally more independent. This goal in particular has the capacity to improve quality of life for both the students and their carer(s). It is recognised that as with other long-term program goals, this outcome may not be evident in the early stages of the program. Nonetheless, questions were developed to determine whether in fact any progress had been made in terms of student functional independence. Questions developed include: ‘What skills enable students to function more independently?’ ‘Has there been any improvement in these skills since commencing the program?’ and ‘Do stakeholders believe that any changes noted are due to the program, maturation, or some other factor, and why do they think this?’ The answers to questions such as these can demonstrate linkage between proximal and more distal outcomes, thus supporting a case for causal attribution.

While the Correa program is on-going, there is an end point for students when they exit the program and either return to one of the other classes within the school, or graduate to post-primary school options. In addition to exit point outcomes for students, there
are outcomes which can be achieved at varying points during the student’s progress in the program. This evaluation sought to determine these as well. Consequently, this research developed a program theory for the Correa program to ascertain outcomes sought and also to identify the planned processes for implementing the program. These then provided benchmarks against which the program outcomes could be measured. A full complement of evaluation questions detailed for each element of the program theory is provided in Appendix 5.

4.5 Chapter Summary

Program theory is a useful tool to assist evaluation by enabling comparison of actual program outcomes (obtained through data collection) with the developed program theory. In effect, the program theory may provide the reference for measuring the program effects. This is particularly useful when no pre-test or control group exists to provide baseline data against which program effects can be measured. Development of a program theory is also useful when there is a lack of articulated program objectives (as occurs in this instance) rendering direct, subsequent impact evaluation problematic.

I developed an explicit Correa program theory to guide the evaluation process for this study. This occurred in consultation with the staff and was based on their articulation of the program theory as well as evidence from school documents. The progress of the program theory included development of an objectives hierarchy to provide information as to whether the program was sequenced logically and to provide a basis for measurement indicators to be developed. It also included the development of a hypothesised causal connection between the program context, inputs, processes, outputs and outcomes. Together the objectives hierarchy and program logic provided structure and direction for determining what questions needed to be answered in order to evaluate the program.
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5.1 Correa Case Study

The unit of analysis in this case study was the educational program in the Correa Learning Unit of Modbury Special School, South Australia. This program is a single-site, multi-faceted educational intervention designed and implemented for students with autism who are chronic climbers and absconders. The program operates in a school setting which by any measure is a complex organisational and social structure. Contextual detail is a key component to understanding program outcomes.

A randomised field trial, while lauded for minimising bias and confounders, was not considered a viable option for the evaluation of the education program offered in Correa Unit. This is because it was deemed impossible to locate and match comparable sets of subjects and unethical to withhold an intervention believed to be effective from a control group. Furthermore, the evolving state of the intervention (such as change of staff, materials or methods) would compromise the findings from any randomised control trial in this instance.

Two research designs considered for this evaluation were quasi-experimental and case study. Quasi-experimental design involving pre- and post-program evaluation using non-randomised groups would have been a preferred option had not the program been operational for 18 months. But given this lag time between implementation and evaluation the quasi-experimental method was discounted. Threats to the validity of experimentally obtained findings (including a quasi-experiment), included lack of pre-intervention baseline data, lack of adequate control group and small sample size. Locating a comparable control group with matched developmental stage, age, anxiety triggers, disability characteristics, abilities, medication and the like was deemed impossible.

A further problem militating against an experimental design was the impossibility of isolating and controlling key elements in a complex educational intervention. At the design stage it was also not known which of the multitude of contextual variables or
combination of variables from both within and outside of the environment of the intervention is/are important to control should the research design warrant a control group. If the control group was to be selected on the basis of the program per se, then comparable control programs were also unavailable. Some programs use elements in common with the Correa program, such as engineering the environment, but few could be found which incorporated the comparable range of program elements and none addressing climbers/absconders per se. These threats were considered sufficient to undermine the credibility of any evaluation findings so obtained via experimental means.

Case study methodology in contrast was deemed a viable alternative for a variety of reasons. First, the program is unique, had only recently been introduced, incorporates contemporary thinking as perceived by staff, and builds on earlier staff action research investigation (see 1.2.3). This research consists of a single case, embedded case study. The Correa program was selected as the case, with Correa student (embedded cases) outcomes used to inform the program outcomes. That is, the unit of analysis is the program, but students provide the sub-units for focusing the inquiry. A corollary of this is that the program is constantly being monitored and adapted so that it is optimally responsive to perceived needs of the students. This dynamism makes it impossible to evaluate using conventional experimental means.

Second, as a qualitative mode of inquiry, a case study enables the research to reflect the pragmatic complexity of school life, providing a detailed understanding of the program both as an end in itself and as evidence for program improvement. Consistent with both Merriam’s (1998) interpretation of a case study being a bounded phenomenon, and Stake’s (2006) interpretation of it being a discrete entity, the evaluation of Correa was conducted by gathering qualitative data from a holistic perspective. Correa is bounded physically (within the Correa Learning Unit) and demographically (via the cohort of students which comprise the Correa class). The program occurs in a school setting where a range of contextual details have been very specifically modified to accommodate the abilities and disabilities of a particular student cohort. A case study can seek to ascertain program effectiveness within the context of the normal program operating parameters. It thus needs to be internally valid.
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While the concept of external validity does not apply as it would to an experimental research design, the findings from a case study may support generalisation on a priori, rather than probabilistic grounds as described in 3.3.2. It should be noted that a case study design does not preclude the use of quantitative measures and some elements of control design, such as variants of the intervention. Nor does it preclude comparison with other programs.

Third, a case study can adapt to changes in the intervention, consider unanticipated factors that might have a causal impact, and deal with more contextual factors within and outside the program. In this instance, the Correa program exemplifies a program in which the boundaries between phenomenon and context are not clearly evident. This underlines the importance of the evaluation maintaining a contextual approach for this exploratory study. Once the evaluand has been more clearly established via this exploratory study, a more formally rigorous study can follow with commensurate reduced risk of validity problems, and with appropriate and realistic outcome criteria outlined.

Fourth, the case study approach enables a range of effectiveness indicators to be incorporated, including the experiences of teachers, parents and school managers in dealing with the problem. It also allows several foci for the evaluation, including criterion focused (stakeholder perceptions of program effects), effectiveness focus (to what extent is the program effective in achieving its goals?), theory focused (on what theoretical assumptions is the program based and to what extent does the program and its effects confirm the theory?), and outcomes focused (what are the effects of the program on the students and staff?). In this instance, no explicit program theory had been developed by the Correa program developers, but I saw it as an inherently useful tool because it can provide detail of the internal program and structure, external constraints and other factors relevant to the evaluation. Hence, such a program theory was developed in consultation with school staff and it provided the basis for Chapter 4 (see 4.3 Correa Program Theory). The ability to confirm or refute intervention (program) effectiveness within the parameters described, is in itself an important milestone for a unique intervention. For Correa, a case study evaluation can confirm
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which aspects of the program are working and under what circumstances they are working. It can also identify aspects of the program which may need modification.

Fifth, a case study approach is appropriate for the evaluation of a contemporary program in which many factors possibly affecting the outcomes cannot be manipulated. This is not to say that controlled scientific research is not appropriate for education. It does in fact play an important role in informing education practices. But for research conducted within a school, the reality for teachers and students is that on a daily basis they need to operate within their personal and professional aptitudes, within organisational and system structures and policies, and within an infinite and variable interplay of intra- and inter-personal factors. The evaluation of an operational education program needs to incorporate these factors.

Sixth, a case study is appropriate when the evaluand is a unique entity and an understanding of its complexity and underlying concepts are indispensable elements to the evaluation. I am not aware of any comparable education program which addresses both the educational and unique safety issues which arise from the specific abilities and disabilities which apply in this instance.

Seventh, a case study is appropriate for the investigation of a program which is evolving and adapting. Correa is not a fixed, stable, fully developed intervention. As such, the research method required to evaluate its effects is necessarily different to that required to evaluate a non-fluctuating evaluand.

Finally, case studies are appropriate when the research information is to be communicated to the main target audience(s) in a way that is relevant to, and reflective of their understandings and frames of reference. The fidelity in capturing these understandings determines the level of face validity in case study research (Patton, 1990). In this instance, knowledge gained from this program evaluation is intended to inform primary stakeholders, notably educators and parents of students with autism who display a behavioural pattern of absconding and climbing. The knowledge is also intended to provide insights to those policy makers, managers and educators who are
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responsible for policy and setting guidelines for resource provision to support the education of these students, regardless of the school setting in which they are educated.

It is acknowledged that case study results will not be to the satisfaction of those who argue the unilateral superiority of RCT experiments as a research method to determine causality. It will however go a long way to satisfying those who are seeking to improve educational programs for students with autism so that educationally defensible short- and long-term educational outcomes are achieved. Defensible program effects include producing outcomes which facilitate learning (engage students in the learning process), that the student learning outcomes are relevant to improving their life opportunities, and that the teaching and learning process occurs in a manner which is safe for all involved. The results of this case study evaluation can also provide information in a form comprehensible to parents, who in the absence of more definite information, need to make daily decisions regarding how to best provide for their child. Thus, this case study can provide findings which have direct relevance for, and application by the range of stakeholders who have a vested interest in the research.

Whilst it is never completely possible to totally capture the experiences of subjects, the Correa case study used multiple perspectives and data collection methods to capture holistically the program outcomes and processes. The case study method in this instance sought to provide valid results by initially developing a program theory to establish a definitive form of the program, demonstrate linkages, and provide a reference framework for the evaluation. Multiple data collection methods were used to collect evidence, which when related to the program theory, allowed judgements regarding the extent to which program outcomes had been achieved and reasons for these judgements. Data collection methods included individual interviews, focus group interviews, visual images and document analysis.

It was also recognised that there are inherent difficulties in evaluating school-based programs, especially for those children with a poorly understood and heterogeneous disability. But whilst the results of successive evaluations of such programs continue to be queried on the basis of perceived design and methodological concerns (even though these concerns often arise because quantitative research measures are inappropriately
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applied), parents and teachers necessarily continue the process of working with these students on a daily basis to the best of their knowledge and skill. The knowledge and skills gained by such frequent, regular and pragmatic exposure (to the students in this instance), is valued by many writers such as Jordan, Jones and Murray (1998) who believe that varying types of evidence should be accepted from a wide range of sources. In discussion of the actual features of a program which contribute to its success (or otherwise), they write “inspection for quality within schools is not just based on outcome measures, but also on professional judgements of the process” (Jordan et al., 1998:117). Case study evaluations can provide such evidence.

In summary, as a consequence of a consideration of the relative characteristics and merits of different research methodologies and on the basis of the criteria outlined above, the case study method was selected for this evaluation because: (1) it enabled the consideration of complex and subtle contextual parameters which may be relevant to program outcomes; (2) its design could be used to help explain causal links; (3) it enabled the inclusion of descriptive and illustrative elements; (4) it could search for mitigating or unanticipated processes which impact on program outcomes; and (5) it was amenable to reporting in a form which was comprehensible to the relevant stakeholder audiences. Further, as the program was still relatively new and developing, and because there are limited prior models, the case study strategy can be proactive in orientation. That is, the findings can be used to assist program planners and decision makers as they continue refining the program.

5.2 Participant Sample

Participants included students in Correa, parents and school staff.2

2 A third group of informants was considered, these being external service providers (speech therapists and/or occupational therapists) involved with Correa. However, early incoming data from school management revealed that their level of involvement was too infrequent and irregular to be able to provide reliable information, thus they were rejected as informants.
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5.2.1 Student enumeration
The total population of Correa students was included in the study. Their ages ranged from eight years nine months to fourteen years two months. Eight students were male and one female. All students were confirmed as having an intellectual disability with each being a client of Autism SA and Disabilities SA. No IQ score was available for any of these students. Eight of the nine students were deemed un-assessable and their adaptive behaviour was rated below the first percentile using the Vineland Adaptive Behavior Scale. No test data was available for the ninth student, but as a client of Autism SA and Disabilities SA, he was confirmed as having an intellectual disability and autism.

The selection criteria for student inclusion in the study were that they had had an intellectual disability, were autistic, and that their challenging behaviour posed duty of care concern for the school. Eight of the nine students were chronic climbers and/or absconders. The ninth student was not a chronic climber, but was placed in Correa because of staff concerns about his heightened sense of anxiety and personal safety issues. As climbing may be a behavioural response to anxiety in some students with autism, it is logical that other anxiety response behaviours are likely be reduced if the program is effective, assuming that students’ challenging behaviours are evidence of this anxiety. It is particularly important for a targeted intervention of this type to ensure that participants have the characteristic impairments and talents which the intervention is designed to address. The Correa program sought to address the characteristic impairments and associated behavioural symptoms of autism, with special provision to accommodate chronic climbing and absconding behaviours. If the program was effective in addressing these characteristics, then the program effects should also be noted in the behaviours of the ninth student. As such, this student was included in the study. An enumeration of all nine students provided the broadest possible basis on which to investigate program outcomes and averted selection bias.

While the students are a focal element of the program evaluation, they were not active participants in the data collection process, apart from their being photographed. Because most of the students in Correa were unable to participate verbally in discussions and interviews, data were gathered indirectly via a range of methods.
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including interviews with critical informants representing different stakeholder perspectives and document analysis.

5.2.2 Selection of the parent informants

All students lived at home with at least one of their biological parents. Five lived with both biological parents. However, of these five, one father spent most of his time working offshore, thus effectively this student was living in a single family environment. Three other students lived with their mother only (parents separated or divorced), and one student lived in a step-family, spending the week with his biological father and step-mother, and weekends with his biological mother. These family demographics are displayed in Graph 1 below.

Further, one parent interviewed was not literate in English and had poor oral English. All information provided to this parent was translated and the individual interview with this parent was conducted with the assistance of a translator and advocate as described in the following section, 5.3.1 Interviews: Field Materials and Field Procedures.

I asked school management to identify one or both parent(s) per student for participation in the evaluation process. The criteria I provided for selection were that the parent(s) needed to be the regular caregiver(s) involved with the child on most days.
of the school year, and in particular, were most likely to be able to provide detailed knowledge regarding their child’s educational and behavioural progress. School management nominations were based on the selected parent(s) being the principal liaison for school-home communication; having the most involvement in formal review meetings at school for their child; being the focal point of contact for incident/accident issues; and being involved in daily journal correspondence with school staff regarding their child’s learning, behaviour and demeanour at school that day. Where this parental role was shared fairly evenly between co-habiting parents, both parents were invited to a joint interview. In instances where the parents lived separately but both maintained regular contact with the school regarding their child’s education and progress, both parents were invited to participate in separate interviews. Invitations were not sent to parents who had significantly less contact with their child because these people were deemed to have insufficient knowledge to be able to contribute detailed and accurate information. These were the non-custodial parents who also had minimal contact with the school regarding their child’s education.

As a result of this selection process, twelve parents covering all nine students participated in the individual interviews. In six instances the primary caregiver was interviewed, and in three instances both parents were interviewed together because they shared involvement with the school on an equal basis and had equal familiarity with the program.

All parents who were invited to participate in the individual interview accepted the invitation. The parents participating in the individual interviews were all invited to attend the focus group interview. However, not all parents were able to participate in the focus group interview due to prior obligations, such as work commitments.

There was no evidence found during the case study that the excluded parents had information which would warrant their inclusion in the study.

### 5.2.3 Selection of the staff informants

A total of five staff participated in formal interviews. They included the two current and the one previous teacher of Correa students, the Principal, and one School Services
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Officer (SSO). Each of the three teaching staff and the SSO informants either taught in Correa in 2002 (the year of data collection), or in 2001, (the first year of operation). One of the two teachers was employed as the Assistant Principal of the school for two days per week and worked as a classroom teacher in Correa for three days per week. Apart from one SSO not being able to attend the focus group interview, the inclusion of this range of informants provided the maximum breadth of perception on program outcomes from staff currently and directly involved with the program in the Correa Learning Unit. All interviews were audio-taped with permission of the interviewee(s).

The staff informant for each student was selected in consultation with school management, the selection criteria being familiarity with the program and consequent ability to provide detailed and accurate information in relation to program outcomes, including specific student outcomes. A secondary consideration was the need to share the interview load. This was because nine individual interviews were required (one per student) from the three staff currently directly involved with the students. This necessitated multiple individual interviews per staff member selected for inclusion in this part of the data gathering process. Individual interviews were conducted with either of the two teaching staff who taught this group of students or the Principal who had been working at the school for the last eight years and was very familiar with the program and each student in Correa.

Two SSOs shared a full time position in Correa. Neither was selected for the individual interviews because they had not been involved in the academic planning, assessment and reporting processes critical to knowledge of program outcomes at the individual student level. However, both were invited to participate in the staff focus group interview as their regular work in Correa had the potential to provide insights into implementation of the program and student behaviour. Only one SSO was able to attend the focus group interview. The full complement of individual interview participants is listed below in Table 6.

Four of the five informants who participated in formal interviews, also participated in informal discussions with me. On the basis of their close working familiarity with each student around the time of data collection, one SSO and a further two teachers also
participated in informal discussions. These were the SSO appointed to Correa for 2001 and the Correa teacher for 2003. Also included were informal discussions with a third teacher on school systems for monitoring student progress.

<table>
<thead>
<tr>
<th>Students</th>
<th>Interviewees for individual interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student 1</td>
<td>Mother and Father, Teacher 1, Immediate pre Correa teacher</td>
</tr>
<tr>
<td>Student 2</td>
<td>Mother, Teacher 2, Immediate pre Correa teacher</td>
</tr>
<tr>
<td>Student 3</td>
<td>Mother, Teacher 1, Immediate pre Correa teacher</td>
</tr>
<tr>
<td>Student 4</td>
<td>Mother* and Father*, Teacher 2, Immediate pre Correa teacher</td>
</tr>
<tr>
<td>Student 5</td>
<td>Mother*, Teacher 1</td>
</tr>
<tr>
<td>Student 6</td>
<td>Mother, Principal, Immediate pre-Correa teacher</td>
</tr>
<tr>
<td>Student 7</td>
<td>Father, Principal, Immediate pre-Correa teacher</td>
</tr>
<tr>
<td>Student 8</td>
<td>Mother*, Teacher 1</td>
</tr>
<tr>
<td>Student 9</td>
<td>Mother* and Father*, Teacher 2, Immediate pre-Correa teacher</td>
</tr>
</tbody>
</table>

*Parents who also participated in the parent focus group interview

5.2.4 Summary of participant sample

In summary, forty seven interviews were conducted. Four key informant groups were identified (students, school staff, parents, and external providers), but only two (school staff and parents) were included as active participants in the research. Specifically this included nine students as passive informants, plus 12 parents and 5 staff in formal interviews. Whilst students were enumerated, staff and parents were selected on the basis of their ability to provide depth of information. Staff selected were those currently working with all nine students plus the teacher of seven of these students in the year prior to the inception of Correa. A further three staff participated in informal discussions. The twelve parents interviewed were selected from a total cohort of 18 parents. Six non-custodial parents who were reported to have had little or no engagement with the program were omitted from the selection. Table 7 summarises the number of interviews conducted across these informant groups.
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Table 7  Summary of interviews conducted

<table>
<thead>
<tr>
<th></th>
<th>Individual Interview</th>
<th>Focus Group Interview</th>
<th>Informal Discussions</th>
<th>Total Interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents</td>
<td>12</td>
<td>7</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>Teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>2002</td>
<td>7</td>
<td>2</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>Post 2002</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSO 2002</td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>SSO 2001</td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Principal</td>
<td>3</td>
<td>1</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>12</td>
<td>11</td>
<td>47</td>
</tr>
</tbody>
</table>

5.3  Data Collection

A multi-method data collection approach was used in this study. This necessitated the use of a range of materials including an explicit and detailed program theory, semi-structured individual and focus group interviews for use with parents and school staff, visual images (still digital photographs), and school documents. The convergence of data from multiple sources (data triangulation), methods (methodological triangulation) and perspectives (theory triangulation) provided a means of cross-validation of findings.

The major period of data collection, including the individual and focus group interviews with staff and parents, document analysis and visual images occurred in 2002. At this stage the program was in its second year of operation. However due to my concurrent work commitments, write-up occurred over a more extended period and so subsequent data were collected by me on a periodic basis (once per annum since 2002) via observations in Correa, informal interviews with the Principal and other staff as previously identified, and an inspection of school records.

5.3.1 Interviews: field materials and field procedures

Based on the program theory and preliminary discussions with staff, two interview schedules were devised. The first was a standardised semi-structured individual interview (Appendix 6) and the second a focus group interview (Appendix 7). Both
interview schedules were designed to elicit information from parents and staff. The content of questions was matched to the program theory. Both instruments were designed to seek perceived program effects since the Correa program commenced.

In order to maximise communication clarity during the interview process, interview questions were refined utilising methods based on symbolic interactionist theory. A short explication of this theory is provided below as a prelude to the discussion on the design and implementation of the interview instruments.

**Symbolic interactionism**

According to symbolic interaction theory, the context of human interactions is integral to how those interactions develop. As humans, we are all in a continuous cycle of mental gymnastics as we seek to interpret the world around us and provide responses selected from an infinite range of possible options. From this perspective, meaning is a social product influenced by the process of interpretation (Blumer, 1969). Drawing from Blumer, Foddy (1993) describes human interaction as the dyadic process of interpretation, planning and action engaged in by each interacting person, a process repeated at every stage of the interaction. When constructing and choosing potential lines of action, each person takes into account his or her view of the other person, as well as their perception of what they believe to be the other person’s view of themself.

It follows from this that both the researcher and interviewee need to be clear about the purpose and nature of the evaluation and questions in order to reduce the incidence of interpretive guesswork as both parties participate in an encoding and decoding process which occurs at each stage of the interview.

*Central to this model is the assumption that before a successful communication cycle can occur, a question must be understood by the respondent in the way the researcher intended, and the answer must be understood by the researcher in the way intended by the respondent.* (Foddy, 1993:23)

Using symbolic interactionism as a framework, Figure 6 below identifies the encoding and decoding processes in the top half of each of the four boxes, and the strategies used
in this research to reduce the variability in each of these processes in the bottom half (shaded sections). The arrows indicate the direction of dialogue.

Figure 6  Symbolic interactionism and strategies used to reduce potential interaction variability

Specific strategies used to improve communication clarity in this research included conducting pre-test interview procedures (described below in the sections on field procedures) and providing a standardised introductory explanation of the nature and
Chapter 5 – Methodology

purpose of the research to each participant verbally, as well as being detailed in an Information Sheet (Appendix 8) and Consent Form (Parent and Child Consent Form exemplar provided in Appendix 9). Both of these documents were translated for one parent.

Further, strategies used to improve communication included providing an opportunity for any further queries to be answered prior to commencing the interview by selecting interviewees who were in a position to be very familiar with at least one student in the program, and by conducting the interview at a venue preferred by the interviewee (home or school). The use of an interpreter and an advocate with one parent also sought to minimise interpretive errors arising from the decoding and encoding processes. Nevertheless it is conceded that it was impossible to eliminate all variability in these forms of social interactions, particularly as the acquaintance between myself and the interviewees was only recently formed and personal value stances and beliefs were essentially unknown to each other. This is true for all of the interview acquaintances except for my prior professional association with the school Principal as described in Chapter 3. It is probable that this encoding-decoding issue is rendered less pernicious by the fact that all interviewees had a great common interest in autism.

Individual interviews

Semi-structured individual interviews were conducted with parents and school staff.

Interview design

The individual interview schedule consisted of a generic section (Section A), which was used in both staff and parent interview schedules. Questions in this section focused on the program outcomes from the perspective of respective students. This included perceived learning and changes to student behaviour. The second section (Section B) was stakeholder specific and included questions related to the role that each stakeholder played in relation to the Correa program. For instance, parents were asked about their level of understanding and involvement in the program, whereas staff were asked questions about program implementation, their own feelings of competence and confidence to work in the Correa program, and the level of support from within the school for the program.
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Three techniques were used to ensure that these interview questions achieved face validity and minimised errors associated with the encoding and decoding processes. First, the standardised, semi-structured individual interview schedule was formulated after the program theory had been developed. The development of the interview schedule occurred in consultation with school management.

Second, the interview questions were subjected to question pre-testing to determine whether respondents interpreted the questions as the researcher had intended them to be understood. This strategy involved asking two different pre-test respondents to re-state the question in their own words once it had been asked of them and they had provided a response. These respondents did not actually participate in the evaluation later. Question interpretations were coded according to Foddy (1993:186) as:

(a) fully correct – leaving out no vital parts;
(b) generally correct – no more than one part altered or omitted;
(c) partially wrong – but indicating that the respondents knew the general subject of the question;
(d) completely wrong or no response.

It is acknowledged that this rephrasing technique does not guarantee respondent understanding of the questions. However, faulty interpretation of a question does in fact imply misunderstanding of the question.

Third, the individual interview schedule was trialed with two different members of school staff who were not directly involved in the Correa Unit program. These staff were selected because I did not wish to use staff currently teaching Correa students (and thus reduce the size of the staff sample participating in the study), yet needed people familiar with the principles on which the program was based. This technique was used to ascertain interviewer difficulties, gauge interview flow, determine response difficulties such as ambiguities or sensitivity to particular issues or questions and lastly to identify areas of omission. Points of clarification were noted from the first trial and
Chapter 5 – Methodology

the interview schedule was subsequently revised and only the revised sections were re-trialed.

The individual questionnaires were thus revised in a two loop series. That is, a question pre-test and subsequent trial of the questionnaire was followed by a second limited trial. No further adjustment to the interview schedule was required as a result of this repeated process. An example of an adjustment made to the interview schedule was the inclusion of ‘play skills’ and ‘recognition of people’ as probes when questioning about changes to students’ socialisation skills.

The question sequencing of the individual questionnaire was designed to enable the interviewer to record whether the content of a particular response was given spontaneously to an open question, or whether it was given following a verbal probe from the interviewer. This is because I deemed the spontaneous raising of an issue to be of greater significance than those responses which did not identified an issue until a standardised probe was used by the interviewer.

Categories and themes were then generated from the responses and these informed the development of focus group interview questions. Whilst the effects of symbolic interactionism are omnipresent in social dialogue, the pre-testing process sought to confirm consistency in understanding of the meaning behind the research questions.

Field procedures

The individual interviews were conducted in a face-to-face setting using the same interviewer, myself, for all interviews. Initial phone contact to parents was made by the Assistant Principal (at the Principal’s suggestion) requesting their cooperation in the program evaluation. An Information Sheet I prepared was approved by the Principal before being sent home on the same day that the initial telephone call secured a verbal indication of cooperation from parents. Scheduling of the interviews occurred once oral permission had been granted by the parent(s) for school management to release their contact details to me. Interview scheduling occurred in a subsequent phone call from me to parents. A consent form was read and signed by each interviewee prior to each interview commencing. This consent included the option to withdraw from the study at
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any point during the evaluation up to the point of data analysis. All interviewees chose to remain in the study and none withdrew at any point during the evaluation.

Interviews were conducted at a location and time selected for convenience by the interviewee. All except two parent interviews were conducted at the respective homes of the informants, one interview occurred at the interviewee’s worksite (professional male), and the remaining interview occurred in a private room at the school because the relevant parent could speak almost no English and therefore the interview included use of a remote translator via speaker phone. The translator was thus audible to both interviewer and interviewee. The translator was requested to translate the actual words rather than provide a summary translation, thus maintaining the integrity of the questions. The translator could also provide further clarification for the interviewee if so requested, conferring with the interviewer as need be. This interview process allowed the non-English speaking background parent to be interviewed with any bias effect limited to the interpreter and not the mode of question delivery by the interviewer. This parent was also accompanied at interview by a representative from the Intellectual Disability Services Council (IDSC). The IDSC support person (advocate) was an observer at the interview. I paused the interview at one stage and asked whether the IDSC staff member wanted to make any comment regarding the progress of the interview from her client’s perspective. She commented that the respondent seemed happy enough with the process and saw no problems with either the nature or the process of the interview. The interview then resumed.

Staff participants in the individual interviews included current teachers, the Principal and the previous teacher of Correa students. Staff were provided with the same Information Sheet prior to interview as that provided for parents and were similarly contacted by me to arrange a mutually acceptable time and venue for their interviews. One teacher interview was conducted at my home, with the remainder of staff choosing to be interviewed at school.

Each individual interview was manually scribed onto the interview schedule by myself during interview. Each interview was also audio-taped and the transcribed responses
Chapter 5 – Methodology

were entered into a data matrix in the form of a Microsoft WORD table. The data matrix was stored in both hard and electronic copy.

Focus group interviews

As this evaluation was proactive in nature, the focus group interview was designed with two main goals in mind. The first goal was to determine the perceived strengths and limitations of the program. The second was to provide information which could inform school practice.

Interview design

The focus group questionnaire was formulated in a similar manner to that described above for individual interview questionnaires, but was also informed by the responses from the individual interviews with both parents and school staff. Initial discussions with the Principal and Assistant Principal provided the initial scope for focus group questions. I then refined the questionnaire by condensing and sequencing the questions from a broad opening question through a series of eleven transition questions, to the final four focal questions. These focal questions were:

(1) “What aspects of the program could be changed to make it more effective?
(2) What do you consider to be the most significant outcomes for students which you believe are attributable to the program being implemented in Correa?
(3) What are the main problems with the Correa program from your perspective?
(4) How do you think these problems could be addressed?”

I checked the questions to ensure that they were clearly worded, open ended and did not include leading questions (Krueger & Casey, 2000).

Once the focus group question route was formulated, the questions were pre-tested by asking two members of staff who would not be participating in the focus group interview to provide feedback concerning how the questions could be worded more clearly or whether there was anything else which should be included. No revisions were suggested.
Field procedure

Two focus groups were conducted: one with parents and one with staff. Informal discussion with the respective stakeholders provided mutually agreeable times and venues for the focus group meetings and this was confirmed in a follow up letter. Both interviews were noted during the interview and also audio-taped. Tapes were transcribed promptly post-interview in each case.

Seven parents representing five students attended the parent focus group meeting. These parents comprised a subset of those who participated in the individual interviews. The remaining parents identified as key informants were unable to attend the focus group interview for a variety of reasons as previously stated. The parent focus group interview was conducted at school during the school day in a room designated for parent use. No other people were present during this interview.

All staff involved in individual interviews plus the two School Services Officers were invited to the staff focus group interview. Five members of staff attended this interview, comprising all participants in the staff individual interviews (current teachers, past teacher and Principal), plus one of the two School Services Officers. This interview was conducted at the end of the school day in the staff common room. Nobody else was present in the room during this time.

5.3.2 Visual images

Still photographs were used to illustrate data reported in interviews or recorded in school documents. They were also used to capture new data. The engineered physical environment is a crucial element of the Correa program and thus the nature of the students’ interaction with it, collected via minimally intrusive digital still photographs, provides unique contextual information. The photographs were undertaken to provide a naturalistic portrayal of the Correa environment and students as they interacted with it in the teaching and learning process. Further, the use of visual images is pertinent in this instance because the students were unable to participate in interviews.
Chapter 5 – Methodology

Students were photographed across time. Notes of date, time, student’s name and activity/situation were recorded at the time each photograph was taken. Photographic integrity was maintained through the non-interference in technical alterations or distortions of photographic content, and adherence to ethical considerations to exclude data which may be deemed personally inappropriate/offensive from the student’s perspective. Because the students participating in this research were not functionally literate, visual images provided the most direct data collected from students.

Digital photographs were not printed as hard copies but maintained in electronic form. Hard copies have been used in the publication of this thesis and will only be used in accordance with parameters agreed to by parents.

5.3.3 Documents

School documentation was used as a source of retrospective but systematic evidence of student behaviour and achievement. Documents accessed include:

- Critical Incident Reports
- Incident/Accident Reports (DECS ED-155 forms)
- Incident Reports (internal school document)
- Time-slice behavioural records
- Modbury Special School Handbook
- Negotiated Education Plans
- Teachers’ lesson planning notes
- Records of staff planning meetings.

School staff were required to complete one of three administrative forms when unacceptable student behaviour occurred. Two of these forms were required by the Department of Education and Children’s Services (DECS), while the third is an internal school document.

The DECS Critical Incident Report was completed whenever a serious event occurred, such as if police, ambulance or fire services were requested by the school, or when a
student absconded from the school premises. This report necessitated the attention and signature of the Principal and was forwarded to the DECS District Superintendent.

The DECS Accident/Incident Form (ED-155) was completed whenever an accident or incident resulted in injury to a staff member or student which necessitated, or was thought may necessitate medical attention. This form was also completed when significant damage was incurred to school property, such as the smashing of a window or punching a hole in a wall or door. It required the signatures of the relevant line manager, the school Health and Safety Representative, and the Principal before being forwarded to the District Office. A copy of completed Critical Incident and ED-155 forms were required to be kept at the school site for legal and auditing purposes. As such, it was expected that completion of these forms had a high compliance rate.

The third administrative form was an internal school document named an ‘Incident Report’. It was used to monitor student behaviour in instances where medical attention was neither needed at the time, nor anticipated to be needed at some time in the future. Because the school implemented changes to the nature of this form between the time when the program commenced to the time of data collection for this research, two versions of this form existed. The first was a single sided A-5 sheet which provided for details on a range of information in regard to the incident, including a narrative description of events. The latter version was an A-4 page with provision for multiple one-line entries for a student whose behaviour was monitored over time. This form recorded only the student’s name at the top and then single line entries which included the time, statement of the behaviour occurring, and comment. As such, the internal incident report used changed from a single incident record (used throughout 2001) to a time-slice behavioural record (used in 2002). The latter version was invoked when a student’s behaviour had escalated to the point where staff wanted some baseline data on the frequency and circumstance of a pattern of behaviour.

Each student has a Negotiated Education Plan (NEP). This document outlines learning goals for the student as determined collaboratively between relevant staff, other professionals, and parents. These goals are necessarily based on the mandated South Australian Curriculum Standards and Accountability (SACSA) framework.
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Student portfolios were used to report student progress towards the negotiated and planned learning outcomes to parents. The portfolios report student behaviour, social skills, communication skills, personal skills (such as toileting) and progress towards the NEP goals. A copy of each student’s portfolio is not kept by the school, only by the parent. The school maintains its official record of student progress via entries on respective students’ NEPs. Collectively, these two documents (NEP and student portfolio), together with teachers’ lesson planning notes comprised the official records of planning for student learning, as well as monitoring their academic progress.

It was hypothesised that students in the Correa program would show a decreased frequency of engagement in unsafe behaviours and/or a decrease in the severity of any unsafe behaviour exhibited. It was further hypothesised that there would be an increase in learning outcomes as a consequence of improved engagement in the education program. Together these reports provided a means of tracking whether the program led to improved student safety, reduced damage to school property and improved educational outcomes for the students.

Caulley (1983:22) suggests that when analysing documents, the “reliability of classification is a problem with content analysis.” Quantification is deemed to be one of the more reliable characteristics of content analysis. As both Accident Reports and Incident Reports provide numerical quantification of incidents per student, they provide an important source of monitoring student behaviour via the document analysis process. But the nature/content of the reports is arguably more prone to subjective variability, both in the initial filing of the report by the staff member concerned and the interpretation and processing of its content by the evaluator. This threat to validity was addressed by quantifying the different types of Incident Forms which inherently provide a measure of incident severity, and then looking for a change in the frequency of each.

Critical Incident Reports, Incident/Accident Reports, Incident Reports and time-slice behavioural records have all been accessed to provide an indirect measure of students’ emotional state. NEPs were accessed to provide an indirect measure of student learning. Access to these documents was approved by the school Principal, with scrutiny being conducted on the school site.
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Informal discussions with the school Principal confirmed that the criteria for, and process of reporting student achievement had not changed at any stage since commencement of the Correa program to the focal period of data collection. Thus, whilst changes in teaching staff had occurred since the program commenced until the focal data collection time, the criteria for the completion of student reports had not. This was not so however for the subsequent period when there have been both annual changes to the staffing of Correa, and changes to the student reporting procedure.

5.4 Ethics

Research approval for this research was obtained from The South Australian Department of Education and Children’s Services (DECS) Research Unit, the Principal of Modbury Special School, the principal caregiver(s) of each student included in the study, and The University of Melbourne Human Research Ethics Committee. These approvals, together with the approval from the Manager of DECS Legislation and Legal Services to be able to cite in this thesis the name of the school where the research was conducted can be found in Appendices 10-12 inclusive.

An Information Sheet was sent to each parent informant and delivered to each staff participant. Informed consent for formal interviews was sought and obtained via a Parent and Child Consent Form or a Staff Consent Form, depending on the relationship of the informant to respective students. The reader is reminded that these Consent Forms are provided in Appendices 8 and 9. The Consent Forms were personally delivered to each informant by the interviewer. Written consent was obtained before the data collection process commenced. Given the inappropriateness of gaining consent from individual students, proxy consent was obtained from their respective parents. Consent for students to be photographed was provided by the school Principal and also by parents via completion of the initial Parent and Child Consent Form. The Consent Form included information to parents about the potential for the photographs to be published and the reasons why particular photographs may be relevant for inclusion. All parents in the sample consented to the use of photographs as so explained.
Chapter 5 – Methodology

Individual students were assigned a number to protect their identity. The sole female student included in the study has been designated male in the data set in order to provide anonymity for data pertaining to her.

One student resides with a sole resident parent who can speak only very limited English. Thus the Information Sheet and the Parent and Child Consent Forms were translated for this parent and an interpreter was used via remote translator on speaker phone to assist the interview process. This parent also had an independent advocate in attendance at the interview.

Audiotapes and archived records in the form of questionnaires and focus group interview transcripts are held securely in the School of Education, at the University of South Australia. The ethical requirements of informed consent, privacy and confidentiality have thus been followed in this research.

5.5 Data Analysis

Data collection and analysis progressively overlapped as the research proceeded. Individual interviews with school staff and parents provided the first round of data and this was analysed on an individual student and cross-student basis. The transcribed individual interview data were displayed in two matrices. The first matrix was student specific and provided a comparison of different stakeholder responses. The design of this matrix is shown in Table 8.

Table 8 Individual interview case matrix: example entries

<table>
<thead>
<tr>
<th>Student 1</th>
<th>Q.</th>
<th>Parent Response (sample entry)</th>
<th>Staff Response (sample entry)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Calmer. Not so much overabundance of energy. Not as much running up &amp; down the passage. Reduced aggression (Have had to replace 3 doors before Correa)</td>
<td>The incidence of him hurting others has reduced dramatically. The incidence of him being distressed has decreased in duration and frequency. He is now incredibly calm.</td>
<td></td>
</tr>
<tr>
<td>4.3</td>
<td>Much better. Recognition of words, runs finger along as reading, wants to be read to. We get the impression that he understands what is being read as he turns the page at the appropriate place.</td>
<td>He has an erratic interest in specific words. He has started to spell out words.</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 5 – Methodology

The second matrix listed each of the nine students by number across the top and the questions numerically down the left hand side. The format for this matrix is shown in Table 9. For each question, the parent response was entered first for each student, and this was followed with the staff response(s). Responses were entered verbatim. Where extended responses were provided, a summary of the response was entered. The 49-page, 133-row composite matrix of 11,700 words allowed all data for each student to be co-located. It enabled a comprehensive picture to be generated for each student as the information is read down the student number column. It also enabled a cross-case comparison of responses for each question across all respondents, and also a comparison between the parent and staff response for each question in relation to each student.

Table 9 Cross-case individual interview matrix

<table>
<thead>
<tr>
<th>Q</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Parent</td>
</tr>
<tr>
<td></td>
<td>Staff</td>
</tr>
</tbody>
</table>

Note: Sample entry, Student 7, Q.4.4 Staff response: “Sorts food. Understands concepts of fairness and equal amounts of food. Understands full/empty concept. Much better now with start/finish type concepts. Grew to anticipate what should happen each day, length of playtime, and in/out concepts.”

The cross–case individual matrix was then read through several times. During this process I colour coded categories of responses, based on key words (e.g. ‘calmer’, ‘settled’, ‘relaxed’, ‘aggression’) and ideas (e.g. ‘can be safely managed’, ‘less demanding on staff’). I then named these categories and manually annotated them on the data set. This process was repeated on several occasions so that progressively categories of responses were delineated at the individual student level as well as across students. The main program outcomes which emerged from this process of tracking student and staff outcomes were perceived emotional state, communication, social tolerance, daily living skills and safety. A further document was constructed which entered the data under the distilled outcome categories.

Transcribed focus group data were entered into two documents, one recording staff responses and the other recording parent responses. The former comprised a 10-page
Chapter 5 – Methodology

5,850 word document and the latter an 8-page, 5,328-word document. In each transcription, responses were entered under each question sequentially and the source of each response was noted. Each document was read through twice before common themes were identified within and across questions. These were colour coded on the transcript. For instance, comments related to different aspects of the environment were coded as ‘Environment’. Responses so classified included “From my point of view, the environment is safe. No matter what is happening inside the rooms, the environment is such that these students can’t escape” and “Space: the different activities that we can have in the space is great.” Data reduction was effected by producing a document of ten pages that listed all points from the transcript grouped by common themes identified from the original transcript.

Data analysis for the interviews and student learning occurred at the level of individual students, while the remaining data from document analysis and photographs occurred across the whole cohort of students in Correa. Findings were cross referenced across all students in the Correa Unit, thus developing an overall picture of program effects.

The document analysis entailed comparative frequency counts of incident and accident reports. NEP data were checked for consistency with the academic reports sent to DECS, both of which give details of student academic progress.

The rigor of this research was enhanced by the use of audit trails and by the triangulation of methods employed. A hard and electronic record of all interview responses has been maintained allowing report citations to be traced to their source. A separate record has been maintained detailing interview times, venues and names and contact details of interviewees. This process assures data integrity and provides quality control. However, it is also recognised that from the perspective of stakeholders, the clarity, relevance, utility and applicability of findings will be of paramount importance, as these inform decisions and plans for program improvement (Hurworth, 1996).

Further cross checking of data was achieved by seeking stakeholder comment on the plausibility of findings and interpretations. This process of triangulation was conducted by comparing and cross-checking parent and staff perspectives on individual students,
Chapter 5 – Methodology

as well as checking the consistency of data from formal and informal discussions with individual stakeholders across time. Interview data were also cross-checked with all school documents previously identified. Finally, drafts of specific thesis chapters were provided to the Principal and/or Assistant Principal for checking that conversations with them had been interpreted correctly and that the writing was therefore a legitimate and accurate reflection of discussions with them and of the program.

The findings from all data sources were compared with the theoretically predicted events as per the program theory, thus allowing judgements regarding the extent to which actual program effects confirmed the outcomes sought for the program. As this program sought to achieve systemic change within the school, it is also possible that the development of the program experienced setbacks or was influenced by other external conditions. Rival explanations and impediments to program effectiveness were sought via both document analyses and staff recollections. Additionally, the program continued to evolve for the duration of the research and this is reflected in school records, processes and infrastructure as discussed later in this thesis.

5.6 Chapter Summary

Participants included students, parents, and school staff. All nine students in Correa were included in the study because they met the criteria for selection. However, because these are children with low-functioning autism, a minimum of two information rich informants were selected for each student to provide reliable data on student progress and program effects. These included at least one parent and one staff member per student.

Data were gathered via observations, individual interviews (with both parents and staff), two focus group interviews (one with parents and one with staff), analysis of a range of school documents, visual images and informal discussions.
Chapter 6 - Role and Perceptions of Staff and Parents on Program Implementation

Traditional cause-and-effect logic disregards the fact that programme effects are always brought about by real actors rather than constructed ideal actors.

(Virtanen & Uusikyla, 2004:77)

6.1 Introduction

This evaluation of the Correa program includes investigation into not only the program effects as measured by student outcomes (reported in Chapter 7), but also the activities surrounding the development and implementation of the program. From their different perspectives, both staff and parents were able to provide unique insights into what they perceived the program to be, as well as reflections on their role in operationalising the program. Data regarding these processes were drawn from individual and focus group interviews, photographs and school documents.

6.2 Parent and Staff Perceptions of Program Goals

For optimal program effect, there needs to be consistency between what the parents and staff understand the program to be, and that their understanding of the program design is accurate. Shared and accurate understandings can enable the program to be reinforced across school and home environments for individual students. This chapter section will seek to determine whether both parent and staff as stakeholders have a common understanding of what the program was designed to achieve. Their perceptions of the Correa program goals were collected via focus group interviews.

Teaching staff and parents varied in their perceptions about what the program was trying to achieve. Parents stated that the program was designed to improve the educational learning outcomes for their child. Specifically they believed the program was designed to develop student skills related to:

(1) functional everyday living
(2) communication
(3) tolerating others
(4) working in a group, and  
(5) socialisation.

From their perspective, teaching staff cited the key program goals to be:  
(1) student safety, and  
(2) the provision of environmental conditions which would facilitate student access to the curriculum.

Teaching staff elaborated that the second of their cited program goals centred on calming students, reducing student sensory overload, minimising student anxiety, providing a safe working and learning environment, and improving students’ sensory tolerance. They believed that the achievement of program goals related to student learning outcomes were contingent upon these antecedent conditions being met.  
(Antecedent conditions for learning were detailed in Chapter 4.)

The school Principal also believed that the program goals also incorporated broader changes within the school in order to:  
(1) foster staff well-being  
(2) improve the culture of the school as a learning environment  
(3) develop staff-parent liaison  
(4) improve standards of professional conduct, and  
(5) streamline administrative procedures.

Parents articulated the program goals to be the more distal program outcomes for their child. Teaching staff on the other hand were looking at the processes which would enable the achievement of student learning outcomes. In effect, staff articulated the antecedents to learning which needed to be addressed in order for the parent stated student outcomes to be achieved. By attending to the disability needs of the students and reducing their anxiety levels, staff envisaged that more opportunities would exist for students to engage with the curriculum and that increased student learning would therefore occur. In the Correa program theory, these were described as immediate and intermediate program objectives respectively. Thus there was consistency in the program effects sought by both staff and parents.
Whilst staff were necessarily concerned with establishing the antecedents for learning as well as the learning outcomes themselves, parents were more concerned with the resultant learning outcomes for their child. This is understandable since parents have a vested interest in their child’s ability to function independently in the short-, medium-, and long-term timeframes. Proficiency in these everyday skills would not only affect the quality of their child’s life, but would also have a significant impact on parents as well as other family members. In this sense, parent and staff program goals were in accord. The extent to which these goals were achieved is covered in this Chapter and also in Chapter 7.

During their respective focus group interviews, all informants pointed out that they believed the program goals were being achieved. No response from either focus group indicated that an informant believed that the program was failing to meet its goals. It is worth noting that each interviewee in both focus groups contributed to this discussion, and thus it cannot be assumed that a nil response shielded a negative perception from being recorded. With regard to the extent to which program goals were being achieved, thirteen of the fifteen comments provided used words or phrases which indicated a high level of achievement of program goals related to student learning. Informants frequently provided specific evidence for program success. For instance, when referring to how much progress had been made by specific students, common phrases used across a variety of responses from both staff and parents were: “much more,” “a lot,” “increased dramatically,” “dropped significantly,” or “huge leaps forward.” Other comments were stated more moderately, but were used in relation to significant behaviours. As such, they can be taken as an indication of the extent of program effect. Examples of this type of comment included: “has started to talk now,” “more and more independent actually,” and “has just started to use the toilet.”

To conclude, while parents and staff differed in their articulation of the Correa program goals, they were consistent in orientation. Using the Correa program theory as a reference framework (Chapter 4, Figure 5) parents were most concerned with Intermediate Outcomes (particularly student safety and student learning), and Ultimate Outcomes. Staff on the other hand focused on the Immediate Outcomes.
(curriculum, staff development and pedagogy) and also the full range of Intermediate Outcomes, including to decrease sensory sensitivity. That is, by attending to the antecedents for learning, the context in which the program operated, and the actual curriculum content and pedagogy, staff sought to maximise student engagement with the curriculum and thus student potential for learning. From this perspective, their views are consistent with those held by parents who focused on student learning outcomes. This is an important factor in facilitating program success. If parents understand the program in the same way as staff, then they are more likely to want to learn and apply teaching and management strategies used at school in their home environment. This in turn is likely to result in student learning outcomes being achieved more expeditiously (refer 2.5.4 Family collaboration). In a similar vein, staff are likely to modify the school program in response to parental expressions of need for their child to develop particular skills for the home environment or a particular event, such as a visit to the hairdresser or a holiday. Further, collaboration which ensues from a common perspective on the program can help staff understand other events operating in the home environment which may impact on student behaviour and learning at school.

6.3 Influence of the Physical Environment on Program Effects

The school infrastructure, so conducive to inappropriate climbing and absconding, was the principal factor which precipitated the construction of Correa. The structure, furnishing and decor of Correa were thus premised on eliminating or minimising these non-adaptive and unsafe behaviours. The physical environment of Correa, however, was also designed to provide opportunities for students to engage in their characteristic climbing behaviours within their learning environs and still be safe. These design features were not perceived as ends in themselves, but rather to provide conditions considered conducive for student learning to occur. Given the capital investment in such a facility, it is relevant to determine the extent to which the Correa environment met these disability and learning needs.
Chapter 6 – Role of Staff and Parents and their Perceptions on Program Implementation

The reader is reminded that discussion of the physical environment of Correa is restricted to those components which could be considered additional, or different from what one may expect to find in a normal special school facility for students with autism or other developmental disability/intellectual disability. For instance, Correa incorporated a range of facilities which one may expect to find in a normal special school, such as climbing equipment. But it was the location and/or way this equipment was incorporated into pedagogy which delineated the Correa program as distinctive. Additionally, the outside and the inside areas of Correa could become one secure integrated space when the broad sliding door was open. This physical environment was described in Chapter 1.

6.3.1 Key features of the physical environment

When asked whether there was some aspect of the program which had been of particular benefit to individual students, either staff or parents or both named aspects of the physical environment. During their individual interviews, staff singled out the variety of spaces available, the climbing equipment, and the provision of interest-based sensory equipment and materials as key features. Indicative staff comments spanning three different students were:

He now can have a positive interaction with an adult – will seek you out to rub his head, push his hammock, rub cream on his feet etc. Correa is a secure environment and so he has a safe place outside. (IS11 3)

He loves the climbing and all of the other equipment. It has been good to see an uptight, very withdrawn student who was bothered by everything now functioning really well. He loves the swings and hammocks (spinning on them). (IS11 7)

Different spaces. He has access to high places. He loves to get up high. He loves the different sounds he can make in the rice pool and he also has access to quiet areas. (IS11 8)

Further, staff perceived that the physical layout of Correa facilitated their implementation of the curriculum. They cited in their focus group interview that student access to withdrawal spaces, indoor and outdoor climbing equipment, and being able to “teach via the sensory media without having to worry about the
horrendous mess or bother because we have got suitable spaces for it - the rice pools room, the outdoor area that can be easily accessed etcetera” (FS6) were key environmental factors which complemented their teaching style. The proximity and ease of access to kitchen and bathroom facilities were singled out for specific praise. For instance:

Mealtime management is a huge improvement. We were simply able to whip up the door and have all the things served out and ready to go and then packed all away in a matter of minutes compared to the half an hour that it used to take with mucking around in Cassia with locking things away and this goes here and that goes there. It’s efficient in Correa. (FS6)

[Note: Prior to 2001, the Correa unit students were located in Cassia unit.]

Parents similarly singled out the physical environment as being of particular benefit to students. They noted the accessible climbing equipment, withdrawal spaces, and the provision of equipment for sensory activity as key aspects of the learning environment for their child. For example, during their individual interviews they stated:

[He] loves climbing, but now it is safe when he climbs. (IP11 6)
[There is] withdrawal space -more outlets for sensory needs. (IP11 4)

Parents also praised other aspects of the learning environment which they deemed important, such as: Correa being a closed environment, that the program used a coordinated approach, that there was an expectation for students to be involved in activities, that students were required to share items, and that independent living skills were being taught in practice.

Speedy and efficient access to varying teaching spaces and resources was considered by staff during their focus group interview to be of significant assistance to their management of students and the teaching process. The physical layout, provision of withdrawal spaces, and proximity and easy access to spaces and resources (including kitchen and bathroom facilities) were reported to be of particular help. These features reduced staff labour and time involved in setting up and cleaning after meals, provided comprehensive toilet and bathroom facilities, and eased the effort required to tidy up after messy sensory activities. In their focus group interview staff conveyed that:
Things could happen in small groups or even pairs and you could isolate those activities from everybody else. So you could have a group inside, a group in the kitchen, a group in the relaxation room and still have the toilet open or access to the toilet organised. (FS4)

Thus from a teaching perspective, the availability of multiple, accessible spaces, and the ease of access to materials and resources facilitated efficient staff movement. As a consequence, staff could set-up and manage varying concurrent student activities oriented to different learning goals.

Further, these design features enhanced staff engagement with students in the teaching and learning processes. This also meant that student needs could be accommodated promptly. For instance staff commented:

Being able to use different spaces makes a difference because depending on the kids’ level of anxiety we use different spaces and so can take different activities to them. We are also able to expect different things. (FS6)

One teacher reflected that once he commenced teaching in Correa, his style of managing students changed because of the range of different areas to which students could move. He noted that “instead of having a whole bag full of distracters, we could say ‘You go here’ or ‘You go there.’” (FS7) That is, the use of different spaces in itself became an effective behaviour management strategy.

### 6.3.2 Modifications to the environment

During their focus group interview, staff indicated that once Correa became operational, several adjustments to the physical environment were warranted. First, while the open space of Correa was useful because it enabled flexibility and could accommodate multiple activities in one area, the noise level was unacceptably high at times. This necessitated the purchase and installation of noise reduction baffles. These were suspended from the ceiling and were effective in dampening sound.

Second, three swings were initially suspended from the ceiling of Correa Learning Unit. However, one of these was removed when it was found that there was insufficient space for children to swing safely in wide arcs. Third, the strength of some items was found to be inadequate for the high level of use which they received.
For instance, the suspension hooks for all swings have all been replaced with heavier duty ones. Metal plates were installed to reinforce the suspension system and this has since functioned without failure. Lastly, most interior wall panels (waist height down) have needed to be replaced with thicker panels at some point since students first occupied the building. The damage did not occur through violent behaviour, but rather through obsessive, persistent picking action by one student in particular who exploited an imperfection in the surface and thus created an initial small hole which subsequently became large. This picking behaviour was the source of potential injury either through the detached material being ingested, or through injury from residual sharp surfaces.

As a consequence of these experiences, staff reflected that there were some design features that they would alter if they had the chance to redesign the Correa facility. The first of these would be to provide better internal acoustics. Acoustics were of concern because some students tended to squeal and/or make loud noises, while others were very noise sensitive. The second item staff identified would be to improve the flexibility of how the internal space was used. They suggested that if the large open teaching area could be divided into multiple teaching spaces, it would enable students to be retained in a more localised area for a particular activity and/or provide an additional teaching space. This perspective was derived from a staff comment which highlighted that “from the point of view of attempting some activity where you want the kids to hone [sic] in on, there are a lot of spaces where they can move away to.” (FS5) A further argument in favour of improving the flexibility of how the internal space could be divided was provided by one parent who noted that her son did not interact much with other people at school. She asserted that his lack of social interaction was exacerbated by Correa’s sheer spaciousness. However any increase in the number of available teaching spaces would only be relevant if an additional teacher was funded to teach in the Unit. Currently an increase in the number of teachers for Correa students is not possible due to the DECS policy governing the staff:student ratio for teaching students with an intellectual disability.

Four other modifications suggested by staff during their focus group interview were that (1) the tricycle path should have softer edges, (2) the outside mound on which
the climbing equipment was sited should have a gentler gradient, (3) the outside area needed an improved shade mechanism, and (4) the sliding door should be designed with a different locking system and handles. Even with these limitations, both staff and parents perceived that the environment of Correa accommodated students’ disability characteristics and encouraged them to engage with curriculum activities. The provision of safe and accessible opportunities for climbing (both indoor and outdoor) and other sensory activities was singled out for particular commendation, as was the provision of multiple spaces to which students could withdraw if they desired.

6.4 Curriculum Priorities

Students’ disability characteristics and learning needs were intended to steer curriculum priorities as evidenced by the existence of the NEP process. Given that progress towards these goals tends to occur in small increments, it was essential that the curriculum be oriented to the requisite skills and knowledge, for these goals to be achieved. If the program implementation maintained fidelity with program design, these priorities should be evident in lesson planning and classroom activity. Thus this evaluation needed to investigate what the curriculum priorities of the Correa program were considered to be by the key stakeholders, whether these priorities were evident in the classroom, and what effect these had on student behaviour and learning.

Agreement was obtained across independent parent and staff focus group interviews that the most important elements of the curriculum were to improve students’ adaptive skills in communication, self-care, and socialisation skills, with student safety and security considered antecedents for learning to occur.

6.4.1 Student Safety

The environment, curriculum content and pedagogy were each directed towards improving student safety. Certainly the environmental design of the facility was oriented to that effect. However, curriculum content and pedagogy were also oriented to reducing student anxiety and minimising challenging behaviours, which it was envisaged would improve student safety. According to staff focus group interviews and teachers’ planning notes, students were taught skills and behaviours so that they
could self-regulate their emotional state and thereby improve their safety as well as their disposition to learning. Six strategies used were (1) encouraging students to lie down in the withdrawal room when feeling anxious, (2) teaching students how to use the Compic ‘Relax’ card, (3) teaching students how to self-massage, (4) massaging the student’s head, arms, and/or legs with deep pressure while quietly verbalising phrases such as “relax leg” or “relax arm”, (5) demonstrating, explaining and practising breathing exercises associated with progressive muscle relaxation, and (6) modifying the environment, for example, by playing calming music or dimming the lights. Improved student safety and competence in the curriculum priority areas of communication, self-care and interpersonal skills, were predicated on the teaching of these self-regulatory skills and strategies.

Across a series of visits, I witnessed each of the above six strategies being used with students. The effectiveness of these strategies was evident from comments made during the staff focus group interview. When asked what were their most effective behaviour management strategies, staff comments included “all the relaxation stuff that we do,” “relax, calm, music,” “choice making,” “lights off, special non-buzz fluoros especially chosen,” and “visual cues.” (FS7) The link between the students’ learning environment, emotional state, safety, and level of engagement with the curriculum was apparent to staff. This is evident from the following focus group comment:

*If the unit was not set up in the way it was, that learning would not happen. They would be quite happy to sit in their own isolated worlds and not reach out or interact with anyone else. There is that dual purpose of not only bringing anxiety levels down, but also providing the expectation that some of that social learning will occur.* (FS8.3)

### 6.4.2 Adaptive behaviour

Whilst still grappling with the mandated SACSA framework in terms of whether the curriculum structure adopted should be framed by the Learning Areas (subject areas) or Essential Learnings, staff increasingly came to realise that the latter provided better scope for framing a curriculum best suited to the needs of their students. Specifically, staff needed to implement a curriculum which not only met their professional
obligations, but also the needs of their students. Proficiency in adaptive skills and improved communication were fundamental to their students’ immediate needs and longer-term quality of life. The Five Essential Learnings (Identity, Futures, Interdependence, Thinking and Communication) provided clear scope for both of these proficiency needs.

A broad range of adaptive behaviours thus became core elements of student learning. During their focus group interview for instance, staff reflected that “we have been able to move to communication as more of a priority because safety isn’t in your face. And we can still manage the personal care issues for the kids. And we can extend that learning.” (FS4) This statement is consistent with their stated Correa program goals as discussed earlier in this chapter (see 6.2).

Teaching functional adaptive behaviours was highly valued by parents. They anticipated that these outcomes could potentially have a lifetime effect for their child and for themselves. They translated these behaviours into a myriad of sub-skills associated with socialisation processes, daily living skills and communication. For instance:

*Waiting*. If they wait at school then they can relate it to other places. They can’t understand that we need to wait for the person before us to pay before we can move through the checkout. He tries to push his way through. People look at you funny…. [For] ATMs it’s the same. They like to look and watch the buttons being pushed and then they can remember the pin number. Especially older people who are just getting used to ATMs and then have this child push through to watch. They get really worried. (FP4)

*With (student’s name)*, I only have to open the kitchen cupboard and he is pulling up a chair. To have tea at 6.30pm we have to start cutting up at 4.00pm and it drives me up the wall. But to me he is learning and one day may be able to put a very basic meal together because he can do that skill. But it is the other living skills like pouring yourself a drink which (student’s name) would never have done in the past, and he has learnt that through school. (FP8.2)

Students’ adaptive skills for independent living, such as preparing food, was hampered by impairments in planning and executing motor movements. Consequently, teaching self-help skills was underpinned by the teaching of gross and
fine motor skills. The priority afforded to gross and fine motor movement was demonstrated by its inclusion as a daily curriculum element for each student. Teachers’ program notes for instance included sections on gross motor locomotor and manipulative skills. These included: throwing and catching (e.g. various balls or bean bags); building and knocking down (e.g. a tower of cardboard boxes or blocks); kicking balls; using hoops to step into, jump from/into/or hold onto as jump, skip, or gallop; walking (e.g. backward); rolling (e.g. balls to one another, or rolling body); pulling (e.g. play tug of war games); or jumping (e.g. off surfaces of different heights). Bilateral gross movement was encouraged. I observed students engaging in such gross motor activities on a number of different occasions.

Further, gross motor activities were also included in the normal routine of classroom activity. This included lifting and carrying objects, pushing items, wiping objects, such as table and chairs, or hanging activities, such as hanging from the climbing equipment. These activities were intended to improve muscle tone, decrease tactile sensitivity, and to teach body awareness, motor planning, touch and object discrimination, and hand and finger coordination. Gross motor activity was variously combined with other motor and sensory activities. This is detailed in 6.5.2.

In order to achieve improvement in functional adaptive behaviour, staff and parents were prepared to trade-off learning gains in one area of the curriculum for another as demonstrated by the following two comments gleaned from the parent focus group interview:

*It’s a matter of learning different things now. Curriculum-wise we are behind where we were earlier. (Student’s name) used to be able to write a page story and type it on a computer which he can’t do now. But I have learnt that sometimes you need to give up on something in order to be able to catch up on other things. I have given up on the work side like maths, reading or writing for him to expand in the living skills. (FP8.2)*

*(Student’s name) could be a computer whizz. I’ve got no doubt whatsoever about that. But that doesn’t mean he will be able to go to the toilet on his own. And so you give up on one set of ideals. ...He can always come back to the computer. (FP8.2)*
As perceived by both staff and parents, teaching functional communication was also a crucial element of the curriculum for each student. While a variety of modes of communication were taught, such as the use of Compics and signing, teaching students to talk was also a high priority. While staff expressed strong support for the inclusion of speech therapy as an on-going curriculum component for all students, this was not possible under the existing DECS regulations regarding centralised provision of such services to schools. Furthermore the existing regulations did not allow individual schools to contract speech or occupational therapy services for their students. One student in Correa did receive privately provided speech therapy as reported by both parent and staff in their respective individual and focus group interviews. Staff indicated that they were happy to liaise with the speech therapist for this student so that his school program complemented the privately provided therapy. The planned school-speech therapist liaison did occur and this was confirmed by the relevant parent in her individual interview. However, the parent expressed that she would like to have even closer ties between what is done in school and what is built into the private tuition sessions.

The effect of this curriculum focus on communication was evident in improved student competence. For instance, one parent stated that the communication level for her child had “increased dramatically. He will indicate to us and others what his wants and his needs are compared to previously when he would kick, hit or scream. Now he says ‘I don’t like it because’ or ‘I would like a drink.’” (FP2)

### 6.4.3 Curriculum shortfall

The range, extent, and quality of curriculum support from external service providers was a key concern of school staff as indicated in their focus group interview. The impact of this perceived curriculum deficit was felt at the student level, in that students were not provided with as much routine occupational and speech therapy as curriculum content as staff would have liked. This issue is elaborated in 6.5.1 below, as well as in Chapter 8.
6.5 Role of Staff and their Impact on Program Effects

The effectiveness of the Correa program was to a large extent dependent on the professional knowledge and skills of the staff, and their commitment to the program. Staff working in Correa Learning Unit were responsible for all aspects of program implementation at the classroom level, including planning for teaching, implementing the program, assessing and reporting student progress, communication with parents, and the management of student behaviour. Taken from a broader perspective, the program was also influenced by school management decisions (such as staff selection and resourcing), staff development, and the contribution of external service providers (allied professional staff) in supporting school staff.

6.5.1 Staffing the program

It is widely known that teaching in special education is stressful, particularly when working with students with complex and challenging needs (Fore, Martin, & Bender, 2002; Littrell & Billingsley, 1994). Thus when mounting a program for students with such needs it is prudent to consider carefully the process by which program staff will be selected. A merit selection process would consider the qualifications; philosophy; experience; and professional skills, knowledge and attitudes of that person in order to gauge their suitability to deliver the program in the manner intended. It would also be prudent to assess some of their personal qualities, such as resilience.

Modbury Special School is a DECS designated hard-to-staff school. This gave the Principal some control over contracting teachers and support staff to the school. Only teachers who were registered with the Teachers Registration Board of South Australia and had also registered their details with DECS could apply for a position at the School. The Principal (and more recently the Management Team) could then rank eligible applicants and forward those rankings to DECS, who ultimately decided the appointment. Applicants appointed via this method could gain permanent status with DECS if they did not already have this. Staff who directly contributed to the Correa program comprised school-based staff (teachers, SSOs, school managers) and staff who visited the school as allied professional staff. These are discussed in turn in the following paragraphs.
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School-based staff

The inaugural class teacher of Correa (2001) indicated in his individual interview that he elected to teach this group of students because he had taught seven of them in the year prior when they were students in the Cassia Learning Unit. As such, he provided staffing continuity at a time when the students were experiencing significant change in other aspects of their learning environment. For the following year (2002, the year of data collection), two teachers shared the full-time teaching position and two SSOs shared the full-time School Support Officer position. Both teachers had been invited to teach the class by the Principal and had indicated that they were happy to do so.

Staff confidence to teach in the Correa Learning Unit varied from “very confident” for one staff member, to “quite confident, -need more professional support” for the other. Teaching staff described themselves positively in terms of attitude and resilience. They used phrases such as: “love special education,” “like to take up a challenge, for example working on an individual program,” “a risk taker,” “patient, do not get flustered easily,” “very resilient,” “persistent,” and “healthy - not absent from school through illness.” (IS4) No negative traits were raised. During their focus group interview, staff also voiced the belief that in order for the program to work, it needed to be staffed by personnel who have a desire to work differently with these students in the Correa environment.

Both teachers indicated during their individual interviews that they felt competent to teach the Correa students and indicated that they would be happy to teach them again the next year. Both teachers also stated that they felt supported by the school ethos and structures. One expressed that she felt “very supported,” while the other confirmed that there were “supportive structures in the school.” (ISB7)

Despite these declarations and their pre-service training in special education which prepared them for teaching students with a broad range of disabilities, teaching staff lamented that their undergraduate education had not provided them with sufficient depth of skills and knowledge for teaching students with low-functioning autism. Neither did they feel that their pre-service education had adequately prepared them to manage the very challenging behaviours which they needed to address on a daily basis.
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basis. To a degree, the shortfall in staff knowledge and skills was addressed through the weekly staff development program discussed later (see 6.5.3). However, they still felt that quite a lot of what they did was guesswork. Staff concerns were encapsulated during focus group conversations such as the following:

*See the other thing that hasn’t happened really is the sexuality stuff. They’re still a young group of students. It’s bound to occur now. It’s just a matter of time before it’s in our face. And we’re not prepared for that because who do we go to. ...We need to think differently about how we handle those students with really challenging behaviours. And how do we do that safely? ...And again as teachers, we do not have the training for all that. Even physically managing some of the students in those situations, let alone understanding psychologically where they are coming from.* (FS14)

Staff were also not privy to what medication each student was taking and how this may have affected their behaviour. Statements such as: “*see all of them have some sort of medication. The impact that has on their learning is quite significant, ...and we don’t have that knowledge,”* and “*well we don’t even have access to that information*” (FS14) exposed deficits in staff knowledge which they assumed would impact on student behaviour and learning in ways of which they were not aware.

Finally, teaching staff also expressed the need for SSO hours to be extended beyond the current 3.00pm finishing time each day (when students go home). They considered that this additional time could be used to prepare teaching resources given that the focus during the school day was to work with students. Compic cards for instance needed replacing regularly as they “*tend to get destroyed or lost.*” This work needed to be undertaken in non-teaching time.

**Allied professional staff**

The reader is reminded that as stated in Chapter 1, the DECS approved level of allied professional support from external service providers for Modbury Special School was set at: less than 1 full day/fortnight consultant teacher/developmental officer (via Autism SA); 0.5 day/fortnight DECS speech therapist; and a DECS disability coordinator provided on a needs basis (see Chapter 1). This time allocation necessarily spanned all relevant students in the school, not just students in Correa. As
a consequence, Correa students and their teachers received only a proportion of the
time each of these service providers had allocated to the school.

Generally speaking, the intended role of visiting allied professional staff was to help
staff assess individual student developmental needs and direct staff to effective
strategies consistent with student learning needs. However, the on-site time provided
by allied professionals and the quality of their support were both deemed by all
Correa staff to be inadequate to meet teaching staff (or student) needs. Not
surprisingly therefore, teachers considered that the Correa environment was “not
really supported to a sufficient level with other professional disciplines, therefore it
cannot reach its full potential.” (FS10)

Apart from the approved overall level of allied professional support being scant when
considered from the perspective of individual teachers, the support time was eroded
through cancellations of visits for one reason or another. Staff concerns regarding the
infrequency of visits were substantiated by the school having received considerably
less than their allocated allowance of allied professional support during the year of
data collection. For instance, during 2002, the consultant teacher from Autism SA,
who was scheduled for fortnightly visits, did not visit the school at all during terms
one and two (due to sickness) and visited less than 50% of the allowable visits during
terms three and four.

During their focus group interview, staff also lamented that the existing service
 provision model was not time-efficient because a significant proportion of service
provider time was spent in transit as evidenced by: “[m]ost of their time is spent on
the road and in meetings. Very little of that would be of direct use to our students.
And we have told them that.” (FS14)

Staff also believed that the existing system did not enable sufficient time for each
provider to understand the context of each student and thus tailor recommendations to
individual student need in a contextually relevant manner. For instance:
Part of the problem is that people come out, observe the kids for a short time, - and these are very complex children. I couldn’t believe it. She said she was going to write a report after her very first visit. Now you might be able to get away with that with some mainstream school where you have kids with autism that are just a bit different, but not someone like (student’s name) or any of the other kids in Correa. (FS10.1)

Apart from issues associated with time, school staff also perceived that the support services to the school often lacked quality. Lack of quality was appraised to encompass: the orientation/level of the support provided; the lack of in-depth professional knowledge per se; and the limited knowledge about individual students and the teaching context. These perceived deficits caused concern for Correa staff who acknowledged the limitations of their own knowledge and were looking for guidance in a form which was useful for the classroom setting. For instance Correa staff stated during their focus group interview that “what happens at the moment with service providers is that they come here and want us to fit into what they can provide. That’s not actually what we want.” (FS14)

The professional competence of three allied professionals was queried. For instance, the consultant teacher from Autism SA was trained as a generalist mainstream educator, not a special education teacher, with on-the-job training by Autism SA to upgrade her skills for the consultant position (J. Aschberger, personal communication, December 30, 2007). Further, this consulting teacher had no previous experience working with autism. As a result, school staff lacked confidence in this advisory service, stating: “it creates tensions because you do not really know what you can ask them to do.” (FS10.1) While teachers indicated that they tried suggestions made by allied professionals, these ideas were generally found to be of limited value because they did not incorporate the fact that the teacher was also concurrently responsible for other students in the class.

All Correa staff clearly wanted closer operational links between the service provider and what happened in the classroom. High quality, regular, ‘hands-on’ speech and occupational therapy, were singled out as being urgently needed. These were needed on an individual student basis and also to provide specific program input. For example, staff suggested that a speech therapist could offer intensive picture exchange...
communication system (PECS) training for staff. A speech therapist could also assist teachers to devise a developmental communication program, including the identification of criteria indicating the need for progression, which could then be tailored to each student. Staff also reiterated in their focus group interview that this level of specificity was not provided by the current service provision model in which advisors visited the school and worked mainly on a broader advisory basis. An example of this sentiment being expressed was:

[We need a] speech therapist definitely so that the school program can support private speech therapy, not just an advisory service to the school, but [a therapist who will] sit down with the teacher and work out what is appropriate for a kid at this level, when to progress etc. (ISB8 4)

Teaching staff expressed their need for knowledge drawn from other professions which could inform their own practice. They theorised that on-going support from an appropriately qualified psychologist who understood the context of each student would also be a step in the right direction. Staff considered that this/these person(s) could help assess when a student was ready for the next developmental stage and what indeed that stage entailed. Teachers believed that this type of input could provide much more specific guidance for themselves when making curriculum choices for individual students. During their focus group interview, staff indicated that they needed information to be provided:

In a format that we know or that we think will work. ...And how do you extend it. See that’s what bothers me. Quite a bit of that is guesswork on our part. We know the students and see how they respond, but we don’t have the professional knowledge about presenting it to certain students. Knowing what would psychologically help the students develop would be a major gain. Because developmentally these students are really delayed. I mean while we’re excited about the gains they have made, they are still students who are operating at a very low developmental stage. (FS14)

Despite these desires expressed by staff, the school had neither control over selection of the external providers contracted to the school (hence their professional competence and/or attitude), nor the frequency and duration of their visits. The contracting parameters were set by the DECS service provision policy. Further, under the Education Act, DECS could not employ occupational therapists directly for
schools. The existing service provision model channelled money from the DECS Ministerial Advisory Committee Disabilities to Autism SA, who in turn contracted allied professional staff to schools on a negotiated basis. The Principal was also not empowered to employ speech therapy or occupational therapy for individual students directly, even though the school may have wished to do so.

While staff agreed that the facilities provided, the re-orientation of the curriculum, the modification of teaching and learning processes, and the adoption of non-aversive behaviour management techniques had all contributed to the achievement of improved student outcomes, they also recognised that there were staff funding constraints impacting on the program which they would like to see adjusted. These constraints were concerned with both school-based staff, and the frequency and quality of visiting external providers as just discussed.

Additionally, based on the complexity of student needs and the space available within the facility, staff perceived that the program would also be better served by having an additional teacher in Correa. They argued that having another teacher appointed to Correa would enable improved targeting of the program for individual students, and the teaching of living skills to be incorporated more frequently into the program. For instance, activities such as food preparation and cooking, cleaning teeth, how to make a bed, and the Community Access Program (CAPS) could be conducted more frequently. This would allow two teachers to work concurrently with different students and to improve the targeting of the program for specific students. The extra staff member could also enable more functional assessments to be conducted, as well as providing capacity for more consistent recording of individual student progress and more immediate reinforcement of behaviour. However, school management indicated that the school could not afford to fund another teacher from their global budget in addition to the extra 30 hours SSO support which they had already funded for Correa. An additional teacher was not considered for appointment by DECS because their staff funding ratio was based on the children having an intellectual disability, not for autism per se or the actual needs of Modbury students. Accordingly, staff indicated that they would like to see an increase in the overall level of funding support provided
from DECS for all staffing, and greater flexibility in how the school budget could be spent on staffing.

**6.5.2 Curriculum implementation**

Staff were required to develop a NEP with parents which articulated the agreed learning goals for each student. The NEP, together with the SACSA framework, was intended to guide the development of individualised curriculum.

I sighted signed NEP documents for each of the nine Correa students. Student programs contained areas of curriculum commonality but also distinct differences. Key foci included teaching students to monitor and manage their own emotional state, improve adaptive skills for functional living, improve functional communication, and develop socially adaptive behaviours. For instance, with kitchen and toileting facilities integral to the Correa facility, food preparation and eating were routine components of the curriculum. Toileting was also incorporated as a daily routine. The NEPs also recorded student interests and preferences and these, in turn, were intended to inform curriculum activities. For instance, food preparation was built around individual students’ preferred foods.

While a NEP was devised for each student, it was perceived by staff as a working document. Any modifications were considered to be responsive, normal, and desirable so that the operational curriculum adjusted to changing circumstance and context. Changes tended to be in response to some unacceptable behaviour. For example, as confirmed in the respective NEPs a behavioural program was initiated for one student for instance to: “combat his unacceptable levels of pushing.” (ISB1.1 4)

For another student, the program focus changed to personal care “following his exclusion from public transport (taxi)” (ISB1.1 3) due to inappropriate urination. Despite these efforts to adjust individual programs to match student need, staff nonetheless indicated that non-adaptive behaviour continued to detract from student learning time.

Teaching occurred mainly on an individual student basis. Teaching strategies which staff found to be most effective included: providing students with choice of activity
and working area; providing a range of concurrent activities (including gross motor activities, relaxation and climbing opportunities) for different students; manipulating the environment in accordance with student mood (e.g. minimal speech, use of music, varying the sensory equipment available, or switching the lights off); and using visual cues. For instance, during their individual interviews one staff member stated that “the variety of possibilities for presenting the curriculum” (ISB2 3) was a substantial asset for helping students engage with the curriculum. Staff noted during their individual interviews that there were a range of factors which particularly helped students engage with the curriculum. A number of these related to the way the curriculum was implemented, such as teaching via the sensory mode, access to various learning spaces, the use of visual cues, and the provision of student choice.

**Sensory-based activity**

As indicated in the focus group interviews, staff and parents both perceived sensory activity to be valid as both curriculum process and content. It was used both directly and indirectly to regulate student behaviour and was premised on the belief that it would induce a calming effect on students. As a result, it was anticipated that students would be more predisposed to engage in, rather than distract themselves and others from the learning process. As indicated in the staff focus group interview it was also believed that sensory tolerance could be taught.

Grounded in the belief that vestibular movement has a calming effect on students with autism, a range of swinging and rocking equipment was provided as part of the normal operating indoor and outdoor environment of Correa. This equipment included: hammocks and swings suspended from ceiling hooks; physio balls; tunnels; and foam shapes such as wedges, rockers, and logs (see Chapter 1). Student engagement in sensory activity could be initiated either by staff or students and the equipment was freely and routinely available for students to access at any point during the school day. The range of sensory equipment available on any one day varied, with equipment not in use being placed in a storage room and screened from view by a roller door.
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Students were free to climb or locate themselves in or on any of the equipment and engage in their curriculum activity at that location. During periodic visits to the facility, differing students were observed using the sensory equipment, sometimes as an end in itself and at other times while also engaging with learning materials and/or a staff member as depicted in Photos 15-17. Evidence of the integration of curriculum engagement and vestibular movement is provided in Photo 15.

Photo 15 Student engaged in learning activity while swinging

Correa was also furnished with a varying range of mobile sensory equipment both as part of the ambient classroom environment, such as the white parachute in the bottom right hand corner of Photo 17, and for use in the teaching and learning processes (see Photo 16 and foreground activity of Photo 17).
Sighted staff curriculum planning notes suggested that while students were on the sensory equipment they could work on any one of a large variety of activities, such as colour sorting, listening to a story, Compic identification, or imitation skills. Further, curriculum notes contained explicit planning for tactile, oral and olfactory activities.
designed to have a direct sensory effect. Examples of tactile activities included deep pressure input, slow linear swinging, drawing shapes in/with a tactile medium, finding hidden objects in a tactile medium, and picking up and placing small items. Teachers used deep pressure massage such as squashing the student under a large physio ball or between two large cushions, or rolling the student in a blanket or sleeping bag and then applying pressure by hand. Firm rather than light touch was recommended when commencing tactile activity because it was tolerated by a child with autism more easily. Oral-motor activities aimed to increase body awareness and muscle strength of the mouth and lips. These included blowing (e.g. bubbles into the air or bubbles into water with a straw, whistles, ping-pong balls), sucking (e.g. thick liquids through a straw, lollipop, mouthing toy), chewing (e.g. dried fruit, mouthing toy) or licking (e.g. place food substance on lips or sides of mouth and get child to lick it off). A mirror could also be used for such licking activities. Olfactory activities involved adding different smells to objects such as rose or lavender oil onto a hanky, adding scented oils to playdough (especially warm playdough), or using fragrant fruit such as oranges to cut, smell and squeeze. Several of these activities involving a range of senses, were observed by me on different occasions.

Both informant groups also independently agreed that sensory-based activity did have a calming effect on the students. For instance, during their focus group interview when parents described what they thought were the most important elements of the physical environment from the student’s perspective, they suggested “all the sensory stuff” and “caters for all needs - all the sensory needs. Variety of equipment is important.” (FP5) The focal role of sensory-based activity was also evident in staff focus group descriptions of the perceived program goals. They stated the goals to be “firstly to calm students - decrease sensory overload” and “provide safety and sensory development.” (FS1) Staff also referred to sensory activity when describing what they perceived to be effective teaching and behaviour management practices by stating “the other thing is being able to offer learning activities via the sensory media.” (FS6)

Thus the focal role of sensory activity was consistently noted across informant groups and across different perspectives on the program. The inclusion of sensory-based
activity as both curriculum content and process was seen by staff and parents as conducive to calming students and pre-disposing them to improved engagement with the curriculum. As such, the inclusion of activities designed to teach students to relax and self-regulate behaviour as core curriculum content and process was consistent with both the antecedents to learning identified in the program theory, and the perceived program goals identified by staff.

One of the complexities associated with sensory learning is that students have idiosyncratic responses to different sensory input. Staff therefore needed to be familiar with the individual characteristics of each child and work in a manner which was congruent with these. For five of the nine students, staff identified that the sensory mode of curriculum delivery was being positively received by students. For example, in reference to specific students they stated that this form of delivery “works well with visual work, especially photographs” (ISB2 2) and “he has responded well to the rice pool.” (IS2 3)

Visual cues

Teachers perceived visual cues, including Compics, writing, pictures, photographs, gestures and signing, to be effective measures for communication. For example, one staff member pointed out that “visual cues and minimal speech are my winners.” (FS7) Similarly, when citing aspects of the program that helped students engage with the curriculum, another staff member mentioned “the use of visual systems. By that I mean Compic cards, picture exchange, timetables.” (ISB2 5) Visual cues provided the means for students or staff to make a request, provide instruction, initiate a task, or offer information. Compics were also useful in assisting students to self-monitor and manage their feelings and subsequent behaviour by selecting and actioning the ‘relax’ Compic card. Compics were also transferable to different environments. Such focal use of visual cues is consistent with these students’ atypical cognitive profile of relatively enhanced visuo-spatial abilities (see 2.2.1). Students could also express themselves orally, via signing, or via some other mode of communication such as augmented communication.
Individualised curricula and the use of visual prompts were observed on the classroom wall display area, in individual student Compic books, and when used by students as they worked or communicated with staff. This static use of visual cues is consistent with the research evidence that the poor working memory of students with autism warrants information to be presented in a non-transient manner (see 2.5.3).

**Student choice**

As a motivational strategy, students were also encouraged to make curriculum choices for themselves. To facilitate this, each day staff selected a set of Compic cards for each student and displayed these on the wall under the photograph of that student. This process enabled staff to select the program but also enabled students to choose which activity they wanted to engage in at any point during the day. The students would then move to where they wanted to do this activity within the facility.

This strategy of encouraging students to choose the curriculum activity and location was evident each time I was present in the classroom, whether the visit was anticipated by staff or not. The reverse of this situation was also observed when staff took a Compic to students in order to initiate a learning activity.

Staff commented that students’ capacity for making choices was improving and that:

> They are choice making themselves a lot more now. Like if (student’s name) is squealing, (other student) will choose to go outside. He will indicate it by going to the door [and] now that we have students speaking, we hear students making those choices too. (FS7)

This provision of student choice within the Correa curriculum is consistent with views expressed in the literature (see 2.5.1) and the broader educational principle that: “the most successful curriculum planning will have sought the input of the pupils” (Carpenter & Ashdown, 2001:6).

**Program fidelity**

I observed teaching and learning processes being conducted during my visits to Correa Learning Unit. During these visits, many of the strategies described above
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were observed in use. For instance, Compics were observed on the display area as individual cards, sequenced as a timetable; as choice boards; in individual student Compic books; and being used by students as they worked or communicated with staff. The posted Compic timetables provided a static display of the routine for the day and thus provided non-transient prompts and predictability for students. Students were also observed self-locating to a site of their choice to carry out their selected activity, with multiple items of sensory equipment available and in use by students. Staff indicated that they sought to maintain a quiet ambient noise level as described in the previous section. I found this to be so on arrival and throughout the duration of site visits. I also observed that apart from the functional posting of Compics, the internal physical environment was devoid of colourful, decorative, teaching material or examples of students’ work which one would normally expect to see in a classroom environment.

These observations support the flexible and varied ways in which the curriculum was presented to students. I also noted varied learning being undertaken in the classroom. In the majority of instances a significant sensory element to the curriculum activity existed. Sometimes this was integral to the activity (such as in Photo 17) and sometimes incidental (such as in Photo 15).

Student and curriculum-related management

The management of student behaviour in Correa was significant, complex and demanding. There was often not an obvious link between stimulus and behavioural response. In the frequent absence of such overt stimulus-response linkage, a multi-faceted approach to managing student behaviour was implemented. This approach was based on principles extracted from the research literature and it affected both structural and procedural program elements. Further, this approach was inextricably linked with both the environment in which the students were educated and the actual teaching process. The reader is reminded that it was hypothesised earlier (see 4.3) that the incidence of challenging behaviours would decrease if students were calmer. It was anticipated that as a result, students would spend longer periods engaged with the curriculum. This next section describes the behaviour management strategies...
implemented together with their perceived effectiveness. Any consequent program
effects on student learning are reported in Chapter 7.

The program structural elements designed to have a calming effect on students, such
as muted colour décor, non-buzz lighting, and multiple and clearly delineated spaces
for learning were evident. Teaching strategies designed to have a similar effect were
also noted. These included, for instance, students being provided with non-transient
visual timetables, student choice for both activity and location, quiet teaching voice
tone, positive reinforcement, and the copious use of visual cues. Further, curriculum
content intended to help students manage their own behaviour, such as learning and
practising relaxation techniques, had been instigated. The withdrawal room was also
used to help students manage their behaviour. At the time this room was observed,
subdued coloured lighting was being projected on the walls and large cushions were
used for student comfort. No music was being played although there was facility for
this to occur if desired. Finally, across all visits there were no instances in which
raised or loud staff voice(s) were heard or agitated staff behaviour witnessed.

Teachers indicated in their individual interviews that the most effective strategies for
managing student behaviour included: (1) non-aversive behaviour management
techniques, including attending to the antecedents to learning and positive
reinforcement; (2) maintaining a calm environment (e.g., special non-buzz
fluorescent lights, music, muted colours, and access to different spaces); (3) teaching
the students to monitor their own stress levels; (4) teaching students techniques to
reduce their own anxiety levels (e.g. teaching relaxation skills, regulated breathing,
use of deep muscle massage); (5) the use of multiple learning spaces; and (6)
providing student choice of curriculum activity and location. Behaviour management
strategies included redirection/distraction.

The administrative duties of staff also included provision of a written entry in the
daily diary/communication book for each parent; recording all phone contact with
parents (including written notes from the discussion); completing relevant forms
related to behavioural incidents and accidents; and when an undesirable behaviour
was escalating, conducting a time-slice behavioural record. Behavioural records
involved completing a half-hourly observation checklist of the behaviour, coded for instance for biting, hitting, kicking, swearing, throwing, and/or property damage, which then was used to try to determine the precipitating factor(s). These activities were time consuming and competed with time when they could be engaging with other students. Antecedents and consequences were not recorded.

Student activity and achievement were reported to parents twice per term via the student portfolio. These folios were not sighted by me as they were retained by respective parents.

In conclusion, staff indicated a high level of commitment to the program and felt supported by school structures and ethos. Their pedagogy was evidence-based and included individualised curriculum priorities oriented to student safety, communication and adaptive behaviour. Pedagogy also was reliant on sensory-based activity and visual cues. Staff acknowledged that limitations of their own knowledge and skills, and saw a dire need for improved service provision from allied professional staff.

### 6.5.3 Staff development

Staff development is integral to every school in South Australia. Indeed, it is mandated that all teachers participate in a government enacted minimum amount of professional development per annum. As such, staff development activities conducted at Modbury Special School were devised for all staff teaching at the school, not just those teaching in the Correa Unit. The program of staff professional development offered at the school was however integral to the successful implementation of Correa.

Both Correa teachers were expected to attend professional development meetings. Although not compulsory because their working day officially ended at 3.30pm, SSOs were also encouraged to attend these meetings, with attendance time able to be counted towards their required annual 37.5 hours of professional training.
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Facilities for staff development

Staff development meetings were conducted in a dedicated room which was separate in location and function from the general purpose staff lounge area. This carpeted staff development room was almost square in shape, air-conditioned, and was well-lit with banks of large windows on two walls and eight fluorescent lights for further illumination if needed. The room was equipped with a fixed 4.2m wide whiteboard, a 1.6m wide portable whiteboard and a 2.4m wide electronic whiteboard. There were also four pin-up boards, one of which was 4.25m wide, two were 2.45m wide, and a fourth was 2.15m wide. Two computer workstations were located against one wall. In one corner was located a mini kitchen. It comprised a fridge; microwave oven; hot water dispenser; sink plumbed with hot, cold and filtered water; and eating and drinking utensils. The main floor space was furnished with four, 2.6m diameter circular tables, each of which could comfortably seat eight persons, thus facilitating group discussion. There were 30 modern comfortable chairs for use at these tables and two computer chairs.

The professional development room was used for weekly staff meetings and also for extended professional development workshops which were held at least once per term. The structured 90-minute weekly staff meetings comprised 10 minutes small group reflection time, 10 minutes housekeeping/administration, and the remaining time (70 minutes) as dedicated staff professional development learning time. The staff development program was outlined at the beginning of each term. It was in part negotiated with teaching and support staff, and partly initiated by the school leadership team. The program was based on identified needs and included topics related to the characteristics of autism through to pedagogy (such as managing the learning environment) motivational strategies, the use of a multi-faceted teaching approach (and how to constantly meet a wide range of learning needs), and occupational health and safety issues, such as manual handling and managing student distress/hygiene.

Staff development recorded outputs

All ideas/materials/outcomes generated at these staff development meetings (including all working papers) were recorded and stored in the room so that they were
easily accessible. The recording and storing of these documents served two functions. First, it provided evidence of the training content. Second, it constituted a transparent record of deliberations, decisions and actions emanating from these meetings.

The walls of the room were used to display material generated from these sessions and provided a visual historical perspective. For instance, one sheet identified the characteristics of the school from 1993-1995, the period prior to the appointment of the current Principal. The nine point list of characteristics included: “television, lots of it”; “child-minding mentality”; “punishment based behaviour management”; “no T&D, no leadership, no teamwork”; “mixed-age groupings, no fences, no variety” [and] “lunch play was not fun/dangerous.” This historical perspective included a photographic timeline of incoming staff for each year since 1995, and a series of overview charts which traced the learning journey of the school from 1996-2002. Each chart preserved the staff agreed values, attitudes, achievements, and highlights for each year. Since 2002 these learning journeys were recorded on large coloured charts. Each chart was divided into four equal squares respectively titled ‘Classroom’, ‘Curriculum’, ‘Operations’, and ‘Other’. Each staff member wrote an entry for each section on coloured sticky labels and these remain displayed in the room to the time of submission of this thesis.

Due to the decreasing availability of wall space, since 2004 display information of the nature referred to in the previous paragraph has been placed in an A-3 plastic sleeve folder located on a bench placed at the side of the room. Each folder contained every item of paper developed for each meeting and generated during them. These included butcher’s paper workings, rough jottings, post-it stickers, and information sourced from staff on specific topics such as use of a whole-school timetable, the student review process, bullying, group processes, ideas for future workshop topics, and end of workshop day feedback sheets. These feedback sheets sought proactive, pragmatic suggestions by using headers such as: “things that require ‘our’ improvement and your suggestions about how this could occur.”

Sticky dot chart displays graphed staff attitude from the commencement to the end of many staff development periods. Each staff member was provided with two sticky
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dots: one for registering their attitude to the relevant staff development topic prior to training commencing, and the other to register their attitude at the end of training. All commencing dots were one colour with a different coloured dot used at the conclusion. Each staff member drew a secret number and this was written on the front of each of their two dots. Both prior to training commencing and at the conclusion, their respective dots were placed on a bar chart, thus allowing the shift of attitude to be measured on a collective and individual staff basis. I noted very distinct, positive shifts of staff attitude.

Use of consultants

Apart from investing in the staff development facility and providing weekly time for staff development, school management invested in importing specialist consultants to conduct training on specific topics. For instance, from the time Correa commenced (2001) until data collection, the following services had been contracted:

(1) a behavioural psychologist to provide a series of four half-day workshops to help staff gain a clearer understanding of non-punitive behaviour management strategies. [Both Correa teaching staff attended each workshop.]

(2) a speech pathologist to conduct a 2-day workshop on how to use visuals effectively. [Both Correa teaching staff attended both days of the workshop.]

(3) 45 hours/week support staff time to prepare visual cues (such as Compics, photographs, schedules and visual cue books) for use in classrooms across the school, and for use by parents in the home environment.

Staff and the school management team believed that they had drawn to the fullest extent possible from resources available to them locally, and were now exploring international best practice. The search involved the Principal visiting a number of highly-regarded schools for students with autism which were located in other developed countries.
Changes to practice ensuing from staff development

I found evidence of the training just described being translated into practice through the way the students’ learning environment had been structured (antecedent behaviour management strategies), the breadth of curriculum content (such as teaching and practicing relaxation several times a day), detailed staff lesson planning notes, the production and use of visual cues, and behaviour management strategies being used in the classroom. Students used visual cues as they worked. Observations of this use of visual cues can be verified from Photos 15-17 presented earlier in this chapter. Visual cues and non-aversive behaviour management were also both mentioned by staff as being amongst their most effective behaviour management strategies.

Thus, the design of the staff development room, the program of staff development and the routinely maintained meeting records (detailing processes, decisions, and evaluations), constituted evidence of a deliberate strategy by management to foster staff collaboration, involve staff in school decision-making processes, and generate an expectation that all staff become learners in the educative process.

6.5.4 Staff stress

Teaching students with low-functioning autism is stressful. This stress can impact on both private and professional spheres of a teacher’s life. Thus if work-stress can be reduced, then apart from the commensurate health benefits for the teacher, they are also more likely to be at work and to function more productively whilst working. Constant staff attendance also averts staffing change for Correa students for the period of teacher absence. Thus it is useful to determine whether the Correa program impacted on staff stress levels, and if so, what aspects of the program were the most significant in doing so.

The stress impact of teaching Correa students was evident from comparative focus group comments. One staff member recalled empathising with a colleague who had been teaching these students prior to Correa commencing. She reminisced that she could "remember thinking I know nobody can cope with that. That’s all I could think of. And I didn’t have to at that stage." (FS8.4) With the benefit of hindsight, others could also see the lighter side of what had, at the time, been traumatic experiences.
The following discussion provides clear evidence that moderated student behaviours had a marked effect on reducing staff stress levels.

*And a lot of those anxiety behaviours are missing, like the vomiting and the self-stimulation. You don’t see those behaviours now. *...And it wasn’t just the odd day that you had it. It was all the time. It was constant. It didn’t let up. *...And there was the biting stuff. We used to go home from Cassia with biting welts down your arms. And the staff were all scratched. *...And think of how (student’s name) used to be, and (student’s name)? *...Twice this year he has pinched me. Two times. And I can tell you why it happened. It’s so different. You could be pinched constantly. *...And having to write notes every night. *...With your poor bleedi ng arms [laughter] *...And the incidents on the buses and taxis. *...And the amount of breakages we used to have – We spent thousands of dollars repairing and replacing everyday items on the classroom - TVs, cassettes, textas, pens, spoons, lights. (FS8.4)*

The resultant sense of relief was reinforced and expanded in subsequent discussion as staff attributed the decreased incidence of students’ challenging behaviours to a reduction in student anxiety levels. That is, calmer students and improved student safety resulted in reduced staff stress levels. This was exemplified in the following dialogue:

*As soon as I was in there, the stress levels dropped by 50% straight away. *...So the focus could be on teaching as opposed to physical safety...The walls are like an extra staff member. *...For us it was sometimes just being safe from each other as well. Sometimes if (student name) would have a stress attack or (another student name) would get very anxious, they would just hoe into each other. *...We had options. *...And safe options at that. You knew that outside was a safe area. *...And you didn’t need to send a staff member with them who would also be at risk. (FS9.1)*

The environment was thus pivotal in decreasing staff stress. Because the disability needs of students, including climbing, were being met within the unit, the incidence of injuries sustained from unsafe climbing or challenging behaviours was severely curtailed. Further, because the Correa facility was a secure, closed environment, staff felt more relaxed and could focus on their teaching rather than having their attention diverted to attend to absconding behaviour. For example, one staff member described how:
From my point of view, the environment is safe. No matter what is happening inside the rooms, the environment is such that those students can’t escape. So this is one less thing the staff have to worry about - students running onto the road, the car-park, - those sorts of things. So the physical environment automatically made it a safe place to be. (FS3)

The importance of improved student safety in reducing staff stress was evident when staff were asked to nominate what they considered to be the most useful aspects of the program. Nine of the 12 staff responses were concerned with improved student safety. The remaining three responses related to the capacity of Correa to accommodate teaching which was sensitive to disability needs. Speedy and efficient access to varying teaching spaces and resources, provision of withdrawal spaces, proximity and easy access to kitchen and bathroom facilities which facilitated the teaching process also reduced staff stress.

With improved student behaviour there was not only a reduction in staff time needed to deal with the incident(s), but also there was a proportional decrease in time associated with completing relevant accident/incident forms. Staff remarked:

There aren’t the same number of incidents from this group of students that there were. When they were in Cassia there were a lot. Students would often be removed from the Cassia building. They would be in the courtyard or with another staff member so it meant that always had an impact on how many staff we had left. (FS8.1)

Because staff were able to remain in the classroom rather than needing to be elsewhere, the scope for engaging students in learning activities was therefore enhanced.

Thus, improved student safety and security afforded by the physical environment; the reduction in student challenging behaviours, the easy access to appropriately equipped kitchen and bathroom facilities within the facility, and the ease of access to teaching resources all contributed to decrease staff stress. As a consequence, staff were able to focus more attention on their core teaching responsibilities. Correa teaching staff and SSOs also indicated that they were prepared to teach in the unit again the next year, indicative that they felt supported by the Principal and school ethos.
6.5.5 Section summary
Correa was staffed with motivated personnel whose self-efficacy was high. Nonetheless teaching staff believed that the generic nature of their pre-service special education training, their restricted access to allied professionals, and the less than optimal quality of the visiting allied professionals curtailed program effects. Whilst frequent and useful, the staff development program was insufficient in itself to resolve staff knowledge and skill deficits.

In terms of curriculum, NEPs were completed for each student and these were modified on a needs basis. Individual student programs were designed and operationalised. Staff found that the use of visual cues, student choice, and strategies to enhance predictability, were effective as standard classroom procedures. Staff also believed that the layout and facilities of the physical environment were crucial to the achievement of program goals and simultaneously reduced the stress associated with teaching students with low-functioning autism.

The management of student behaviour in Correa was significant, complex and challenging. Staff indicated that the use of non-aversive behaviour management techniques reduced the incidence of problem behaviours and contributed to a productive learning environment. These included pro-active elements (such as teaching the students to self-monitor their stress levels and techniques to reduce their anxiety) and reactive elements (such as distraction and re-direction).

6.6 Role of Parents and Their Impact on Program Effects
The effectiveness of the Correa program was in part also determined by the attitude of parents to the program and their collaboration with staff with regard to shaping the curriculum and adopting strategies used at school in the home. When asked how satisfied they were with the program overall, all parents attending indicated that they were very happy.

Even so, across both individual and focus group interviews, parents posited a range of suggestions about how the program could be improved. They suggested: (1) the inclusion of more group work, (2) more 1:1 language direction, (3) more
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challenging goals and activities for one student who was more advanced than others in the class, and (4) preparation for transition stages.

The parent who suggested that the program could be improved by the inclusion of more group-oriented activity suggested that this could be achieved through the creation of “more similar classes so that students could be closer linked with age/disability/sensory needs.” (FP15) In relation to the second point above, another parent suggested that the program should “have a full time speech therapist and then do it 3 hours per day. I used a speech therapist privately with (student’s name) and it helped immeasurably.” (FP15) This sentiment echoes the desire for more speech therapy support so strongly expressed by staff.

Whilst recognising the difficulties created by the disparate variety in students’ age, abilities, emotional needs and impairments, parents also expressed concern about being prepared for the “next move”, whether that be transition to post-primary school placement, or the next developmental stage of their child, such as adolescence. These concerns again echo those expressed by staff in the previous section.

6.6.1 Negotiated Education Plan

The parent(s) of eight of the nine students stated that they had been involved in development of the NEP for their child. Of these, two parents made suggestions for improvement. They considered that: (1) “the NEP is not the ideal document as for instance, we don’t know the implementation methodology” (IPB4 6), (2) more feedback on what was actually implemented for the program would be helpful, and (3) more follow-up information on the extent to which their child’s goals were achieved could assist. The parents of one student indicated that while they had been involved in the process of NEP development, the actual curriculum delivered in the classroom was not challenging enough for their son. The ninth parent (who had limited English skills) indicated that she had not been involved at all in negotiating a curriculum plan for her son. However, as confirmed in an informal interview with the Principal, an interpreter had been provided for each NEP meeting with her and I did see a staff and parent co-signed a NEP document for her son. Thus, it appears that despite the use of an interpreter for both the NEP process and the interview process
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for this thesis, there was a communication problem with this parent at either or both of these discussions.

6.6.2 Home and school liaison

Parental trust of professionals (such as teachers) is to a large degree influenced by their perception of the professional’s disposition to do the best they can for their child (Stoner et al., 2005). Such trust is essential for a close home-school liaison to be fostered, and as indicated in the research literature (see 2.5.4), learning is more likely to occur if it is reinforced consistently in both home and school environments. This need for trust is amplified when their child is impaired and dependent.

During their individual interviews, Correa parents cited several features of the program which resonated with them and provided them with confidence that their child was being well cared for at school. They singled out communication between themselves and the school, changes in their child’s behaviour and learning outcomes, and the sharing of ideas and resources by staff, as key contributors to the development of trust.

Parents indicated that in addition to: (1) communication which occurred on a needs basis, such as arising from acute incidents or regarding specific issues information, communication occurred via (2) NEPs, (3) the daily communication book, (4) follow-up phone calls, (5) the student portfolio, (6) a weekly phone call (for one student), and (7) attendance at monthly parent meetings at school. Indicative comments of parental approval of the school-home communication strategies included that:

[They] send home a fantastic report [portfolio]. I speak with the teacher each day, [and] they have a good communication book. (IPB2 5)
There is a big description in the report [portfolio]. (IPB2 9)
[The] diary is excellent. (IPB3 4)

From the parents’ perspective, the most preferred modes of communication were via oral contact, either by phone or in person, and the daily diary, albeit that the latter was time consuming for staff. Parents suggested that more frequent individual face-to-
face meetings with teachers, perhaps one per term to discuss goals for the forthcoming term and review progress on the previous term’s goals would be helpful. One parent also proposed the use of a tear-off, checklist style slip at the end of each day to communicate the likely emotional state of the student at the time of changeover. This indication would be based on whether the student had slept, eaten, been hit and so forth during the day.

The parents of three students indicated that they did not feel the need for more information. However, despite expressing satisfaction with being provided with information about the program, parents of six students indicated that they would like to receive even more information. They were interested to know more about both broader issues and specific program details. Broader issues that they were interested in included mapping anticipated progress towards post-school life; planning for anticipated changes such as puberty, change of school, transition to mainstream class and post-school choices; and reporting student progress. Parents were also interested in what their child was currently learning. They were also interested in discussing specific program detail, for instance the functional specificity of computer programs or the level of literacy development. Indicative parent individual interview comments included:

Where do the topics fit into the bigger scheme of development? (IPB3 6)
[I] need a sense of timeline. (IPB3 4)
[I] would like to know more about the routine of each day. (IPB3 9)
[I] would like to understand the goal and how they are implementing the program to achieve that goal. (IPB3 2)

Staff remarked in their focus group interview that with the incidence of challenging behaviours having decreased for a number of the students, parents could turn their attention to issues related to educational outcomes and anticipation of future developmental stages. The suggestions made above by parents would indicate that this process had already started to happen.

A School Services Officer (SSO) was designated as a Family Liaison Officer. This school-wide position was created and funded by the school. Her role was to support school-home communication through the exchange of student-specific personal and
educational information. For instance, if the current focus for a particular student was getting dressed, or if the family was going on holidays, then relevant Compics were provided for the family together with ideas regarding their use. These mechanisms for communication on pragmatic issues were perceived by both parents and staff to have a positive influence on program outcomes. The supply of relevant and purpose specific Compics, together with strategies for behaviour management and learning was appreciated by parents. This became evident during individual and focus group interviews when for instance they reported the effective use of the Compic card to alleviate the anxiety level of their child. They stated:

(Student’s name) certainly wants to know ‘what’s next, what’s next?’ and ‘where are we going next?’ And I can say ‘we are going to Grandma’s and then we are going to the shops and then we have a cup of coffee and then we go home to dinner and then it’s bedtime’. It seems to have really calmed him down and I would never have thought of doing this. The itinerary for the whole day is written down. (SSOs name) and (teacher’s name) suggested this idea and also suggested try this and try that. I’ve been ready to hold out the white flag. It’s just too difficult with the constant fights all the time and it is just the little things that they point out to you. (FP6)

Frequent, honest, and open communication with school staff was highly valued by parents and was useful for a variety of purposes. It (1) allowed parents to inform staff of relevant home issues, (2) allowed exchange of effective teaching and learning practices and strategies, (3) allowed discussion of issues and concerns, (4) facilitated the development of a developmentally appropriate curriculum, and (5) fostered the dissemination of student learning and progress. In addition, the school offered support to parents and families as they negotiated with other services and systems to meet the needs of their child. Parents’ respect for the teachers in Correa was evident in focus group statements such as:

As I said before, I don’t envy the teachers at all. ...All you have to do is approach them and they will try to do what they can. ...To me the teachers are fabulous and what they have to deal with is a huge task. I think they need more specific aids, such as a full time speech therapist. ...Doing a fantastic job. (FP15)

With one exception, parents and staff agreed that communication was working quite well in relation to pragmatic daily and weekly communication systems, information
sharing with regarding the current emotional state of the student, behavioural issues, reporting acute incidents, and the sharing of successful practices and strategies on an individual student basis. The exception was the parent for whom English was a second language. This mother was unable to comprehend much of the written information sent home because it was “in English and quite lengthy.” She found the handwritten notes by the teachers “messy”, adding to her deciphering difficulties. In addition, she could not write to staff in English. An older child could read English but according to the mother could not translate very well. Therefore the mother’s minimal oral English skills were insufficient to hold a discussion with school staff on educational issues and thus conversations with staff at drop-off and pick-up times were also problematic. So, overall, language difficulties limited communication for this family. Whilst some key information was translated by the school, the translation process was expensive and not viable for the daily flow of information between school and home. Communication with this parent could be improved by neat, legible handwritten notes and the translation of more information sent from school. An interpreter participating in a regular teleconference with the mother and staff member(s) may be considered as an efficient and more cost-effective possibility. This parent indicated that she would like to be more involved with the school regarding her child’s education.

During their individual interviews, the parents of eight of nine students reported that they had been provided with sufficient information about the program to understand how it was trying to work. The remaining parent could not understand much of the information provided by the school as described in the preceding paragraph. At regular and opportunistic meetings held on the school premises, parents were provided with information about teaching strategies used at school. They in turn could also notify teachers if a potentially disruptive event was anticipated, such as moving home, a holiday, or a visit to the dentist or hairdresser, so that early preparations could be made. For instance, one or more relevant Compics could be developed, introduced at school and also provided for parents to use at home. Being transferable, visual cues, particularly Compics, enabled reinforcement of learning strategies used at school. Parents found that the Compic for relaxation, relaxation per
se, and time-out were their most effective behaviour management techniques. Parent comments indicating their uptake of ideas provided for them by school staff included:

*I am told that (student’s name) is dressing himself after swimming. I stopped using Compics when (student’s name) started talking. It was just something that dropped out because he was so interested in talking and reading. We were actually taking a step backward I believed to keep using Compics. But I have been convinced ... that in order for him to go forward we need to use Compics to get him to do things. For instance at home, (student’s name) never dresses himself. Two weeks ago we got the dressing Compic [from school] and that has worked dramatically. ...You don’t have to keep nagging ‘(student’s name) get dressed, (student’s name) get dressed.’ You stick it in front of him. It has all the instructions on it and you don’t seem to have to nag as much.* (FP2)

*(Student’s name) learnt to read very early and he is quite good at it. I can write (student’s name) a sentence, a note, such as ‘If you want to go to the market on Friday there must be no more pushing, no more chasing, no more teasing anybody.’ And for two days I gave him this piece of paper and he read it in the mornings. And (teacher’s name) said to me ‘I wonder what you have done with (student’s name). He’s been really good today.’ It seems to be really working.* (FP6)

Appreciative parent comments expressed during their focus group discussion are consistent with those reported in the literature (Roberts & Prior, 2006) and indicate the great need parents have for information and access to management techniques. Their comments also indicate the confusion and stress parents feel as they navigate through choices and bureaucratic obstacles, including lack of awareness of options, at each stage of their child’s development. These uncertainties make for a disjointed journey for both parent and child. They add to the considerable frustration which parents of students with autism often experience when dealing with professionals who lack specific knowledge of the disorder or in attempting to access appropriate services (Ryan & Deci, 2000). These latter problems clearly also exist at the organisational level as indicated earlier in the section on allied professional support.

Thus, the school provided a range of avenues for communication with parents. These were valued by both staff and parents. Parents’ hunger for further information on both daily events and broader educational and developmental issues relevant to their child, highlighted their need for still further support. It also reinforced the need for
quality allied professional support for teachers so that improved staff skills and knowledge could both extend student learning outcomes and also improve the quality of support which staff could provide to parents.

### 6.6.3 Parental stress

The Correa program evoked a sense of relief for parents which ensued from their increased knowledge, an expansion of their management strategies, and seeing their child safe and happier. They expressed this feeling in various ways, such as:

> We had trouble when (student’s name) was in the other classroom. We were having to play chasey around the taxi [each morning]. It was like the taxi driver, (student’s name) and me saying ‘quick grab him.’ It was a screaming battle to get him to come to school. ...Now I can come to school and (student’s name) will wave to me. Or if I come early he will say ‘Go away, (student’s name) not going home yet. Not time.’ This is a big improvement. It used to be a screaming battle to come to school. Now he wants to stay at school. This is the greatest relief to me as a parent. (FP8.1)

> At that stage (student’s name) was still on a bottle and I remember we had to get him toilet-timed in order to get him to a normal school. ... (SSO’s name) said don’t worry about the bottle, you can worry about that later. Don’t try to introduce too many things at once. Stick to one. You do two, they’re lost. And I must admit, sometimes you need a reality check, because it can be very hard for them. But you forget it because some of them look so normal. (FP8.2)

> Unless they can say to you that they are unhappy, you have no idea. He won’t say, ‘I don’t want to go to school today, someone hit me and I’m scared.’ When they are happy at school it makes such a big difference. (FP8.1)

When asked what aspects of the program have been most useful to them, parents highlighted the sense of relief gained from knowing that their child was safe. Of the 18 comments provided in response to this question posed during the focus group interview, 13 were concerned with the safety of their child and 4 were concerned with the increased freedom which they as parents gained following improvements in their child’s adaptive behaviour. For instance, in relation to safety they bantered:
There is actually a room that can keep him in [laughter]. [Interviewer: ‘But how does that affect you?’] I feel more relaxed because I know that they are secure. ...That they are actually kept in and are not playing with cars and that any more. ...They used to put on one of those orange road worker vests because he used to get over the fence all the time, so they could spot him at a distance. ...It’s only been the last year that I can leave the gate open at home. ...Once they make up their minds to go, they are OUT. ...(Student’s name) now runs but then turns around and comes back. But I have had to run for miles. ...We can go to the beach and it can be a relaxing occasion. ...I don’t have to think ‘Oh my God, I’ll have to take another adult with me in case he does a runner’ because I can’t leave a five-year old and a baby by themselves. I can even take him shopping and he stays with me. (FP9.1)

Another parent indicated that her child had ceased absconding in certain environments, such as a shopping centre, but persisted in others, such as the beach.

Parents also experienced stress due to their child’s inability to understand the passage of time, or very restricted social skills. One parent indicated that her child had: “no concept of time and so will stand at the window till my return. I can’t say to him ‘I will only be an hour or so.’ So my social life starts at 9.00pm.” (FP9.1) In comparison, when their child’s adaptive skills improved, parent stress levels also decreased. This impact was felt by parents in the home environment as inferred from the quote provided in this paragraph. Improved adaptive behaviours also impacted on the family or individual parent’s ability to socialise. For one mother, the improved adaptive behaviour of her child gave her:

The freedom to go out now. (Student’s name) always used to say ‘Mummy, Mummy, Mummy’ and he would want to hold my hand and only my hand. Now I can say ‘hold Daddy’s hand’ and he will. I can actually go into a shop on my own now and I never have been able to in the past. He has become more independent. They taught the time in Correa and (student’s name) can read the time, so I can say what to expect. ...Now if we visit friends I can say ‘we’re going home at 9.00pm’ and he will know. You just have to make sure that you have done all your business by 9.00pm. He will wait patiently till then. (FP9.1)

Improved students’ social skills have also led to a decrease in parental stress because their child can manage themselves appropriately when anxious. For instance, one student has learnt to walk away and ask for help if troubled by others. A number of
other students know how to implement relaxation techniques if anxious. Both techniques were new skills for these students.

Apart from teaching and behaviour management strategies explicitly communicated to parents by staff, a number of parents also indicated that they had modelled some of their behaviours on those which they had seen teachers use to good effect. Parents reported that by changing their own behaviour to match that used by staff, they noticed an improvement in their child’s behaviour and a corresponding decrease in their own stress levels. For instance:

*I have learnt a lot of positive things. For example, telling him to stop and listen rather than yelling so much trying to get through. - Noticing more the way that the teachers do things, because I have noticed (teacher’s name) saying to (student’s name) all the time ‘stop and listen to what I am saying’.* (FP6)

Nonetheless, three parents indicated on-going concerns about their child entering adolescence. Whilst anticipating changes, they were unsure how this developmental stage would unfold for their child and be reflected in their behaviour. They were also concerned about their child’s looming sexual maturity: how it could be managed safely, ethically and socially. One parent acknowledged that she already found it difficult to manage her son and was worried about the potential impact of his increased physical strength and aggression as puberty progressed. Parents indicated that they were looking to the school for information and advice. However, staff did not feel adequately trained and informed to advise parents. They also acknowledged a lack of community information which could assist parents as they grappled with these issues.

### 6.6.4 Section summary

In general, parents felt satisfied that the program was serving their child well. The improved safety of their child was a key program outcome from the parents’ perspective, as was the apparent improved attitude to attend school. All parents had been involved in the development of the NEP for their child, although a couple would like to have more detailed knowledge of how the NEP was translated into what
happened in the classroom. One parent felt that their son was not being sufficiently challenged by the implemented curriculum. Parents applauded staff for their consistent and constructive effort under difficult circumstances. They based this perception on the constructive and pro-active communication between themselves and the school, and the changes in their child’s behaviour and learning outcomes. All parents noted that their level of stress had reduced as a result of their increased knowledge, an expansion of their management strategies, and from seeing their child safe and happier.

6.7 Chapter Summary

There was consistency in what parents and staff perceived to be program goals. This common understanding was fundamental to the development of a productive school-home liaison, and ultimately improved student learning outcomes.

The influence of the physical environment of Correa was noted by both staff and parents to have improved student security and safety dramatically, which in turn held benefits for both sets of informant. Staff were less stressed and able to focus more of their time and energy on educational rather than management pursuits. Parents on the other hand were relieved to see their child more relaxed and happier to attend school. They also found that the quality of their own lives improved as a result of their child behaving in a more socially adaptive manner. This socially adaptive behaviour included being calmer. Responsive adjustments were made to the environment once the program commenced and ideas for further improvements were suggested.

Curriculum priorities included improved student safety and teaching adaptive behaviour. Sensory activity as both content and process was used prolifically in Correa and was available for students at any time during the day, whether inside or outside the classroom. Teachers also found the multiple spaces available in Correa conducive to teaching and learning needs. The use of visual cues and student choice as pedagogical principles was based on the available research evidence. Students appeared responsive to these methods.
The level of staffing of teachers in Correa was consistent with DECS guidelines. These staff expressed feelings of confidence and competence to teach Correa students, although this was tempered by self-admitted shortfalls in knowledge. These shortfalls were attributed to their pre-service training which they considered had ill-prepared them for such challenging student behaviour. Nor had their pre-service training provided them with an adequate knowledge of autism. Teaching staff were supported in Correa by SSOs. The DECS funded SSO hours for Correa were supplemented by an additional 30 hours funded from the school’s global budget.

Systemic problems in the model of service delivery by allied professionals from external service providers, whilst supposed to support teaching staff, in reality were unable to meet teachers’ knowledge and skills needs. An enterprising school-based staff development program was, however, of assistance to teachers and this provided the impetus for change at the classroom and school-wide levels.

Parents held staff in high regard and appreciated the exchange of information. Diverse modes of communication operated concurrently and effectively. Strategies used at school and subsequently adopted at home were generally found to be successful. Both parents and staff agreed that since Correa commenced, there had been a decrease in the frequency and incidence of student non-adaptive behaviour, which had alleviated their own levels of stress markedly.
Chapter 7 - Program Outcomes

7.1 Introduction

This chapter presents and synthesises data collected from parent and staff interviews, documents, photographs, and observations with regard to program effects for students. These data and the consequent discussion are framed by the first broad objective of this evaluation stated in Chapter 1: to determine the intended and unintended program outcomes. The second broad objective of this evaluation was to determine what factors and processes facilitated or militated against the achievement of the intended outcomes. This discussion is located in Chapter 8.

7.2 Student Profiles

In order to ascertain the effectiveness of the program, it was necessary to ensure that it was targeted to an appropriate student group. Hence, information regarding each student’s characteristics and level of adaptive functioning was sourced from the relevant DECS District Guidance Officer (psychologist), Autism SA, the school Principal, teaching staff, and parents. These data, together with the basis for acceptance of each student into the program and each student’s home context are presented in the following paragraphs.

Each student was a client of Disability SA [formerly the Intellectual Disability Services Council, (IDSC)]. Validation of each student’s intellectual disability was provided for the school via this organisation on the basis of psychological assessment(s) used to determine each child’s IQ and level of adaptive functioning. Assessment records were neither provided to, nor held at the school.

Whilst all of the students were diagnosed with an intellectual disability, only eight were formally diagnosed with autism. The administrative practice in South Australia is that a formal diagnosis of autism is not mandatory for educational purposes, even though students may exhibit behaviours consistent with autism.

Student 1 was diagnosed while living interstate. When his family moved to South Australia, his assessment was provided to the relevant Guidance Officer at the
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Education Department District Office. Validation of his assessment was forwarded to the school in accordance with due process. While no formal diagnosis had been conducted for Student 9, he was believed by both parents and staff to have autism based on his marked characteristic behavioural symptoms. For the remaining students (Students 2-8 below), their autism assessment procedure was conducted by Autism SA (or one of its predecessors, either the Autistic Children’s Association or the Autism Association of SA). All assessments were conducted by at least two members of the diagnostic team, including speech pathologists and psychologists. With parent permission, and if the child lived in the metropolitan area, observation visits of the child at their educational setting, such as kindergarten or school, were undertaken prior to the assessment taking place. Where possible this would involve observation of the child in structured activities and free play. The person observing did not interact with the child. Staff at the child’s educational setting were also interviewed about their perceptions of the child’s behaviours, interactions and responses to their environment. If possible the child was then observed at home as well.

The assessment session at Autism SA involved the child interacting with a member of the diagnostic team they had not seen before. The assessment occurred in an assessment room: a large room full of games and toys. This session was videotaped with parental permission. While the child was in the assessment room the member of the team who had observed the child previously, interviewed the parents about the child’s early development. The questionnaire used covered pregnancy, birth, motor development, feeding (when younger and current), sleeping (when younger and current), development of independence skills, emotional responses, social development, sensory responses, play development, imagination and interests/obsessions, reaction to change/non-functional routines, as well as verbal and non-verbal communication development and use. This process could take between 45 minutes to two hours depending on the age of the child. After the interview, the family were free to leave. The two members of the diagnostic team then watched the video of the assessment; went through the early history, observation visit notes and perceptions; and read through any reports which parents had brought (such as from the school or previous assessment). All the information was then collated and
considered against DSM-III-R (American Psychiatric Association, 1987) or DSM-IV (American Psychiatric Association, 1994) (depending on when the child was assessed) and the Childhood Autism Rating Scale (Schopler, Reichler, & Renner, 1988). Each child was required to meet criteria on both tools for a diagnosis to be made.

A profile of each student is presented in the following paragraphs. Each profile contains information on the student’s age, family demographics, assessment, behavioural characteristics, and whether any private therapy was provided. The age of each student was taken at the time the data collection process commenced. Because of the small sample size, certain aspects of the family demographics have been jumbled to provide a further layer of anonymity for each student. That is, all the information included in the following paragraphs is factually correct across the range of students, but may be incorrect for any one particular student. Psychological assessments required parental approval for these to proceed at the time they were conducted.

Student 1: Male, 8 years old, who lived at home with his mother and older biological sister. His parents were separated. An attempt was made to assess his intellectual ability using the Differential Ability Scale (Elliott, 1990). However no score was able to be recorded because of his low level of functioning. A subsequent assessment of his adaptive behaviour using the Vineland Adaptive Behavior Scale (Sparrow, Balla, & Cicchetti, 1984) rated him below the first percentile. His characteristic behaviours included pinching, screaming, biting, kicking, climbing, jumping (for instance off a window ledge and onto his bed, thus breaking it), bouncing/banging (three internal doors have been broken at home via this behaviour), absconding, and smearing faeces. The parents did not engage this student in any private therapy additional to his involvement in the Correa program.

Student 2: Male, 8 years old, lived at home with his mother and one older biological brother. His father lived and worked offshore and had only periodic contact with the student. English was a second language for both parents. This student was assessed as below the first percentile on the Vineland Adaptive Behavior Scale (Sparrow et al.,
1984). His characteristic behaviours included absconding, thrashing around in a temper tantrum when he didn’t get what he wanted, crying inconsolably, screaming, and hitting. A private speech therapist was employed by his mother and this therapist liaised with the school to ensure consistent strategies to develop speech were adopted.

Student 3: Male, 12 years old, lived at home with both parents. This student was the youngest of three children, with each of his older biological siblings engaged in the workforce. While an attempt was made to conduct an assessment of this student’s IQ using the Wechsler Intelligence Scale for Children (Wechsler, 1991), no score was recorded. His cognitive ability was consequently rated below the first percentile. No adaptive behaviour assessment had been conducted. His characteristic behaviours included temper tantrums, biting, hitting, incontinence, absconding, and occasionally spitting. The parents did not engage this student in any private therapy additional to his involvement in the Correa program.

Student 4: Male, 13 years old, lived at home with mother, stepfather and two younger step-siblings. An attempt to conduct an IQ test was made but terminated. The student was subsequently deemed not assessable. His adaptive behaviour was rated below the first percentile based on the Vineland Adaptive Behavior Scale (Sparrow et al., 1984). His characteristic behaviours included hitting (mainly mother), pushing, and screaming. He was not a climber but enjoyed chasing others up and over the equipment. His mother had not engaged him in any private therapy additional to his involvement in the Correa program.

Student 5: Male, 12 years old, lived at home with mother and one younger biological sister. His parents were divorced. His father had since re-married but still maintained contact with the school and the student. No IQ test had been conducted (deemed not assessable), and he was rated below the first percentile on the Vineland Adaptive Behavior Scale (Sparrow et al., 1984). When this student commenced enrolment at the school, he had a history of behavioural issues necessitating a staff:student ratio of 1:1. His characteristic behaviours included biting his own arms (out of frustration), hitting himself in the mouth (not often), flapping items, head-banging, spitting, and
climbing. His parents did not engage him in any private therapy additional to his involvement in the Correa program.

Student 6: Male, 14 years old, lived at home with his father, stepmother, younger biological sister and younger half-brother. This student spent one weekend day and night with his biological mother. An attempt was made to test this student’s IQ using the Wechsler Intelligence Scale for Children (Wechsler, 1991), but this attempt was abandoned prior to any score being recorded. His IQ was thus rated below the first percentile. An assessment of his adaptive functioning was made using the Vineland Adaptive Behavior Scale (Sparrow et al., 1984). This assessment rated him below the first percentile for adaptive functioning. His characteristic behaviours included absconding, masturbation, and aggressive actions such as punching and hitting. This student was not safety conscious. The parents did not engage this student in any private therapy additional to his involvement in the Correa program.

Student 7: Male, 9 years old, lived at home with mother, and younger half-brother and half-sister. His step-father did not live with the family. No IQ test had been conducted as he was deemed not assessable, and he was rated below the first percentile on the Vineland Adaptive Behavior Scale (Sparrow et al., 1984). His characteristic behaviours included being tactile defensive (strips all clothes), absconding (and has no road sense), and smearing (soiling himself and wiping his bottom all the time on whatever was close by such as a curtain, towel, or shirt). Neither parent engaged this student in any private therapy additional to his involvement in the Correa program.

Student 8: Male, 11 years old, lived at home with both parents and two older biological sisters. No information on IQ or adaptive behavioural assessment could be obtained from DECS for this student. However, the student was a client of Autism SA and Disabilities SA. He was also a chronic climber as assessed by the school. For instance, he would balance on the roof of play equipment and walk on the handrails of the tall fort. His characteristic behaviours included absconding, screaming, smearing faeces, hitting, destroying (punching out windows, breaking elements of a car), high-pitched squealing associated with flicking and self-stimulation, stripping off all
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clothes, and loving water. This student had no concept of safety. The parents did not engage any private therapy for this student additional to his involvement in the Correa program.

Student 9: Male, 9 years old, lived at home both parents and two biological brothers. No IQ test had been conducted with this student. The Vineland Adaptive Behavior Scale (Sparrow et al., 1984) rated the adaptive behaviour of this student below the first percentile. His characteristic behaviours included absconding, kicking, hitting, spitting, and throwing stones. He also lacked awareness of any safety issues, was preoccupied with climbing and other activities, and had difficulty adjusting to change. This student also liked sensory sensations, particularly associated with water. For instance, he liked to turn all the taps on and would put his hand down the toilet. As such, he needed constant watching. The parents did not engage this student in any private therapy additional to his involvement in the Correa program.

In summary, apart from Student 8 for whom no test data were available, data from psychological assessments and staff confirmed that all students in Correa had an intellectual disability and had very low level adaptive skills. This was evidenced by the inability of the assessing psychologist to obtain a valid IQ score for each of these students, and each of the eight students registering below the first percentile on the assessment of their adaptive behaviour. Further, the behavioural characteristics reported by both parents and staff for these eight students were consistent with the each student’s psychological assessment(s). While the assessment data were not available for Student 8, he necessarily had an intellectual disability and autism in order to be a client of Autism SA and a client of Disability SA. Staff and parent descriptions of his characteristic behaviours, confirm the appropriateness of his inclusion in Correa.

Given the aforementioned student profiles, it is evident that the Correa program was appropriately targeted. If the evaluation conducted for this thesis demonstrates the program to be successful, then this validates the program to be well designed for this sample of students.
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7.3 Program Outcomes for Students

The nature of the program effects across all students is discussed in this section. It commences with an assessment of student security and safety given the pivotal role of this issue in precipitating the Correa program development. This is followed by a discussion of the program impact on students’ emotional state. Students’ emotional state is an important issue given that it is hypothesised to be a prime antecedent condition for student learning. Lastly, parent and staff perceptions of student learning outcomes are presented. It should then be possible to confirm whether the program outcomes anticipated in the program theory outlined in Chapter 5 Correa Program Theory, did in fact occur.

7.3.1 Security and safety

One of the key design principles for the Correa physical environment was to keep students secure and safe.

Security

Students and parents were required to enter and exit the closed environment of Correa via a digital-locked, personal access door. Because the outside and inside areas were part of the one secure learning environment, and because kitchen and toileting areas were co-located within the unit, students did not need to leave Correa during the day for play periods or to eat lunch.

The movement of students into and out of Correa was supervised to prevent absconding. I was present at both the beginning and end of the school day on numerous occasions. Some of these visits were anticipated by the school while others were not. However, on every occasion, I observed direct transfer of students between relevant adults assuming responsibility for designated students. For instance, for students transported to school by car, there was direct transfer of the student between parent and staff at pick up and drop off times. This transfer occurred either in the classroom or within an enclosed transition space immediately outside the classroom. The transition space was enclosed by swimming pool style of fencing which incorporated a child-proof access gate. As such, it provided a closed and restricted
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area for students and their belongings to be secured by the adult accepting responsibility for the child. Students transported to school via taxi or minibus, were received directly from the vehicle by a staff member and were physically escorted to their classroom by one or two staff (holding on to the student as well if he was an absconder). The reverse process occurred at the end of the school day. A minimum of two staff were present in Correa at all times, one teacher and one School Services Officer.

A Community Access Program (CAP) was initiated for students who were absconders. The goal of the CAP program was to teach students to negotiate safe passage on the school site and in a community setting. It used a system of graduated reduction in supervision as students moved between locations. During individual interviews, staff reported that for one student this involved escorting him to and from the school canteen with two staff members holding onto him for an extended series of visits, then one person holding, followed at a later stage by one person walking alongside. At the time of writing this thesis, this student had left Correa and returned to one of the other classes within the school. He regularly visits the canteen safely now on his own. The CAP program also used graduated supervision to teach students how to negotiate safe passage in the community, such as using traffic lights, crossing the road and using pedestrian crossings.

An inspection of school records (Critical Incident Reports and DECS ED-155 Reports) and staff interviews confirmed that no Correa student had absconded since the program commenced (2001) and up until the writing of this thesis (2007/8). That is, from 2001-2008 no student had absconded from Correa. Thus, in terms of student security, the program was completely successful.

Safety
Student safety refers to reducing/eliminating student behaviour that poses a risk of injury to themselves and/or others. The importance of this issue was demonstrated in Student Review meeting minutes in which it was recorded that “injuries to students and staff are an on-going concern” (meeting minutes 22/5/01). This meeting was held early in the first year of Correa program’s operation and demonstrated that
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student safety was an on-going concern across the school. These meeting minutes referred to both management of the actual behaviour while it was occurring, and the subsequent documentation process as issues of concern. The dramatic drop in the frequency of accident and incident reports for students in Correa stands in contrast to the expression of continuing concern for student safety across the school.

Vital ways in which the Correa program sought to improve student safety was by providing safe but challenging opportunities for climbing, while reducing the opportunities for unsafe climbing. My observations confirmed the existence of building design features oriented to student safety. Electrical outlets and light switches were located in areas not accessed by students (apart from the kitchen when the roller door was open, and the bathroom/laundry). As noted earlier in the thesis, the walls were rendered from floor to ceiling with a fine grain mortar to prevent hand and foot holds. There was minimal provision of moveable furniture (five chairs and two small desks); a fixed work-desk space; a fixed table adjacent to the kitchen; and no structures onto which students could climb to access inappropriate sites. Further, to cater for students who loved to climb, opportunities for challenging but safe indoor and outdoor climbing were provided (see Chapter 1). Students were allowed to access these indoor and outdoor climbing facilities at any time. Students were observed using this equipment on numerous occasions (see Photo 18 and Photo 19).

In addition to the security and safety afforded in the closed Correa environment, staff stated in their focus group interview that the withdrawal room, the provision of equipment for gross and fine motor movement, the sheer space, the variety of environments and safe climbing facilities, were all key elements of the Correa facility which directly or indirectly enhanced student safety. One parent also raised safety in the kitchen, cooking and education in the use of hot water as safety features of the program.
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Photo 18 Student using climbing wall and ceiling ladder

Photo 19 Student using wall frame

Evaluation of an Education Program Designed for Students with Autism Who are Chronic Climbers and Absconders
All staff attending the focus group interview confirmed that they believed program goals related to student safety were being achieved. The parents of all students except one, strongly also supported the value of the physical environment in providing for the sensory needs of students, including their love of climbing. The following statement exemplified this perspective:

(Student’s name) knows he can retreat to a calming activity whenever he needs to. The climbing equipment is excellent. (IP11 1)

Improved safety and security had a flow-on effect as reported by one parent who described how:

(Student’s name) will now go to the library and borrow a book. That safety issue is a really big step. It didn’t happen when he was over in the other part of the special school. He is no longer anxious about security. (FP8.3)

In essence, safety and security were not only important program effects per se. They were also important because addressing these issues appeared to have a settling effect on students. In this more settled state, students were reported by both staff and parents to be more amenable to engaging in the learning process.

The parents of one student who did not speak strongly in favour of the environment, did not malign it either. They thought that the environment simply did not have a major effect on their child because his needs were different from others in the class.

Further evidence regarding the improvement of student safety was obtained during the individual interviews when staff and parents were asked an open question about the nature of student changes as a result of the Correa program. In response, staff cited improved student safety for five of the nine students. In contrast, the parents of only one student indicated that improved safety was an important program effect. This was possibly because parents were not accountable for managing the unsafe behaviours of their children while at school, but rather valued other behavioural changes more highly. Nor may parents have been aware of teachers’ significant concern about the safety of the students while at school, a concern borne of their legal duty of care obligations. As there was no overlap between staff and parent responses, it is
noteworthy that safety was raised as an important issue for six of the nine students by either staff or parents.

Further evidence supporting improved student safety and security was provided by informants during their focus group interview. Based on terminology used by the informant, responses to the question ‘What do you perceive to be the most significant program outcomes for students?’ were classified as ‘safety and security’, ‘personal care’ or ‘emotional state’. For instance, responses classified as ‘safety and security’ included terms such as “decrease in accidents and incidents,” or “decreased absconding. It doesn’t happen any more.” However, references to self-care skills such as “washing,” “toileting” or “personal care” were classified as ‘personal care’. Lastly, responses which included psychological state terms such as “more settled,” “happiness” or “more relaxed” were categorised as ‘emotional state.’ Two of these classifications directly pertained to student safety, these being ‘safety and security’ and ‘emotional state.’ As can be seen from Graph 2, fifty percent (50%) of staff responses related to improved safety and security outcomes for students and eighty percent (80%) of parent comments related to the improved emotional state of their child.

![Graph 2](image_url)  
**Graph 2 Most significant outcomes for students**

**Question:** “What do you consider to be the most significant outcomes for students which you believe are attributable to the program being implemented in Correa?”
The difference between staff and parent perceptions is consistent with their articulation of the program goals. Thus overall there was a high level of congruence between informant responses on this issue, with reference to student security and safety being articulated by either staff or parents or both for six of the nine students.

Staff and parent perceptions were confirmed by school records which showed that there were no Critical Incident Reports and only two DECS ED-155 Incident Forms filed in relation to events in Correa since the program commenced in 2001. Both of these DECS ED-155 reports were prompted by staff injuries which were not the result of student actions. Thus, in effect there were no Critical Incident or DECS ED-155 reports for injuries to Correa students, or injuries incurred by Correa student behaviour filed since the program commenced. This compared with an average of 47 ED-155 reports for each remaining class in the school across the same time period. Sighted time-slice behavioural reports of student behaviour suggested that unacceptable behaviour was occurring in Correa, some of which impacted on other students. However, as confirmed by staff in informal interviews, the absence of completed ED-155 Incident forms for Correa students during this period indicated that these events, such as pinching, were not severe enough to warrant or suggest that medical treatment may be necessary.

In summary, evidence across parent and staff responses to individual and focus group interviews, and confirmed by school documents, leads to the conclusion that the program was highly successful in achieving its goals related to improved student safety and security.

7.4 Emotional State

The types of challenging behaviours engaged in by Correa students included smearing faeces, pinching, vomiting at will (including projectile vomiting), head banging, absconding, climbing, hitting, spitting, pushing, removal of clothes (tactile intolerance), soiling self, scratching, high pitched squealing, flicking, self-stimulation, masturbation, jumping from a high location (e.g. top of wardrobe or ceiling rafters) onto the floor, and water obsession. Staff and parent informants believed these behaviours occurred when students felt anxious or stressed. A reduction in these
behaviours was therefore interpreted as indicating that the student was in a calmer emotional state.

The triggers for these challenging behaviours reported by staff and parents in the individual interviews included: changes in routine (such as recommencement of the school year or term, changes of staff, first days of the week, moving house or family disruption); boredom; being with strangers; being allowed to watch videos for long periods; seasonal allergies; or ambient noise level. The Correa program introduced a number of learning strategies intended to reduce the effects of these triggers. It sought to reduce student boredom by providing a varied, inviting, and calm but challenging physical environment and learning activities. Staff sought to maintain a quiet ambient noise level as described in the previous section, and if a potentially disruptive event was looming, lead-in experiences were provided to minimise the impact of the event.

During the individual interviews, parents and staff were asked whether the students had changed in any way as a result of the sensory-based teaching and learning program in Correa. I categorised informant responses in two ways. First, they were categorised on the basis of the extent of perceived changes. Second, responses were categorised on the basis of the nature of the changes perceived at the individual student level. These classifications are discussed in the following paragraphs.

First, based on the actual words used by informants, responses were categorised as describing ‘very significant’ ‘significant’ or ‘minor’ change. A response which indicated ambivalence regarding whether change had occurred or not was categorised as ‘difficult to say’. For instance, both responses “yes, a lot” and “very significantly” were categorised as ‘very significant.’ A response of “more tolerant and better listening skills” however, was coded as ‘significant’ because while these were significant skills that had developed, there was no adverb included in the response which indicated a high level of improvement in these competencies. A response of “haven’t noticed any great change” was coded as ‘minor’ because by implication some change had occurred. Lastly, a response of “cannot really say if have changed
at all” was coded as ‘difficult to say’. The results displayed in Graph 3 show that
very significant or significant change had occurred for eight of the nine students.

Graph 3 Extent of student change since starting Correa

Question: “Do you think (student’s name) has changed in any way as a result of the sensory-
based teaching and learning program in Correa?”

Further, for seven of the nine students, very significant changes were independently
recorded by both staff and parents. For another student, both parents and staff agreed
that only minor changes had occurred. However, for the ninth student, the parent
response was coded as ‘difficult to say’ whether improvement had occurred or not,
whereas the staff response was coded as ‘significant’ improvement. The reasons for
this discrepancy may be due to different skills and abilities being evident in different
settings, differences in subjective opinion, or the impact that the student behaviour
had on the staff or parent involved. However, overall, these data demonstrate a high
level of independent agreement between parents and staff perceptions. Specifically,
informants agreed that eight of the nine students had exhibited improvement since
commencing in Correa, with the extent of improvement for seven students being very
significant.

Second, in response to an open question to elaborate the perceived changes, (‘Can you
tell me more about those changes?’), informants spontaneously stated a range of
program effects for different students. I categorised responses based on the actual
words used by informants. For instance a response which referred to mood

\[\text{Extent of student change since starting Correa}\]

\[\text{Number of students}\]

\[\text{Very significant} \quad \text{Significant} \quad \text{Minor} \quad \text{Difficult to say}\]

\[\text{Extent of changes}\]
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(“happier,” “calmer,” “more settled”) was classified as ‘perceived emotional state’. Responses such as “more tolerant” or “he approaches students and staff, he looks for contact” were classified as ‘social tolerance’. In total, six categories were identified. These included the students’ (1) emotional state, (2) communication, (3) social tolerance, (4) daily living skills, (5) safety and (6) ease of management. The most frequent program effects perceived by staff and parents were students’ perceived emotional state and communication as shown in Graph 4. This section discusses only the category of ‘perceived emotional state’ as the remaining categories are discussed in other sections of this chapter.

![Graph 4 Perceived program effects](image)

Question: “Do you think (student’s name) has changed in any way as a result of the sensory-based teaching and learning program in Correa? Can you tell me more about those changes?”

The reader is reminded that in identifying the most significant program outcomes for students, fifty percent (50%) of staff responses related to improved safety and security outcomes for students and eighty percent (80%) of parent comments related to the improved emotional state of their child (see Graph 2). Of the staff responses which related to security and safety, half (50%) were contingent on an improvement on the student’s emotional state. For instance, the comment “he has had a significantly decreased number of violent outbursts towards others” was classified as improved
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safety. Comments such as this illustrate the inter-relationship between the students’ emotional state and the incidence of non-adaptive behaviours.

While a rating scale was not administered to informants when interviewed, informant descriptions as to how a particular student’s anxiety-related behaviour had changed were also classified as ‘very significant reduction’, ‘reduction’ or ‘increase’. Responses were classified as ‘very significant’ when terms such as “dramatically” or “completely” were used by the informant. For instance, a statement that: “the incidence of him hurting others has reduced dramatically. ...He is now incredibly calm” was classified as ‘significant reduction,’ while a response of “has calmed quite a lot. ...He is now a more relaxed person” was classified as ‘reduction.’ For six students the perceived reduction in their anxiety-related behaviour was reported to be very significant, with independent agreement occurring between parents and staff in each instance. A reduction was observed in two of the remaining three cases by either parent or staff, and an increase in anxiety-related behaviour was perceived by both interviewed informants for the third student. These data are presented in Graph 5.

![Graph 5 Program effect on students’ anxiety-related behaviour](image)

Graph 5 Program effect on students’ anxiety-related behaviour

Question: “Do you think (student’s name) has changed in any way as a result of the sensory-based teaching and learning program in Correa? Can you tell me more about those changes?”

Behavioural improvements associated with students’ calmer emotional state were noted in staff and parent individual interviews. Informants stated that students were
calmer, less aggressive, less anxious, more tolerant, and happier. Indicative statements were:

[He’s] a lot happier - happy to go to school and happy when he comes home. This previously was not the case. Less aggressive. (IP4.1 4)

He copes better with frustrations. (IS4.2 2)

He has stopped screaming. He used to be a very demanding and dependent person. (IS4.2 6)

Focus group interview comments reinforced the above perceptions. During these interviews, students’ improved emotional state was said to be one of the most significant program outcomes. For instance, staff informants revealed that students were:

Happier and confident too in themselves and what they are doing. They seem to achieve more. They are positive and not stressed out. I mean they still get stressed out obviously, but there is the facility to deal with it so that it is over quickly whereas before it used to last all day and they are not learning for the whole day. (FP8.1)

Well (student’s name) is a good example who not last year but the year before spent 95% of his time out of the classroom while his parents spent 100% of their time in my office. So that was in 2000. That was also about (student’s name)’s emotional state at the time but it also meant that he couldn’t learn. It is very different now. He very rarely has to come out of the classroom. Emotionally he is well placed. He is happier. And I have not seen his parents virtually in the last 2 years in terms of complaints. And yet I would have met with them very, very regularly. (FS8.2)

It is noteworthy that parents conveyed a personal sense of relief in accordance with the improvement in their child’s emotional state. This is not surprising as it would be expected that this outcome would lead to an improvement in the quality of family life at home for all family members.

Thus, consistency of data reported from both staff and parent informants across individual and focus group interviews, document analysis reporting a significant reduction in accidents and incidents, and author observations, supports the conclusion that there was a significant shift in students’ emotional state. Non-adaptive
behaviours were reported to have decreased in duration, intensity and frequency, and students were perceived to be less anxious, happier, less aggressive and more tolerant. Staff and parent responses spanning four students indicated that:

*The sheer number of occurrences [of challenging behaviours] has dropped dramatically. These used to be on-going behaviours.* (IS7.1 6)

*The incidence of him hurting others has reduced dramatically. The incidence of his being distressed has decreased in duration and frequency. He is now incredibly calm.* (IS4.2 1)

*All [undesirable behaviours] have reduced a lot. There has been no need to patch walls in the last nine months.* (IP7 9)

*In the last year he has hardly bitten his arm at all and certainly to a lesser degree than he used to. He used to do it a lot. He has bitten down to the bone. He tends to mouth more now.* (IP7 5)

While overall there was an improvement in the behaviour of eight students, this was tempered by an increase in some anxiety-related behaviour for some of these students. This included a resumption of urinating in inappropriate places for one student, stronger pushing “which has become out of hand” for another, and the uptake of nail biting and eating string, for example shoe laces or untwined thread from socks, for a third. No reason for this deterioration was offered.

### 7.5 Learning Outcomes

If the Correa program theory represents the actual program accurately, then this improvement in students’ emotional state should be reflected in improved student engagement with the learning process, resulting in improved learning outcomes. To determine whether this in fact occurred, data regarding the nature and extent of student learning were obtained via parent and staff individual and focus group interviews. Interview questions such as ‘Do any of the changes we have talked about so far represent really big developments, either big breakthroughs or bad setbacks?’ invited responses reflecting an assessment of the extent and direction of changes in learning and behaviour. A ‘yes/no’ response alternative was not provided. The decision about whether a particular change represented a major breakthrough or a
setback was decided by the informant using the terms such as “big breakthrough”, “bad setback”, or other terms indicating similar levels of change. That is, these responses were not coded by me post-interview. However, based on informant responses I did code the classifications ‘gradual progress’ and ‘no change.’ For instance, a response of “not really [any big breakthroughs or setbacks], but really pleased with progress” was coded as ‘gradual progress.’ The response “no significant change” was coded as ‘no change.’ These data are presented in Graph 6.

Graph 6 Breakthroughs in student learning

Question: “Do any of the changes we have talked about so far about represent really big developments, either big breakthroughs or bad setbacks?”

For seven of the nine students, either staff or parents or both noted dramatic improvements in learning since the Correa program commenced. Parent and staff response categories matched category for five students. Staff believed two students demonstrated setbacks in their learning, albeit each in a specific area (toileting for one and violence for another). Staff also believed that a third student neither achieved a major breakthrough nor experienced a bad setback. It is notable that parents registered greater improvement in student achievement than did staff.

Comments illustrating marked positive changes in achievement included that there have been:
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Big breakthroughs. Toilet training is fabulous, use of functional speech great and he no longer looks to hurt others. Therefore, they engage with him more. (IS5 1)

Big developments. Socialising and communication are the most important ones. Also he doesn’t always look to run out/away. He is happy in the school environment and enjoys the activities on offer. (IS5 6)

Big breakthroughs. Appropriate toileting is a massive improvement. He used to shower many times a day. Now he never needs to. He would want a shower because he could feel a bowel action coming on and he would shower to relax him to do it. (IS5 8)

More breakthroughs this year than any other. Toileting, using utensils to eat and more talking are big breakthroughs. No setbacks. (IP5 1)

Huge improvements in talking/communication. (IP5 4)

Whilst significant improvements in student achievement were noted, these were not evenly spread across the group, or across differing areas of learning. Program effects on student learning were registered across a range of areas, including toileting, general behaviour, socialisation skills, communication, daily living skills, speaking, and fine motor skills.

Some students improved in one or more areas of the curriculum, but decreased in another. For instance, toileting was perceived to be a significant breakthrough for one student and his family, but a disappointment (not a setback) for another student. An example of inconsistency at the individual student level was a big breakthrough in talking and communication for one student, but he was also reported to have started pushing others. One parent reported that her child was talking, but the meaning was not evident. She recounted how “(student’s name) talks a lot of Ashley, but no-one knows who Ashley is!” (FP2). Both staff and the parents of this student who also demonstrated increased aggressive play rationalised that he was being under-challenged in the curriculum. This student was working at the upper competency level in the class and had not received as much focus from staff as perhaps was his due. This was probably because staff attention tended to focus on other students.
working at the lower range of competency and/or the challenging behaviour of some other class members.

Of the two students who made more gradual progress, one had moved house during the previous 12 months which could have been a trigger for regressive behaviour. However, regression did not occur. This in itself was a significant achievement. Overall, it was not surprising that these program effects evident in student learning were unevenly distributed across all students and learning domains because of the individual variation in disability characteristics, aptitudes, and behaviour triggers.

One of the difficulties in determining what learning had been achieved was indicated by one parent in the focus group interview who remarked that “(student’s name) can’t talk and tell me what he has learned. I will only know that he has learnt something if I see something he does.” (FP8.3) That is, the parent’s perception of learning was based on a subjective interpretation of their child’s behaviour. Staff informants supported this notion of behavioural evidence of learning and attitude to learning during their focus group interview.

The majority of parents and staff were unable to attribute with certainty that student changes were due to the program and not some other factor such as maturation, medication, private tuition (such as speech therapy), staff, health, home environment, or some other factor. However, the extent and timing of improvements suggested that while other factors were likely to have an impact on student achievement, the Correa program was a very significant contributor to the perceived improvement in student outcomes. This point was recorded in both focus group and individual interviews with parents and staff pointing out that:

*While there is an element of developmental change, this does not account for the huge gains made had the learning not been in this environment, as he was not making them back over on the other units.* (IS10.1 6)

*Because we have had the benefit of three different environments, having experienced both the annex and the special school, we can say that (student’s name) has gone ahead in leaps and bounds.* (FP8.3)
Clearly the rate of improvement in student learning increased substantially once students commenced in Correa. This learning demarcation is equivalent to regression discontinuity and lends strength to the argument that improved student outcomes were due to the program and not some other factor. The issue of attribution is discussed further in Chapter 8.

Further disaggregation of student learning was determined by asking informants a series of open questions related to specific domains of learning. For instance they were asked ‘How about changes in socialisation skills?’ and ‘How about changes in daily living skills?’ If a respondent had difficulty thinking of a response, standardised prompts were used, such as: ‘For instance, were there any changes in attending to own their own personal care such as toileting; attending to their own personal feeding; ability to dress self; or participation in appropriate classroom routines?’ The results were collated by coding verbatim responses with a symbol to indicate improvement, no improvement, or deterioration in the identified domain. The symbols are identified in Table 10.

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>SYMBOL INTERPRETATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓✓</td>
<td>Improvement in student knowledge/skill was spontaneously raised in response to an open question, or the improvement reported by the informant was interpreted to be very significant by the author</td>
</tr>
<tr>
<td>✓</td>
<td>Improvement in student knowledge/skill</td>
</tr>
<tr>
<td>✓x</td>
<td>Improvement in student knowledge/skill in one domain but deterioration in another.</td>
</tr>
<tr>
<td>x</td>
<td>Informant reported no improvement had occurred in student knowledge/skill</td>
</tr>
<tr>
<td>xx</td>
<td>Informant reported a deterioration of student knowledge/skill</td>
</tr>
</tbody>
</table>

These symbols were then tabulated according to learning domains so that a direct comparison of staff and parent responses could be made for each student. If an
informant spontaneously identified student improvement in a domain, or if the informant used terminology which indicated the something was very significant, such as “marked”, or “completely” then a second tick was placed in the relevant cell. I considered this would strengthen the measure of student achievement in that domain.

On several occasions, an informant stated that there had been improvement in one aspect of a domain but not in another aspect of that same domain. In these instances, both symbols ‘✓’ and ‘x’ were included in the same cell. The complete profile of student learning as perceived by parents and staff is displayed in Table 11. This data set allows direct comparison of informant perceptions of learning outcomes at the individual student level. The table can be read vertically to provide a profile of perceived learning for each individual student, with student numbers being indicated across the top of the table. The table can also be read horizontally to gain a picture of the extent of perceived learning across learning domains, with parent and staff perceptions provided separately for direct comparative purposes.

Table 11 Composite staff and parent perceptions of student learning outcomes

<table>
<thead>
<tr>
<th>Learning Domain</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>Literacy</td>
<td></td>
</tr>
<tr>
<td>Parents</td>
<td>✓✓ x ✓✓ xx ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Staff</td>
<td>✓ x ✓ x x ✓ ✓ x x</td>
</tr>
<tr>
<td>Numeracy</td>
<td></td>
</tr>
<tr>
<td>Parents</td>
<td>x ✓ x x x x x ✓ ✓</td>
</tr>
<tr>
<td>Staff</td>
<td>x ✓ x x x ✓ ✓ x x</td>
</tr>
<tr>
<td>Communication</td>
<td></td>
</tr>
<tr>
<td>Parents</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ x</td>
</tr>
<tr>
<td>Staff</td>
<td>✓ ✓ x ✓ ✓ ✓ ✓ ✓ x</td>
</tr>
<tr>
<td>Responding</td>
<td></td>
</tr>
<tr>
<td>appropriately</td>
<td></td>
</tr>
<tr>
<td>Parents</td>
<td>x x x ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Staff</td>
<td>✓ x x x ✓ ✓ ✓ ✓ ✓ x</td>
</tr>
<tr>
<td>Daily Living</td>
<td></td>
</tr>
<tr>
<td>Skills</td>
<td></td>
</tr>
<tr>
<td>Parents</td>
<td>✓ x ✓ x x ✓ ✓ x x</td>
</tr>
<tr>
<td>Staff</td>
<td>✓ ✓ ✓ xx x x ✓ ✓ x x</td>
</tr>
<tr>
<td>Socialisation</td>
<td></td>
</tr>
<tr>
<td>Skills</td>
<td></td>
</tr>
<tr>
<td>Parents</td>
<td>✓ ✓ x xx ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Staff</td>
<td>✓ ✓ x xx ✓ ✓ ✓ ✓ x</td>
</tr>
</tbody>
</table>

This process demonstrated that student improvement had occurred across all identified learning domains, with most improvement occurring in communication, and
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the least improvement occurring in numeracy. This composite perspective is depicted in Graph 7.

Graph 7 Composite staff and parent perceptions of program effects

The data presented in Graph 7 were then disaggregated to determine the extent of consensus between staff and parent perceptions of individual students. These disaggregated data are displayed in Graph 8. It can be seen that the level of agreement between the two informant groups was greater than their level of disagreement for all domains of learning. The level of consensus varied however across domains, ranging from almost complete consensus (Socialisation) to slightly >50% for Daily Living Skills and Numeracy.
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By condensing ‘Literacy’ and ‘Communication’, and also by condensing ‘Responding Appropriately to People and Events’ and ‘Socialisation Skills’, four main categories of student learning outcomes emerged. These were (1) Communication (2) Numeracy (3) Socialisation, and (4) Daily Living Skills.

Each of these is discussed in further detail in the following paragraphs. In the discussion of each, the relevant subset of data has been extracted from Table 7 and represented so that the discussion can be referred to a more proximal data display.

**Communication**

Communication is defined as being able to relate to other people, to share and participate in social interaction. Any change in students’ skills in this domain was investigated via two questions in the individual interviews, one which used the term ‘literacy’ and the other which used the term ‘communication’. Neither term was defined for respondents at the commencement of the individual interview process and no respondent asked for a definition of the terms. Literacy is defined by Weber’s New International Dictionary as “the state of being literate,” and to be literate is to be “instructed in letters; educated; specific., able to read and write” (Harris & Sturges Allen, 1929:1260). As such, literacy could be viewed as a subset of communication.
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At Modbury Special School the term ‘literacy’ was interpreted broadly as: “communication/augmentative/systems/signing/visual/oral/aural cues; comprehension – functional/environmental; reading, viewing, listening, speaking, writing” (Aschberger, 1998:np). Therefore, it is more consistent with the broader term ‘communication.’

All students entered Correa with very limited communication skills which were usually hard to interpret, such as squeals, tears, shouts or smiles. For these students the literacy program was based on “first establishing and then teaching some sort of communication” (Aschberger, 1998:np). This included recognising the presence of other people and seeking to be in the presence of others, responding to voice, attending to visual communication (including signing and Compics), writing, and readiness for writing. Readiness for writing included “follow text L-R, can match pictures and symbolic pictures, can hold a pencil or pen purposefully, attempts writing like marks, attempts tracing shapes and letters, (and) attempts copying shapes and letters” (Aschberger, 1998:np). It also included learning to talk. This interpretation of the term ‘literacy’ is consistent with its use in the South Australia Curriculum Standards and Accountability (SACSA) framework.

As shown in Table 12, improvements in communication skills (inclusive of both ‘Literacy’ and ‘Communication’), were noted for all students by either staff or parents or both. Parents and staff, unanimously and independently indicated improvements in both categories for four students (Students 1, 3, 6 and 7). In a further two cases (Students 4 and 8), both stakeholders agreed that there had been improvement in either ‘Literacy’ or ‘Communication.’ Improvement was noted in the sub-category ‘Literacy’ by parents for three students (Students 5, 8 and 9) and the sub-category ‘Communication’ for two students (Students 2 and 5), while these improvements were not noted by staff.
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Table 12 Communication skills

<table>
<thead>
<tr>
<th>Learning Domain</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5 6 7 8 9</td>
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<td>Parents</td>
</tr>
<tr>
<td></td>
<td>Staff</td>
</tr>
<tr>
<td>Communication</td>
<td>Parents</td>
</tr>
<tr>
<td></td>
<td>Staff</td>
</tr>
</tbody>
</table>

Improvements in ‘Literacy’ were thus noted for seven of nine students, with very significant improvement recorded for two students, and marginal change in five of the seven cases. Responses indicating improvement included:

\[ A \text{ much better recognition of words, runs finger along as reading, wants to be read to. (We) get the impression he understands what is being read because he turns the page at the appropriate place. (IP4.3 1)} \]

\[ \text{ He has an erratic interest in specific words. (IS4.3 1)} \]

\[ \text{ He appears to understand a lot more of what is said around him. He used to understand key words. Now he understands whole sentences and will respond appropriately. He has started to spell out words. (IP4.3 7)} \]

\[ \text{ Better listening skills. (IP4.3 5)} \]

A significant improvement in verbal and computer skills was noted for three students, such as: “\text{Now uses significantly more words}” (IP4.1 1) and “\text{More verbal now}.” (IS4.1 6)

Responses indicating minimal or no improvement in literacy included “\text{Not a great deal,}” (IS4.3 7) “\text{not sure,}” “\text{no real change,}” (IP4.3 3) “\text{minor, can match Compics now.}” (IS4.3 3) Although non-verbal, one student was deemed by both informants to have improved in communication because he could now match some Compics and words, and could use some gestures or a sound, whereas previously he gave no response.
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One student was deemed to have declined in writing skills. His parents lamented:

*His writing has gone backward. He had a high literacy level before he went to Correa. We are disappointed in this aspect of the program. He could write his own name before he started school. Now his writing is untidy. He can do much better but there is no expectation to do so. The teacher doesn’t have the time to work with him at the upper level of competence. But the trade-off is that now he is also learning living skills.* (IP4.3 4)

When asked about student changes, greater improvements were reported for ‘Communication’, than for ‘Literacy’. Improvement in ‘Communication’ was noted for all nine students by one or both informants; the equivalent figure for ‘Literacy’ was seven students. Additionally, the level of agreement about improvement between respondents was higher for ‘Communication’: Six pairs of respondents were in agreement. In the case of ‘Literacy’ only four pairs of respondents were in agreement.

At least one informant per student perceived improved communication, with informants independently agreeing that improvement had occurred for six students. Further, in the spontaneous responses recording program effects at the student level, improved communication was raised in relation to six of the nine students. Specific improvements mentioned included talking, attempts to talk, signing, gestures, using Compics, writing, eye contact, proximity to others, and an increased number of people the child interacts with. Examples of informant comments drawn from the individual and focus group interviews include:

*I heard words for the first time in Correa. In 2002 he has gone ahead in leaps and bounds.* (IS4.1 6)

*Talking and communicating to a broad range of people is much better. He now has clearer communication although some is still quite ritualised. His signing had increased before the talking commenced. His writing has improved as well. He understands verbal conversation.* (IP4.5 6)

*Talking has improved dramatically. He doesn’t volunteer information about the day’s events when he returns home from school, but he talks to himself which was not happening before and so I can glean what happens during the day. Sometimes he now initiates communication.* (IP4.5 4)
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Very good eye contact. It is now for much longer and with a bigger range of people. (IP10 1)

Further, the students’ improved communication skills helped reduce parents’ anxiety as it removed much of the guesswork about what was wrong with their child in a given situation. Students’ ability to express these needs helped parents care for their child. As one parent explained:

He is more aware when he has hurt himself. He knows where he is hurt and will show me. Previously he used to just show distress and it was up to me to find out where. (IP10 4)

On the other hand, the parents of one child expressed concern that their child didn’t communicate when he was hot and needed a drink. The parents were worried that if the teacher didn’t notice that this student had not had a drink, especially on a very hot day, he could go all day without drinking and thus get dehydrated.

Improvements in learning outcomes for these students were generally not to the extent that they would be able to be fully functional in mainstream society. The scale of relativity in terms of improvements therefore needs to be tempered. Major breakthroughs for these students are not on the same scale as for students without disabilities and complex needs. Hence indications of improvements include not only achievements per se but also the effort being made toward a particular goal. Instances of this type of improvement are:

He is trying harder to talk. This is quite recent [last 12 months] and despite his speech therapy being discontinued in this time. He has set noises which mean specific things. He understands much more of what is said around him. He used to understand key words. He now understands whole sentences and will respond appropriately. He can say (father’s name) and ‘no’. He is trying to say ‘yes’ and has limited signing. (IP4.5 7)
He likes to feel the vibration of a person’s neck when they talk. He is working out how people speak. (IS4.5 7)

Now if I ask for something and he doesn’t want to do it he will indicate with a hand gesture or perhaps a sound. Before he used not to respond at all. ...Sometimes now if I say he can’t have something he will listen and not throw a tantrum. (IP4.5 3)
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For one student, despite a decline in quantity and quality of writing skills, dramatic improvements occurred in talking and participation in group settings.

The interrelationship between communication and emotional state is inferred in one parent’s comment that “his behaviour at home has been quite good since his communication improved.” (IP4.6 6) The inference was that the establishment of some form of communication could reduce distress and anxiety, resulting in a reduced incidence of challenging behaviours. The reverse direction of this association was demonstrated with a different student:

(Student’s name) can be sitting watching TV and then he will start crying and I have no idea what the reason is. I would often give him Panadol because if he is sick he cannot tell me. (FP6)

The relationship between emotional state and communication inferred by these comments is consistent with experimental research data which reports the use of challenging behaviours to avoid difficult tasks and gain access to preferred objects (Braithwaite & Richdale, 2000; Day et al., 1994).

In summary, the overarching domain of communication skills (interpreted to include literacy), was the academic area of learning in which the most student improvement was recorded. Improvement in this domain was recorded for every student, and was noted by both staff and parent informants for six of the nine students. It was also the academic learning outcome raised most often by informants in their spontaneous response to program effects. These spontaneous responses can be identified by the double ticks in relevant table cells.

Numeracy

As identified through individual staff and parent interviews, the least improvement overall in student learning was recorded in numeracy. Small improvements were noted for four of the nine students with improvement for only one of these students being independently reported by both parents and staff. These improvements included being able to count from one to seven, understanding the concepts of full/empty, in/out, swapping, fairness of exchange, and having a better understanding
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of time as evident in scheduling. Important improvements were however noted in the concepts of waiting (time), fairness (amounts of food traded), sorting (food) and start/finish type concepts. For instance, “he understands the concepts of fairness and amounts of food. ...Students are encouraged to swap food [not give away].” (IS4.4 7)

Learning one-to-one correspondence and counting were the most prevalent numeracy skills which were perceived to have improved since the program began, but these skills were not necessarily translated to functional purpose. No improvement in numeracy skills was reported for four students by both parents and staff. Table 13 below displays parent and staff perceptions of student improvement in numeracy.

Table 13 Numeracy

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<tr>
<th>Learning Domain</th>
<th>Students</th>
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<tbody>
<tr>
<td></td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>Numeracy Parents</td>
<td>x ✓ x x x ✓ ✓</td>
</tr>
<tr>
<td>Staff</td>
<td>x ✓ x x ✓ ✓ x x</td>
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A wide variation in mathematical competence between students was reported by staff, ranging from high competence in tables and mental arithmetic for one student, to zero understanding of one-to-one correspondence for another. For the student working at the upper range of competence in the class, no improvement in numeracy was recorded by either parents or staff. His parents indicated that his higher level of competence in numeracy preceded entry into the Correa program. For instance, he could count to 100 before he left kindergarten. Thus this may be regarded as a splinter skill.

Whilst several students displayed some ability in numerical concepts such as quantity, routines, counting, or number or shape recognition, again this understanding had limited transference to everyday life. Further, the student who demonstrated good mathematical computation skills had no understanding when a problem was stated descriptively rather than numerically, no student could comprehend money and change, and the ability to count did not translate to functional counting. For instance, comments related to three students included:
Chapter 7 – Program Outcomes

He can name shapes, recognise numbers, but functional numeracy does not exist. (IS4.4 1)

He can count to 20 in the last few months. Has been working on 1:1 correspondence with the speech therapist, but have yet to see this skill transferred to everyday living. (IP4.4 2)

Very significant change in Correa, especially in relation to time. This is evident in his visual scheduling work – hours, minutes, years. (IS4.4 6)

Socialisation

Socialisation is defined as being able to relate to other people, to share and participate in social interaction. Any change in students’ socialisation skills was investigated via two questions in the individual interviews, one which used the term ‘Socialisation’ and the other which used the phrase ‘Responding appropriately to people and events’. Neither term/phrase was defined for respondents at the commencement of the individual interview process and no respondent asked for a definition of the terms. The response category ‘Responding to people and events’ was included in the questionnaire as I hypothesised that this lay phrase would assist parents to identify relevant adaptive social behaviours.

As shown in Table 14, improvements in socialisation skills (‘Socialisation’ and/or ‘Responding appropriately’), were noted for eight of the nine students by either staff or parents or both. The exception was Student 3.

Parents and staff, unanimously and independently indicated improvements in both categories of socialisation skills for four students (Students 5, 6, 7 and 8). It will be recalled that significant improvements are shown by a double tick. These indicate either a spontaneous, unprompted comment, or the use of an intensifier, e.g. “great improvement.” Double ticks are recorded in the table in either or both socialisation skill sub-categories for three students (Students 5, 6 and 7) by at least one informant. In a further two cases (Students 1 and 2), both stakeholders agreed that there had been improvement in the sub-category ‘Socialisation’ whereas no such agreement of improvement existed for the sub-category ‘Responding appropriately’ for these same students.
Improvement was noted in the sub-category ‘Responding appropriately’ by parents for two students (Students 4 and 9) and the sub-category ‘Socialisation’ for one student (Students 9), while these improvements were not noted by staff. Staff however noted only one incident of improvement, this being for ‘Responding appropriately’ (Student 1).

No improvement in either category was recorded by either staff or parents for the ninth student (Student 3). This student was from a non-English speaking home environment and he displayed only very minimal or no improvements across the breadth of skills and attributes documented.

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<th>Learning Domain</th>
<th>Students</th>
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<tbody>
<tr>
<td></td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>Responding appropriately</td>
<td>Parents</td>
</tr>
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<td></td>
<td>Staff</td>
</tr>
<tr>
<td>Socialisation</td>
<td>Parents</td>
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<td></td>
<td>Staff</td>
</tr>
</tbody>
</table>

Only one (Student 4) recorded a decrease in socialisation skills. This was recorded by both parents and staff and related to the sub-category of ‘Socialisation.’

With regard to ‘Responding appropriately to people and events’, improvements included one student letting his parents know if he wasn’t feeling okay about a social situation; before they could only tell this from his reaction. This skill was reported by parents to have been taught in the curriculum. Another student had learnt to respond respectfully to a very ill grandfather; for instance, by not jumping on his bed. But within a month after his grandfather’s death, this skill had been forgotten. This skill was also not transferred to other people or situations.

Other improvements in Socialisation noted for Correa students included indicating choice (of foods to eat or places to go), initiating requests, being more comfortable with different people, being able to wait, using spoken language to express himself...
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rather than hurting others, keeping clothes on, seeking and displays of affection, and responding very well to requests such as ‘sit down’ or ‘come out’. Indicative staff and parent comments included:

A lot of improvement. There was a time when he could not monitor his own behaviour at all. In the last two years he has learnt to do this. (IS4.6 6) [This time span coincides with commencement in Correa.]

He used to take his clothes off all the time. Now he will keep his clothes on all day. This has only happened since he started at Correa. (IS4.6 7)

He initiates more requests now than he used to. He is more aware of things he wants to do although it is not always possible to do what he wants which can lead to frustration. (IP4.6 6)

Improved socialisation skills were noted for seven of nine students (unanimously in six of these cases, and variation between staff and parents in one), no improvement for one student (as independently perceived by both staff and parents), and a decrease for one student (as also independently perceived by both staff and parents). Improvements were noted in students’ tolerance of other people in their vicinity, greeting, recognition of others, acknowledging others, parallel play, recognising who will play with them, playing with others, eye contact, sense of fun, accepting changes to routine without distress, watching others, sharing, and maturity of peer interactions during puberty. Reductions in negative behaviours, such as a reduced length of time in episodic distress, coping better in different environments and improved ability to monitor own behaviour were also noted.

For some students, improvements in their socialisation skills either did not occur or only marginally improved. One parent noted that her son did not interact much with other people while at school, suggesting that perhaps the sheer spaciousness of Correa which enabled students to be alone was also one of the limitations of the facility.

One student’s socialisation skills had decreased according to both staff and parents. The student had been observed at both home and school to display increased pushing of younger children. Staff suggested that he may possibly be using this behaviour to
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indicate a desire to play, while his mother believed that his pushing had possibly emanated from learning to play chasey but not having learnt to stop when asked.

Indicative comments related to students’ socialisation skills drawn from individual and focus group interviews include:

There has been a big improvement in tolerance of others. He will wave to certain people he sees a lot. (IP4.8 5)

He recently has begun playing with his sister. He interacts mainly with his mother although he knows his sister’s routines and likes to watch her play sport. He acknowledges other kids he knows now, for example on the bus and at the shopping centre. (IP4.8 6)

He has been much more affectionate, giving kisses and hugs often at unpredictable times. He can play, but other kids including his siblings don’t like playing with him. (IP4.8 8)

The children are much more aware of each other. There is more eye contact. They will come up to the window and (student’s name) will acknowledge me as being there. (FP2)

The interplay between curriculum, the learning environment, socialisation and the students’ emotional state was evident in the parent focus group comment:

I think those kids could be quite calm and self-contained. But if the unit was not set up in the way it was, that learning would not happen. They would be quite happy to sit in their own isolated worlds and not reach out or interact with anyone else. There is a dual purpose of not only bringing anxiety levels down, but also providing the expectation that some of that social learning will occur. (FS8.3)

This comment arose from a discussion which identified socialisation skills, such as taking turns, waiting, awareness of others in the group, social interaction, and helping each other, plus academic learning as student outcomes arising from the program.

Daily living skills

Daily living skills are those which facilitate personal independence. Apart from communication skills, they include toileting, dressing, self-management of meals,
movement, hygiene, and personal care. These activities are demanding for parents because they are on-going, daily life functions, regardless of location or other circumstances, such as parental illness or tiredness. To a large degree student competence in these skills controls the quality of parents’ lives because they are significant factors not only in the home, but also in the planning and conduct of social occasions. Thus it was not surprising that a key program goal sought by parents as indicated earlier was for their child to learn skills for functional daily living.

The Correa program included routines around toileting, communication, and self-care as daily events. Staff commented that self-care became much more possible in Correa:

*Simply because we could access a lot more independent living equipment - the toileting, the kitchen. Things could happen in small groups or even pairs and you could isolate those activities from everybody else. So you could have a group inside, a group in the kitchen, a group in the relaxation room and still have the toilet open or access to the toilet organised. And the shower is important. (Student’s name) knows where the shower is. It can be accessed whenever he needs it.* (FS4)

The CAP, discussed earlier, also was a curriculum element oriented to independence.

Data from individual interviews displayed in Table 15 indicate that either one or both informants noted improvement in ‘Daily living skills’ for eight of the nine students. Parents perceived improvement for six students whereas staff reported improvement for five, with consensus in only three cases (Students 1, 6, and 7) from both parents and staff that improvement had occurred. In five cases, either parent(s) or staff, but not both, believed that improvement had occurred. In one case, no improvement in daily living skills was perceived by either parents or staff. This student was reported by his parents to be quite competent in this domain, although staff stated that “this area continues to be a focus. He is fairly independent, although at mealtimes he has a problem. He can open his lunchbox but cannot put his hand in to take out the food.” (IS4.7 5)
Chapter 7 – Program Outcomes

Table 15 Daily living skills

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<tr>
<th>Learning Domain</th>
<th>Students</th>
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<tbody>
<tr>
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<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>Daily Living Skills</td>
<td></td>
</tr>
<tr>
<td>Parents</td>
<td>✓ x ✓ x✓ x✓ x✓ x ✓</td>
</tr>
<tr>
<td>Staff</td>
<td>✓✓ ✓ xx x✓ ✓✓ ✓ x</td>
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For three students, parent informants indicated an improvement in this domain when no such improvement was recorded by staff. In fact for one of these students, staff noted a deterioration in daily living skills. Parents may have registered greater improvement in this domain because they had more opportunity to observe these skills being applied than did staff. Further, any advance in students’ competence to function more effectively in the home had an immediate and direct impact on parent demands and thus their level of stress.

The skills most frequently identified by both parents and staff as having improved in this domain were toileting and dressing. For instance, toileting was “a long time coming! ...better at school than at home.” (IP4.7 1) Other skills which had improved related to self management (such as cleaning teeth and bathing), preparing food, and attending to their own feeding and drinking. Indicative informant comments regarding improvement in daily living skills included:

- *He can now get his pyjamas out of the drawer. Recently he has started making peanut butter sandwiches at home. He has trouble monitoring his own body temperature.* (IP4.7 6)

- *He dresses himself 70% of the time if his clothes are laid out. He does not talk but makes communicative noise if he wants to eat at MacDonald’s. He could not do these things before.* (IP4.7 8)

- *He attends to his own personal care such as toileting. He has made real progress here. He toilets appropriately. He used to do his bowel action mainly in the shower. This changed in 2002 and he is now doing it consistently in the toilet. This is a massive improvement.* (IS4.7 8)
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One parent found that her efforts to teach independence also had the counter effect of reducing the child’s necessity to communicate. His attempts at talking were reduced because he could manage things for himself.

Generalisation of skills

People with autism often do not transfer skills learnt in one setting to another. Thus, if the Correa program was to have an impact beyond the confines of the classroom, then it needed to include explicit processes designed to achieve such a goal. As discussed in Chapter 6, parents were integral elements of the overall design of Correa. Multiple modes of regular communication between staff and parents were instigated with the intention of facilitating the generalisation of student skills across settings. For instance, the designation of one staff member as a school-home liaison officer, parent education, and the provision of resources for home use (such as Compics or behaviour management strategies used at school) typified such supports. By far the majority of parents were receptive to this assistance and noted commensurate improvements at home. However, the duplication of teaching and management strategies at home and school was not universal. One mother for instance indicated that she started using Compics at home but found it too cumbersome as she tried to maintain signing and eye contact as well.

While some transfer of skills was noted, there was inconsistency in the execution of these skills between different environments. It did not automatically follow that because a skill was practiced at home that it would also be transferred to school or vice versa. Neither did skills demonstrated in respite care necessarily occur at home. Disruptions to normal routines also often had an unsettling effect on a student’s ability to maintain the skills. For instance, parents indicated during their focus group interview that changes to medication, going on holidays, or moving house usually prompted a period of readjustment which entailed intensive monitoring over a protracted period (weeks). An indicative parent comment to this effect was “at his host family he will pour his own milk on cereal but will not at home. ...Can dress himself at school but will not at home.” (IP4.7 4) Further, skills used at home and school did not necessarily transfer to other settings. For instance:
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We have been caught out driving and if there is no toilet, we have tried to get him to wee behind a bush. You would think that stand and shoot mate,...you know. Doesn’t happen. He needs a toilet and he wants to sit. (FP2)

A related issue is the difficulty people with autism have in adapting to change. The relationship between this characteristic of autism and poor generalisation of skill was evident in the comment of one parent who stated:

(Student’s name) was taught to wee on a tree if we go camping. But then it takes two weeks to get him going back to the toilet when back home. He’ll just go in the backyard. That’s fine when you are five, but he’s too old now. ...It’s like ‘I could go behind a tree yesterday, why can’t I today?’ He doesn’t quite relate. It’s the change of routine which is so hard. We need to follow him around for a few days and get him to go to the loo each time and then he is OK. (FP2)

Nonetheless some generalisation of student learning did occur as indicated by several parents. They asserted in their focus group interview that skills learnt at school were now being used in other settings. In particular, daily living skills (such as pouring a drink), socialisation skills (such as waiting or sharing), and communication skills (such as greeting and the use of Compics or verbalisation) were specified. For instance, parents’ confirmation of skill transfer included “having to share items at school (e.g., computer). He shares much more at home now” (IP11 9) and “talking and communicating to a broad range of people is much better.” (IP4.5 4)

Further, students were able to generalise the use of particular strategies from school to home, particularly if accompanied by the use of the same visual prompt. For instance, the Compic for ‘Relax’ and the use of a specific breathing technique were mentioned on a number of occasions by parents as being very useful for both the child’s communication and capacity to calm themselves. One example of this occurred during the parent focus group interview where it was stated “we got the Compic for relaxation three weeks ago. (Student’s name) knew immediately what it was. Three big breaths, lie down, angry, not happy, walk away.” (FP7)
Summary of student learning outcomes

Based on individual and focus group interview data from a minimum of two key informants (staff and parents) per student, improved student learning outcomes were perceived across each domain of learning reported in this evaluation. Most improvement occurred in communication skills, with improvement recorded for every student by at least one of the two informants, and by both staff and parent informants for six of the nine students. Socialisation skills were recorded as the second highest improvement. Improvements in daily living skills generally were reported more favourably by parents than staff, possibly because there was more opportunity for these skills to be displayed in the home environment. The least improvement occurred in numeracy where the transfer of academic gains to functional numeracy was also limited. Some generalisation of skills was evident between environments.

Skill transfer appeared to be facilitated when strategies were used consistently at both home and school. This was particularly true for the use of Compics and self-relaxation techniques. But it was also true for other skills such as sharing, waiting, improved social tolerance and daily living skills.

7.6 Objective Testing of Student Achievement

It was difficult to substantiate student achievement empirically based on the goals articulated in the NEP records, for two related reasons. First, in accordance with staff understandings that reporting needed to reflect the SACSA framework, the NEPs at times reflected SACSA framework language rather than stating the learning goals in more quantifiable terms. An extract from an NEP illustrates this point. It stated the learning goals for a particular student as “playing and experimenting with sounds and patterns; listening attentively, recognising cues and visual stimuli; and developing increasingly complex non-verbal skills in his language.”

Second, most of the stated NEP goals were not sensitive enough for small incremental improvements to register as progress, provide useful information to parents and staff, or to guide future planning. An example of this NEP wording was: “signing and verbalisation continues as a focus; word phrases for comprehension.” As educational goals are intended to drive individualised curricula, students are best
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served when these goals are articulated precisely. Thus the non-articulation of incremental progression militated against staff being able to monitor, assess, and track student progress accurately. This issue is discussed further in Chapter 8. In an informal interview, the Principal also indicated that staff workload, low level of administrative support, and the high demands of these students combined to create problems for staff in managing data related to student learning and thus reporting (Interview 12/10/02).

However, data collected from the focus group interviews did provide insights into the extent of student learning which they perceived had occurred. When asked how the overall Correa program, including physical environment, teaching style, curriculum content, and behaviour management practices had affected student learning, staff became quite animated, raising a variety of academic and social indicators of student progress. Their conversation developed as follows:

You can see it in the amount of work that the students produce. I had real problems in Cassia getting those students to sit to do almost any of the academic program. ...Now you see much more of the bookwork, the reading skills are just skyrocketing compared to where they were. When these children were in Cassia we thought that they would never write. ...Not even hold a pencil really. ...Even simple colouring skills or tracing skills, - no sign of it two years ago. Now (student’s name) is filling up notebooks with his own writing and so is (another student name). ...You know that they are aware of the group. The class group. ...And they do turn taking etcetera and they do wait. ...And they didn’t particularly before. ...And they will now help each other. (FS8.3)

Parents also noted that learning had occurred. However this varied from “has jumped ahead since being in that room” and “the rate of improvement has improved” to “don’t really know what he has learnt.” (FP8.3)

7.7 Chapter Summary

The student profiles confirm that the Correa program was appropriately targeted. This strengthens the likelihood that program effects are due to the program, as anticipated in the Correa Program Theory discussed in Chapter 4.
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There was an overwhelming improvement in student security which was demonstrated by no student having absconded from the Correa Learning Unit from the time the program commenced to the time of the thesis write-up. Student safety also improved quite significantly. No Critical Incident Reports had been necessary and there had been a dramatic decrease in the frequency and severity of challenging behaviours. Students were reported to be calmer and happier. Both of these emotional states are beneficial to students wanting to engage with the learning process. This improved capacity for learning was reflected in student learning outcomes. Big breakthroughs in learning were reported for the majority of students. These spanned a range of areas including general behaviour, socialisation, communication, daily living skills (especially toileting), speaking and fine motor skills. Most improvement occurred in communication and socialisation skills and least improvement in numeracy.
Chapter 8 - Discussion

Effective school reform cannot happen until people move beyond superficial conceptions of education systems and recognise the unseen values and attitudes about power, privilege and knowledge that keep existing structures, regulations and authority relationships in place.

(Senge et al., 2000:20)

8.1 Introduction

The evaluation findings presented in Chapters 6 and 7 raise issues which span the domains of both program evaluation and education. The evaluation of the education program provided in Correa for students with severe disabilities needed to be based on a defensible rationale. For instance, it needed to recognise the existence of political and organisational constraints that shape the programs. It also needed to recognise that there are countless macro- and micro-mediating factors which affect the operations and ultimate effects of the program. This evaluation needed to be sensitive to and reflect this complexity as it sought to inform the thinking of policy makers and other program stakeholders. Thus, a “realistic evaluation” as advocated by Pawson and Tilley (1997) was selected for this case study evaluation of the education program provided in Correa Unit to students with autism who are chronic climbers and absconders. A program theory was subsequently developed (see 4.3) to provide a framework for the evaluation. This program theory included not only the program inputs, processes and outcomes, but consistent with the evaluation theory perspective advocated by Pawson and Tilley, it included the context of the Correa program.

In line with this broader framework, Chapter 8 commences with a discussion of the threats to the validity of both the research design and implementation of the evaluation. This chapter also examines the context in which Correa operated to explore how this affected program development, implementation and outcomes. It has consistently been maintained throughout this thesis that the Correa program did not exist in isolation. It existed in a milieu of economic, political, bureaucratic, organisational, human, and physical factors which may have individually or collectively operated to enhance or restrict program implementation and thus affect
the outcomes achieved. This discussion therefore brings to bear factors which directly or indirectly facilitated or militated against program effectiveness.

8.2 Consideration of Methodological and Research Design Issues

This section discusses reliability, validity and attribution issues as they pertain to this study.

8.2.1 Reliability and validity issues

Reliability and validity are highly developed concepts in the experimental design literature. They are also important issues in qualitative studies. In both experimental and qualitative studies they serve to enhance the credibility of the research findings. The credibility of the findings from qualitative research is enhanced by the use of rigorous techniques and methods to gather and analyse data which can be cross-checked through triangulation to see if the data from multiple sources and perspectives provides a consistent finding.

I will consider five issues related to the reliability and validity of this investigation. These are informant recall, specificity of student learning goals, accident/incident data, objectivity of informants, and lack of a control group.

Informant recall

Informant recall is primarily a reliability issue because it relates to consistency of measurement. A prime source of data for this study was obtained via informant recall. It is acknowledged that informants may not remember events accurately, or they may have been influenced by more recent events which then modify their earlier perceptions. As such, informants may not be a reliable source of data. The reader is reminded, however, that a minimum of two independent, information-rich informants were interviewed per student. It is also worth noting therefore the high level of congruence between staff and parent perceptions across the range of program outcomes (safety and security, emotional state and learning outcomes). This high level of congruence suggests that informants were indeed reliable sources of data.
Further, informant perceptions regarding students’ improved emotional state is supported by school accident and injury documentation. This is an example of data triangulated from different sources which provide consistent evidence of a program outcome.

**Specificity of student learning goals**

One of the goals of the Correa program was to improve student learning. However, the level of generality with which student learning goals were worded on their Negotiated Education Plans (NEPs) posed a problem for this study. Specifically, student learning goals were stated at a level of generality which was incongruous with the smaller incremental improvement typical for students with severe disabilities. As such, it was difficult for staff to determine accurately the extent to which these goals were achieved. As a consequence, the usefulness of these stated student learning goals was diminished for this evaluation. The level of generality with which learning goals were stated also diminished their usefulness for reporting student progress to parents, and also the extent to which they provided accurate information for any subsequent teacher regarding students’ current level of competence. Staff recognised this problem and significant amendments were made across the intervening years as to how learning goals were set. These changes occurred after data were collected but before analysis had been completed. They are discussed in below in 8.4.1. The reader is reminded that the level of generality for student learning goals used in the early years of program implementation was in response to the DECS requirement that student progress be reported against the SACSA Framework Learning Outcomes in each of the Learning Areas.

**Accident/Incident data**

Since the program commenced, no Critical Incident Reports or DECS ED-155 Incident/Accident reports were lodged for injuries incurred to Correa students as a result of their own behaviour or the behaviour of any other person in the Unit. As these reports recorded the most serious behavioural events, this is a clear indication that students were calmer and that the severity of their challenging behaviour had significantly decreased, compared with the reported incidence of such events pre-
Chapter 8 – Discussion

Correa. If incidents did occur which warranted completion of such reports, it seems highly likely that staff would have been diligent in doing so because these forms provided verification of events for legal and auditing purposes.

By way of comparison, the internal school Incident Report was used to record unacceptable student behaviour not resulting in injury warranting medical attention. The reader is reminded that this reporting form changed during the time that Correa was operational but before the data collection commenced. While a single incident report used throughout 2001 was not burdensome for staff to complete (a single-sided A-5 sheet), the sheer frequency of such events made it impossible for all incidents to be recorded. As a result, staff decided that from 2002 it would be more useful to replace this internal Incident Report with a system which monitored individual students using a time-slice, behavioural record to monitor problem behaviour. The one-line entries in this record simply stated the name of the student and what behaviour was observed, with little, if any, antecedent information supplied. It was invoked when a student’s behaviour had escalated to the point where staff wanted some baseline data on the frequency and circumstance of a pattern of behaviour. As such, the time-slice behavioural record was also not useful as a means of monitoring the frequency of incidents because it was invoked only at times arbitrarily determined by teaching staff. It was, however, useful to gain insight into the nature of such problem behaviours.

Thus, disappointingly, a count of these internal incident reports and time-slice behavioural records were not useful as a source of data for this evaluation. Teaching staff and school management conceded that many incidents passed unrecorded due to competing demands on staff time, with a higher priority being afforded to activities more directly related to teaching, managing actual student behaviour, and maintaining close communication with parents rather than to administrative record keeping. This situation was compounded by the low level of administrative support available for teachers.

Objectivity of informants

It is conceivable that informant perceptions were influenced by vested interests, thus influencing the reliability of the study. For instance, motivated by their considerable
investment in the program, staff may have oriented their responses to program success by exaggerating improvements in student behaviour and learning. Conversely, motivated by a desire for the program to deliver the best possible outcomes for students, staff may have presented particularly critical perceptions on the program.

However, the evidence related to staff commitment to refining the program suggests that staff were open to acknowledging problems and adjusting the program or context in order for the program to better serve student needs (see Chapter 6). From this perspective, it was unlikely that staff would overestimate program effects.

Parents on the other hand had a vested interest in not inflating program effects. This evaluation provided an opportunity for them to voice concerns and suggestions which could ultimately contribute to the program being better tailored to their child’s leaning needs. Thus, with their child the ultimate beneficiary, it might be expected that parental responses would underestimate program effects. While the parents of one student were critical of the program under-challenging their son, overall parents reported very positive program outcomes for their child. Indeed, the high level of congruence between the perceptions of independent information-rich informants reporting on an individual student basis, supports the validity of the evaluation findings. Further, there were 13 instances when parents gave a more favourable indication of program effects at the individual student level than staff. As such it can be argued that parents did not underestimate program effects. Staff on the other hand provided only six instances where they noted favourable program effects for specific students when the parents did not. On this basis, it can be argued that staff did not inflate program effects because of a vested interest in its success.

Lack of control group

It can be argued that the lack of a control group challenges the internal validity of this study. However, it can also be strongly argued on a priori grounds that the improved student outcomes noted in Chapters 6 and 7 are due to the program and not some other factor. Possible other attribution factors are detailed in the next section.
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8.2.2 Attribution Issues: Factors other than the Correa program that may be contributing to outcomes

This section discusses general issues of attribution in research design for educational programs. It also discusses attribution factors which relate more specifically to the Correa program.

General issues of attribution in research design for educational programs

Experimental style investigations attempt deliberately to isolate and test the effect of specific variables. However, educational programs are counter-intuitive to such techniques. It is difficult to isolate the effect of specific variables and therefore to attribute observed effects exclusively to the program being evaluated. As such, rival explanations can challenge the validity of the findings. Some rival explanatory factors can certainly be identified in this instance. For example, apart from being a multi-dimensional program, Correa was also located within broader school, DECS, community, and political contexts.

The existence of known (or unknown) rival explanations does not mean that an evaluation of an education program such as Correa should not be attempted. It should be, particularly when that program is innovative and has the potential to affect the lives of many in a cascading effect. However, in the evaluation of such a program we do need to consider the confidence with which we can claim that the outcomes are due to the program activities and not some other rival explanation. For the Correa program, examples of such rival explanations, amongst others, may include contamination from a concurrent program (such as private therapy) or age-related maturation. The inclusion of multiple perspectives, consideration of program mediators (contextual factors), and feedback loops, are efforts to improve the robustness of the evaluation findings.

Given that the program was correctly targeted as demonstrated by the student profiles in Chapter 7, this evaluation needs to consider whether these results can confidently be claimed to emanate from the program, or whether they may be due to some other rival explanation. Three possible confounding variables were detected. These were
privately provided therapy, medication and maturation. Each is discussed in the following sections.

**Privately provided therapy**
Throughout the period that students were in Correa to the point of data collection, only one student was receiving any privately provided therapy (speech therapy once/week). While this student had made gradual progress in the achievement in learning outcomes, he was not identified as one of the students who had achieved any significant breakthroughs (as confirmed by independent agreement of staff and parent). However, even though he was still non-verbal at the time of data collection, he may well not have been making the gradual improvements noted had he not been receiving this treatment. No student was receiving privately provided occupational therapy for the duration of time that these students were in Correa. Neither were they receiving privately provided ABA intervention.

Chapters 6 and 7 reported significant improvement in behaviour and learning for the majority of students, many of whom demonstrated ‘significant breakthroughs’. None of these students were receiving privately provided therapy. Thus, it is reasonable to claim that the validity of the evaluation findings reported is strengthened because privately provided treatment cannot be considered to be an alternative explanation for the program outcomes recorded for the majority of students. Indeed, the one student who did receive private speech therapy did not show greater improvement than other students in the class.

**Medication**
It is likely that most, if not all students were on some medication, albeit that the type and/or dosage was unlikely to be constant across all students. Nor was medication likely to be constant for any one student for the period over which data were collected. Further, the precise nature and effects of any of this medication was not routinely recorded at school, hence was unknown to staff. As such it is impossible to indicate with any degree of certainty the extent of influence of such medication.
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However, it is noteworthy that the program effects spanned all students, despite likely variation in type and dosage of any medication. This strengthens the rationale that program effects noted were due to the program rather than medication, although medication could have played a contributory role. For instance, it may have ameliorated behavioural symptoms by inducing a calmer state, or may have made induced comfort by treating some other condition (such as a sinus problem). More importantly, evidence that medication was not the prime factor responsible for changes in student behaviour and learning was deduced from the accelerated acquisition of adaptive behaviours and learning outcomes once students commenced the Correa program compared to their rate of progress prior to acceptance into Correa. This point is discussed further in the next section in the context of maturation.

**Maturation**

Unlike the previous rival explanations (private therapy and medication), maturation is relatively constant across all participants and thus poses a more plausible rival explanation for program effects. Ideally a control group would permit exclusion of maturation as a plausible rival explanation.

Whilst certainly affecting the development of students, maturation was discounted as a rival explanation for the outcomes measured in this evaluation. It was discounted on the basis that the rate and extent of learning outcomes achieved by students since entering Correa was well above that which would be expected for these students through maturation alone. Evidence for this statement is drawn from four sources.

First, comments made independently by both staff and parents confirm that the rate and extent of student learning was well above what they had expected to occur commensurate with developmental progression. This learning included a significant number of ‘big breakthroughs’ in achievement (see 7.2.3).

Second, the pre- and post-Correa perspectives on seven of the nine students indicated reductions in student anxiety-related behaviour and improvements in student learning outcomes well above what would have been expected through normal maturation. As staff were experienced teachers of students with low-functioning autism, they were
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well positioned to make a comparative judgement about student improvement within the context of normal maturation. Further, one staff informant taught the majority of Correa students during the year immediately prior to Correa commencing and was also the inaugural teacher in Correa. He could thus provide a pre-and post-Correa perspective on their learning.

Third, a number of parents volunteered comments about the rate and extent of progress their child had made previously in the school compared to the progress they achieved in Correa. Their perspectives supported the notion that learning was accelerated once students were placed in Correa: this is a type of regression discontinuity argument.

Fourth, the high level of correspondence of triangulated data from independent key stakeholders supported the program effects reported.

Qualitative elements incorporated in the design of this evaluation, being particularly sensitive to contextual and unanticipated issues, increased the likelihood that rival explanations would be detected. However, only a few, as discussed above, have emerged. I acknowledge that other confounders may have remained undetected. Given the depth of investigation in this study, the possibility of undetected confounders is considered to be low.

Section summary

Three rival explanations have been identified which may possibly account for the program effects noted in this study. These are privately provided therapy, student medication and normal maturation. None of these can explain the comprehensive moderation of student anxiety levels and improvements in student learning outcomes which span the student cohort, the timing at which the accelerated progress commenced, or the rate of improvement which was inconsistent with what could be expected through normal maturation.

If there had been causal factors that could invalidate the effects of the Correa program, it is highly likely that these would have been detected. This is because this evaluation
was conducted in close association with information-rich informants and also because the study design provided an intimate knowledge of the program and the context in which it operated.

Thus, in the absence of any other known confounder, it is reasonable to attribute the Correa program effects recorded in this thesis to the program and not to privately provided therapy, medication or normal maturation.

The reader is reminded that a qualitative uncontrolled study design was adopted for this evaluation because the program was still at a developmental stage. Such a design was able to detect a broad range of anticipated and unanticipated factors which may have influenced program implementation and outcomes. In essence, this evaluation has been an essential preliminary to any controlled experimental design. Any subsequent control group design is now better positioned to deal with many attribution issues which were not appropriate for the evaluation of the program at its developmental stage.

8.3 Facilitating Contextual Factors

As discussed in Chapter 4, one of the strengths of the program theory approach is that it enables identification of factors that either enhance or impede the achievement of program objectives. Pawson and Tilley (1997) for example advocate the use of such an approach because it enables ‘what works for whom and in what circumstances’ to be determined. This evaluation therefore investigated not only program outcomes, but also the contextual issues which impacted on the program processes and outcomes. The context of Correa includes organisational and school policies, structures and processes (see 4.3).

Exploration of the Correa context serves a four-fold function. It can assist program generalisability, enrich causal explanations, identify factors which impact on program sustainability, and enhance the usefulness of the evaluation findings for stakeholders. These will be discussed briefly in turn in the following paragraphs.

First, an understanding of program context can assist generalisablity. When the factors which facilitate or militate against the program success are understood, then this can
help others anticipate how well the program is likely to perform if implemented in
contexts which are different from the one described in this study. This issue of
generalisability is discussed in Chapter 9.

Second, context can identify factors which impact on the sustainability of the program.
Program sustainability is a desirable feature for any successful program because it
ensures that desired outcomes are likely to be maintained through routine operational
procedures and practices.

Third, an understanding of context can enrich causal explanation. For example, staff
commitment to the program is likely to underpin program fidelity and thus achievement
of program objectives. In turn, staff commitment may be enhanced by a range of
contextual factors, such as the leadership skill of the Principal, changes to the physical
environment, funding arrangements, and/or the staff development program.

Fourth, the consideration of these contextual issues can enhance the usefulness of this
evaluation for various stakeholders within and outside of the school. To do this, it
needs to be of strategic and pragmatic assistance to them, which can lead to improved
program delivery and outcomes for students. While the locus of control for some
decisions pertaining to the program lie external to the school, the responsibility for
effective program implementation does not. Accordingly, the findings of this
evaluation can identify structural opportunities and constraints (such as inter-agency
alliances or the funding model for staffing) relevant for policy makers. Thus, if
through this evaluation it can be shown that student educational outcomes could be
significantly improved through structural adjustments and without an increase in staff
funding allocation, then this argument needs to be mounted. That is, evidence-based
best practice should be used to support the achievement of learning outcomes for
students at the departmental as well as school levels. The findings of the evaluation
can also inform practitioners at the local level about program implementation issues.
Such information can be of assistance to them to fine-tune program delivery.

The sections which follow consider how the context and processes of the program have
facilitated or hindered the achievement of program outcomes reported in this thesis.
They also consider what modifications would enhance the delivery and outcomes of the
program. Facilitating factors include investment afforded to program sustainability, staff ownership of the program, and the deliberate intent by school management to create a culture of learning within the school. These are discussed in the following sections.

8.3.1 Program sustainability
A systematic review of 26 empirical studies on program sustainability by Scheirer (2005) revealed that from the perspective of program developers at the local level, continuation of a program is enhanced when: (1) it is strongly related to the core mission of the organisation and has the support of upper management; (2) there is a leader within the organisation to champion the cause; (3) the benefits to a broad range of stakeholders including staff, clients, and potential external funders are emphasised during the program development and broadcasting stages; and (4) the program is made a routine part of the core operations of an existing agency rather than being a discrete program. These contextual factors are discussed in this section from the perspective of the Correa program.

Core mission of the school
Structures and policies at the school, departmental, and legislative levels play a critical role in either supporting or undermining program success. For instance, if legislation and education department policies support the education of students with disabilities in a range of settings, then it follows that unless these settings are supported to function effectively, then the legislation and policies will fall short of what they are intended to achieve. Similarly school policies and structures provide a layer of strategic intent. At Modbury Special School, these statements of intent are expressed in the Modbury Special School Handbook. As the primary goals of the Correa program were to improve educational outcomes and student safety and security, the program was firmly ensconced within the domain of core school business.

The program was supported by the overarching school Vision, Mission and Philosophy Statements. The Vision Statement identified in the Staff Handbook was “to develop and promote a relevant curriculum for students living with a disability”
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(2002:np). Such a statement provided broad recognition that education for such students needs to be appropriate to current and future needs. However, it was the application of statements such as this which were crucially important from a program impact perspective. The development of the Correa program was predicated on school-based research and evidence from the literature. Its implementation was accompanied by school-wide changes towards being a learning organisation, prioritising of school funds for maximum impact on student learning, and staff professional development. As such, the Correa program was consistent with the school Vision Statement.

The school Core Business/Mission Statement provided further evidence that the orientation and delivery of the Correa program were consistent with the overall school approach. It stated:

Subjects are offered through sensory awareness, relaxation and positive behaviour support channels, which address the preferred learning styles and learning needs of students. The school delivers individualised education programs derived from NEPs for all students. Individualised learning programs address the different learning styles and needs of each student in the areas of sensory learning, communication, behavioural/emotional learning, and are based around the SACSA Framework. (2002:np)

As evidenced by the data provided in Chapter 6, these elements were all included in the Correa program. They included: all students having individualised programs tailored to their needs, sensory activity being available to students at all times of the day (both indoors and outside), an approach to learning which included the use of non-transient visual cues and student choice, and a learning environment which was designed to ensure students’ security and safety. Further, the curriculum for each student focused on adaptive skills for daily living communication, adaptive social skills, and self-regulation of their own emotional state.

The Philosophy Statement articulated in the Staff Handbook similarly espoused values and beliefs which were also embedded in the assumptions underpinning the Correa program. A selection from the Philosophy Statement demonstrates this consistency. It stated:
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The focus at Modbury Special School is to develop a learning organisation which fosters quality learning opportunities for all students and staff. We do this by acknowledging that: Each individual has the right to learn and that learning for everyone should be relevant to their needs, strengths and interests. ...Our whole school philosophy advocates the development of partnerships with students and the community. We use behaviour management that focuses on engineering the environment and positive programming in order to benefit student learning. ...We support collaboration with parents, associated agencies, services and community group. (2002:np)

The School Vision, Core Business/Vision, and Philosophy Statements were translated into a series of policy documents such as a Duty of Care Statement, Code of Ethics and Discipline Policy. Such Statements and Policies provide principles and pragmatic direction for staff. The Discipline Policy for instance translated a set of nine principles into statements of intended action such as:

We will involve staff, students, families and support agencies in the development of student behaviour management strategies. ...Responses to unsafe or challenging behaviour will involve problem solving approaches which will support students at all times, including times of crisis. (np)

The reader is reminded that the approach to managing student behaviour in Correa was to provide a learning environment which it was believed would have a calming effect on students. This included providing a physical and social environment adapted to their disability characteristics (e.g. minimise distracters and provide opportunities for safe climbing and other sensory activities), teaching students to monitor and self-regulate feelings of anxiety, staff using non-aversive behaviour management techniques, and developing partnerships with parents in order to reinforce in the home, behavioural and learning strategies used at school.

Evidence of policy implementation spanned administrative, behaviour management and teaching domains. This evidence was collected via direct observation of class facilities, teaching practices, informal staff activities, the school management structure, facilities for staff development, the staff development program and records, and via informal discussions with school staff. For instance, reactive behaviour management strategies such as ignoring, redirecting, visual feedback, stimulus
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change, and positive reinforcement were both articulated in the Staff Handbook and were sighted being implemented in Correa.

Thus, the underpinning beliefs and implementation of the school Core, Vision, Mission and Philosophy Statements supported program sustainability in tangible ways. Staffing, funding, pedagogy, behaviour management of students, the development of a culture of learning amongst staff, and selection of curriculum content, were all framed by these articulated beliefs. In their different ways, each also contributed to program implementation and also shored support for routine monitoring and funding. These statements also demonstrate the school’s strategic intent to closely align the program with South Australian and Commonwealth legislation as well as education department policy.

Leadership

Sustainability of the program was enhanced by the direct participation of the Principal in its establishment and in on-going support. It was also enhanced by the breadth of program leadership which included the Assistant Principal, teachers and SSOs.

School Principal

With regard to the program having the support of upper management, the Principal provided the initial lead in precursor activities which culminated in the development of the Correa program. This commenced with the initiation of, and participation in, formal research undertakings to inform school practice. The Principal also (1) supported staff development activities, (2) was instrumental in applying for research funds and the funding of Correa, and (3) initiated a deliberate strategy to staff the school with personnel who shared a common philosophy about student learning. For instance, pre-selection interviews for prospective staff required them to state their philosophy about student learning. Supporting change practice through individual performance management plans was used by upper management to improve the quality of staff. Further, (4) sufficient recurrent resources were provided to ensure on-going program integrity and viability, including equipment, maintenance, staffing and staff development, and (5) processes were initiated to foster shared ownership of school policies and practices which were oriented to improved student outcomes.
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These modes of emotional and pragmatic support were appreciated by staff as indicated by their decreased stress levels, job satisfaction and preparedness to teach in Correa in the future (see 6.5.4). This appropriately targeted support stands in contrast to earlier findings by Littrell and Billingsley (1994) which suggested that the majority of general and special education teachers surveyed found that the focus and quantity of support provided to them by their respective Principal was not what they considered to be most important.

Program support by upper management was also evident through the agreed assignation of the Assistant Principal to teach in Correa. These activities demonstrate that the program had the support of upper management at strategic, logistical, financial and pragmatic levels.

Program leadership

To achieve sustained effectiveness, a program needs to ensure that the achievement of outcomes is not dependent on the drive of a limited range of personnel, regardless of their status. However, such personnel must also have the ability to influence strategic decision making. In this regard, having upper management leadership support for Correa as described above was an asset for program sustainability.

Leadership was a valued quality at Modbury Special School. It was not the sole domain of upper managers but was an encouraged trait across all staff. Devolved decision making and administrative responsibilities fostered the development of leadership qualities. This was not restricted to teaching staff. For instance, a keenly interested SSO was afforded leadership status for her role during the initial research and establishment of the Correa program. Her valued contribution continued when she was appointed school-home liaison officer, allowing her to work directly with students, parents and staff. Such a role enabled her to actively facilitate the use of Correa teaching and learning strategies in the home as well.

Upper management leadership and support for the program extended beyond the facilitation of structures and processes which integrated the Correa program into school operations. For instance, at the time of data collection, financial and staffing
support was evidenced in the school-funded extra 30 hours of SSO time in Correa to support student learning. This staffing was additional to that provided by the DECS staff funding formula in South Australia as described in Chapter 1, 1.3.2.

Upper management leadership and support was also evidenced in how staff were acknowledged and valued. For instance, periodic but routine celebratory events were provided, such as teaching staff providing lunch for SSOs on a designated day, or the provision of a masseuse during the lunch break for staff neck and shoulder massages. At the time the write-up of this thesis was being concluded, each member of the teaching staff was presented with a school-owned laptop, fully equipped with appropriate software and the School Handbook (including school belief statements, policies, processes and induction information for new staff). This was kept a surprise until presentation actually occurred (except for the technician who loaded the software). Technical support of this nature provides increased independence and flexibility for all teaching staff, including those teaching in the Correa Learning Unit to conduct their school-work at a time and place of their choosing. It also supports the links between planning and implementation, such as having lesson planning in electronic form ready for use with the smart-board provided in each classroom.

Strategies such as those discussed in this paragraph, were implemented to support the well-being of staff and to recognise the stressful nature of teaching in such an environment.

Thus leadership initiatives supported the program through staff well-being and professional initiatives which spanned upper management, teachers and SSOs.

**Range of stakeholders who benefited from the program**

The stakeholders most directly affected by the Correa program were students, staff and parents. The Correa program was initiated by staff, with students as the intended beneficiaries. Certainly students did benefit from the program as demonstrated by their improved safety and security, and the decreased incidence and severity of challenging behaviours detailed in Chapter 7. They also benefited from improved learning outcomes. Evidence from the literature supports the strategies and structures adopted for the Correa program. For instance, from their respective investigations:
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Ferrari and Harris (1981) found sensory reinforcers to be effective in behavioural interventions, O’Leary and Dubey (1979) deduced that self-management can be taught to people with autism, and Jordan (2008) reported the increasing trend to recognise the crucial role that the physical and social contexts of an intervention can bring to achieving adaptive behaviour in real life.

However, the Correa program effects were not restricted to students. Both staff and parents indicated that their stress levels had decreased as a direct result of students’ improved ability to communicate and their improved adaptive behaviour. Staff indicated that they were able to focus more on their core business of teaching, while parents reported improvements in the quality of family life at home and in social settings. The Principal also reported a significant decrease in the frequency with which she needed to deal with students and parents regarding unacceptable student behaviour. As a result, positive program effects were experienced by students, staff and parents.

Correa program sustainability was significantly enhanced by the positive experiences of these stakeholders as noted above. The range and nature of the benefits they experienced, the pivotal role staff and parents played with respect to individual students, the frequent, routine contact between the stakeholders, the critical mass of school staff who supported the program, and the priority afforded to on-going funding at a level necessary to support optimal student learning experiences at the school, all contributed to, and are continuing to contribute, to program sustainability. For instance, motivated by a desire to maintain improved relationships and behaviour at home, parents continue implementing strategies introduced to them by staff. Motivated by improved social and physical working environment for themselves, as well as the perceived educational effects for students, staff are also are keen to maintain program integrity.

Program implementation integrated into school routines

School policies need to be dynamic and responsive to evolving beliefs, values and understandings. Thus, in order for the Correa program to be sustainable, it needs to be integrated into the routines of the school. As such, one would expect to see
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evidence of routine modifications to school policies and practices which were consistent with the program assumptions and beliefs. This section provides that evidence.

From around the time that Correa commenced operation, policies were developed and revised at Modbury Special School as a collaborative endeavour. The revision process included the development of a draft revised policy by the school’s Policy and Planning Committee which was then taken to a full staff meeting for comment. This draft was then forwarded to the Governing Council for input before being returned to the full staff group for comment. The final agreed policy was then sent home to parents after the Governing Council had ratified it. Feedback was invited from the community by providing a ‘feedback slip’ with each Campus News publication (three editions per term). A random staff satisfaction survey was also conducted annually to inform school management of how policies, practices, and the teaching environment impacted on staff. Information from this survey was fed back into the rotational policy revision process. This collaborative process ensured that the revised school policies were well supported throughout the school community and that they maintained consistency with the core mission of the school (detailed earlier in this chapter). This is relevant for Correa because the philosophy and operational guidelines of the program were embedded within these broader school values and beliefs and also shared across the whole school community.

Such collaborative processes sought to ensure staff commitment to, and application of, the evolving school policies. Staff satisfaction and commitment to teaching in Correa was evident in the interest staff expressed to continue their involvement in the Correa program. Further, for the changes introduced in the Correa program to be supported not only at the broader framework level but also at the micro level, follow-up support through regular and routine staff development and a team approach to solving problems was implemented. This was evident through the appointment of a teaching team to Correa, collaborative teamwork being encouraged as routine procedure, research being conducted collaboratively, and through the active support of the Principal as previously described. Moreover, this Principal valued the changes introduced in Correa and was knowledgeable in the pragmatics of that change.
Thus, in summary, the school had identified a shortfall in the provision of education and safety needs for a particular cohort of students and had implemented policy and procedural changes to address these. The documents cited earlier in this section were consistent with Commonwealth and South Australian disability legislation and also with departmental policy guidelines. The translation of these policies into practices evidenced in the Correa program, as well as the routine professional development on aspects of pedagogy and behaviour management directly relevant to the Correa classroom, demonstrate that the program was integrated into the routines of daily school life, thereby enhancing continuance of the program.

### 8.3.2 Staff ownership of the program

From the outset, the drive for research activities which preceded the development of Correa stemmed from a small group of three school personnel, including the Principal, a teacher and a SSO. These research activities included an initial intensive period of data collection on accidents and injuries, an Action Research Project which investigated what learning environment and teaching methods best suit students with autism, and a pilot study (The Northern Schools Project) designed to investigate models of service delivery that blended speech and occupational therapy into school-based curriculum. Whilst initiated from a small cluster of staff, these ideologically driven activities stimulated interest and subsequent involvement of a broader staff cohort in investigating modifications to the learning environment in order to improve the educational outcomes of students with autism. Consequently the Correa program was initiated through collaborative staff research activities and was internally driven and supported by a critical mass of staff, including school managers. The philosophical base of these staff was consolidated by the addition of new staff whose philosophy about teaching and learning was consistent with the Modbury Special School philosophy. It was also consolidated by use of staff development activities to improve staff skills and knowledge and the performance management process to encourage staff to seek appointment elsewhere if they did not feel committed to the re-oriented school philosophy. These factors, together with the school policies in general, helped ensure that staff had a commitment to supporting the implementation of the program in a manner which ensured program fidelity.
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Structures and processes which supported staff ownership of, and commitment to, the program were fore-grounded in the Modbury Special School Staff Handbook (2002). For instance, there was an expectation that individual staff contribute to policy development, decision making, and expenditure (of equitably allocated class budgets). Specific statements indicating this included:

All staff are expected to participate in the running of the school. Committees and working parties will be established to help with this. ...Committees will have a function, to complete a task or tasks so that there is an end point to their function. ...Documentation of meetings will be required. ...There is an expectation that units function as a team and that team meetings are held regularly with documentation kept by the teacher(s) (p.10); ...We can only move forward if we take responsibility for ourselves in the workplace (p.13); We believe that our ethical behaviour is demonstrated when we...respect the integrity of our organisation when we are representing it in our relationships with parents, allied professionals, personnel of non-government agencies and the community. (p.15)

The stated purpose of staff meetings was to provide a forum for “professional learning as a team.” Staff meetings were conducted using a rotating chair and minute taker, with action and staff responsibilities recorded in the minutes. The Decision Making Policy also identified the decision maker(s) for discrete types of issues and the consultation process for each.

Discussion with staff and records of meetings indicated that efforts were made to facilitate pedagogy, curriculum content, policies, resourcing, procedures, and school-home relationships that were genuinely supportive of each other. The Staff Handbook also provided explicit detail which reinforced the pedagogy used in Correa. For instance, teacher responsibilities included to:

Support the initiatives of our school – visual communication and non-aversive behaviour and positive programming, ...communicate with families of all of your students regularly and sensitively, ...contribute to a professional culture, ...reflect regularly in written form on your work and our core business, ...manage the recording of your own learning, ...program for students using goals as this is how we measure progress, ...understand the way classrooms have been engineered. (2002:np)
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The Staff Handbook also evidenced deliberate efforts by the school managers to foster a collaborative and trusting group of staff. It provided directives such as:

*If you have a problem with me, come to me (privately). ...If I have a problem with you, I’ll come to you (privately). If someone has a problem with me and comes to you, send them to me (I’ll do the same for you). *...there is an expectation that units function as a team and that team meetings are held regularly with documentation kept by the teacher, ...talk together, work together, we are a team.* (2002:np)

Such structures and processes designed to help staff collaborate, develop abilities, explore, assume responsibility and take risks, are indicative of a culture of learning. This quest to develop a culture of learning throughout the school also provided a framework for consistency across elements of school operations.

Further, these structures and processes also helped ensure that the planned program was not undermined by counter efforts. Staff ownership of, and operational consistency for the program, ensured that the embryonic Correa program initiated by three staff, was no longer reliant on their individual advocacy. In effect, staff ownership of the program was both a key process in establishing the program and also a key contextual factor in its perpetuation.

### 8.3.3 Learning organisation culture

It was hypothesised that the development of a culture of learning in the school constituted a critical reinforcing factor influencing program effectiveness and sustainability. A learning organisation is one in which staff continuously and deliberately learn and apply new knowledge and skills in a systematic and collaborative manner in order to improve the service, product, environment and/or performance quality provided by the organisation (Honold, 1991). A culture of learning so created includes *“beliefs and attitudes that support the systematic and ongoing use of knowledge and information for improvement”* (Botcheva, White, & Huffman, 2002:423). Evaluative inquiry, risk taking, learning from mistakes, and the development of a climate of trust and courage are all key elements of a learning culture.
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In order for a culture of learning to occur, school leaders need to be strategic in their modus operandi to see that the effectiveness of a particular school program is more than the sum of the component elements. There also needs to be an ethos in which all students are expected to learn. Structures and systems which support effective teaching and learning are essential components of such a culture. Thus, the evaluation of a learning organisation which uses a systems thinking approach needs to include not only detailed knowledge of the program, but also its objectives, assumptions, values and “also those factors beyond the boundaries of the program which interact with and have important consequences for both the program and the organization as a whole” (Owen & Lambert, 1995:240). This perspective is consistent with the ideas expressed in Chapters 1 and 4 particularly, and is reflected in the scope of the data and discussion in this thesis.

At the operational level of a school, indicators of a learning organisation include: (1) frank and routine staff self-appraisal oriented to improving student learning, (2) school personnel persistently and deliberately seeking to expand their knowledge and skills and apply them within a continuous feedback loop, (3) team learning and group interaction being used to facilitate the achievement of common goals, and (4) systems thinking (understanding of interdependency and change) being used to clearly conceptualise the internal operations of a program (including objectives, assumptions and values) as well as the factors external to the program and organisation which have the capacity to impact in strategic ways (Owen & Lambert, 1995; Senge et al., 2000).

At the school in which the Correa program was nested, evidence of such a culture was found in strategic school and program processes. Indicative processes include: (1) the on-going research culture of the school, (2) inclusive decision making, (3) collaborative staff development, (4) the high proportion of staff meeting time devoted to staff development designed to support student learning, (5) planning for program sustainability, (6) budget priorities, (7) strategic action designed to engage and empower staff, and (8) modifications to program processes (such as how student learning goals were articulated, monitored and recorded). These activities demonstrate the use of feedback loops used to inform program teaching practice.
Chapter 8 – Discussion

This learning culture provided deep support for the development, implementation and outcomes of the Correa program. Staff relished the collaborative exploration of pedagogy, environment and behaviour management methods best suited to students with low-functioning autism. The learning culture ensured that program support and refinement did not cease once the program became operational. Indeed, apart from adjustments to the Correa learning environment, curriculum, setting of student learning goals, and pedagogy as discussed earlier, many of these program principles are now applied in all other classes in the school. The deliberate development of an inclusive culture of learning was a paramount factor in ensuring not only program success, but also staff ownership of the program and program sustainability.

8.4 Militating Contextual Factors

It was evident that the achievement of Correa program goals was hampered by a several factors. These were principally: (1) how goals for student learning were articulated and the impact of this on individual programs as well as on monitoring and recording student achievement; and (2) external policy and funding issues related to staffing.

8.4.1 Specificity of student learning goals monitoring and recording student progress

The processes used to monitor and report student learning did not serve the students well. This was due in part to individual student goals being stated in broad terms which provided neither sufficient direction for curriculum planning, nor adequate criteria against which student progress could be measured. The miss-match between broadly worded NEP goals and the scale at which student learning occurred made reporting of improvement against these goals nigh impossible as discussed earlier.

Second, the students were not served well by the structure of the document used for monitoring and recording student progress. This document had no provision for recording incrementally student learning. A compounding factor was the DECS requirement for student progress to be recorded according to attainment levels, these being integral elements of the recently introduced, mandated state curriculum (the SACSA framework). However, these attainment levels were to a large degree beyond the scope of students with severe and multiple disabilities, such as in Correa. Thus
while staff used this reporting framework for the first year that Correa was in operation, thereafter they developed students’ curricula in line with the SACSA Essential Learnings. From these, staff used their discretion to develop increasingly more specific learning goals over successive years as they came to better understand the newly mandated curriculum framework and became more confident that this approach would better served the learning needs of their students.

Cumulatively these factors militated against the optimal achievement and reporting of student learning outcomes as acknowledged by staff in both formal and informal interviews. Parents acknowledged that student reports provided a large quantity of detail on what their child was doing; some also stated that it provided insufficient specificity about their child’s learning progress.

Since the time of data collection, and as a part of the on-going program review process, there has been a dramatic improvement in the specificity with which student learning goals were worded. There have also been marked modifications to the structure of documents used to monitor and record student progress.

An inspection of school records demonstrated that from 2002-2007 the wording of learning goals became increasingly more specific, allowing the NEPs to better serve their intended role. Specifically, they enabled staff to target the curriculum more precisely to students’ stage of development, map student progress more accurately, provide more precise reporting of student progress to parents, and provide more specific information for the subsequent teacher. In order to be useful, this information needed to be honest and detailed. The information sighted confirms that this was the case.

An indicative example of the improved structure and wording of learning goals can be gleaned from a comparison of the 2002 learning goals with how they were stated more recently. For instance, the learning goals for one student were stated in a one-page document in 2002 as “signing and verbalisation to continue as a focus” and “word phrases for comprehension.” By way of comparison, an 11 page NEP document for the same student in 2007 provided a comprehensive structure for the curriculum.
spanning seven of the eight Learning Areas, with learning goals being stated in much more specific and measurable terms. English curriculum goals for this student were stipulated under different strand headings such as Writing (with a sub-category of Fine Motor), Reading/Listening and Speaking/Communication. A further layer of detail was provided in a four-column table for every strand which, reading from the left, are entitled Baseline Skills, Learning Goals, Additional Information and Observed Skill Level. The learning goals thus had become significantly more specific and measurable. For example, one learning goal entry was stated as: “with direct supervision (student’s name) will write his first name and surname, phone number, date under the example given.” Another learning goal for this same student was prompted by his parent’s stated desire for a specific skill to be taught, specifically, skills to help him hang out the washing. It was recorded in the NEP that the student pushed too hard when pegging clothes on the line, and that clothes were scrunched when pegged out. Thus fine motor learning goals for this student included: “use two hands cooperatively,” “…participate in a range of activities to improve strength and coordination in his upper body, hands and fingers,” and “use scissors to cut shapes for curriculum related purposes.” The mechanism for tracking student progress was recorded as shown in Table 16.

### Table 16 Tracking student achievement

<table>
<thead>
<tr>
<th>Date</th>
<th>Goal</th>
<th>Entry Skill Level</th>
<th>Date</th>
<th>Observed Skill Level</th>
<th>Rate of Progress</th>
</tr>
</thead>
</table>

The right hand column records student progress. The rate of progress is determined by reading down this column in conjunction with the successive time intervals over which the recordings were made. Entries for the Rate of Progress column were defined by the following criteria:

1. Cooperating: accepting assistance
2. Beginning: attempting a skill
3. Consolidating: practising a skill
4. Established: consistently demonstrating skill
Chapter 8 – Discussion

5. Transferred: –uses skill across situations
6. Completed: an activity sequence

Thus, more recently, the level of detail used in curriculum planning and monitoring student progress has enabled both staff and parents to be better informed about student progress. The monitoring form equips staff with a more useful tool for tracking student achievement and mapping future goals. It also addresses the shortfall of detailed information about individual student achievement which parents craved and which was reported in 6.6.2.

8.4.2 Policy issues related to staffing

Both the model for service provision from allied health agencies, and the model for calculating the allocation of DECS staff to the school, did not optimally serve the Correa program. The former determined the nature, quality and frequency of allied professional support provided to the school. The latter determined the staff:student ratio and parameters governing the school’s ability to contract staff to the school, whether they be teaching staff, or external consultants.

Model of allied service provision

Special education involves a nexus of education and health services. Effective partnerships between both services need to be created in order for improvements in student learning and health needs to be effected. Hence it is important for educators and education administrators to critically examine whether the model for the provision of such allied professional support leads to improved outcomes for the ultimate recipients (the students). Further, the model of service provision needs to be cost-effective in that the implementation of the service being funded aligns with the service needs of the recipient organisation. The potential for allied professional support to improve the Correa program was well recognised by school staff and management. However, the DECS funding policy and legislative guidelines precluded their ability to enact desired changes.

While the school was responsible for improving student learning, they were not responsible for the policy or decisions which determined the support their teaching staff
received from allied health professionals. This issue had a significant impact on the quality, frequency and duration of service delivery received by school teaching staff and ultimately the students. In short, issues such as consultant expertise, role delineation, consultant knowledge, frequency of visits, and travel time as a proportion of consultation time, were outside the realm of school control.

The data from this evaluation indicated that the allied service provision model was neither cost-effective, nor effective in positively influencing the teaching and learning processes. The competence of some service providers, their time on-site at school, the frequency of their visits, the disproportional time spent in transit, and the level at which their advice was oriented, all militated against optimal service provision.

Teachers essentially wanted greater control in determining the timing and type of externally provided allied health intervention(s), the detail of that intervention, and pragmatic direction on how to implement that intervention whilst still maintaining responsibility for all students in the class. The existing model was oriented to a broader level of support. Accordingly, staff unanimously and strongly perceived that the service afforded them through this model was not cost efficient and fell well short of the anticipated benefits to students.

Staff proposed that if DECS routed the allied health service funding directly to the school rather than via Disabilities SA to service providers, then the end users (school staff) could have greater control over contractual arrangements for allied health professional staff. The reader is reminded that problems arising from the existing model of service provision included: the school having received considerably less than their allocated allowance of allied health professional support; visits were not time-efficient because a significant proportion of paid service provider time was spent in transit; the on-site visits did not enable sufficient time for each provider to understand the context of each student and thus tailor recommendations to individual student need in a contextually relevant manner; and a lack of service quality (encompassing the orientation/level of the support provided, the lack of in-depth professional knowledge per se, and limited knowledge about individual students and the teaching context.
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An alternative proposal strongly endorsed by both school management and teaching staff was to re-conceptualise the model of service provision. This model included the appointment of a multidisciplinary team of professionals to the school, including a psychologist, occupational therapist and speech therapist. This would mean that staff would have on-going access to relevant selected professionals with a complementary knowledge base but who also understood the context of student and teacher needs on a daily basis. Examples of such staff conversations included:

If we worked with a team of people like psychologists that you could bounce ideas off of, who actually worked on site and understood the context on a daily basis for those students. ...And it’s what happens with kids when other kids trigger things. So how can you manage that when you have the 9 or 10 of them? And doing one thing one-to-one is not going to manage a situation like that. ...I think what’s missing is people who understand the context, who understand the needs which require attention. (FS7)

While staff reported that they had voiced their concerns and proposals to service managers, they felt stymied by a system which listened to their proposals, then “nod sagely and nothing happens.” (FS11)

Model for provision of teaching staff

Several issues emerged in relation to the DECS staff funding model. The existing model determined both the staff:student ratio and the range of staff who could be employed at the school.

First, the base allocation of teaching staff was determined by the number of students enrolled with an intellectual disability, without regard to the level of their sensory impairment, behavioural characteristics, safety concerns, extent of challenging behaviours, demand on staff time, or the capacity of the learning facility. Neither did the staffing formula adequately countenance the considerable time needed for administrative matters associated with students with high demands. For instance, administrative tasks included daily feedback to parents, recording incidents, organising translations, or liaison with service providers. Nor did it have provision for additional teaching-related responsibilities such challenging students warranted, such as conducting and analysing functional assessments of challenging behaviours.
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Second, the Principal was not able to directly employ speech or occupational therapists to provide intensive speech therapy or occupational therapy on an individual student basis, even though she may have wished to do so. As discussed in the previous section, this was governed by legislative and policy guidelines to which the school was required to adhere. This was an issue for Correa because students were thus unable to directly access speech therapy or occupational therapy from appropriately qualified personnel. Nor did Correa staff receive sufficient or appropriately contextualised support from visiting consultants such that that they felt confident and/or competent to implement many of the strategies suggested to them. Further, Correa staff did not feel that the visiting advisory teacher, who was not trained in special education and had limited experience with students with autism, provided quality, pragmatic support for managing challenging student behaviours.

8.5 Chapter Summary

The findings from this evaluation strongly indicate that significant and worthwhile program outcomes ensued from the Correa program for students, staff and parents. The transparent and rigorous collection and processing of data from multiple sources and perspectives indicate that the evaluation findings are valid and reliable.

Therapy provided privately, medication, and maturation were considered possible rival causal explanations for the program outcomes. However, none of these can explain the comprehensive reduction in student anxiety levels and improvements in student learning outcomes which span the student cohort, the timing at which the accelerated progress commenced, or the rate of improvement which was inconsistent with what could be expected through normal maturation.

Contextual factors which impacted on the Correa program embraced organisational and school policies, structures and processes. More specifically, these included: investment afforded to program sustainability (including the Core Mission of the school, school and program leadership, the range of stakeholders affected, and integration of the program into school routines); staff ownership of the program; and the culture of learning within the school. Two main factors militated against optimal program outcomes being achieved. First, the level of generality with which learning goals were worded on
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students’ NEPs was incongruous with the small incremental improvement typical of students with severe disabilities. It also made it difficult for staff to determine accurately the extent to which these goals were achieved. Second, the models for determining the teaching staff:student ratio, and the provision of allied professional support did not support the achievement of student learning needs as well as was desirable. These are crucial issues, because small improvements in the adaptive behaviour of students with severe disabilities has the potential to have a major effect on the quality of life for that student and also their family.
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9.1 Introduction

This research documents the effectiveness of the Correa program for a cohort of students with autism who are chronic climbers and absconders. There were dramatic improvements in student safety and security. Additionally, gains in learning outcomes spanned communication, socialisation and adaptive skills. These achievements are testament to the effectiveness of this program.

As discussed in Chapter 1, a range of schooling options for students with disabilities is available in South Australia, with integration into mainstream society a priority. However, meaningful integration and social justice are not achieved by simply placing students with disabilities into a mainstream environment, such as a mainstream school or class. Rather, optimal schooling is about locating students with disabilities in learning environments which best suit their needs. Such learning environments would be adapted to the students’ disabilities and abilities so that optimal knowledge and skill acquisition occurs, together with meaningful integration into mainstream society.

The program effects detailed in this thesis were achieved through the commitment of school staff to the application of social justice principles espoused in Commonwealth and South Australian legislation and education department policies. Students’ aptitudes, as well as their disabilities, provided the impetus for the Correa program development. Rather than trying to prevent climbing, the program provided safe opportunities for students to climb. Instead of simply providing a secure environment to restrain absconders, it provided varied and safe spaces for students to move within.

9.2 Summary of Work Undertaken

Chapter 1 detailed staff concerns prior to the introduction of the Correa program. These concerns were based on a shortfall in the capacity of the school to meet its duty of care responsibilities to students. These difficulties were attributed to problems in the nexus between student disability characteristics, school architecture and pedagogy. This provided the impetus for a series of events including an action research project and a
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pilot study to investigate models of service delivery. These events culminated in the
development of the Correa education program designed for students with autism who
are chronic climbers and absconders.

The purpose of this thesis was to evaluate that program. Specifically, the evaluation
sought:

(1) to determine the intended and unintended program outcomes, and
(2) to determine what factors and processes facilitate or militate against the
achievement of intended outcomes

A case study research method was used to evaluate the program which operated within
the Correa Learning Unit of Modbury Special School.

In consultation with staff, a program theory was initially developed to frame the
evaluation and to understand the assumptions and objectives hierarchy underpinning the
program. Following the selection of participants in the study, the research instruments
were designed and tested. Data were collected via interviews (individual, focus group
and informal), school documents, and photographs. As all students were either non-
verbal and/or had very low-level communication skills, a minimum of two key
informants (at least one parent and one staff member per student) were selected to
provide much of the data for the evaluation. The transcribed interview data were
manually analysed and transposed onto a series of matrices stored as electronic word
documents. The two dimensions on each matrix were, in the columns, students; and in
the rows, issues classified by informant (parent or teacher)\(^3\). This format provided a
convenient means for cross-student, cross-informant, and cross-issue data comparison.

As discussed in Chapter 3, this method supported efforts to authenticate evaluation
findings by triangulating data. The reader is reminded that this triangulation included
convergence of data from multiple sources (data triangulation), methods
(methodological triangulation) and perspectives (theory triangulation). In general, the
findings were supported via this cross-validation.

\(^3\) See Table 9.
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9.3 Summary of Findings

The Correa program was based on the provision of individualised curricula delivered in a physical and social environment tailored to students’ ability and disability needs.

The physical environment of Correa was considered to be a key factor in the achievement of program outcomes for students. It featured minimal physical and visual barriers, minimal distracters and moveable furniture, natural lighting, the clustering of activities, visually identifiable areas, convenient storage facilities and functional facilities (such as a kitchen, fully equipped bathroom and laundry), copious sensory equipment including indoor and outdoor challenging climbing equipment, and play space being maximised at the expense of instructional space. Such environmental elements, including the spatially organised, sensory environment, were similarly found to be conducive to engaging students with autism by other researchers such as Jones (1988) Mesibov (2002) and Houghton (1996). Their research was discussed earlier in this thesis (see 2.5.1).

The individualised curricula focused on communication skills, adaptive social skills, targeted skills for daily living, and teaching students to monitor and self-manage feelings of anxiety. The mode of curriculum delivery included the use of sensory experiences as both an adjunct to learning and as an end in itself, with on-going student access to indoor and outdoor sensory equipment (including challenging climbing facilities) the norm. Extension of the curriculum was achieved by developing strong school-home partnerships.

Teaching strategies used in Correa included the use of structured teaching with individuals and small groups, visual supports, prompting, shaping, chaining, graduated guidance, predictable routines, the use of a quiet voice tone by staff, and collaboration with parents. The use of these strategies is broadly supported by in the literature as conducive to the learning style of students with autism (Fredrick & Hummel, 2004; Iovannone et al., 2003; Jordan et al., 1998; Mesibov, 2002; Roberts & Prior, 2006).

Learning strategies employed in Correa included student choice (of activity and site of learning), on-going access to sensory equipment, student self-monitoring and
management of their own levels of anxiety, and the use of non-transient and structured visual cues. These strategies were similarly reported in the literature as supporting the learning needs of students with autism by Roberts and Prior (2004; 2006), Mesibov (2002), Koegal et al. (1992), Koegal et al. (1996), Reese (2003) and Delprato (2001). Further, such strategies are conducive to student engagement with the curriculum which Iovannone (2003) reports to be one of the best predictors of positive student outcomes.

The program outcomes achieved by students in Correa were very significant because the literature is dominated by interventions which focus on early childhood (up to 8 years of age). As discussed by Howlin (1997), these interventions are considered more likely to succeed and be cost effective compared with those introduced with older students (junior primary through secondary school age). However, this present study has demonstrated that marked behavioural and learning improvements can also be achieved with older students if the learning environment and the teaching and learning processes are adapted to suit students’ ability and disability characteristics.

The Correa program outcomes for students were broadly classified into three categories, namely students’ emotional state, safety and security, and learning outcomes. Program effects for both staff and parents were also detected by this evaluation. These outcomes for students, staff and parents are summarised in the next sections.

9.3.1 Emotional state of students
Student anxiety levels were specifically targeted by the Correa program. They were targeted through the provision of sensory experiences as ends in themselves and as an adjunct to learning activities. In particular these sensory experiences were included as (1) developmentally appropriate but non-contextually related sensory experiences designed to improve sensory perception and sensory tolerance, (2) contextually relevant and developmentally appropriate sensory experiences, such as using perceptual skills in curriculum activities, and (3) as an entry point to skill learning or conceptual understanding. The use of sensory experiences was deliberately included in the program because people with autism often exhibit unusual responses to sensory
stimulation leading to non-adaptive behaviours. If the unusual responses can be
normalised, then behaviour is also likely to become more adaptive. It is generally
accepted that sensory experiences are inadequate as ends in themselves, that:

\[
It \text{ is only when they have an intrinsic meaning of their own, or are part of an experience that itself has meaning, that they will provide the opportunity for meaningful involvement in the learning process and the development of thinking skills, leading to more subject-specific understanding.} \quad (Ouvry & Saunders, 2001:245)
\]

The Correa program demonstrated that such sensory experiences can be used as a
means of regulating emotional tension.

Certainly a dominant program outcome was the calmer emotional state exhibited by
students (see 7.2.2). This program effect was deduced from (1) marked reductions in
the frequency and severity of student anxiety-related behaviour, (2) longer periods
spent by students calmly engaged with the curriculum, (3) a dramatic decrease in
damage to school property and equipment, (4) the reduction in accident and injury
reports, and (5) improvements in students’ communication, daily living skills and
adaptive social behaviour. The Correa program theory had postulated that
modifications to the teaching environment and pedagogy, student behaviour
management practices, and curriculum could induce students to feel calmer (see 4.3).
It was further theorised that their reduced engagement in challenging behaviours
would lead to an increase in the time they spent engaging with the curriculum and
thus learning. Certainly this outcome was achieved according to the cross-validated
informant perceptions, reduced damage to school facilities and equipment, and the
decrease in behaviours warranting a Critical Incident Report or a DECS ED-155
Incident/Accident Report as discussed in 7.3. This finding corroborates Iovannone’s
(2003) conclusion that student learning outcomes improve with increased engagement
with the curriculum.

**9.3.2 Student safety and security**

Improved student safety was a notable program effect as determined by the reported
and documented decrease in accidents and injuries to students (and staff) and the
decreased stress levels independently reported by both staff and parents. Certainly
there appeared to be a close correlation between students’ emotional state, the incidence and severity of challenging behaviours exhibited, and safety. As students became calmer, so there was a corresponding decrease in anxiety-related challenging behaviours resulting in a decreased incidence of accidents and injuries. However, the correlation between anxiety and behaviour may not be direct. On the basis of the known link between poor communication and challenging behaviours, it may be argued that a decrease in their level of anxiety enabled students to engage more with the learning process, and as a result, their communication improved which subsequently led to a decrease in anxiety-related behaviour. Horner et al. (1993) subscribe to this view, believing that communication underpins the achievement of short- and long-term educational goals. The issues associated with the documented evidence of students’ emotional state described in the previous section is also applicable here.

With regard to improved student security, the high level of agreement between independent, information-rich informants and the confluence of this agreement with school incident data supports the claim that improved student security could be attributed to the Correa program. While the design of the Correa facility was deemed crucial in ensuring student security, it was not the only factor. Other contributory program elements included the procedures adopted at transition periods when responsibility for the child was transferred from one adult to another, curriculum elements oriented to teaching specific students to move safely between locations or remain with their parent/caregiver without absconding, and design elements which enabled management and transfer of students to occur in a secure location.

Overall program compliance with South Australian Education Department policies, and South Australian and Commonwealth disability legislation was drawn from a range of indicators. These included (1) no student having absconded from Correa since the program commenced, (2) fewer and less severe injuries to students (and staff) and, (3) a reduction in the incidence and severity of disruptive and challenging behaviours. The Correa program theory was predicated on these outcomes being related to decreased student anxiety.
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9.3.3 Student learning outcomes

Evidence related to improved learning outcomes included students spending longer periods engaged with the curriculum and improved skill development. Importantly, these improvements spanned adaptive behaviours in socialisation, communication, and daily living skills (see 7.4). The improvements detected are consistent with program linkages theorised in the Correa program theory (see Chapter 4, Figure 4). In this model it was theorised that modifications to infrastructure, curriculum design, and teaching and learning strategies (including closer school-home links) would reduce students’ sensory sensitivity, which in turn would lead to students being calmer and more likely to engage with the curriculum. It was further theorised that as a result of these program effects, students were likely to exhibit less aggression and unsafe climbing, and that consequently their safety and learning would improve. These program effects were recorded for most students. It was also anticipated that these program effects would lead to improved functional independence and both short- and long-term quality of life.

The Correa program theory detailed in 4.3 was predicated on anticipation that students’ anxiety level had a direct influence on their capacity to engage with the curriculum. This assumption was supported by the independently corroborated staff and parent perceptions that students were calmer, were spending more time engaging with the learning process, and had achieved improvements in learning additional to what they would have expected through normal maturation.

There were high levels of agreement between informants in some important areas of learning, but low levels of agreement in others. For instance, there was a high level of agreement that significant improvements had occurred in communication and socialisation skills. The high level of accord between independent informants indicates that these data are highly reliable. An example of this high level of congruence can be observed in Table 14, Socialisation Skills. There was also a high level of agreement that there had been only very marginal improvement in numeracy. However, there was greater variation between informants as to the extent of improvements in daily living skills. This variation may possibly be due to different informants seeing the child in different contexts where these skills may be evident. It
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may also be due to the extent of that these behavioural changes impact on informants’ lives.

The improvements in student learning outcomes recorded are consistent with evidence from the literature which suggests that learning for students with autism is enhanced in a highly structured, engaging learning environment in which distracters are minimised (Iovannone et al., 2003; Jones, 1988; Logan et al., 1997; Reese et al., 2003). These improvements are also consistent with the research literature which suggests that a teaching style which focuses on the use of systematic instruction including the use of visual cues; predictability and routine; individualised autism specific curriculum content which focuses on attention, language, and social skills; student choice; sensory-based activity; and school-home collaboration are conducive to learning for students with autism (Iovannone et al., 2003; Roberts, 2004). The use of visually structured tasks, task variation, variation of stimulus materials and reinforcers, individual and small group activities, and consistent routines are also evidenced in the literature as appropriate for students who are poorly motivated to learn, a characteristic trait of autism. All of these approaches were adopted in Correa (see 2.5 and 6.5.2). Further, the use of highly-structured play activities as a learning strategy in Correa is consistent with contemporary research into Theory of Mind, which suggest that the use of such activities may help teach students with autism to tolerate others in their proximity and thus lead to improved socially adaptive behaviour (see 2.2.3).

The importance of early diagnosis and intervention is highlighted in the research literature as a critical factor in improving the quality of life for a person with autism (Howlin, 1997; Iovannone et al., 2003; Roberts & Prior, 2006). Early intervention is deemed to mean one oriented to pre-school children, with most of these interventions comprising highly intensive engagement. Once children reach the age at which schooling becomes mandatory, such highly intensive intervention is usually no longer possible. The findings of this study suggest that the period when significant improvements may be achieved can however be extended by aligning the environment and the teaching and learning processes in schools to the ability and disability needs of students with autism.
9.3.4 Staff and parent stress levels

Staff considered the design and furnishing of Correa to be a pivotal factor in the reduction of their own stress levels. They believed that Correa provided well for students’ sensory and learning needs which led to a reduction in student anxiety levels and a corresponding decrease in the incidence of challenging behaviours in the classroom. However, as stated earlier, it may be that the improved adaptive communication skills also contributed to a reduction in students’ non-adaptive behaviour.

The design of Correa enabled staff to manage the teaching and learning processes more easily. This was because the facility was a secure environment for students, essential facilities were co-located, teaching and learning spaces were varied and clearly demarcated, and the teaching and learning spaces were easily accessible and mostly within the line of sight of staff. In short, calmer students improved student safety and security, and ease of student management resulted in a reduction of staff stress levels.

Increased knowledge about autism, an expansion of their management strategies, and seeing their child safe and happier evoked a sense of relief for parents. The reader is reminded that when asked what aspects of the program had been most useful to them, parents highlighted the sense of relief they gained from knowing that their child was safe. Of the 18 comments provided in response to a focus group question about what was the most useful aspect of the program for themselves as parents, 13 were concerned with the safety of their child and 4 were concerned with the increased freedom which they as parents gained following improvements in their child’s adaptive behaviour.

9.3.5 Section summary

In summary, informants overwhelmingly indicated that there was a marked moderation in anxiety-related student behaviour both at school and at home. There was significantly fewer violent and destructive behaviour exhibited in both locations, fewer injuries, and as a result, a marked decrease in staff and parent stress levels as reported in 6.5.4 and 6.6.3. The shared understanding at both school and home of
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what the program was trying to achieve appeared to facilitate the transfer of skills between environments. This finding is consistent with the evidence from the literature which indicates that family-professional collaboration and partnerships is an important, systematic method for improving the outcomes of behavioural interventions (Koegel, R. L. et al., 1996; Roberts & Prior, 2006), reported earlier in 2.5.4.

Staff and parent perceptions about improved student behaviour are supported by the complete absence of Critical Incident Reports for the entire period since Correa commenced, and the absence of any DECS ED-155 Incident/Accident Reports needing to be completed in association with Correa student behaviour.

There was likewise a high level of congruence between informants that student security and safety had improved significantly since Correa commenced. Staff and parent perceptions were confirmed through an inspection of school documents which evidenced that no student had absconded from the facility, and that a significant decrease in the incidence and severity of episodic challenging behaviours had occurred.

Informants noted improvements in student learning additional to what they would expect through normal maturation. Improvements in student learning were recorded for all students, although this was not evenly distributed across all learning domains nor across all students. For seven of the nine students, either staff or parents or both noted significant improvements in learning. Most gains were recorded in the domains of communication and socialisation. Program effects recorded included: (1) improved social relationships, (2) increased frequency and duration of peer interactions, (3) social interaction occurred with an increased range of people, (4) increased verbal functioning, (5) decreased disruptive behaviour, (6) increased peer acceptance, (7) increased independence, (8) improved daily living skills, and (9) improved safety. In many instances, these improvements were considered to be highly significant.
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The findings from this study support adapting the learning environment and pedagogy to the associated features of autism. In this instance, disability impairments and strengths were catered for through attending to the antecedents to learning such as minimising distractions, objects and behaviours believed responsible for escalating anxiety-related behaviours. They were also catered for through proactive program planning. Key features of this proactive program planning included: (1) a curriculum oriented to the acquisition and application of adaptive skills and behaviours (including communication and social skills), (2) a structured learning environment with clearly delineated activity areas, (3) the use of non-transient visually-based cues, (4) predictability and routine, (5) provision for student choice, (6) the development of a supportive and collaborative partnership with parents, (7) strategies to promote the generalisation of skills, (8) routine upgrading of staff knowledge and skills, (9) the provision of sensory experiences as both an adjunct to learning and as curriculum content, and (10) non-aversive behaviour management techniques.

The conclusion which can be drawn from this evaluation is that the Correa program produced significant improvements for students with autism who are at the lower range of functionality, who are chronic climbers and/or absconders, largely non-verbal, and who display significant challenging behaviours. As such, the Correa program is more consistent with state and national disability legislation and best practice evidence for educating these students than other programs used previously. A range of program effects which included improved student safety and security, improved student learning outcomes, the development and maintenance of quality school-home partnerships, and modifications to school policies and practices were shown.

9.4 Importance of this evaluation

The importance of this evaluation stems from three key features. These include evidence that (1) a school-based educational program has been demonstrated to successfully accommodate the behavioural characteristics of autism such that the incidence of challenging behaviours (in particular chronic climbing and absconding) are rendered not harmful, (2) significant improvements in cognitive and communication skills, and behaviour can be achieved at an older age than previously suggested in the
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literature, and (3) confirms use of specific behavioural characteristics as a predictor of language gains.

First, over a decade ago, Koegel, Koegel, Frea, and Smith (1995:15) provided eleven clinical considerations for emerging interventions for children with autism. These were that interventions should (1) be individualised, (2) occur as early as possible, (3) occur in a naturalistic setting, (4) help motivate the child to minimise the effects of his/her disability, (5) include a functional analysis of behaviour, (6) plan for inclusion in normalised settings, (7) involve parental participation, (8) plan for generalisation and maintenance of intervention gains, (9) involve a coordinated approach from intervention providers, educators and parents, (10) promote the child’s independence, and (11) consider the social significance of the intervention from the child and family’s quality of life perspective. The Correa program included all of these principles in its design and implementation except number five, although staff did conduct observations which monitored student behaviour for a set period of time. The Correa program also incorporated elements reported across the literature which commonly recur in ‘effective programs’ for children with autism, regardless of whether the program is clinically based or provided in a normalised setting. These elements were identified in 2.5 Implications for schools. The uniqueness of the Correa program stemmed from how it included these elements and also catered for students’ behavioural characteristics, both their strengths and impairments.

Second, in a longitudinal study spanning 1978-2005, Sigman and McGovern (2005) found that in contrast to a striking improvement in cognitive and language skills achieved by children with low-functioning autism in their pre- and early-school years, only very limited improvements occurred in both of these domains from the mid-school period through to adolescence/early adulthood. It was hypothesised that this may be due to such factors as (1) early childhood being a developmental period which is sensitive to new learning, (2) a ceiling on the level of difficulty of skills able to be achieved by these students, and/or (3) the types of experiences children were exposed to in the early years were more effective in effecting change than those experienced by children in their second decade of life. In light of these findings, the improvement noted in the communication skills of students in Correa (age range eight years nine months to fourteen years two months) is a very positive outcome for the program
because it demonstrates that provided the antecedents for learning are adjusted to the ability and disability characteristics of students, significant learning can be achieved for a significantly extended period and at a later age than previously thought.

Third, some behavioural characteristics (namely the number of functional play acts and the percentage of responses to bids for joint attention) have been shown to be consistent predictors of language gains in early childhood and adolescence (Sigman & McGovern, 2005). These behaviours were also confirmed in this evaluation as conducive to learning gains. Specifically, adjustments to the antecedents to learning increased student engagement with the curriculum. Correa’s incorporation of play skills, student initiation and selection of learning activity, and teaching socially adaptive behaviours confirm this association between behavioural characteristics and improved language gains.

The findings of this evaluation add significantly to the research literature because they indicate that marked improvement in behavioural and learning outcomes can be achieved for low-functioning students with autism after the long established ‘early intervention’ window has passed. This is not to suggest that early intervention is not preferred: it is because it minimises the period of non-adaptive behaviour and also maximises outcomes. Rather, these findings suggest that educators in schools can extend the period when marked improvements can be realised. This can be achieved by changing the antecedent conditions and the teaching and learning processes so that they are better suited to older students with low-functioning autism, and in particular, students who are chronic climbers and absconders. This is particularly pertinent given the recent media release by the federal government to extensively fund early intervention support for children with autism (Australian Government, 2008). The findings of this research suggest that the government should also provide comparable funding to support school-aged children with autism who would also benefit from school-based, targeted educational interventions.

The findings from this evaluation also suggest that improvement in student outcomes could be achieved with the model of allied health service provision to schools being more closely aligned with the learning needs of students. Such modifications would
be consistent with the current DECS blueprint for action *Statement of Directions 2005-2010* which states that:

*To succeed in promoting more progressive forms of learning, DECS must seek the support of industry, training providers and youth service agencies.*

*Strategic partnerships are best maintained at the local level as the biggest impact on service provision is often achieved by locally managed initiatives.*

*Coordination of service delivery across level of government is essential to provide families with simple, seamless and efficient education and care services.* (Department of Education and Children's Services, 2005:12)

Such modifications to the model of service delivery would also be consistent with the DECS revised Students with Disabilities Policy (2006). Further, as suggested earlier in 8.4.2, such modifications need not incur additional cost to either the organisation providing the service or the school.

In summary, based on the features described in the preceding paragraphs, this study has contributed significantly to the body of literature on ‘effective programs for students with autism’.

### 9.5 Generalisability of the Program Model

Student learning is the core business of schools. Ethical strategies which have been demonstrated to improve the rate and extent of student learning should thus be considered for adoption by other schools with students who demonstrate similar needs. Indeed withholding a treatment found to be efficacious, could be considered a breach of ethics and contrary to legislative and policy parameters which apply to students with disabilities.

Chronic climbing and absconding behaviours by students with autism pose particular challenges for educators, physical danger for the students, and also reduce the life chances of students, due to commensurately decreased learning outcomes. The Correa program met these challenges via its purpose-specific infrastructure design and evidence-based behavioural approaches which spanned antecedent conditions for learning and pedagogy. Given the success of the Correa program, it is pertinent to
Chapter 9 – Conclusion

consider the extent to which the principles of this model could be generalised to other locations where students with autism are taught, particularly those who display absconding and chronic climbing behavioural characteristics. Replication is indeed possible because the basis for generalisation is not probabilistic statistics, but a process of detailed argument based on observation and analysis of program mechanisms. The principles on which the program is based were derived from the research literature on educating students with autism as detailed in Chapter 2.

The qualitative nature of this study provides strong grounds for the claim of generalisability because we now have a much clearer understanding of how the mechanisms that link the program activities with the positive outcomes can be replicated in other locations. If this study had been conducted using a RCT, we would know that the intervention worked, but not understand quite so well why or how it worked, nor indeed, how it could work better. Nonetheless, while this program has shown to be effective for a particular cohort of nine students, the findings would by strengthened by similar studies if they generate similar findings.

Despite contextual differences, transferable principles and knowledge of context can inform educational practice across schooling types for students with disabilities to the extent that positive outcomes as discussed throughout this thesis are likely to be replicable across sites.

Further, apart from the security and indoor climbing elements (which are specific to students who are chronic climbers and absconders), the principles of the program can also be applied to other students with autism who do not display characteristic chronic climbing and absconding behaviours.

As evidenced from the evaluation of the Correa program, other contextual factors were also important in achieving program success and sustainability. These included the school philosophy and policies, leadership (affecting resource priorities), and staff attitude. Indeed, the fact that the Correa program was driven from initiatives within the school (rather than imposed from outside) was probably a key factor underpinning its success. Replication of the Correa program may well not achieve the same level of
success if imposed, if the staff do not support the program philosophy, or if school management do not support (and resource) the program in ways that have a direct bearing on what happens in the classroom.

Thus, this program evaluation has demonstrated that a multi-dimensional learning environment can successfully be adjusted to suit the learning needs of students with autism who are chronic climbers and absconders. Further, this study has demonstrated that as well ameliorating characteristic, non-adaptive behaviours, improved learning can result from such an approach.

9.6 Implications for future research

In Chapter 1 it was stated that the effective education of students with autism relied on an understanding of the characteristics of autism and how these impacted on learning. This is a simply stated but complex process. As indicated in Chapter 2, a range of evidence exists in the literature which indicates that we are far from having a clear understanding of the cause(s) of autism. Nor do we have unequivocal evidence which supports definitive best educational practice for students with autism, with intervention research varying considerably in quality, scope and findings. The classification of autism as a syndrome of unknown aetiology means that it is very difficult to develop a targeted program because the specific variable(s) to be targeted remain elusive. Through necessity therefore, teachers are required to make educational and management judgements based on less than perfect understandings. They can however apply principles associated with ‘effective programs for students with autism’ (such as structured teaching, teaching to students’ strengths, the use of visually-based cues, and collaboration with parents) to their own context.

Like many writers before them, Beebe-Frankenberger and MacMillan (1999) highlighted the need for improved scientific rigor in the planning and conduct of research which focuses on interventions. The evaluation of a program may be criticised for not using random assignation of subjects or not using a control group. However, given the complexity of confounders operating in a social or educational program, it would be impossible to find a matching control group. Variables do not operate in isolation, and as some studies have experienced, it is difficult to find a no-
Chapter 9 – Conclusion

treatment control group. Additionally, ethical issues arise as soon as a program begins to demonstrate positive effects. These points are particularly relevant when seeking to ameliorate the characteristics of autism. The use of scientific methods can also preclude the contribution of program contexts, but as discussed previously in this chapter, the use of qualitative methods can account for program contexts and enhance the claim that the program model can be generalised. Qualitative methods provide a clearer understanding of not only the outcomes which can be achieved from a program, but also how the context, inputs and activities interact to support the achievement of outcomes detected.

With the Correa program now more clearly defined, it is possible for a comparative study to be conducted. That is, the outcomes generated from the Correa program could be compared with outcomes achieved via a different type of program for students with autism who demonstrate the same or similar behavioural characteristics. This could help establish the relative effectiveness of different school-based interventions.

Second, an investigation of pre-post outcomes could be conducted if students identified for entry into Correa had outcome measures recorded prior to, and after acceptance into the program. These could include measures of adaptive and cognitive functioning, behaviour, and educational achievement. It could also include stakeholder perceptions. This was not done in the present study because the students were already in the program when the study commenced. As such, it was more important to understand how the program worked and the range of intended and unintended program effects, rather than just program outcome measures. The program effects detected in this study justify this approach.

Third, comparative longitudinal studies also could provide important information regarding the rate at which outcomes were achieved across different programs. Fourth, this study has highlighted difficulties of aligning allied health service provision with the needs of teachers and ultimately students with autism in a special school setting. Future research may explore whether (and the extent that) this problem exists in mainstream schools, given that such schools may be chosen because
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parents assume that appropriate support services would be provided such that their child was not isolated or disadvantaged in such a school placement.

Fifth, it is clear from this evaluation that even in a special school setting, teachers feel that despite working within a supportive school culture and with special education training, they need more professional development in order to optimise student learning. In mainstream schools it could be expected that staff would have even greater need for comparable professional development because of their generalist pre-service training and because of their less frequent exposure to students with autism. Thus, future research could investigate the impact of these factors on their attitude to teaching students with autism and their ability to accommodate relevant disability characteristics in curriculum, pedagogy and behaviour management.

Research has the potential to improve the quality of education provided in schools for students with autism. If student access to, and participation in the curriculum is maximised, so also is the potential for student learning. Such learning has the capacity to influence the quality of life for the student, and also improve the lives of those involved with them. This must be a worthy goal for education providers but also for policy makers and service providers. Such processes are essential if legislative and policy rhetoric is to be meaningfully translated into quality educational outcomes for students with autism.
Reference List


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Appendix 1 - Background to the Development of Correa

The current Principal was appointed to the school in 1995. Prompted by concerns about student behaviour, frequent injury causing accidents, the perceived slow rate of academic and social learning, and the low moral of staff, she instigated a number of actions. These actions led to a re-orientation of the school philosophy and changes to the teaching and learning processes. The initial action commenced with a 3-month period of rigorous documentation of accidents and injuries to students and staff. Once the perceived high incidence of these had been substantiated, an action research project was proposed and subsequently funded by DECS. This constituted the second preliminary phase which underpinned Correa. The action research undertaken in focused on one class (Cassia). This class included seven of the nine students who later became members of the inaugural Correa class. The action research was conducted by a group of 3 school staff (the Principal, a teacher, and a School Support Officer), and a representative from Autism SA (formerly the Autism Association of South Australia. The research question they posed was:

“What types of learning environment and teaching approaches best support the needs of students at Modbury Special School, in particular, students with autism?”

The action research project found that improvements in student behaviour occurred following adjustments to their learning environment. This was gauged by a reduction of student and staff injuries although no record of these internal figures still exits. As a result of this research, staff agreed to adopt a range of changes to the curriculum and teaching and learning processes across all remaining classrooms. These included changes to the classroom ecological setting, curriculum, teaching methods and behaviour management, which were all designed to be congruent with student strengths (such as stronger visual modality and aptitude for climbing).
Appendix 1 – Background to the Development of Correa

However, the design of existing classrooms remained unsuitable for the unique abilities and disability characteristics of students who were chronic climbers and absconders.

During 1998, three schools, including Modbury Special School, participated in a pilot study (The Northern Schools Project) designed to investigate models of service delivery that blended speech and occupational therapy into school-based curriculum. While time constraints affected assessment, service delivery, administration and the establishment of sound working relationships, the project recorded a number of positive outcomes. Outcomes included the development of new speech assessment tools which provided information that better informed teaching practice. Outcomes also included improvements in teachers’ knowledge, confidence and competence to work with students with autism (Nitschke, 1996).

The documented evidence of accident and injury frequency prior to the action research, together with findings from the Action Research and Northern Schools Project provided the basis for a submission to DECS for a purpose specific facility to meet the education and safety needs of a specific cohort of students to be constructed (Aschberger, personal dialogue, October 9, 2002). The existence of Correa is evidence that funding approval was granted.
Appendix 2 - Finance for Staffing and Classroom Resources

The South Australian Department of Education and Children’s Services (DECS) Students with Disabilities policy states that it “recognises that appropriate education of students with disabilities is based on curriculum needs rather than the description of disability” (p.1). Accordingly, DECS has devised a funding formula to determine staffing provided to special schools so that the educational needs of these students are met. However, during 2001 a new model of school governance called Partnerships 21 (P21) was introduced which schools could choose to adopt. While P21 did not alter the base funding allocation to schools for staffing, nor enable speech or occupational therapists to be directly employed by the school, it did devolved discretionary spending of the global school budget and so permitted greater flexibility for school-based expenditure. Modbury Special School chose to engage with the P21 model.

Using this discretionary power, the school Principal chose to provide an extra 30 hours of SSO support, thus reducing the staff:student ratio in Correa. However, under P21, Principals could not directly contract staff from external services to the school because this funding is controlled at the District level of DECS (as had been the case pre-P21). In effect, the intended outcome of the P21 funding structure has not been met due to other existing policy and legislative constraints. If the funding for external services was provided directly to schools, then the Principal could contract the services and personnel required, whether sourced from DECS, non-government organisations, or independent consultants.

With regard to staff access to funds to support teaching and learning, each class was allocated an annual budget based on a designated amount per student, with an accountability processes specifying the purchasing procedures, stated in the Staff Handbook. This budget was deemed by the Correa class teachers to be adequate for conducting the program as designed. Infrastructure maintenance was funded from the school global budget.
Appendix 3 - Terminology: Program Theory and Program Logic

The process of making explicit the program elements and assumptions is variously labelled by differing writers. Labels include a program theory (Weiss, 1996, 2003/2004); a logic model (W K Kellogg Foundation, 2000), or a program’s theory of action (Funnell, 1997; Patton, 2002). The breadth of what is encompassed by the term ‘program logic’ varies, but in all instances it is still seen as a strategic tool linking the evaluation process to both program theory and practice. Monroe (2005:61) defines program logic as “the logical connection among the program’s invested resources (inputs) that allow activities to be accomplished (outputs) and the resulting benefits and changes (outcomes).” A broader definition is provided by the W K Kellogg Foundation, where it is defined as “the theory and assumptions underlying the program. A program logic model links outcomes (both short – and long term) with program activities/processes and the theoretical assumptions/principles of the program” (W K Kellogg Foundation, p.III). This definition of program logic unambiguously incorporates the assumptions inherent from conception to implementation of the program.

Program theory is similarly defined as a theory about how a program causes its effects or what a program needs to do to achieve or improve its goals (Chen, 1990; Scriven, 1991). Other writers have extended this definition to include contextual elements as mitigating factors in the cause-effect sequence (Donaldson, 2003). Rossi, Lipsey and Freeman (2004) also acknowledge these elements, but raise the status of program theory development in overall program design. They state: “a program’s theory is the conception of what must be done to bring about the intended social benefits. As such it is the foundation on which every program rests” (Rossi et al., 2004:134).
## Appendix 4 - Assumptions Underpinning Objectives

<table>
<thead>
<tr>
<th>HIERARCHY OF OBJECTIVES</th>
<th>UNDERLYING ASSUMPTIONS</th>
</tr>
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<tbody>
<tr>
<td>IMMEDIATE Objectives</td>
<td></td>
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</table>
| • Provide appropriate infrastructure and resources to meet the disability needs of students with autism who are chronic climbers. | School has a duty of care to students and staff.  
Students need to be educated in an environment which complements their disability needs.  
Existing school facilities are inadequate to provide for the safety of students. |
| • Provide a developmentally appropriate curriculum for each student. | All students can learn.  
Students have a right to access and participate in a curriculum designed to meet their needs.  
Student curricula and health needs vary according to disability characteristics.  
Teachers are competent to plan individual developmentally appropriate curriculum. |
| • Engage student in the learning process by using appropriate pedagogy. | Teachers are competent to select and implement appropriate teaching and learning strategies. |
| • Improve staff knowledge and skills for teaching students with autism who are chronic climbers. | A program is more likely to succeed if it is staffed by competent, confident, committed teachers and school service officers (SSOs).  
Teacher practices relate to student learning outcomes. |
## Hierarchy of Objectives Underlying Assumptions

<table>
<thead>
<tr>
<th>Hierarchy of Objectives</th>
<th>Underlying Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermediate Objectives:</td>
<td></td>
</tr>
<tr>
<td>• Improve student safety.</td>
<td>Absconding, injuries from violence or falls &amp; the events surrounding their occurrence are disruptive to the educative process and distressing for those directly and indirectly involved.</td>
</tr>
<tr>
<td>• Reduce student sensory sensitivity.</td>
<td>Sensory sensitivity inhibits the potential for learning. Reduced sensory sensitivity will cause students to be calmer. Calmer students will result in a reduction in the number of violent outbursts. Calmer classroom will provide fewer distractions for other class members and fewer injuries to staff and students. Calmer students are more likely to engage with the curriculum because they are not acting out their frustrations and stresses. Students will learn more if they increase their engagement with the curriculum. Non-aversive behaviour management practices are less stress inducing for students and staff. Sensory tolerance can be taught. Greater sensory tolerance will lead to more adaptive behaviour.</td>
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</table>
### HIERARCHY OF OBJECTIVES

#### INTERMEDIATE Objectives:

<table>
<thead>
<tr>
<th>Objective</th>
<th>Underlying Assumptions</th>
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</thead>
<tbody>
<tr>
<td>• Increase student learning.</td>
<td><em>All students have the right to learn.</em>&lt;br&gt;&lt;br&gt;<em>If students can spend a greater proportion of their time engaging with the curriculum rather than being ‘off-task’, then their potential for learning is increased.</em>&lt;br&gt;&lt;br&gt;<em>Sensory input can be self-monitored.</em>&lt;br&gt;&lt;br&gt;<em>Students who can self monitor their own stress levels will have less time disengaged with their social and physical environment.</em>&lt;br&gt;&lt;br&gt;<em>Teachers are competent in and adopt teaching and behaviour management methods which support learning for these students.</em></td>
</tr>
<tr>
<td>• Students take increasing responsibility for their own learning.</td>
<td><em>Quality of life is improved with increased independence and improved self-management skills, including self-regulatory practices.</em></td>
</tr>
<tr>
<td>• Strengthen school-home partnership.</td>
<td><em>Parents/caregivers want to provide optimal benefit from formal schooling for their child.</em>&lt;br&gt;&lt;br&gt;<em>Parents/caregivers have a vested interest in maximising the functional independence of their child.</em>&lt;br&gt;&lt;br&gt;<em>Parents support the school philosophy</em></td>
</tr>
<tr>
<td>• Facilitate consistent approaches to learning at both school and home environments (build school-home partnership).</td>
<td><em>Students are more likely to adopt behaviours consistently reinforced at both home and school.</em></td>
</tr>
</tbody>
</table>
### Appendix 4 – Assumptions Underpinning Objectives

#### Evaluation of an Education Program Designed for Students with Autism Who are Chronic Climbers and Absconders

<table>
<thead>
<tr>
<th>HIERARCHY OF OBJECTIVES</th>
<th>UNDERLYING ASSUMPTIONS</th>
</tr>
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<tbody>
<tr>
<td><strong>INTERMEDIATE Objectives:</strong></td>
<td></td>
</tr>
<tr>
<td>• Reduce incidence of staff injury and work-related stress.</td>
<td>Continuity of staffing allows progressive breadth and depth of staff skills to be developed. Change to routines, such as staffing changes, is stressful for students with autism because they have difficulty adapting to change.</td>
</tr>
<tr>
<td>• Improve staff work satisfaction</td>
<td>Staff morale impinges on the quality of the teaching/learning process.</td>
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</table>

<table>
<thead>
<tr>
<th>HIERARCHY OF OBJECTIVES</th>
<th>UNDERLYING ASSUMPTIONS</th>
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</thead>
<tbody>
<tr>
<td><strong>ULTIMATE Objectives</strong></td>
<td></td>
</tr>
<tr>
<td>• Improve students’ quality of life.</td>
<td>Education should optimise opportunities for improved quality of life. Individuals who can function independently and participate in the broader community will have improved quality of life. Students have a greater likelihood of effective integration in broader society if they can monitor and self regulate their behaviour.</td>
</tr>
<tr>
<td>• Students become more functionally independent.</td>
<td>Functional independence is socially and pragmatically desirable.</td>
</tr>
<tr>
<td>• Improve educational outcomes for individual students.</td>
<td>All students have a right to learn. All students learn in different ways. Teaching practice relates to student outcomes.</td>
</tr>
</tbody>
</table>
### Appendix 5 - Program Theory and Evaluation Questions

<table>
<thead>
<tr>
<th>INPUTS</th>
<th>EVALUATION QUESTIONS</th>
<th>DATA SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infrastructure and Resources</strong></td>
<td>What security measures exist to prevent students from absconding?</td>
<td>Observation</td>
</tr>
<tr>
<td>Purpose specific building is funded, designed, erected, furnished &amp; maintained.</td>
<td>What design features have been incorporated to complement student learning needs and behavioural characteristics, specifically provision for safe but challenging climbing?</td>
<td>Observation, Staff interviews, Photographs, Document inspection, Semi-structured interview with Principal</td>
</tr>
<tr>
<td></td>
<td>To what extent are the facilities accessible to students?</td>
<td>Teacher and parent focus group interviews</td>
</tr>
<tr>
<td></td>
<td>To what extent do the students use the facilities provided?</td>
<td>Teacher focus group interview</td>
</tr>
<tr>
<td></td>
<td>What funding is provided to support on-going maintenance of facilities?</td>
<td>Semi-structured interview with Principal</td>
</tr>
<tr>
<td></td>
<td>Is the level of funding sufficient to operate the program as intended?</td>
<td>Semi-structured interview with Principal</td>
</tr>
<tr>
<td></td>
<td>What other facilities would be useful to include in Correa?</td>
<td>Semi-structured interviews with principal and staff</td>
</tr>
<tr>
<td><strong>Staff</strong></td>
<td>What is the basis of Correa staff selection?</td>
<td>Teacher focus group interview</td>
</tr>
<tr>
<td>Staff program with personnel with relevant skills, disposition and common understandings of the philosophy of the program.</td>
<td>Do staff feel competent to do their job in Correa?</td>
<td>Individual staff interviews</td>
</tr>
</tbody>
</table>
### Appendix 5 – Program Theory and Evaluation Questions

<table>
<thead>
<tr>
<th>INPUTS</th>
<th>EVALUATION QUESTIONS</th>
<th>DATA SOURCE</th>
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<tbody>
<tr>
<td></td>
<td>Do staff feel confident working in the sensory-based program in Correa?</td>
<td>Individual staff interviews</td>
</tr>
<tr>
<td></td>
<td>Are there some aspect(s) of the program which staff feel are particularly demanding?</td>
<td>Individual staff interviews</td>
</tr>
<tr>
<td></td>
<td>Would staff like more training to help them be more effective when working with these students? If so, what training is needed?</td>
<td>Individual staff interviews</td>
</tr>
<tr>
<td></td>
<td>To what extent do relevant staff agree with the theoretical underpinnings of the sensory-based program in Correa?</td>
<td>Individual staff interviews, Semi-structured interview with Principal</td>
</tr>
<tr>
<td></td>
<td>Is the staffing level optimal to meet the needs of students in Correa?</td>
<td>Teacher focus group interview, Semi-structured interview with Principal</td>
</tr>
<tr>
<td></td>
<td>Given the choice, would current staff like to continue teaching in the Correa program in the next school year?</td>
<td>Teacher individual interviews</td>
</tr>
<tr>
<td></td>
<td>How would each staff describe themself as a teacher/SSO/Principal?</td>
<td>Individual teacher and principal interviews</td>
</tr>
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</table>

**Access relevant services to support the program**

<table>
<thead>
<tr>
<th></th>
<th>What services are available to support the school-based teaching and learning process?</th>
<th>Semi-structured interview with Principal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>What is the nature of the support services available?</td>
<td>Semi-structured interview with Principal</td>
</tr>
<tr>
<td></td>
<td>How helpful are these services as perceived by school staff?</td>
<td>Teacher focus group interview</td>
</tr>
<tr>
<td></td>
<td>How helpful are the services for students?</td>
<td>Teacher focus group interview</td>
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</table>
### Appendix 5 – Program Theory and Evaluation Questions

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<tr>
<th>INPUTS</th>
<th>EVALUATION QUESTIONS</th>
<th>DATA SOURCE</th>
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</table>
|        | What other support services would be helpful? | Teacher focus group interview  
Semi-structured interview with principal |
| **Students** | Has each student in the Correa program been assessed as having an intellectual disability as per the DECS Students with Disabilities policy criteria?  
Has each student been diagnosed as having autism?  
Are there safety issues warranting a special education facility for these students whilst at school? | Semi-structured interview with Principal |
| Students selected in accordance with school determined criteria:  
1. DECS Students with Disabilities Policy  
2. A diagnosis of autism  
3. A risk & safety assessment by school staff based on prior school experience. | |

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<tr>
<th>PROCESSES</th>
<th>EVALUATION QUESTIONS</th>
<th>DATA SOURCE</th>
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</table>
| **Plan individualised programs** (curriculum content) | Has a Negotiated Education Plan (NEP) been devised for each student?  
Who was involved in developing this plan?  
Did each person feel meaningfully involved in the process of developing this plan? Why, why not?  
To what extent has NEP been implemented as planned? | Document inspection  
Document inspection  
Parent and teacher focus group interviews  
Teacher and parent focus interviews  
Semi-structured interview with Principal |
| | | |
### Appendix 5 – Program Theory and Evaluation Questions

<table>
<thead>
<tr>
<th>PROCESSES</th>
<th>EVALUATION QUESTIONS</th>
<th>DATA SOURCE</th>
</tr>
</thead>
</table>
| Implement sensory-based teaching and learning activities                  | What evidence supports the use of sensory learning for students with autism?  
How is the teaching/learning conducted?  
How is student achievement towards the NEP evaluated?  
What progress towards goals does the evaluation indicate for individual students? | Literature review  
Teacher interviews  
Observation  
Semi-structured interview with Principal  
Document inspection  
Parent and teacher individual interviews |
| Implement non-aversive behaviour management strategies                    | What evidence supports the use of non-aversive behaviour management for students with autism?  
What strategies are used to manage unacceptable student behaviour?  
Are these strategies effective in dealing with behavioural issues?  
Do staff feel competent in applying non-aversive behaviour management strategies? | Literature review  
Teacher interviews  
Semi-structured interview with Principal  
Frequency of incident & critical incident reports  
Staff interviews |
| Increase range and depth of staff knowledge and skills relevant to working with students with autism who are chronic climbers | Is there a staff development program?  
How was the program decided?  
Is the program developmental in structure?  
Where does the professional development occur?  
Is the professional development training routinely attended by all staff? | Document inspection  
Semi-structured interview with Principal  
Semi-structured interview with Principal  
Semi-structured interview with Principal  
Semi-structured interview with Principal  
Inspection of staff professional development records |
### Evaluation of an Education Program Designed for Students with Autism Who are Chronic Climbers and Absconders

#### Appendix 5 – Program Theory and Evaluation Questions

<table>
<thead>
<tr>
<th>PROCESSES</th>
<th>EVALUATION QUESTIONS</th>
<th>DATA SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Is the professional development program perceived by staff to be useful?</td>
<td>Inspection of staff feedback sheets</td>
</tr>
<tr>
<td></td>
<td>Is the staff development program evaluated? By whom? How often? Are the results shared with staff?</td>
<td>Interviews with staff</td>
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<td></td>
<td>Semi-structured interview with Principal</td>
<td></td>
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<td></td>
<td>Inspection of staff professional development records</td>
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</table>

<table>
<thead>
<tr>
<th>OUTCOME</th>
<th>EVALUATION QUESTIONS</th>
<th>DATA SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students are calmer</td>
<td>Have the students changed in any way since being in Correa? In what ways?</td>
<td>Individual staff interviews</td>
</tr>
<tr>
<td></td>
<td>What behaviours become evident when sensory overload occurs for individual students?</td>
<td>Individual parent interviews</td>
</tr>
<tr>
<td></td>
<td>What behaviours would be deemed unacceptable for each student?</td>
<td>Individual and focus group interview with parents</td>
</tr>
<tr>
<td></td>
<td>Has there been a change in the frequency and/or intensity of any of these behaviours?</td>
<td>Individual staff interviews</td>
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<td></td>
<td></td>
<td>Individual parent interviews</td>
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<td></td>
<td></td>
<td>Individual staff interviews</td>
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<tr>
<td></td>
<td></td>
<td>Individual parent interviews</td>
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<tr>
<td></td>
<td></td>
<td>Inspection of school documents</td>
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<td></td>
<td></td>
<td>Semi-structured interview with Principal</td>
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<tr>
<td>Students are engaging more with the curriculum</td>
<td>Has there been a change in the proportion of time that individual students spend engaging in curriculum related activity?</td>
<td>Individual staff interviews</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>What aspects of the program have helped or hindered individual students engage with the curriculum?</td>
</tr>
<tr>
<td>Decrease in staff work-induced stress</td>
<td>How many days absent from work have Correa staff had this year due to work induced stress or injury?</td>
<td>Document inspection</td>
</tr>
<tr>
<td>OUTCOME</td>
<td>EVALUATION QUESTIONS</td>
<td>DATA SOURCE</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>---------------------------------------------------------------------------------------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Is this an increase or decrease in the incidence of such leave compared to before you started working in Correa?</td>
<td>Document inspection</td>
</tr>
<tr>
<td></td>
<td>Given the choice, would relevant staff like to continue working in Correa next year?</td>
<td>Staff individual interviews</td>
</tr>
<tr>
<td></td>
<td>Are there any aspects of their work which staff find particularly demanding?</td>
<td>Staff individual interviews</td>
</tr>
<tr>
<td></td>
<td>What would help support staff to do their job more effectively in Correa?</td>
<td>Staff individual interviews</td>
</tr>
<tr>
<td>Decreased incidence of staff and student injuries</td>
<td>Is there any change to the frequency of Critical Incident Reports completed for individual students since being located in Correa?</td>
<td>Document inspection</td>
</tr>
<tr>
<td></td>
<td>Is there any change to the frequency of Incident Reports for individual students since being located in Correa?</td>
<td>Document inspection</td>
</tr>
<tr>
<td></td>
<td>Has there been any change to the rate of injury related staff absenteeism?</td>
<td>Semi-structured interview with principal</td>
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<td></td>
<td></td>
<td>Inspectio of school records</td>
</tr>
</tbody>
</table>
### Appendix 5 – Program Theory and Evaluation Questions

<table>
<thead>
<tr>
<th>IMPACT</th>
<th>EVALUATION QUESTIONS</th>
<th>DATA SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of life is improved for students</td>
<td>Do individual students seem happier since starting the Correa program?</td>
<td>Focus group interviews with parents and teachers</td>
</tr>
<tr>
<td>Students are functionally more independent</td>
<td>What skills enable students to function more independently?</td>
<td>Individual interviews with parents and teachers</td>
</tr>
<tr>
<td></td>
<td>Has there been any improvement in these skills since commencing the program?</td>
<td>Individual interviews with parents and teachers</td>
</tr>
<tr>
<td></td>
<td>Do stakeholders believe that any changes noted are due to the program, normal maturational changes or some other reason? Why do they think this?</td>
<td>Individual interviews with parents and teachers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Semi-structured interview with Principal</td>
</tr>
<tr>
<td>Improved educational outcomes</td>
<td>Have there been any changes for individual students in literacy, numeracy, communication skills, daily living skills or socialisation skills since starting in Correa (February 2001)?</td>
<td>Individual interviews with parents and teachers</td>
</tr>
<tr>
<td></td>
<td>What measurements of educational achievement exist?</td>
<td>Semi-structured interview with Principal</td>
</tr>
<tr>
<td></td>
<td>Has there been any change in the level of independence in individual students?</td>
<td>Individual interviews with parents and teachers</td>
</tr>
<tr>
<td></td>
<td>Are any of these changes deemed significant breakthroughs or major setbacks?</td>
<td>Individual interviews with parents and teachers</td>
</tr>
</tbody>
</table>
Appendix 6 - Individual Interview

STANDARDISED OPEN-ENDED FACE-TO FACE INTERVIEW GUIDE

Introduction

The program in Correa Unit at Modbury Special School is applying Sensory Learning Theory to the classroom. It is doing this by decreasing the amount of unnecessary stimulation to the different senses, such as sight and hearing, in an effort to reduce student sensory overload. The program is also trying to provide for the sensory needs of the students in the class by providing a secure environment in which climbing skills are catered for as well as providing opportunities for students to improve their tolerance of various sensory inputs. The program aims through these strategies, (including curriculum content, the way the curriculum is taught and the environment in which it is taught, that students will be calmer and more able to concentrate on learning skills and knowledge which will be useful for their lives. Additionally, the secure environment reduces teacher anxiety about the location of students, enabling them to go about their work more productively.

My research aims to evaluate how effective the program has been and how it could be improved for both students and staff. In this interview I will ask a series of questions which allow you to answer in your own words. Sometimes I may seek clarification of something you say or I may follow up your answer with a more specific question. Are there any questions before we start?

SECTION A  Generic Information
Questions in Section A are for all participants.

SECTION B  Group Specific Information
Participants will be asked to address questions in one Section B group. The group will be determined by the participant’s association with the student.
Appendix 6 – Individual Interview

SECTION A

1. What is your sex? (male/female)

2. What is your professional position or relationship with (student name)?

3. How long have you been working with/living with (student name)?
   _______ Years     _______ Months

4. Do you think (student’s name) has changed in any way as a result of the program in Correa?
   4.1. Can you tell me more about that?
   4.2. Do you think this/these change(s) might be due to the program or just to the fact that (student’s name) is growing up?
   4.3. How about changes in the area of literacy? For instance:
       4.3.1. recognition that books have words
       4.3.2. understanding that the words and sentences make a story
       4.3.3. listening more attentively and follow stories
   4.4. How about changes in the area of numeracy? For instance
       4.4.1. understanding of numbers
       4.4.2. understanding of counting
       4.4.3. understanding of one-to-one correspondence
       4.4.4. understanding of quantity
       4.4.5. understanding of money
   4.5. How about changes in communication skills? For instance
       4.5.1. communication with familiar people
       4.5.2. indicating what they want through for example signing, gesturing or compics
       4.5.3. talking
       4.5.4. communication to broad range of people
   4.6. How about changes in responding appropriately to people and events?
       For instance
       4.6.1. indicating choice
       4.6.2. monitoring their own behaviour
       4.6.3. responding appropriately to stimuli
Appendix 6 – Individual Interview

4.7. How about changes in daily living skills? For instance:
   4.7.1. attending to their own personal care such as toileting
   4.7.2. attending to their own personal feeding
   4.7.3. ability to dress self
   4.7.4. participation in appropriate classroom routines

4.8. And lastly, how about changes in socialisation skills? For instance
   4.8.1. tolerance of others
   4.8.2. indicating greetings
   4.8.3. recognition of people
   4.8.4. toleration of people in their own personal space
   4.8.5. group skills such as sharing
   4.8.6. engaging in play
   4.8.7. play skills

5 Do any of the changes we have talked about so far represent really big developments, either big breakthroughs or bad setbacks?

6 Have you noticed a change in frequency of any undesirable behaviours since (student’s name) entered the program in Correa unit?

   6.1. Can you tell me a little about these changes? For example
      6.1.1. sheer number of occurrences
      6.1.2. any special timing of when they occur
      6.1.3. spacing between bouts of undesirable behaviour

7 Have you noticed a change in the nature of any undesirable behaviours since (student’s name) entered the program in Correa unit?

   7.1. Can you tell me a little about these changes? For example,
      7.1.1. has there been a change in the intensity of undesirable behaviours?
      7.1.2. has the type of undesirable behaviour changed?
      7.1.3. has there been a change in the social context in which these behaviours occur?
      7.1.4. has there been a change in the length of time that the undesirable behaviour lasts?

8 Have you noticed a change in the triggers of these undesirable behaviours, such as particular events, places, circumstances or people?

9 Are there any other changes in (student’s name) which you have noticed that we have not covered so far?
   9.1. Do you have any ideas as to why these changes have occurred?
Appendix 6 – Individual Interview

10 Do you have any suggestions as to how the Correa program be changed to make it more helpful for (student’s name)? For instance
10.1 in terms of what is taught?
10.2 how it is taught?
10.3 the environment in which the program operates?
10.4 how behaviour is managed?
10.5 resources eg
   10.5.1 availability of equipment
   10.5.2 maintenance of equipment
   10.5.3 number of staff working in Correa at the same time
   10.5.4 anything else?

SECTION B

Teacher specific questions

1 Have circumstances allowed you to follow the negotiated program for (student’s name) exactly as planned, or has it been necessary to make some changes?

   1.1. What sort of changes have been necessary?
   1.2. What sort of things have prompted the changes to be made?

2 What aspects of the program have really helped or hindered (student’s name) when trying to engage with the curriculum?

3 Are there any aspects of the program that are particularly demanding for staff? For instance:

   3.1. pay packet too small for responsibilities
   3.2. needing to justify self on the broader professional arena for facilities/resources/philosophy etc
   3.3. dealing with parents
   3.4. risk of injury
   3.5. other?

4 How would you describe yourself as a teacher/support teacher?

5 Tell me a little about how you came to be working in the Correa program?

6 Do you feel competent to do your job in the Correa program?
Appendix 6 – Individual Interview

7 Is there anything in particular that should be provided to help support and develop staff to do their work in Correa?

7.1. more information on .
7.2. more opportunities for unwinding and informal networking
7.3. mentoring
7.4. discussion groups
7.5. more input from other professions (eg OT, Psychology TEACCH, PECS)
7.6. formal training sessions
   7.6.1. what sort of information?
   7.6.2. what type of skills?
   7.6.3. where would it be best for this training (on-site; external)

SECTION B

Parent specific questions

1 If I were to ask your partner/husband/wife about these changes in (student’s name), would (s)he be likely to mention different sorts of things?

1.1. Would you expect him/her to agree with you?

2 Do you feel that you have been given enough information about the program in Correa to fully understand how it is trying to work?

3 Do you feel that you would like to be provided with more information about the program?

3.1. What would be the most helpful way for you to receive this information?
   3.1.1. newsletter sent home with child
   3.1.2. newsletter posted home
   3.1.3. regular parent-teacher group meetings
   3.1.4. individual meeting with staff
   3.1.5. email
   3.1.6. watching the Correa unit during normal school time
   3.1.7. other

4 Do you feel that anything else could be done to help improve your understanding of the program?

5 Is there anything else you would like to say in relation to the program?
Appendix 7 - Staff and Parent Focus Group Interview Guide

Broad Opening Question

1 From your perspective, what do you think the program in Correa Unit is trying to achieve?

Transition Questions

2 To what extent do you think these goals have been achieved?

3 Why do you think the program has achieved these results?

4 What are the most important elements of the curriculum for students from your perspective?

5 What are the most important elements of the physical environment for students from the student/child’s perspective?

6 What do you see as the most effective teaching strategies?

7 What do you see as the most effective behaviour management strategies used in Correa?

8 To what extent do you believe these changes we have been talking about (teaching style, curriculum, physical environment and behaviour management) have affected:
   8.1. the general emotional state of the students?
   8.2. student’s capacity to learn?
   8.3. actual student learning?
   8.4. student’s general behaviour?

9 What have been the most useful aspects of the program:
   9.1. for you?
   9.2. for the students?

10 To what extent is the program resourced?
    10.1 What else does it need?

11 Considering your experiences and the things we have discussed, how satisfied are you with the program overall?
Appendix 7 – Staff and Parent Focus Group Interview Guide

Key Questions

12. What aspects of the program could be changed to make it more effective?

13. What do you consider to be the most significant outcomes for students which you believe are attributable to the program being implemented in Correa?

14. What are the main problems with the Correa program from your perspective?

15. How do you think these problems could be addressed?
INFORMATION SHEET

Dear

Rosemary Badenoch is a Master of Assessment and Evaluation student at the University of Melbourne. She is conducting research pertaining to Correa Unit, Modbury Special School, Adelaide. This research is being supervised by Neil Day at the Centre for Program Evaluation, The University of Melbourne. The research topic is *Evaluation of an educational program designed for students with autism who are chronic climbers and absconders*.

This innovative education program being implemented in Correa Unit is based on current Sensory Learning Theory and has been applied to a particular cohort of students with autism, those who display extraordinary climbing skills. The school program aims to address the students’ particular sensory needs and thus facilitate their safety and their potential to learn. To date there has been no systematic research to confirm the effects of this program on student behaviour and achievement. This research intends to provide that evidence.

This research aims to determine the extent to which the program is effective in achieving its aims, which aspects of the program are successful and why, and also what has not worked as well as it might and the reasons for this. In this way, the program can be refined or modified to better cater for the needs of students and staff. It also can provide a basis for expansion of the program in other settings where students with these conditions are educated.
Data will be collected through taped individual interviews (with individual parents, staff, health access workers and Interagency Disability Services Council staff), taped focus group interviews (one with staff, one with parents and one with health access workers and IDSC staff), document analysis and visual images. The documents to be analysed include Critical Incident Reports (reports of harm to self or others), Incident Reports (reports of damage to property, and Student Reports. Additionally, the research will generate a detailed program theory to show the short and longer-term outcomes, a review of assumptions underlying the program and the program logic (causal chain). There will be no direct testing of the students. The only direct contact with students will be when photographs are taken to support points elicited in the interviews. As the environment in this program is central to the sensory needs of the students, the ways in which student interact with the facilities is also of central concern to the evaluation.

Your involvement in this research is critical, as it is your perceptions and insights gained through an intimate involvement with the students and the program, which will enable a comprehensive and accurate evaluation to be completed. As there are only a small number of students who are involved in this program, it is hoped that each student will be represented in the research via their parents and their associated professional staff. The approximate time commitment per adult is 60 minutes on two occasions.

In summary,

**PARENTS** will be requested to:
- provide informed consent for their child to participate in this study
- give permission to access DECS records of their child for evaluation information
- be asked to participate in this study themselves through participating in an individual interview and a focus group interview.

**STAFF** will be requested to:
- participate in an individual interview and a focus group interview.
Appendix 8 – Information Sheet

While information gained in this study may be published, be assured that no student, parent or staff will be identified. Anonymity of students and staff will be preserved through the use of pseudonyms or Case Numbers wherever reference is made in the thesis to particular individuals. However participants are informed that the sample size in this study is small and thus anonymity is not as secure as with a large sample group. No photographs will be taken of inappropriate, embarrassing or compromising situations for either students or staff. Information collected will stored in a secure, locked environment with data and identifiers located in separate locked filing drawers. The data will be destroyed after 10 years. Participants are informed that this confidentiality is subject to overriding legal requirements should this be deemed appropriate.

A copy of the completed thesis will be forwarded to the Principal, Modbury Special School and to the Department of Children’s Services (DECS) in South Australia. Additionally, the results will be presented orally to participants and other interested staff at or associated with Modbury Special School.

Participation in this research is voluntary and participants can withdraw from the study at any stage. Participants also have the right to withdraw any unprocessed data previously supplied. Should any student display distress whilst being photographed, this element of data collection will stop immediately. Please note that the treatment of students and services provided will in no way be affected by your decision to participate in the research or not.

The sample size is determined by the number of students in the Correa Unit (9 students) and the selection of two critical personnel per student. These will include at least one parent and one professional worker. The professional worker will be selected in consultation with the Principal and class teachers.

This research has been approved by the Ethics Committee of the University of Melbourne and the Ethics Committee of the Department for Education and Children’s Services (DECS).
Appendix 8 – Information Sheet

If you have any concerns about the conduct of this research project, you may contact the Executive Officer, Human Research Ethics, The University of Melbourne, ph: 03 8344 7507.

If you are prepared to participate in this research project, please complete the attached Consent Form.

Thank you for considering this request.

Signed ___________________________ Date / /02
Appendix 9 - Parent and Child Consent Form

PARENT AND CHILD CONSENT FORM

I hereby consent to my involvement in the research project entitled: Evaluation of an educational program designed for students with autism who are chronic climbers and absconders.

I understand that the investigators in this research are Rosemary Badenoch and Neil Day and that my participation is voluntary.

I have read and understood the Information Sheet on the above project and understand that I will be asked to contribute my reflections and perceptions on my son/daughter’s involvement in this program. This will involve my participation in both a taped individual interview and a taped group interview. These interviews will be no longer than 1 hour duration per interview.

I understand that the research will also involve school records pertaining to my child being accessed.

I understand that while information gained in the study may be published, all efforts will be made to maintain my anonymity and that of my child. I also understand that the small sample size in this research necessarily renders my anonymity less secure than with a larger sample size.
Appendix 9 – Parent and Child Consent Form

I understand that all individual information will remain confidential subject to legal limitations.

I understand that I may withdraw from the study at any stage up until the end of the data collection phase of the research.

I understand that there will be no payment for participating in this study.

I am aware that I should retain a copy of the Information Sheet and Consent Form for future reference.

I consent to my child being photographed for the purposes of this project, and understand that such photographs may be published.

I understand that my decision whether or not to participate in the study will in no way influence the quality of type of care provided to my child at the Correa Centre.

Signed ____________________________ Date  /  /02

Relationship to child ________________________________

Name of child ________________________________
Appendix 10 - University of Melbourne Human Research Ethics Approval

We apologize for the delay in this notification.

20 March 2013

R. Badenoch
Centre for Program Evaluation, Education Policy & Management

Dear R Badenoch

HEEC Project No. 820041
Title: Evaluation of an education program designed to meet the sensory needs of students with autism who are chronic climbers

Principal Investigator(s): R. Badenoch
Other Investigators: N Day

Internal Reference: AHE 3.358

This is to confirm that the Arts and Education Human Ethics SubCommittee noted the approval of the above project via Presentation Review by the Education Policy & Management Department Human Ethics Advisory Group for the period 20/04/10 to 30/01/12.

It is your responsibility to ensure that all people associated with this particular project are made aware of what has actually been approved.

Research projects are normally approved to 31 December of the year of approval. Projects may be renewed yearly for up to a total of five years upon receipt of a satisfactory annual report. If a project is to continue beyond five years a new application will normally need to be submitted.

Please note that the following conditions apply to the approval. Failure to abide by these conditions may result in suspension or discontinuation of approval and/or disciplinary action.

(1) Limit of Approval: Approval is limited strictly to the research proposal as submitted in the application.

(2) Variation to Project: Any subsequent variations or modifications to the project must be confirmed formally to the Department Human Ethics Advisory Group for consideration and approval. All applications for approval of the revised project should be submitted on the Application for Approval of the Revised Project form and submitted to the Department Human Ethics Advisory Group.

(3) Incidents of adverse effects: Researchers must report immediately to the Department Human Ethics Advisory Group and the Human Research Ethics Committee any adverse incidental incident or event that might affect the ethical acceptance of the study or affect subjects or unforeseen events that might affect continuing ethical acceptability of the project. Failure to do so may result in suspension or discontinuation of approval.

(4) Monitoring: Projects are subject to monitoring at any time by the ethics committee.

(5) Annual Report: An annual report on the project must be submitted at the end of the year, or at the conclusion of the project if it continues for less than a year. Requests for annual reports are sent out by the Human Research Ethics Office in November/December of each year. Failure to submit a progress report at the end of the year will result in approval for the project being suspended.

(6) Auditing: All projects may be subject to audit by members of the Sub-Committee.

If you have any further questions on these matters, or require additional information, please do not hesitate to contact me on telephone no. 8344 6089 or e-mail: [email protected] or [email protected]

Please quote the HEEC registration number and the name of the project in any future correspondence.

Yours sincerely,

Ma Jancy Angus
Ethics Officer, Human Research Ethics

Melbourne Research and Innovation Office
The University of Melbourne Victoria 3010 Australia
Ph: +61 3 8344 6089 Fax: +61 3 8344 6240
http://www.unimelb.edu.au/ethics

Evaluation of an Education Program Designed for Students with Autism Who are Chronic Climbers and Absconders 361
Appendix 11 - Department of Education and Children's Services (DECS) Ethics Approval

DECS 0013/02.h

Tuesday, 17 September 2002

Ms Rosemary Badenoch
12 Heather Avenue
Netherby SA 5062

Dear Ms Badenoch

Thank you for your letter requesting approval for your project 'Evaluation of an education program designed for students with autism who are chronic climbers'. Following consideration by a senior DECS consultant, I am pleased to approve your application.

Your project has been reviewed with respect to protection from harm, informed consent, confidentiality and suitability of arrangements and has been found to fit within DECS guidelines.

Please note that it will still be necessary to obtain the agreement of the principals of schools involved. Enclosed is a letter that should be shown to them.

Please supply the department with a copy of the final report, which will be circulated to interested staff and then made available to DECS educators for future reference.

I wish you well with your project.

Barry Dolman
ASSISTANT DIRECTOR, STRATEGIC PLANNING AND INFORMATION
Appendix 12 - Approval from DECS for Modbury Special School to be named

Rosemary

I refer to your request to identify and name the Modbury Special School as the school involved in your research. I note the earlier approvals around the conduct of the research. I further note that parental approval around the study and other like issues (i.e. publication of photographs etc) has been individually granted etc. As such approval is granted to identify and name the school for the purposes of the thesis document only.

Do not hesitate to contact this office if you have further queries on this or other matters.

Don Mackie
MANAGER LEGISLATION AND LEGAL SERVICES (DECS)

1 August 2008
Appendix 13 - Approval for conversion from Master to PhD thesis

June 23, 2003
Our Ref: 2002-00555

Ms Rosemary Kaye Badenoch
12 Heather Avenue
Netherby SA 5062

Conversion From Masters
Dear Ms Badenoch

I am pleased to inform you that your admission to candidature for the degree of PhD in the department(s) of Education Policy & Management has been approved.

<table>
<thead>
<tr>
<th>Commencing</th>
<th>Probationary Period</th>
<th>Completion</th>
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<td>17/3/03</td>
<td>17/3/03 to 16/9/03</td>
<td>31/7/06</td>
<td>Full time</td>
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</tbody>
</table>

Project Title:
Evaluation of an education program for students with autism who are chronic climbers/absconders

Supervisor(s):
Mr Neil Day, Dr Amanda Richdale (ext)

Special Conditions:
No special conditions

Acceptance of Offer
To ensure you are not charged double fees we have notified the Faculty of your discontinuation in the Masters program.

Please keep both the School of Graduate Studies and your Department informed of your current address and phone number.

Please remember it is your responsibility to re-enrol at the beginning of each calendar year. If you have any questions regarding your offer please contact Tim Bryce on 8344 8472.

Welcome to the School of Graduate Studies and congratulations on the success of your application!

Yours sincerely,

*Jennifer Gilbert
Research Higher Degrees Manager

cc:file/supervisors/faculty nominee/scholarships office/ (for your information only)
Minerva Access is the Institutional Repository of The University of Melbourne

Author/s:
Badenoch, Rosemary Kaye

Title:
Evaluation of an education program designed for students with autism who are chronic climbers and absconders

Date:
2008

Citation:

Publication Status:
Unpublished

Persistent Link:
http://hdl.handle.net/11343/37766

File Description:
Evaluation of an education program designed for students with autism who are chronic climbers and absconders

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