Learning with Intentional Teaching Gestures: Japanese foreign language output in the primary years

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Abstract

This thesis reports on an educational study that investigated the impact of Intentional Teaching Gestures (ITG) within primary school ‘Japanese as an additional language’ classes in one school in Victoria, Australia. Action Language, more commonly known as ACTLAN, a methodology developed specifically for teaching Japanese as an additional language within an Australian classroom context, was the focus for investigating ITG. The use of ITG has been incorporated into many Australian language classrooms and whilst teacher lore says that the use of ITG increases students’ proficiency in the language, there has not been any published research carried out to determine this empirically. This study investigated the impact of ITG in ten primary school classrooms teaching ‘Japanese as an additional language’. Students’ Japanese oral telling of stories was a key source of investigation in this study which used a quasi-experimental approach. Specifically, the research contrasted the oral output of students within an ‘ITG’ approach with that of students learning Japanese in a ‘non-ITG’ approach. The study collected both quantitative and qualitative data to test the main research question. Quantitative data informed the question of how much language ITG students produced, whilst qualitative data provided evidence of the features of students’ language and patterns of ITG use, responding to the question of the impact of ITG. The research findings provide empirical evidence to address teacher lore about the use of ITG in Japanese language teaching and learning contexts and inform classroom practice. In addition, the study provides new information about pedagogy and of the potential role of ITG in language education.
Declaration

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 fewer than 100 000 words in length, exclusive of tables, bibliographies and appendices.
Preface

The following is a selection of research outputs that are related to the current thesis. These include the topic of Intentional Teaching Gestures, the Voice Story App derived from the ‘Storytelling’ research approach used in the thesis and related second language education work.

Publications

Wilks-Smith, N. (2017). The Place of Learners’ Languages in Literacy Programs: Bringing learners’ home languages in through the school gate, Babel, 52 (1), 27-34.

Presentations

Creative Outputs


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Chapter 1. INTRODUCTION

1.1. Intentional Teaching Gestures

The teaching of an additional language is a core curriculum requirement in the primary schools of the Australian state of Victoria, commonly referred to as ‘Languages’. This study is located in a typical primary school second language program in Melbourne, the capital city of Victoria, in which twenty-two different languages are taught (Department of Education and Training, 2017). Currently, many teachers of Languages in Australian primary school classrooms use methodologies that incorporate gestures into their teaching (Cross, 2014). Throughout this thesis, I refer to these systems of gestures in a second language teaching context as Intentional Teaching Gestures or ITG. This terminology refers to “…those gestures which have been specifically designed to support each word as a tool to facilitate language teaching and learning and are intended to be used consistently” (Wilks-Smith, 2013). ITG refers to a pre-determined set of gestures that were created by a method developer for the purpose of supporting the teaching and learning of a second language. ITG are considered a pedagogical tool for second language teaching and learning and differ from naturally occurring gestures or individuals explicitly choosing to use their own personal gestures. There are differences in the types, purpose and contexts within which gestures occur. ITG are distinct because they have been pre-determined and have been learned by teachers explicitly for implementation in language classrooms. Each ITG corresponds with a word and the form of the gestures remains consistent. The purpose of ITG is therefore purely pedagogical and it is not expected that ITG will be used outside the classroom in authentic communication situations. This strict limitation of purpose and context is the primary distinguishing feature of ITG and it is precisely this strictly pedagogical orientation and classroom setting which delimits this thesis.

Three major approaches currently exist for ITG in second language teaching; ITG utilising The Narrative Format Approach (developed by Trove Taeschner in 1991), The Accelerative Integrated Methodology, known as AIM, (developed by Wendy Maxwell in 1993) and Action Language, known as ACTLAN (developed by Chizuko Gomura in 2008). In each of these approaches, the design of the gestures and their consistent use is unique to the program for which it was conceived. ITG are a new area of focus for the
study of gesture. It needs to be further specified that ITG are not viewed as a method to be applied in isolation, nor are intended to replace other classroom approaches to the teaching of the second language concerned. Rather, ITG use is viewed as a supplementary classroom tool whose addition to a language teacher’s existing techniques and classroom tools enriches their repertoire of pedagogical interventions based on an assumption that ITG serve clear educational purposes.

At the time this study was carried out, ACTLAN was the only gesture-based approach for the teaching of Japanese as a second language. As the focus of this research is Japanese, ACTLAN was selected to investigate effectiveness and characteristics of ITG in second language contexts. ACTLAN is a methodology that combines intentional teaching gestures with spoken Japanese. Each word has a related gesture. ACTLAN gestures are intended to be performed together with the oral production of each word in Japanese. ACTLAN does not prescribe a curriculum for teachers to follow, instead, the focus of ACTLAN is to extend and enrich the toolkit of interventions for Japanese intended for students who have little or no familiarity with the language outside of the classroom setting. ACTLAN gestures are taught to teachers of Japanese at numerous professional learning seminars across Australia and are documented in the ACTLAN Handbook (ACTLAN, 2010). A collection of photographic examples of ACTLAN gestures reproduced from the ACTLAN Handbook (with permission via personal communication, Gomura, 2018) is included in Appendix 1. A range of resources, including word and picture flashcards, games, stories and songs, are also available from ACTLAN. While these resources do not constitute a curriculum and do not suggest a particular teaching practice, they were excluded from the study to permit an uninhibited focus on the gestures independently of their accompanying teaching resources.

ACTLAN has become popular for the teaching of Japanese throughout Australia. By 2013 more than 200 teachers of Japanese in Melbourne were using the approach (C. Gomura, personal communication, March 27, 2013) and it was growing in popularity across all States and Territories of Australia. As a result of the familiarity and interest of teachers in gesture ACTLAN has been a strong feature of Japanese teacher professional learning, supported with funding and resourcing from Australian Government’s National Asian Languages and Studies in Schools Program initiative between 2010 and 2012. Information sessions, promotion and teacher discussions of gesture-based approaches, including ACTLAN, have featured at state Japanese-specific conferences.
(JLTAV, 2017), state multilingual conferences (MLTAV, 2012) and general national language conferences (AFMLTA, 2015) in recent years. ACTLAN is also specifically mentioned on the website of the Victoria Department of Education and Training (Victorian State Government Education and Training, 2016) under the category of ‘Curriculum and Pedagogy’, as a teaching approach for Japanese. In this way ITG in general and ACTLAN in particular benefit from an informal promotion and acknowledgement, though this does not constitute formal governmental endorsement.

1.2. The research problem

Observing and participating in these activities at professional conferences over the past decade it has become clear that many teachers remark on the increased proficiency gains of their students when using ITG. However, to date, there has not been any empirical examination to affirm that the use of these systems of gestures or ITG actually increases learners’ production of the target second language. A key aim of the present study was to establish an empirical investigation of this phenomenon, to see whether the use of a system of ITG, using ACTLAN, does in fact increase the quantity and quality of oral language that students could produce and therefore benefit learners’ oral output in the new language. This therefore is the primary motivation and conception of this research, to address the impact of ITG on learners’ oral output in Japanese but in environments that typify normal school conditions in keeping with the pedagogical and school-based nature of the present study.

ACTLAN was the only gesture-based method for Japanese when this study was conceptualised, and data was collected. A current literature search has not located or identified any publications about the use of ACTLAN, highlighting a gap in critical research in ITG. There is yet to be research conducted in relation to the impact of ACTLAN on students’ oral output, further demonstrating the need for research in this area. The many teacher testimonials and claims of increased student language proficiency when ITG is used, represent an anecdotal and informal corpus of validation that motivated my interest in demonstrating a range of outcomes from ACTLAN-using programs.

In addition to my personal involvement with Japanese teaching, as a past teacher and currently a teacher trainer, there is growing awareness, discussed later in the thesis, that Australia’s strong promotion of Asian language teaching has neglected a sufficient
focus on learning outcomes from public investment in language education. Japanese is the most widely taught language in Australian schools and its teaching is accompanied by a public expectation of “proficiency” as an outcome. I was interested in finding out if the use of a system of gestures, ITG using ACTLAN, would impact on the Japanese oral output of primary school students. The findings of the research are directly informative for the school in which the study was carried out and may be valuable to the many teachers of Japanese in primary schools using ACTLAN, and may also be of interest to teachers of other languages using other systems of ITG. Finally, a policy influence might also result from being able to identify whether a growing method of teaching is effective.

1.3. Scope and overview of the study

The study of gesture and language is a broad field of research. In this study the term ITG is used to distinguish second language teaching methodologies that use systems of gestures created by method developers from other definitions of gesture. The strict scope of the study is on the educational implications of ITG using ACTLAN in one primary school for Japanese as a second language in Melbourne, Australia with a strictly pedagogical orientation. This is not a study of the types of naturally occurring gestures that appear with speech, cultural gestures, teachers’ or learners’ use of gestures that are not intentionally designed to support teaching, nor is it a linguistic analysis of gestures with speech. This study is not conducted within the field of theoretical linguistics or gesture studies. The contextual framework as outlined above constitutes both a limitation for generalisability but also contributes considerable strength of clarity of aim and focus.

This study utilises a quasi-experimental examination in a single school to assess oral language output from students in the dual conditions of after learning with and without ITG. The corpus and setting of the research is ten primary school classes of students learning Japanese as a second language in one Independent girls’ school, comprising a total of one hundred and seventy student participants. The quasi-experimental approach involved the creation of contrast and comparison groups regarding oral output measures from the “with ITG” and “without ITG” cohorts. Each class was taught Japanese for one school term in each approach, ITG and non-ITG. Two oral language tasks, Storytelling and Story Re-tell, were used to elicit oral language from students which supplied the total corpus of data. There were seven stages of data collection. The first collected
baseline data to determine the starting level ability of students’ oral Japanese followed by three stages of data collection within each teaching approach, ITG and non-ITG.

Both quantitative and qualitative data informed the findings. The former enabled the question of whether ascertaining quantifiable differences in the output of students in the ITG and non-ITG approaches, hence quantitative data, constitutes the numerical findings of the research including the number of words and average length of utterances produced by students in each story told as well as the quantity of ITG produced by them. Qualitative data involved a comparison of the transcriptions of each learners’ Japanese stories when doing Story Re-tell with and without viewing ITG. Thematic analysis was used to identify qualitative themes from the stories. The qualitative data enabled the questions about the features of students’ language and ITG use to be addressed.

The research findings can be used to inform Japanese second language teaching practice and pedagogy in the school context that the study was carried out in and has implications for teaching practice and pedagogy for other similar contexts, as well as guiding future research. Developing knowledge of ITG also contributes to second language acquisition theory.

1.4. Significance of the research

In Australian socio-political discourse there is frequent reference to the Asian Century (Asia Education Foundation, 2012; Commonwealth of Australia, 2011, 2012). Language skills are frequently promoted as critical to Australia’s future economic development and integration into the dynamic economic zone of Australia’s immediate region. In much of this discussion, repeatedly stressed by all political elements of Australian public life, and endorsed hardly without contest by major educational institutions, including school jurisdictions across the country, languages are cited as critical skills and linked to a category of often unclear specification called “21st century skills” (Diversity Council Australia, 2015). Asian languages are not only cited as independently important but are promoted as the priority category in language study above all other groupings of languages (Commonwealth of Australia, 2012).

A federal government investment of over $400 million was directed towards priority Asian languages and Asia studies between 1994 and 2008 (Lo Bianco & Slaughter, 2016). However, despite the numerous policies and declarations favouring Asian language study, all of which make Japanese a central focus of attention, and despite the
considerable financial investment these policies and declarations have generated, a national investment in languages: “…education systems have repeatedly failed to meet targets set for numbers to be enrolled in these languages, and for the most part language programmes are of insufficient duration and depth to produce the ambitious and, occasionally, naïve targets” (Lo Bianco & Slaughter, 2016). This failure to reach targets has resulted in a great deal of crisis reporting about the state of languages education along with the reporting of low proficiency attainments (Scarino, Elder, Iwashita, Hee Ok Kim, Kohler, Scrimgeour, 2011).

The policy reports cite specific aims for the investment of taxpayer dollars into languages education which are mostly very practical aims tied to employment. They suggest that the provision of language programs will result in the highly desirable language fluency. Many of these reports downplay or even ignore altogether the many other benefits of language learning, and only pay marginal acknowledgement to success in language learning unless it has been continued until the end of secondary schooling and aim for fluency with little understanding of the complexity of factors that contribute to its achievement. In addition, and highly problematically, no policy has mandated any of the many factors that have been identified to support languages such as the continuity of study, time on task and ‘quality’ features of programs. A greater emphasis now needs to be placed on supporting ‘quality’ and ‘proficiency’ in languages.

During the 1990s there was a great surge all across Australia in Japanese study, leading to its becoming the number one language taught. Despite some decline in recent years the most recent available indicators show a new growth spurt in Japanese enrolments (Victorian State Government Education and Training, 2016b). It is timely now to provide strong support for these new programs as well as for the existing programs and investigate ways to achieve proficiency to support their long-term sustainability. An investigation into ITG as one factor that may play a role in increasing students’ oral language output contributing to proficiency will provide valuable information to language teachers as well as policy makers in this context.

More specifically, with a large and growing number of teachers of Japanese currently using ACTLAN, it is important to empirically identify any impact of ACTLAN on students’ learning of Japanese. A base of research needs to be developed to inform teachers’ decisions and program design and findings about ACTLAN may also be suggestive of the impact of wider ITG use, such as the Narrative Format Approach and
AIM. With these considerations in mind the following research questions were decided as the guiding focus of the study;

1.5. Research questions

Three interrelated research questions were adopted to anchor the research:

1. *What impact does the use of Intentional Teaching Gestures (ITG) in Japanese as additional language classes have on students’ oral language output?*

This question seeks to find out if the quantity of oral language that students produce varies when ITG is added to the teaching approach. The number of words that students say when telling stories in Japanese and the length of utterances produced are the measures of quantity of oral output for comparison between the ITG and non-ITG approaches. This research question is addressed with quantitative data.

2. *What are the features of students’ oral language when ITG has been incorporated into learning Japanese?*

An analysis of the transcriptions of students’ Japanese stories and the features of their oral language used in the stories provides insight into the impact of ITG on oral language. This research question is addressed with a qualitative analysis of themes.


The number of students using ITG when telling stories in Japanese was recorded to determine the use of ITG by students. The number and types of gestures that students use, were recorded to determine patterns of use. These aspects of the research question are addressed with quantitative data. Additionally, patterns of ITG use by students are addressed with qualitative evidence from story transcriptions.

This research aims to contribute to knowledge about the impact of ITG on students’ Japanese oral language output. It is reiterated that the focus of the study is primarily research into the practical application and effects of ITG in classrooms, and not a theoretical exploration of gesture theory. The findings from this study inform L2 teaching practice and pedagogy in school contexts typologically similar to the research site and may be useful for consideration in other similar language teaching contexts. Findings will contribute towards informing language teachers about the potential role of ITG in second language classrooms in order to support teachers to make informed
choices about whether the integration of ITG with their current practice would work in their teaching context.

1.6. Outline of the thesis

Chapter two provides the background and context for the study. It situates the study in an Australian primary school context and provides the historical policy and curriculum background to the study. The chapter identifies Japanese as the focus language of the study and provides context-specific information about specialist teaching, teacher education, the curriculum for languages and language programs and methodologies in Victoria, Australia.

Chapter three provides a literature review of the key theories and research in the field of gesture and language. It identifies the evolutionary claims about gesture and language and the physiological research that situates gesture closely with language. The developmental role of gesture in first and second language acquisition is identified. The broad range of evidence supporting the impact of gesture on learners’ receptive language is outlined. Discussion of the role of gesture in encoding and processing language is included, including gesturing as a form of embodied cognition. Finally, the role of gesture on learners’ productive language output is discussed, culminating in the identification of a gap in knowledge about the impact of ITG on learners’ second language oral output.

Chapter four details the methodology for the study. It outlines the quasi-experimental approach used, the participants involved in the study and the context. The language elicitation tasks and the data collection instruments are described. The stages of data collection, sets of data that were gathered, and ethical considerations are then explained.

Chapters five and six present the results. Chapter five presents the quantitative results, presenting the comparison of the two teaching approaches, ITG and non-ITG, a comparison of Storytelling at two stages, and a comparison of Story Re-tell with and without viewing ITG. Students’ use of ITG is also presented. Chapter six presents the qualitative results of the study. The themes related to when students viewed ITG are presented first, followed by the themes identified as arising for when students used ITG.

Chapter seven discusses the findings according to the emergent themes and addresses each of the research questions. The impact of ITG on the quantity of Japanese oral
output that students produced is discussed and interpreted, along with the impact of ITG on the quality of students’ Japanese oral output.

Chapter eight provides a conclusion to the thesis. It identifies the knowledge that this thesis has added to the field and discusses the pedagogical implications, theoretical implications and possible policy implications of the study. It acknowledges the limitations of the research and poses further questions and lines of enquiry for future study.
Chapter 2. BACKGROUND AND CONTEXT

2.1. Study in context

Australia is a linguistically diverse nation with 229 languages spoken in Australian homes (Commonwealth of Australia, 2014) with one in five people speaking a language in addition to English (Australian Bureau of Statistics, 2017). Contemporary Australia is recognised widely as a multicultural and multilingual country with two main sources of diversity; large scale immigration and pre-British indigenous people, speaking a large number of unique languages. Despite this plethora of languages being present in the community (Clyne, 1991), most are absent in schools. 97 percent of students study one of ten languages in school with Japanese having the most student enrolments, 23.8 percent, followed by Italian, Indonesian, French, German, Chinese (Mandarin), Arabic, Spanish, Greek and Vietnamese (Lo Bianco & Slaughter, 2009).

In 1987, the Federal Government introduced its first attempt to “plan” languages through the National Policy on Languages (Lo Bianco, 1987). This saw Australia as the first English speaking country to have a policy for languages and was a world first for a multilingual languages policy. This policy provided a strong rationale for multilingualism and second language learning in Australia. Despite this, the uptake of languages into the school curriculum has been painfully slow and varied in how it has been adopted.

Traditionally, language study in schools has not been seen as a priority and high levels of attainment have been rare (Lo Bianco, 1990). Unlike most other curriculum areas, ‘Languages’ has needed to advocate for its place in the curriculum. This has tended to render languages vulnerable to replacement and has also affected student demand for language learning. There has been an ongoing lack of recognition of the benefits of language education and this has led to it holding a low status and receiving poor uptake by students. Liddicoat identified the perception of languages in Australia as being an option representing a dispensable aspect of the curriculum (2002). He distinguishes between the notion of ‘languages being important’ and ‘languages being useful’ and explains that the currently held position reflects the view that languages are ‘useful’ but not necessary because everyone speaks English. This widely held view contributes to the negative positioning of languages education in schools which Clyne (2005) identified as a ‘monolingual mindset’ in which monolingualism is considered normative.
and due to its pervasive global presence English is taken to have universal utility restricting the usefulness of second languages’ particular trade, geopolitical or other commercial niches.

2.1.1. Prioritising of Asian languages

From the early 1980s and seeing a peak in the 1990s, Asian languages have been favoured to support Australia’s economic interests in the Asia-Pacific region (Lo Bianco, 1996). Interestingly, these language skills were promoted for English speaking learners of new Asian languages rather than maximise current language expertise within Asian-Australian communities (Clyne, 1991).

There has been a reluctance to value immigrant languages because these were not seen to match Australia’s economic and political interests (Lo Bianco, 1990). The perception was that many bilinguals in Australia came from European backgrounds and these weren’t as relevant for Australia’s national strategy of Asian integration. At the same time, children speaking minority languages have been viewed from a deficit perspective, as ‘lacking English’ (Lo Bianco, 2000b) hence the preference has been for English speakers to add new priority languages rather than pursue a policy of building on or exploiting community language skills in minority languages. As a result, the bilingual or multilingual capabilities of many Australians are not being recognised or provided for in the current languages education system.

One regrettable consequence of this history of policy debate has been that languages have been positioned against each other rather than being promoted as valuable learning for all. Practically in schools, the priority for Asian languages has seen Asian language programs replace many European language programs, regardless of the outcomes of the programs or any consideration of the need for the continuity of program offerings for achievement of ultimate language proficiency.

In the mid-1980s, the question was asked nationally of how well students learn languages. This was addressed with The Australian Language Levels (ALL) Guidelines (Vale, McKay, & Scarino, 1991) and then through the Collaborative Curriculum and Assessment Framework for Languages (ACACA, 2001).

After the first National Policy on Languages in 1987 a succession of policy statements followed; perhaps the most prominent was the NALSAS, National Asian Languages and Studies of Asia Strategy, adopted in 1994. NALSAS stimulated growth in language
offerings for four priority designated languages, Chinese, Indonesian, Japanese and Korean.

The National Policy on Languages (NPL) (1987), was the first comprehensive national language policy. It produced the first programs in many areas of Australian education and distinguished between community language maintenance and languages of widespread teaching but did not rank these in priority order. The ‘languages of wider teaching’ were Arabic, Chinese, French, German, Modern Greek, Indonesian, Italian, Japanese and Spanish, and attached these to a program of first language maintenance via complementary provision. In 1992 the NPL was superseded by the Australian Language and Literacy Policy (ALLP), which took a more utilitarian approach and ranked Asian trade languages and English literacy as the key goals of policy.

In 1994 a new approach was adopted known as NALSAS, The National Asian Languages and Studies in Australian Schools, which continued to 2002. This made available federal government subsidies for languages but with a key rank order of four languages of commercial importance for Australia: Chinese (Mandarin), Indonesian, Japanese and Korean. Under NALSAS there was accelerated growth in language provision, mainly of Japanese, which continued the growth started under the NPL Japanese had surpassed French enrolments. When NALSAS came to an end, enrolments in the four languages had expanded, but mostly for Indonesian and Japanese, but many were programs of short duration and so public debate turned to stress the proficiency outcomes from language teaching rather than the numbers enrolled. The next key step in policy was in 2008 when a meeting of State, territory and Commonwealth Ministers of Education meeting as the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA, 2008), released the Melbourne Declaration of Educational Goals for Young Australians. Again, the stress was on Asian languages but without excluding non-Asian languages.

2.1.2. Languages in primary schools

These policy moves led to languages entering primary schools in most Australian states in the early 1990s, a key vehicle was the ‘National Goals for Schooling in Australia’ calling for a focus on “a knowledge of languages other than English” (Australian Education Council and Curriculum Corporation, 1992, p. 17). This document also listed an “emphasis on LOTE” (Language Other Than English) as a Victorian state priority (Australian Education Council and Curriculum Corporation, 1992, p. 38) and aimed for
languages other than English to eventually be a core area of study in secondary schools. Despite this goal that aimed to transfer general language policy to school programming, a number of issues worked against the widespread acceptance of languages into the core curriculum in schools.

During the late 1990s there were many complaints about standards of English literacy in schools which then worked to undermine the learning of languages other than English so that English could be prioritised. This reflected a narrow definition of ‘literacy’ as only referring to English and demonstrated a poor knowledge of the benefits of additional languages to support English literacy development (Lo Bianco, 2001). Also during this time, primary schools attributed their resistance to languages on the basis of the “crowded curriculum” arguing they could not “fit” languages into the already full timetable.

The model of teaching at the primary school level is one generalist teacher per class of students with minimal additional teaching being done by specialist teachers, coming at an additional cost. This further reduces the attraction by schools to increase specialist teaching time, including for languages. This funding issue has largely been addressed by schools by minimising the amount of time each class spends learning an additional language with a specialist teacher, reducing the time requirements for the school to employ the language teacher. This has then resulted in reducing the overall effectiveness of the language program and attainment of the language due to minimal time on task.

The maximum point of favouring of Asian languages was evident in NALSAS between 1994 and 2002. NALSAS was the first strategy developed to “establish” Asian language learning throughout the education system nationally. It was developed to respond to the recommendation from the Council of Australian Governments (COAG) for “Asian Languages and Australia’s Economic Future” (Rudd, 1994). Although it failed to achieve its goals the NALSAS target of 60% of school students studying one of four priority Asian languages; Chinese, Japanese, Indonesian, and Korean, until the end of Year 10 became an established component of thinking about the desirable percentage of Asian and non-Asian languages in schools.

2.1.3. Student achievements in Languages

Throughout the 1990s, NALSAS commissioned three projects to investigate the issue of student achievement; 1. the development of generic student proficiency outcomes and
language-specific descriptors for Japanese (Scarino, Jenkins, Allen, & Taguchi, 1997), 2. the development of language-specific proficiency descriptors for Chinese, Indonesian, and Korean (Scarino, Scrimgeour, Elder, & Brown, 1998), and 3. a report on assessing student outcomes in Asian languages for Japanese and Indonesian (Hill, Iwashita, McNamara, Scarino, & Scrimgeour, 2004). The first two projects only focused on Year 12 (the final school year) proficiency in specific languages. The third project developed performance measures for Japanese and Indonesian but did not actually conduct any assessments. The need to report on actual language achievement and at all levels of schooling still required attention.

By 2002, the funding allocations made under the NALSAS initiative produced a significant spurt in language study, as measured by raw enrolments, with Japanese the major beneficiary, without however comparable evidence as to the robustness or seriousness of study.

2.1.4. Challenges

In 2003 a Review of Languages Education in Australian Schools was released (Ministerial Council on Education, 2003). The review found that only 50% of students were learning a language in mainstream schools and that Japanese was the most commonly taught language at this time. The review concluded that there were significant challenges facing languages education in schools including the qualifications of language teachers, continuity of programs within schools and between primary and secondary schools, time allocations and timetabling of programs, resourcing and an often-lacking school commitment to language programs. In order to address these concerns, a National Statement on Languages Education in Australian Schools was established with a four-year plan to support language education.

2.1.5. Renewed focus

‘The National Statement on Languages Education in Australian Schools 2005-2008’ (Ministerial Council on Education, 2005) demonstrated a renewed government commitment to languages education. The Statement recognised that “quality languages education is not yet part of the learning experience of all students” (Ministerial Council on Education, 2005, p. 4). The inclusion of “quality” as an aim for language programs was a welcome addition.

The National Plan for Languages Education was developed in response to the Statement with six strands of focus. Of importance to the current study, strand one, ‘Teaching and
Learning’ set the objective “To strengthen and promote the quality of teaching and learning practices to ensure that all learners in Australian schools have the opportunity to achieve high level outcomes in languages learning” (Ministerial Council on Education, 2005, p. 12). However, the ‘actions’ to achieve this outcome focused on increasing student participation in programs, the dissemination of information about research and teaching practices and suggested areas for future research and development. These actions cannot determine quality student learning outcomes.

More specifically focused on Asia was the 2006 National Statement on Engaging Young Australians with Asia (Ministerial Council on Education, 2006) supported by The Asia Education Foundation. The document states strongly that “Asia is now the region whose current emergence is one of history’s greatest catalysts for worldwide change” (p. 2). The priority for Asia is due to Australia’s greater consciousness of its geographical location and the growing economic importance of the region. Asia being of cultural importance to many Australians with an Asian cultural heritage is also emphasised. A goal for Australians to “increasingly be able to communicate in one or more Asian languages” (p. 9) is put forth. This document explicitly connected with the National Statement on Languages Education 2005-2008 and emphasised the shared goal towards “improving the quality and strength of languages education, including Asian languages” (p. 14).

A change in government in 2008 led to renewing the priority for Asian language studies in schools. The National Asian Languages and Studies in Schools Program (NALSSP) was implemented between 2008 and 2012 to reinstate this priority. One of the aims of NALSSP was to increase the number of Australian students exiting Year 12 with high levels of second language proficiency. The target was that by 2020 “at least 12% of students will exit Year 12 with a fluency in one of the target Asian languages (Mandarin, Indonesian, Japanese and Korean) sufficient for engaging in trade and commerce in Asia and/or university study” (Department of Education, Employment and Workplace Relations, 2010, p. 3). This ambitious target demonstrates a lack of understanding of the time required to produce such fluency and exposes the huge gap between policy makers and language educators. The actual time required for students to learn each specific language and the factors that support fluency of those languages need to be more fully understood and supported in policy circles because, despite these high ambitions to increase proficiency, funding was again directed to increase the provision of programs rather than on quality programs aimed at proficiency.
A further development occurred in 2012 with the release of the most recent Australian Government policy ‘Australia in the Asian Century’ which also supported the priority placed on Asian languages (Commonwealth of Australia, 2012). This White Paper reflected the long-held government view of the importance of Asia for economic and strategic purposes. Language education in schools was positioned to meet these purposes and so in this context, a focus on Asian cultural and language capabilities was emphasised (p. 2) stressing that “all Australian students will have the opportunity, and be encouraged, to undertake a continuous course of study in an Asian language throughout their years of schooling” (p. 16). Despite a long list of Asian countries being identified as important, again only four priority Asian languages were recommended in the 2012 White Paper but this time Korean was replaced with Hindi. With a heavy focus on language capabilities, attention should have been devoted to quality and outcomes, but once again, expanding provision of language programs took precedence.

Curriculum development in Australian education is a state responsibility and the Asian language priority was also reflected in the release of the first Australian Curriculum (ACARA, 2011), which included ‘Asia and Australia’s engagement with Asia’ as one of three priority areas to be taught across the curriculum. The national curriculum ranges from Foundation (the first year of primary school) to Year 10 of schooling and ‘Languages’ is one of the eight core curriculum areas. It is understood that “being able to communicate proficiently gives learners essential communication skills in the target language” (ACARA, 2011, p. 13) with the Languages curriculum reflecting this with an emphasis on “using language for communicative purposes…” (p. 23). This emphasises a value for and expectation of language proficiency. This curriculum is innovative as Australia’s first national approach to curriculum, but is also the first curriculum to provide language-specific curricula rather than generic curricula for all languages.

2.1.6. Languages in Victoria

In the state of Victoria, the context for this study, The Victorian Government’s Vision of Languages Education (Department of Education and Early Childhood Development, 2012a, 2013) is the key text that has aimed to improve and extend current languages programs. It set the target for all Foundation to Year 10 students to study a language by 2025, starting with Foundation in 2015. The period from 1999 to 2010 saw a decline in students learning an additional language (Department of Education and Early Childhood Development, 2012b, 2013), particularly at the primary school level, with participation falling from 88.7% to 69.4% over this time (Department of Education and Early
Childhood Development, 2013). The Government’s Vision of Languages Education aimed to address the decline in student participation and set the ambitious aim for all Victorian students to learn and become proficient in a language in addition to English (Department of Education and Early Childhood Development, 2012a) and “be on track to be fluent in an additional language…” (Department of Education and Early Childhood Development, 2013, p. 3). However, this vision to incrementally mandate the provision of Languages ended in 2015, long before reaching its goals of 2025. The ambitious aim for proficiency and fluency was once again lost.

On a positive note, Languages has retained its place in both the Australian Curriculum and its Victorian counterpart (Victorian Curriculum and Assessment Authority, 2015). “All Victorian schools are required by legislation, Education and Training Reform Act 2006, and as a condition of their registration with the Victorian Registration and Qualifications Authority to provide instruction in the eight learning areas, including Languages” (Victorian State Government Education and Training, 2016a). Languages should no longer be an area to strive for or argue the importance of, as it takes its place as one of eight compulsory core curriculum areas from Foundation to Year 10. Now that the provision of Languages in the curriculum is no longer contested, it is hoped that proficiency can now become a focus of attention.

The above schematic overview of the complex evolution of policy shows that there has been no shortage of policy activity for language education but that proficiency attainment has not been included among the policy ambitions. Previous decades of prioritising Asian languages has produced only limited capabilities in these languages. Research carried out into second languages within Australian schools (Lo Bianco & Slaughter, 2009) found that proficiency attainments within primary language programs was minimal. A greater focus on quality in program design and teaching which expect high levels of student achievement is increasingly now the focus of attention and this reveals the critical need to investigate ways to increase the levels of students’ proficiency.

2.1.7. Student achievement in Asian languages in Australia

In a first ever study investigating Student Achievement in Asian Language Education (SAALE) in Australia, the SAALE report identified achievement levels in each of the four key Asian languages; Chinese, Japanese, Indonesian and Korean (Scarino et al., 2011). This critical study is still the only examination of proficiency gains from Asian
second language acquisition in Australia despite decades of policy focus on the area. Learner background and time-on-task were investigated as variables that influence student achievement.

In an Australian language learning context, a key distinction is between learners whose learning of a school language involves acquiring a totally new language, (L2 learners), while for others additional languages are actually their home language, (L1 learners), while other learners access background language, (background learners), study in which they have varying levels of experiences of that language from home and in the community. Chinese for example, comprises learners in all three categories, whereas for Japanese, most students are learning it as a second language in Australian schools. These different learner profiles contribute to the complexity of reporting on student achievement.

It is recognised that “the amount of time on task made available for learning Asian languages is a major variable that influences student achievement” (Scarino et al., 2011, p. xi). The policies for time-on-task for language learning vary from state to state, further adding to the complexity.

SAALE’s focus on student achievement in languages was highly unusual given that past policy and government funding have largely targeted provision of programs with the expectation that proficiency will follow. SAALE identified factors that contribute to proficiency attainment and supported the argument that provision of programs is not enough to ensure language proficiency.

In its approach to proficiency SAALE highlighted student background and time-on-task and the need to conduct language-specific investigations into proficiency attainments in recognition of the distinctive nature of each language. Until this time, language guidelines have been generic without recognition that the characteristics of a specific language impact on student achievement. Differences in “programs of different types, duration, and intensity (i.e. with diverse entry points, diverse amounts of time on task available for learning the target language, and diverse numbers of years of sequential learning)” (Scarino et al., 2011, p. xii) are accounted for by describing student achievement in each specific language in various contexts.

Some of the key findings from the SAALE study that are relevant for the current thesis are: “First language learners consistently achieve at higher levels than second language learners”, “Learners with first languages that are ‘related’ to the target language (e.g.
Japanese students learning Chinese) do better than those whose first language is ‘not related’”, “Studying additional languages may aid achievement”, “Studying for longer at primary school yields higher levels of achievement at Year 6/7” although “Early starters do not necessarily do better at Year 10 (Indonesian and Japanese)” and “Intensity of instruction (via bilingual instruction or study abroad) yields higher levels of achievement” (Scarino et al., 2011, p. xv). The descriptive samples of students’ language in each Asian language within the SAALE study provides evidence of learner language levels. Teacher and program quality were mentioned as being important to determining overall student achievement, however, the data from SAALE could not determine the extent of the impact of these factors.

The youngest learners who took part in the SAALE study were in Year 6, the final year of primary school. Students’ proficiency within the primary school years and prior to the end of primary school at Year 6 now needs to be focused on. Variables within the primary years, such as pedagogy, that may influence proficiency by Year 6 still need to be more fully understood and will support a greater understanding of the development of language proficiency. Interestingly, data could not be provided by SAALE about Year 6 students’ oral language achievement. Oral language was observed in classes and individuals’ oral language samples were collected, however, without a means to measure oral language achievement, it was not reported on.

The SAALE study draws attention to the need for more research into student achievement in specific languages as well as the need to examine contextual variables that impact upon student proficiency. This thesis responds to that need.

2.1.8. A focus on ‘quality’

The Victorian Government Department of Education and Training recognise that a ‘Quality Languages Program’ (2014) has a number of important features.

Learning a language is a sequential and cumulative process. Students learn most effectively through:

- frequent, regular lessons including those conducted entirely in the target language
- engagement over an extended period of time
- opportunities to practise and meaningfully use the language in authentic situations (Victorian Government Department of Education and Training, 2014).
The Department also recommends that a language program should be “primarily aimed at developing proficiency in the target language” (Victorian Government Department of Education and Training, 2014).

Of importance to the context of this study is the recognition that “students learn most effectively through frequent, regular lessons including those conducted entirely in the target language” and that “the Department recommends that schools plan a languages program that is primarily aimed at developing proficiency in the target language”. This sets the expectation for language programs to be delivered in the target language and to aim to develop students’ second language proficiency. Despite this expectation, the large majority of language programs are conducted in English which greatly reduces students’ exposure to the target language and reduces the likelihood of students then using the target language proficiently themselves. In order to achieve high levels of L2 proficiency, strategies to support teachers to use the target language in class and support students’ developing L2 output are needed. From the macro level discussion of policy provision it is clear the factors which support proficiency must be investigated with a view to determining their individual contribution to the overall proficiency outcomes of learners.

With numerous policies and government documents calling for proficiency in languages, the question needs to be asked of what ‘proficiency’ actually means. Longman’s Dictionary of Language Teaching and Applied Linguistics defines language proficiency as “a person’s skill in using a language for a specific purpose” (Richards, Platt, & Platt, 1992). The degree of fluency required to use a language for a wide range of various purposes could vary greatly, adding to the difficulty of determining or assessing ‘proficiency’. The level of proficiency that can be expected from the various range of school second language programs also need to be questioned and specified.

The ‘Languages Provision in Victorian Government Schools Report’, (Victorian State Government Education and Training, 2016b), is the most recent report into the state of Languages education in Victoria. The earlier 2011 SAALE report demonstrated the low time allocations provided for languages in schools a problem highlighted again in this 2016 report showing that time-on-task has not improved in recent years and remains a great concern (2016b). One of the positive findings of the 2016 report however is that “after a decline in the number of schools providing Languages programs between 1999 and 2012, there was a significant increase in the number of schools providing
Languages programs between 2012 and 2015, particularly at the primary level, from 60.1 percent of primary schools providing a Languages program in 2012 to 92.1 percent in 2015” (Victorian State Government Education and Training, 2016b). After much ‘crisis’ reporting about the decline of languages, these current figures indicate that the quantity of language programs are once again increasing, particularly at the primary level.

This section of the chapter has demonstrated that there has been no shortage of policy for languages education in Australia however, the proficiency returns from the investment have been more modest than the ambitions of policy. The next section will provide the historical context for Japanese, the focus language for this study.

2.2. Focus on Japanese

There is a diversity of languages taught in Australian schools, with a total of twenty-two taught in Victorian government primary schools (Department of Education and Training, 2017). For many years Japanese has been the most widely taught language across Australia (de Kretser & Spence-Brown, 2010; Lo Bianco & Slaughter, 2009; Victorian State Government Department of Education and Training, 2016) and whilst learner backgrounds and experiences may differ, the learning of Japanese typically involves L2 study rather than L1 maintenance and has relatively few background speakers.

Australian education can now count several decades of investment and experience in Japanese language education. Many government investments have supported the teaching of Japanese primarily because of the economic and strategic importance of the relationship between Australia and Japan and as a result Australia’s expertise in Japanese language education is recognised internationally (de Kretser & Spence-Brown, 2010).

Japanese was taught in Australian secondary schools as early as the 1970s and introduced into primary schools by the mid-1980s. The 1980s represents a peak time in interest in the teaching and learning of Japanese. During this decade, trade with Japan dramatically increased, tourism to Australia from Japan increased, the National Policy on Languages was introduced (Lo Bianco, 1987), and the government’s aim for ‘Asia literacy’ was prioritised, all accelerating interest in Japanese. As a result the late 1980s saw the greatest peak in the number of students learning Japanese, referred to as the ‘Tsunami’ (Lo Bianco, 2000a).
Throughout the 1990s the number of students learning Japanese at the primary school level increased four-fold from just over 25,000 students to over 100,000 students (Lo Bianco, 2000a). The 1990s also saw a change in Japanese teaching pedagogy with many more programs using a communicative teaching approach which had not been common until this time (Marriott, Neustupny, & Spence-Brown, 1994).

A report into the learning of Japanese in Australia in 1994 (Marriott et al., 1994) found that the learning of Japanese at the primary school level was “… one of rather limited and careful growth” (p. 30). Many programs were quite new at this time and relied on considerable government support. Limited numbers of teachers of Japanese were identified and the concern that teachers may not be able to meet the demand for Japanese was steadily growing. Even at this early stage of implementation at the primary school level, there was debate about realistic achievement expectations for students.

Then between the years 2000 and 2010 there was a dramatic decline in enrolment numbers. The numbers of students studying Japanese across Australia significantly decreased; by 21% in the primary level and 6% at the secondary level (de Kretser & Spence-Brown, 2010). The number of Japanese programs in Victorian primary schools during this time fell from 94.9% to 77.4% (Department of Education and Training, 2008). These declining numbers were of great concern and the effect on the sustainability and overall effectiveness of programs was felt. When the NALSAS program was terminated in 2002, this provoked a dramatic decline in Japanese, particularly at the primary school level.

Despite this decrease in Japanese enrolments between 2000 and 2010, strong business and trade links remained between Australia and Japan and increasingly greater numbers of people visited Japan from Australia and Australia from Japan for business, study and travel. Japanese was heavily promoted to “… lead to greater employment opportunities in the areas of banking, business, education, finance, hospitality, retail and tourism” (Department of Education, 2007, p. 1). The decline in student numbers demonstrate that the government’s push for Japanese and the promoted long-term career prospects for students were not influencing enrolment choices of students and show that other factors must be more immediately important for students.

From an expansive international set of survey data, The Japan Foundation found that of the 3.9 million learners, “interest in Japanese language” (62.2%) followed by
“communication in Japanese” (55.5%) were the most cited reasons for learning Japanese (Japan Foundation, 2012, p. 4), rather than employment reasons as emphasised by Australian government policy. This shows that to increase the number of students studying Japanese, it is important to respond to student motivations for studying the language, especially when these align with proficiency, the ultimate but often neglected aim of the policies.

Despite the decrease in enrolments, by 2010, Japanese remained the most widely taught language in Australian primary schools (de Kretser & Spence-Brown, 2010). Japanese had become well known for its strong base of excellent teachers, who participate in language-specific professional development and networking and teach with high quality materials.

During this time, there was a generic curriculum for languages which did not account for the specificity of Japanese. It was open to interpretation without clear content or achievement indicators. The wide range of types of Japanese programs and differences in time on task made it unrealistic to set common achievement standards. What constituted a language program had not even been defined. Some schools claimed to have Japanese programs, when teaching Japanese for as little as 10 minutes per week. In others, cultural awareness programs operated with little to no language development. These examples are in stark contrast with programs aimed at developing communicative language ability (de Kretser & Spence-Brown, 2010).

The working conditions for many language teachers was also a point of concern at this time, particularly for primary teachers (de Kretser & Spence-Brown, 2010). There was a heavy workload when teaching to every class in the school and often working between a number of schools. The short time provided for languages in many schools and the difficulty of finding a full-time position in one school led to many teachers moving away from the teaching of languages. The language teacher was often seen as the provider of non-contact time for classroom teachers and was often not considered a full member of staff or had their contributions valued.

Approximately 64% of teachers of Japanese in Australia are non-native speakers (The Japan Foundation, 2009). This high number of non-native speaking teachers shows how long Japanese has been established in Australian schools. Many of the current teachers of Japanese were the early students of Japanese during the ‘tsunami’ in the 1980s and 1990s. There have been concerns however about the linguistic competence of many
non-native teachers (de Kretser & Spence-Brown, 2010) which identifies that Japanese language maintenance is an area of need for ongoing teacher professional development. “Only 0.1% of all Australian learners can be considered as advanced and professional proficiency speakers of Japanese” (Thomson, 2010, p. 157). This leads to question what level of proficiency can be realistically expected from teachers of Japanese and from students of Japanese.

In addressing the question of proficiency, we need to firstly identify what proficiency means in this context as well as identify the various factors that may influence the levels of students’ proficiency in each teaching context. The teaching and learning of Japanese in Australian schools is not homogenous. Japanese programs vary greatly in terms of contact time; frequency and duration of lessons, the language or languages that are used when teaching Japanese, and the types of language programs and approaches that are used. Each of these will have an impact on students’ levels of proficiency. We also need to be mindful that Japanese requires many more hours of study than languages like French or Spanish, that share with English common roots in Latin and the Roman orthography, both accounting for the shorter time required for proficiency gains compared to more distant languages. Japanese is classed as a ‘Category Five’ language by the Foreign Service Institute as taking amongst the longest time to learn to gain a predetermined level of proficiency due to it being “exceptionally difficult for native English speakers” (Effective Language Learning, 2015). It is recognised that “More work is needed in determining realistic goals and the conditions and approaches needed to achieve them…” for Japanese (de Kretser & Spence-Brown, 2010, p. 12).

In the previous section, the SAALE research was identified as the first national study to focus on students’ proficiency in Asian languages (Scarino et al., 2011). One of its key findings relevant to the current thesis was that “Studying for longer at primary school yields higher levels of achievement at Year 6/7” (2011, p. xv). The youngest participants in the SAALE study were in Year 6. Knowing that studying longer at primary school is an influential factor towards achievement in Japanese in Year 6/7, the variables that may influence proficiency within these earlier years need to be investigated.

Japanese-specific findings by SAALE at Year 6 level, as it is the closest to the focus of this thesis, showed that ‘first language’ and ‘background language’ learners outperformed ‘second language’ students, as would be expected. Second language
learners from Chinese and Korean backgrounds outperformed learners from other language backgrounds in Japanese achievement, suggesting that the relative closeness of those languages (L1 and L2) influenced the achievement. Students in bilingual programs outperformed those in regular second language programs in all assessments. Of the non-bilingual schools, weekly lessons varied between 30 and 80 minutes per week and student achievement was not reflective of this time difference. Achievement increased as did the years of sequential language learning.

The government priority to respond to Australia’s role in the ‘Asian Century’ in 2012 renewed the priority for Asian languages, including Japanese as a priority language (Commonwealth of Australia, 2012). A concern for all languages at this time was the limited number of students who continue to study languages throughout their secondary schooling once studying a language becomes an elective. Only 11% of secondary school students nationally, complete their schooling with a language as one of their subjects (Asia Education Foundation, 2014). We know that one of the reasons why many students opt out of languages is because they do not feel that they are making progress with their language learning (de Kretser & Spence-Brown, 2010). A study into students’ experiences of learning Japanese in Australia (Lo Bianco & Aliani, 2013) found that students wanted experiences that were “more rigorous” and “extensive”. Student expectations for ‘rigorous’ and ‘extensive’ learning needs to be responded to and this calls for a greater focus on Japanese proficiency achievements.

The total number of Japanese programs and student enrolments increased again significantly from 2012 to 2015. Over 69,000 students studied Japanese with programs being carried out within 19.4% of all Victorian primary schools (Victorian State Government Education and Training, 2016b). By secondary school level, enrolments in Japanese remained strong with over 16,000 students participating in Japanese programs which was only superseded by enrolments in French and Italian. 19.7% of all language enrolments at year 7 level were in Japanese in 2010 and tracking these same students to year 12 in 2015 represented 19% of all language enrolments (Victorian State Government Education and Training, 2016b). These figures show a strong retention rate for Japanese at the secondary level. Japanese had the third highest number of students completing Unit 4 VCE Japanese, the highest level at secondary school, out of all languages, superseded only by French and Chinese. It needs to be recognised that the majority of students that made up the total enrolment numbers for Chinese were first
language Chinese students, whereas French and Japanese enrolments consisted largely of second language students.

According to the 2015 data, students’ contact time of learning Japanese was an average of 59.4 minutes per week showing that only “0.9 percent of Languages programs consisted of at least 150 minutes of teaching per week, which is the recommended minimum time by DET” (Department of Education and Training) (Victorian State Government Education and Training, 2016b). This tells us that although more Japanese programs are being provided in schools and enrolments of students in these programs is high, the contact time remains low. It is unrealistic to expect that an average of 59.4 minutes a week will result in Japanese proficiency and certainly not the proficiency required in order to meet the government ideals for fluency.

In 2015 the Australian Curriculum was the first to introduce language-specific curricula (ACARA, 2015). Each state then released its own local context interpretations of the curriculum. A key aim in the Victorian version is for students to “communicate in the language they are learning” (Victorian Curriculum and Assessment Authority, 2015). This sets the expectation for both teachers and students to use Japanese as the medium for instruction and for communication in the classroom. The curriculum is divided into two strands of learning, ‘communicating’ and ‘understanding’. Communicating in Japanese involves “using language for communicative purposes in interpreting, creating and exchanging meaning” (Victorian Curriculum and Assessment Authority, 2015). It is an expectation that “students are encouraged to use Japanese as much as possible for classroom routines, social interactions, structured learning tasks, and language experimentation and practice” (Victorian Curriculum and Assessment Authority, 2015). These expectations emphasise students’ oral output as well as comprehension. Investigation into strategies to support students’ oral output now needs greater attention in order to meet these expectations.

This section has highlighted the long-term provision of Japanese in Australian schools and the consistent support provided by government. Although there are many strengths in Japanese language education, there is great diversity of programs and concerns remain about student proficiency attainments. There have been numerous long-term calls for increased enrolments in languages such as from NALSAS and NALSSP (Asia Education Foundation, 2014), for “high level outcomes” (Ministerial Council on Education, 2005) and for “proficiency” (Department of Education and Early Childhood
Development, 2012b) and “fluency” (Department of Education and Early Childhood Development, 2013; Department of Education, Employment and Workplace Relations, 2010) in languages. The responsibility for achieving these ambitious targets is felt by language teachers in all year levels.

Many challenges to the teaching and learning of Japanese have been presented and concerns remain about low proficiency outcomes. Strong consideration needs to be given to increasing students’ proficiency within Japanese language programs.

The next section explains the requirements to become a specialist teacher of a language in Victoria and provides a brief account of what is required by teacher education programs to prepare teachers as specialist teachers of languages.

2.3. Specialist teachers of languages and teacher education programs

The Australian Institute for Teaching and School Leadership (AITSL) is the governing body that sets standards for initial teacher education programs to meet to become nationally accredited (AITSL, 2017). These standards are set for the program level, such as the Bachelor of Education program at undergraduate level, or the Master of Teaching Practice program at post-graduate level. Requirements for ‘specialist areas’ within these programs vary from state to state and are accredited by different organisations. In Victoria, the Victorian Institute of Teaching (VIT) has set standards for specialist teachers within the ‘Specialist Area Guidelines’ (Victorian Institute of Teaching, 2015). The Specialist Area Guidelines specify the “minimum level of discipline study” required for a specialist area teacher in a nationally accredited initial teacher education program (Victorian Institute of Teaching, 2015, p. 2). “Australian program standard 4.5 states: Programs must include a minimum of one-quarter of a year of full-time equivalent study of discipline-specific curriculum and pedagogical studies for each teaching area that the graduate intends to teach. This is normally equivalent to two units. All teaching methodology studies should include, or be associated with, supervised teaching practice in the specialist area” (Victorian Institute of Teaching, 2015, p.2).

Within initial teacher education programs, all teachers will have completed studies in the theory and practice of teaching. Specialist teachers will additionally undertake discipline-specific studies that incorporate discipline-specific teaching approaches and understandings, as well as discipline-specific planning, curriculum and assessment strategies. “Specialist area teachers are expected to have a sound understanding of the
key concepts, structure and developments in the subject or discipline area; to be well versed in the knowledge and concepts required for teaching students in Victorian schools; and to be able to provide a variety of methodologies for addressing the needs of individual students” (Victorian Institute of Teaching, 2015, p.2).

To become a specialist teacher of Languages, it is expected that the pre-requisite of a degree major study in the language is met in order to be eligible to undertake specialised studies in language teaching methodology as part of an initial teacher education program. Native speakers of the language may seek a ‘statement of equivalence’ from an Australian university to demonstrate that their language skills are ‘equivalent’ to that of a degree major. The specialist area guidelines for Languages state that:

All programs or program combinations should equip prospective teachers of languages with:

- a sufficient level of competence in a range of acceptable spoken and written uses of the standard variety of the language so that they can provide their students with a reliable language model. This includes the ability to use the language:
  - in an appropriate range of registers and contexts,
  - as the medium of instruction for classroom and instructional purposes,
  - with users from a range of ages, regions and/or social groups, both in Australia and overseas
  - an understanding of the significant works of the language (poetry, prose, drama, song, film etc), both contemporary and traditional, and insights into its related history, culture and social life, including in Australia
  - knowledge of the formal properties of the phonology, syntax and discourse patterns of the standard language; an understanding of the significant features of the main varieties of the language (regional and social); an understanding of the legitimacy of a range of varieties/settings of the language; and an understanding of the contrastive features of English and the language
  - a sound understanding of the pedagogy for teaching languages in the primary and/or secondary schools, including the ability to implement various program models for teaching languages
  - an understanding of contemporary research findings in language acquisition, including oracy and literacy development in the first and second languages
  - educational theory and practice in Australian schools as it relates to the teaching of languages. (Victorian Institute of Teaching, 2015, p. 5).

The next section serves to place this Australian language teaching context in the historical context of second language education research.
2.4. Second Language Education Research

This section outlines the key theories and theorists of second language education research and the key second language teaching approaches, both of which are relevant to consider how ITG can be integrated effectively into an L2 teaching program in a typical school Japanese program. In SLA research, as with all disciplines, theoretical positions and paradigms have changed over time. This section intends to account very briefly for some of the most influential that have contributed to our current knowledge of second language acquisition, as well as the range of practical teaching approaches, providing an historical context for this study. Although the history of teaching second languages differs somewhat depending on specific geographic locations, there are global patterns in SLA research and theory that have informed teaching practice. Three overview studies by Richards and Rodgers (2001), Ortega (2009) and Larsen-Freeman and Anderson (2011) have been used to inform the sequence of theories and methodologies presented in this section. Although there is overlap between many theories and methodologies, the sequence presented below represents a broad shift across the theories and methods over time.

The ‘Grammar Translation Method’ was a common approach to L2 teaching between the 1840s and 1940s (Richards & Rodgers, 2001) and some features of the approach are still used in some L2 programs to this day. This method relied heavily upon the translation between L1 and L2 written texts and allocated a minor role to oral language in classrooms so that teaching was conducted only in students’ first language. Effectively Grammar Translation is a teacher-centred approach with a focus on the explicit teaching of lists of vocabulary and grammatical rules usually with little reference to the communicative context in which such items occurred.

The ‘Direct Method’ was popular in the early 1900s until its decline in the 1920s (Richards & Rodgers, 2001), however, some features of the Direct Method continue to be used in some current L2 programs. The key feature of Direct Method teaching is the conducting of classes in the target language, in stark contrast to Grammar Translation teaching and opposed to many of the earlier approaches that focused on the explicit teaching of grammar. Oral language became a strong focus in classrooms with grammar taught in the context of communicative dialogues and conversations. This method claims excellent results from L2 learners and yet the method is not widely used due to many teachers lacking the ability to conduct classes completely in the medium of the L2
or lacking the confidence in teaching the approach without reverting to L1 (Richards & Rodgers, 2001).

During the 1950s a ‘structuralist’ view of languages typically predominated in both theorisation and practice (Hummel, 2014) placing emphasis on forms and structures of language as opposed to the functions of language. This view saw ‘Contrastive Analysis’, an applied linguistic theory, informing teaching throughout the 1950s and 1960s (Lado, 1957). Teaching during this time commonly involved the comparison of the structure of two languages (L1 and L2) informed by close linguistic analysis of structural similarities and differences. The comparison of language structures in turn led to hypotheses being generated about levels of difficulty in acquiring L2. It was concluded that when two languages shared similarities, these aspects of the L2 would be acquired relatively easily whereas, structural differences between the languages would pose learning difficulties. These principles were however not supported by a number of empirical research studies and contrastive analysis based on structure has tended to lose popularity since the 1970s.

Behaviourist theories, best represented in the views and research of B. F. Skinner, were also prevalent between the 1950s and 1970s. Behaviourist views saw language learning as the development of habits acquired through imitation, repetition, and reinforcement. Stimulus response patterns were believed to support L2 learning behaviour.

Noam Chomsky challenged the idea that languages could be learned by forming habits because habits did not account for people creating and understanding utterances that they had never heard before. Instead, he proposed that a knowledge of underlying rules of language supported acquisition and suggested that speakers systematically develop their own rules about language which they then test in practice. Chomsky’s theory focused on L1 acquisition in infancy and yet also was influential in second language theories. This transformational, cognitive view of language acquisition was in stark contrast with the previous structuralist and behaviourist paradigms.

‘The Audiolingual Method’ was a common approach to the teaching of second languages in the 1950s and 1960s (Richards & Rodgers, 2001) as it created opportunities for imitation, repetition and reinforcement. The basic premise of Audiolingualism was that L2 habits would be formed through such a process to support acquisition and in keeping with this language laboratories were commonly employed as
a resource for teaching and learning equipped with audio devices for language listening drills.

In the 1960s James Asher developed ‘The Total Physical Response Method’ (Asher, 1969) which consists of learners carrying out actions in response to the teacher’s commands. Total Physical Response (TPR) focuses on learners listening to L2 and responding to verbal stimuli before being asked to produce the target language. TPR was promoted as being successful because it appeared to mirror the process of L1 acquisition.

During the 1960s, Pit Corder introduced “Error Analysis” with the belief that close scrutiny of learners’ errors would provide insight into the underlying learning process and inform observers about the language acquired by the learner and what they are in the process of acquiring. This view was supported and further developed by Larry Selinker in the 1970s who used the term “interlanguage” to describe this observable process of second language development. Selinker also believed that learners’ language output demonstrated their developing L2 system including the learner’s hypotheses about how the target language system was structured and operated. This theoretical view had lost popularity by the end of the 1970s however, as it didn’t account for other language strategies that learners were deploying such as the avoidance of difficult aspects of a language in their communication practices.

During the 1970s a broad move away from behaviourist influenced teaching methods, towards more humanistic, affective and emotional methods became established. One of the approaches encompassing this focus on experiential and emotional aspects of learning was ‘Suggestopedia’ (Lozanov, 1978), developed by Georgi Lozanov, and centred around “the power of suggestion”. He asserted that if the environment in which the learner is located is stress-free and free of anxiety, L2 learning will be enhanced. As a result Lozanov proposed relaxation in a physically and emotionally comfortable environment, together with relaxation music, to support L2 learners’ receptiveness to the language being studied.

More influential than Suggestopedia was a 1972 innovation by Dell Hymes who introduced the notion of “communicative competence”, suggesting that language learning needed to be situationally and socially appropriate. Over time Hymes’ conceptual innovation led to ‘Communicative Language Teaching’ (CLT) and this
methodological take up of Hymes became widespread as a teaching method throughout the 1980s and 1990s. CLT makes extensive use of meaning based, interactive and social activities in second language classrooms and displaces the past focus on formal grammar teaching. While it is true to say that there are many CLT teaching approaches, in general they respond to the need for learners to be able to actively use their developing L2 skills in real life situations, a feature all CLT approaches have and which distinguishes them from previous teaching approaches. The general focus of CLT is on ‘functional use’ of target language skills for ‘meaningful purposes’ in real world settings and situations. The approach of CLT is usually coupled with the introduction of authentic materials such as newspapers and books into the L2 classroom. Some kind of CLT remains a dominant teaching method in L2 classrooms in many parts of the world.

A refinement of CLT worth specifying in this discussion is ‘Task Based Language Teaching’. This approach was influenced by foundational educational theorists such as John Dewey (1933), who advocated for ‘experiential learning’ in which learners are physically engaged in the learning process in order to learn from it. Within L2 classrooms, task based language teaching focuses on input, social interaction and output. Tasks involved meaning, authentic problems and simulated real-world situations.

In the mid-1970s, Stephen Krashen collected several of these strands of methodology innovation and theory into a unique set of five connected hypotheses about second language learning (1983). The first of these was the ‘Acquisition Learning Hypothesis’ in which he distinguished between ‘Acquisition’ that he claimed leads to productive output skills in the target language, and ‘Learning’ a more formal process that serves as a monitor for language use. The ‘Monitor Hypothesis’ explained the editing function which allows learners to self-correct their language after production. The ‘Natural Order Hypothesis’ identifies a natural and sequential order in which language is acquired based on the premise that knowing this order would inform the teaching sequence. Krashen identified the ‘Comprehensible Input Hypothesis’ as critical in the process of second language acquisition. He defines comprehensible input as the simplification of language by teachers or materials with the support of contextual and extralinguistic clues. Comprehensible input should be provided to learners as a step ahead of the learner’s current level, at an “i + 1” level. The final hypothesis is the ‘Affective Filter Hypothesis’ which suggests an innate component for language acquisition exists and which acts as a “filter” under certain conditions, such as stress or anxiety, blocking the
intake or new language material. The implication of the existence of the Affective Filter is the need to create a stress-free second language classroom environment. Although each hypothesis has been both supported and challenged, Krashen’s hypotheses have been highly influential in second language classroom practice and continue to be cited today.

Since Krashen’s work, there was a continued focus on language as ‘input’ for acquisition. The role of input expanded from only involving speech directed at learners as input (Gass, 1997) to considering the roles of interaction partners (Pica, Young, & Doughty, 1987) and group work (Long & Porter, 1985), teacher-talk, content-based and task-based learning (Seedhouse, 1999).

A related development is called ‘Connectionism’ which addressed the role of input during the process of language acquisition and identified the way language is processed in the brain. Empirical studies of the brain found that the frequency of input supported learners in making connections between elements of language and discovering the rules of language. The more second language learners are exposed to the target language and the reoccurring patterns of language, the stronger the “connections” will be. The role of internal processing is highlighted within ‘connectionism’.

Each of these approaches to the role of L2 input still retained a focus on speech and speaking whilst relegating the role of non-verbal input to SLA. However, with the advent of Conversation Analysis (Psathas, 1995), which can be seen as the study of language during social interaction, there arose an opening for gesture to be taken notice of with speech during interaction. Working in this framework was Lazaraton who argued that speech could not be considered as a separate unit apart from the other aspects important in conversation, such as gesture (Lazaraton, 2004) and this insight has led to more studies including a focus on gesture with speech.

In the mid-1980s, a significant precursor was the work of Merrill Swain who introduced the ‘Comprehensible Output Hypothesis’ after noticing that second language learners needed more opportunities to produce the target language (Swain, 1985). Until Swain’s work the focus in SLA was largely on input with minimal consideration of learners’ output. Whereas Krashen’s focus had been on comprehensible input, and therefore on the input required for learners to comprehend L2 directed at them, Swain shifted attention towards learners’ output and the effects of learners listening to themselves.
producing the target language which she believed was critical to enhance L2 fluency. Early studies by Swain (1985) found that comprehensible input alone did not support learners’ output and so she constructed the comprehensible output hypothesis on the belief that learners needed to notice a gap in their L2 knowledge, hypothesise and test this hypothesis, and then reflect on their language in order to internalise it (Swain, 2000). Closely related to the output hypothesis is Schmidt’s ‘Noticing Hypothesis’ (1995) which places emphasis on students ‘noticing’ language in order for classroom L2 input to become ‘intake’.

During the 1990s, cognitive approaches to SLA were also present in the mix of thought and methods, drawing attention to the mental processes involved in acquisition. Psychological variables that influence the language learning process, such as attention, memory and processing became a focus for research. Drawing directly from cognitive linguistics this approach addressed the central role of meaning to language and suggested that language, communication and cognition are interrelated. This field of study has been followed by many researchers interested in the role of cognitive processing in SLA although with the broader SLA field cognition focused research was considered to be a ‘complex adaptive system’ (Ellis & Larsen-Freeman, 2009), a belief that supported the role of meaning and cognitive processing in language learning and also included the role of social interaction in the acquisition process.

Perhaps the most challenging for communicative oriented methods was the cognitive view of the ‘Processability Theory’ developed by Manfred Pienemann (1998). The theory explains learners’ developing ability to process linguistic features and identifies that some linguistic structures develop in a predictable sequence and that L2 learners need to pass through certain stages of learning to be able to acquire later stages of language. This implies that learners cannot be taught what they are not developmentally ready to learn and this constraint has proved difficult for communicative oriented methods to reconcile. The theory accounts for why some language structures can be taught more successfully to L2 learners than other structures. While Processability explains the theoretical principles of why some aspects of language are more difficult to learn but does not easily predict a sequential approach for teachers in practice since the sequence is not known for all language features or for all languages. In any case even if there are cognitive processing constraints on what a learner can acquire at a particular stage this does not answer the question of what input a teacher should actually provide.
The significance of cognitive approaches to SLA was emphasised and expanded upon by Rod Ellis (1990) who identified cognitive theory as important to the processing of language in general but more particularly to how language is stored and retrieved. Ellis uses cognitive theory to explain how knowledge is represented, how the ability to use it develops and how new knowledge is integrated with existing knowledge (Cohen, 1990). He also draws a sociolinguistic distinction between classroom language learning and naturalist language learning perhaps in response to the large gap between theory and practice that characterises SLA. In a classroom second language learning environment, a balance between types of language learning contributes to learners internalising a knowledge of the second language.

Throughout the 1990s, the role of conversational interaction was also increasingly emphasised. Michael Long was instrumental in increasing the profile of this through his model of an ‘Interaction Hypothesis’ which saw the role of the conversational partner as important in adjusting speech to support comprehension and communication (Long, 1996). This view emphasises the language learner’s interaction with the language, not just the learner’s exposure to it. As a result of this thinking modifications to second language became increasingly popular including slowed speech, elaboration, comprehension checks, clarification, contextual cues and gestures.

Perhaps the most pervasively influential theory position has drawn from the early work of Vygotsky for first languages, who advocated that social interaction was critical in the learning process (Vygotsky, 1978b), and laid the groundwork for a ‘sociocultural theory’ that influenced more specifically second language acquisition theories. Inspired by this intellectual legacy social context was identified as important to L2 learning and theories of cognition were closely tied to the social context (Ortega, 2009) giving use to a ‘social constructivism’ viewpoint in which social interaction was identified as the context required for the “construction of knowledge” (Lantolf, 2000).

Another concept strongly influential in practical language teaching and also introduced by Vygotsky was ‘The Zone of Proximal Development’. This articulates the distance between a learner’s current level of language ability and the desired level that can be achieved with support from a more experienced person. In an L2 context, learners are thought to be able to progress to higher levels of L2 use when supported by more experienced users of the L2 who supply scaffolding that permits both comprehension
and a higher level of performance, and once mastered these higher forms become the new base level of competence for further scaffolded increase in ability.

The central role of scaffolding is closely connected with sociocultural theory and hails from the foundational work of Vygotsky. In an L2 context, scaffolding may involve such pedagogical activity as providing direct or explicit feedback to learners, prompting language, modelling language and filling in unknown language, or creating a meaning rich comprehension environment, similar to Krashen’s ideas of comprehensibility, that allow learners to perform above their present level of ability, at the i+1 point.

Societal transformations also assisted in the evolution of both theory and practice; the most notable has been the rise of multilingualism in society and the attention given to bilingual programs from the 1980s and 1990s. In 1996 Sue Fernandez wrote a detailed account of one of the first successful bilingual programs in Victoria, the German immersion program at Bayswater South Primary School, which set a benchmark for bilingual methodologies in Australia’s second language learning context (Fernandez, 1996). This became a flagship document and program detailing innovative bilingual program design that paved the way for the introduction of other bilingual programs across the state of Victoria (De Mejía, 2002), for which there are now fifteen highly regarded programs (Victorian State Government Education and Training, 2017). These programs are well known for their successful teaching and learning of an additional language through target language delivery within a range of curriculum areas and covering a wide range of languages.

This profusion of methods and theory positions can be productively understood within Dianne Larsen-Freeman’s ‘Complexity Theory’ to language which proposes that the process of SLA is individual and non-linear (Larsen-Freeman, 2015). Larsen-Freeman believes that language is best conceived as a resource for meaning making and is therefore adapted within specific communicative contexts that are unlike each other. The Complexity paradigm sees language as a dynamic rather than static phenomenon, with a learner’s individual language differing depending on a wide variety of factors such as the context and various environmental and situational factors. Larsen-Freeman also stresses that adding new L2 knowledge isn’t just a neat process of adding to what a learner already knows, but that new knowledge may disrupt and challenge existing stocks of knowledge and ability.
These insights from the broad field of Complexity Theory are consonant with ‘Usage Based’ linguistics which identifies that authentic communicative contexts are needed for second language development. Michael Tomasello has been a key innovator in developing this approach with emphasis on “meaning in use” which focuses on the role of functional language to achieve social purposes. A critical presupposition of Usage Based linguistics is that “structure emerges from use” directing attention to meaning based grammar during language use (Tomasello, 2015). Among the critically important notions from Tomasello’s work for SLA have been two aspects in L1 development; “intention reading”, whereby infants search for the intention or meaning in communication in a social, cultural context and “pattern finding”, when children construct and produce utterances based on their experiences with the language. Tomasello identifies gestures as fundamental to early communication for infants which later is combined with oral language. Gestures are highlighted as playing a critical role in L1 development and being central to the usage based approach.

Lourdes Ortega, applies these notions from ‘Usage Based’ linguistics to SLA fusing the cognitive and the social lenses. Ortega places an emphasis on the creation of shared meaning during communication with two main ideas behind the approach: 1. language is meaning making and 2. communication is about the establishment of similar concepts in each interlocutor’s mind (Ortega, Tyler, Park, & Uno, 2016). This is one of the most recent theoretical developments in the field and offers a new perspective on language learning even as it reconciles existing theory positions in general linguistics. Well supported by research using a wide range of methodologies, with a wide range of languages and in a wide range of contexts, the usage based approach to SLA is gaining a great deal of attention in contemporary language education practice.

The profusion of approaches discussed above has provoked discontent over the limitations and unintegrated nature of separate teaching approaches, giving rise to a reaction called the ‘Postmethod Perspective’ (Kumaravadivelu, 2012). In this view Kumaravadivelu identifies the importance of L2 teachers taking their own teaching context into account and crafting a specific response rather than applying methods from literature or reported as successful or interesting in other settings. In practice, this sees teachers incorporating aspects from many different L2 approaches into their teaching or innovating locally guided by learning theory and linguistic principles.
Broadly in this spirit and moving from a contextual focus of SLA to the internal processes of SLA, Ofelia Garcia introduced the concept of ‘Translanguaging’ in 2009 to describe the language practices of bilinguals (García, 2009). Translanguaging has extended our knowledge of the internal processing of languages by bilinguals in which Garcia asserts that bilinguals draw from all their knowledge in all their languages using their full set of communicative resources (Garcia & Wei, 2013). In practice, translanguaging promotes that students should not be limited to the linguistic resources valued or emphasised in school. “Translanguaging is more than going across languages; it is going beyond named languages and taking the internal view of the speaker’s language use” (García, 2016, p. 1). This concept which acknowledges that bilingual and multilingual learners’ languages are social and cognitive resources that can be drawn upon in different ways in different contexts has much to offer classroom practice. Swain contributes to this with her related term “languaging” as a process by which speakers can use various languages for various purposes such as by using languages to mediate thinking (2013). The process of languaging places value on L1 ability as a point of reference in the learning process of L2 (Swain, 2010; Swain & Lapkin, 2013; Swain & Watanabe, 2013).

These diverse contributions to second language education, linguistics, sociolinguistics and pedagogy have supported current understandings of second language acquisition. An account of SLA theories and methodologies is relevant to the present thesis because they are part of debate about second language acquisition in Australian teacher education and teachers’ attitudes towards ITG are influenced by their knowledge of SLA theories and methods and how these are debated and represented in education circles. Teachers’ background knowledge becomes a filter through which they look at new methods and make decisions about whether or not to consider new methods or approaches.

The next section discusses the curriculum for languages and current language teaching methodologies used in Australian language programs, reflecting the relationship between second language education research and local current practice.

2.5. The curriculum for languages

The AusVELS curriculum (Victorian Curriculum and Assessment Authority, 2015), was the curriculum for Foundation (Prep) to Year 10 for Victorian government and
Catholic schools between 2013 and 2016, throughout the time of the study. AusVELS represented the integration between the developing Australian Curriculum and the Victorian Essential Learning Standards (VELS).

There were two ‘pathways’ for Languages. Pathway 1 was a Foundation to Year 10 sequence, designed for those commencing the study of a language from the beginning of primary school and continuing the same language into secondary school. Pathway 2 was a Year 7 to Year 10 sequence, designed for those commencing the study of a language from the beginning of secondary school. AusVELS was not language-specific. It organised languages into six categories: Roman alphabetical languages, Non-Roman alphabetical languages, Character languages, Sign language, Classical languages, and Aboriginal Languages. ‘Standards’ included an initial section common to all languages, followed by a common description specific to the language category.

There were two ‘dimensions’ within the Languages curriculum; ‘Communicating in a language other than English’ and ‘Intercultural knowledge and language awareness’. The skills of the ‘Communicating in a language other than English’ dimension included “… listening, speaking, reading, viewing, writing, and the use of body language, visual cues and signs” (Victorian Curriculum and Assessment Authority, 2015). The skills of the ‘Intercultural knowledge and language awareness’ dimension included “… knowledge of the connections between language and culture, and how culture is embedded throughout the communication system” (Victorian Curriculum and Assessment Authority, 2015).

‘Progression measures’ were described within levels A, B and C to be achieved by the end of Level 6 (Year 6) as the first stage for Pathway 1 learners. There were not any specifications for achievement prior to Level 6. The progression measures outlined a “sequence of development leading to Level 6” (Victorian Curriculum and Assessment Authority, 2015). Progressions measures were not assigned to year levels of schooling in recognition that the variables of teaching a language in different schools varied greatly, including such things as the frequency and duration of language learning, the year levels it was offered to and the language of lesson delivery. An example of the requirements for Pathway 1 learners in progression measure A, which identifies the standards common to all languages and then standards specific to language categories, was:
Communicating in a language other than English

On completion of an initial period of learning, students of all Languages (formerly LOTE) should be able to:

- repeat teacher-modelled use of the language
- participate in choral use of the language
- identify the names of visible objects and items from aural/visual cues
- introduce themselves, greet and farewell the teacher
- follow simple classroom directions
- recognise some culturally-specific gestures and body language, and demonstrate how these are used
- observe the process of interpreting and perform some of its simple features using single words or phrases.

Students of Roman alphabetical languages should be able to:

- recognise the different sounds of similar letters, and demonstrate differences for key sounds
- identify letter-sound relationships and copy and trace letters and letter clusters and match them to sounds and words.

Students of Non-Roman alphabetical languages should be able to:

- notice and discuss the different writing system, and practise writing individual letters and other symbols
- distinguish selected letter sounds from English, match sounds and letters, identify words for concrete items from cues, etc.
- copy or trace selected letters and match them to sounds and words.

Students of Character languages should be able to:

- notice and discuss the different writing system, and practise writing selected letters, characters or other symbols
- recognise characters associated with specific concrete items and their different sounds, matching symbols to meanings and forms
- trace or copy selected characters.

Students of Sign language should be able to:

- notice and discuss the visual nature of communication
- demonstrate single signs and simple signed sequences
- recognise signs and simple signed sequences emphasising non-manual features
• produce simple manual signs and non-manual signs to participate in games and activities.

**Intercultural knowledge and language awareness**

On completion of this period of learning, students of all Languages should be able to:

• demonstrate an understanding of some of the differences in how people eat and dress, sign and gesture, write and say things

• identify some of the relationships between selected letters, sounds or tones in the language compared to English or other familiar languages

• identify a cultural icon, geographic feature, famous building or cultural practice and make a simple statement about it in the language

• display an awareness of different ways of doing things in particular situations

• express their own preferences in the language, or by responding to cues given in the language (Victorian Curriculum and Assessment Authority, 2015).

The ‘shape’ of the developing Australian Curriculum was released in 2011 (ACARA, 2011). AusVELS incorporated the Australian Curriculum as it was progressively developed and in this way the nationally constructed Australian Curriculum influenced teaching in schools during the process of being trialled and progressively implemented alongside AusVELS. The Australia Curriculum was finally released in 2014, with specific language syllabus gradually being made available. This was the first national curriculum in Australia and the first that included language-specific curricula, so was particularly significant for teachers of Languages. The languages currently included are Arabic, Auslan, Chinese, The Framework for Aboriginal Languages and Torres Strait Islander Languages, The Framework for Classical Languages, French, German, Hindi, Indonesian, Italian, Japanese, Korean, Modern Greek, Spanish, Turkish and Vietnamese. This wide array represented a significant recognition of the unique features of different languages and what their sociolinguistic and linguistic features mean for their teaching and learning in schools.

The Australian Curriculum continues to offer two ‘sequences of learning’ (previously called ‘pathways’ in AusVELS), one for Foundation to Year 10 and the other for Year 7 to Year 10. Content within these sequences is separated into ‘bands’, or clusters of year levels; Foundation to Year 2, Year 3 and 4, Year 5 and 6, Year 7 and 8, and Year 9 and 10. The specifications for the primary school levels in the Australian Curriculum are now much more detailed than AusVELS which provided only ‘a sequence of development’ to Level 6 (Year 6).
Two strands organise the content of the curriculum; “Communicating: using language for communicative purposes in interpreting, creating and exchanging meaning” and “Understanding: analysing language and culture as a resource for interpreting and creating meaning” (ACARA, 2016b). Each language-specific curricula provides a ‘level description’, ‘content description’ and describes ‘achievement standards’ at each level of schooling. Comprehensive information for the Japanese-specific curricula is provided (ACARA, 2016a). An example from the Foundation to Year 2 ‘level description’ for Japanese is:

The initial focus is on listening to the sounds and patterns of Japanese through language-rich activities such as rhymes, songs, clapping and action games. Repetition and recycling help children to identify frequently used words, simple phrases and non-verbal communication strategies employed in greetings and other social interactions. Learners experiment with simple responses to prompts and cues.

An example from the ‘content description’ for Japanese at the Foundation to Year 2 level from the “communicating” strand is: “Exchange greetings and introduce and share information about self with the teacher and peers using simple language and gestures”. ‘Elaborations’ are provided that suggest classroom activities and elements of language to be taught, such as: “learning how to greet others at different times of the day using appropriate gestures and forms of address, for example, せんせい、おはようございます、さようなら、おはよう、じゃあね” and “using culturally appropriate titles, forms of address and levels of politeness in everyday interactions with the teacher and peers, for example, Smith せんせい、ありがとうございます。Tomくん、ありがとうございます。Alisaさん、おめでとう”。

An ‘achievement standard’ sets expectations to be achieved by the end of the year level specified. An excerpt from the Foundation to Year 2 standard exemplifies this: “By the end of Year 2, students interact with the teacher and peers through play- and action-related language. They use formulaic expressions and appropriate gestures in everyday interactions such as exchanging greetings and farewells ... ”

Complicating what is already a highly variegated scene, each state developed a unique state curriculum based on the Australian Curriculum but with the inclusion of state specifications. In Victoria, this is known as the Victorian Curriculum and this commenced in January 2017. While there are level description statements for Japanese which differ between the curriculums, they remain very similar. The content descriptions for Japanese in the Victorian Curriculum have remained the same as the
Australian Curriculum, however, only the Australian Curriculum provides the ‘elaborations’ for each content description. The achievement standards are the same in both the Victorian and Australian Curriculums.

The Australian and Victorian Curriculum set outcomes that should be achieved at each level for Languages, but do not stipulate a methodology for which these outcomes should be met. The ‘elaborations’ for specific languages in the Australian Curriculum are detailed and suggest not only language content, but also classroom tasks and activities which may influence methodology. The recommendations from state Departments of Education and the guidelines for ‘quality’ languages programs, may also impact on teaching methodology.

The next section identifies the types of language programs and current teaching methodologies in Victorian primary schools.

2.6. Language programs and language teaching methodologies

There are a wide range of types of language programs across schools. In Victoria, language programs are predominantly delivered in three formats as “separate subject programs, as Content and Language Integrated Learning (CLIL) programs and as bilingual programs” (Victorian State Government Education and Training, 2017). Most Languages programs delivered in Victorian government schools are taught as a separate subject. These programs focus on the delivery of the target language and on fostering understanding of the connections between language and culture (Victorian State Government Education and Training, 2017). Separate subject language programs were traditionally the most common way to teach a language and this type of program currently remains the most common.

Content and Language Integrated Learning (CLIL) programs “combine teaching content from a curriculum area with the explicit teaching of the target language” (Victorian State Government Education and Training, 2017). “In a CLIL program, learners gain knowledge of the curricular subject (for example, Science) while simultaneously learning and using the target language (for example, Italian). CLIL has the advantage of addressing the ‘crowded curriculum’ issue as it enables one or more curriculum areas to be taught in and through an additional language, and thereby extends the time on task for language learning” (Victorian State Government Education and Training, 2017).
The Victorian Department of Education and Training provides funding to support 15 bilingual programs across 13 government primary schools. These bilingual programs provide “face-to-face teaching in and through, the target language for a minimum of 7.5 hours up to 12.5 hours per week to 100% of their students” and provide “content-based teaching in the target language across two or more of the Learning Areas within the Victorian Curriculum” (Victorian State Government Education and Training, 2017).

The Victorian State Government Department of Education and Training recommends that a languages program is:

- a language acquisition program – while the long-term aim of the program is to develop proficiency in the target language, learners have regular opportunities to practise in a supportive environment where fluency rather than accuracy is the initial aim
- literacy-based – learners acquire an understanding of the grammar, word and sentence construction, phonology, as well as an extensive vocabulary in the target language
- personalised and scaffolded - the learner's first language literacy is acknowledged and taken into account so that pedagogy, curriculum and learning environments meet the needs of individual learners
- blended – combines face-to-face classroom methods with mobile and online learning
- cognitively demanding – learners have the opportunity to apply higher-order reasoning and thinking skills and engage with age-appropriate content
- authentic and contextualised – language is used in meaningful contexts for authentic purposes
- engaging – learners play an active role in their own learning (Victorian State Government Education and Training, 2017).

The Department recommends that schools plan a languages program that is:

- primarily aimed at developing proficiency in the target language
- taught by a qualified teacher of the language
- delivered for a minimum of 150 minutes per week, spread as evenly as possible across the week
- strongly supported by the school community, including by the school administration, staff, parents and students and appropriate partnerships
- resourced to an appropriate level, comparable with other learning areas in the school
• flexible in its approach to delivery and resourcing, including changing from year to year as required

• part of a planned pathway for languages learning

• Continuity and frequency of language learning will contribute significantly to a student gaining proficiency in the language (Victorian State Government Education and Training, 2017).

Despite these many Department recommendations, these are not mandated, so in practice few schools adhere to all of the recommendations. Most significantly, 2015 data revealed that Languages programs consisted on average of 59.4 minutes per week, falling short of the recommendation for 150 minutes per week (Victorian State Government Department of Education and Training, 2016).

Language programs do not exclusively adhere to one approach or methodology, so many approaches may be visible within any one program. A range of approaches is favoured by the Department, with guidelines set for ‘quality languages teaching’:

Quality languages teaching encompasses a range of approaches to:

- develop and extend student capacity to communicate in the target language, across all four dimensions of reading, writing, speaking and listening
- develop and extend intercultural understanding
- develop understanding of and respect for diversity and an openness to different perspectives
- nurture reflective, creative and critical thinking
- enhance intellectual and analytical capabilities (Victorian State Government Education and Training, 2017).

Whilst the curriculum specifies the content and understandings to be taught and sets standards for achievement, a process of devolution also applies so that it is up to the professional judgement of individual teachers to select the specific approaches they apply in teaching. The curriculum guidelines, Department recommendations, and suggestions from single language teacher associations, such as the Japanese Language Teachers’ Association of Victoria (JLTAV), along with language teacher professional learning, will each play a role in influencing teachers’ decisions on methodology.

Teaching methodologies are also influenced by a wide range of factors including the type of language program that is being offered in the school and the numerous factors that differentiate programs, such as the school year level of commencement of a language program, frequency and duration of lessons, priorities of the school, the
availability and access to a language teacher and the philosophy of the language teacher, as well as access to funding and resources.

2.6.1. ACTLAN

ACTLAN, a gesture-based approach for the teaching of Japanese, has been the focus of professional learning for teachers of Japanese in Victoria since 2010. ACTLAN has featured within Japanese language-specific association conferences (JLTAV) and across-languages conferences (MLTAV) and features as an approach within the Victorian Department of Education and Training website for teachers (Victorian State Government Education and Training, 2017). The noticeable presence of ACTLAN in schools, together with its presence in various forms of Department communication and professional learning, has attracted increased attention. It is within this pedagogical context, that the focus on Intentional Teaching Gestures (ITG) is set.

2.7. Focus on Intentional Teaching Gestures, ITG

As a teacher of Japanese for many years, I have always believed that it is important to teach in the target language in order to create an environment where students will be immersed in the language and have a need to use it. I did this in the belief that such a classroom approach would be most likely to encourage target language use by students. I used many strategies to ensure that Japanese was comprehensible to my students who were learning it as an additional language. Such strategies included the use of non-verbal communication to support the verbal mode, so that students’ second language comprehension could be supported, most importantly by a means other than resorting to English. Among the strategies were the use of props, visuals, body language and gestures, voice volume and intonation. These strategies need to be explored more in their role to support target language use in second language classrooms. One strategy to support the maintenance of Japanese as the language of communication in the second language classroom was to use gestures. Such gestures would include thumbs up, pointing, hands apart or close together to show the concepts of large and small, hands signaling past tense (hand positioning behind my shoulder) and future tense (hand outstretched in front). I did not use a ‘system’ of gestures, but rather created my own gestures ‘intuitively’ as I needed them in my classes. Many of these gestures were used regularly and consistently. I routinely did this as part of my teaching over many years.
My interest in the use of gestures in additional language classrooms was triggered by my language teaching background.

In more recent years, the rise of second language teaching methodologies that incorporate systems of gestures, The Narrative Format Approach (developed by Trove Taeschner in 1991), The Accelerative Integrated Methodology, known as AIM, (developed by Wendy Maxwell in 1993) and Action Language, known as ACTLAN (developed by Chizuko Gomura in 2008), have risen in use and popularity. These systems of gestures, or intentional teaching gestures (ITG), refer to a pre-determined set of gestures that have been created by a method developer to be used consistently. Despite many teacher testimonials and claims of increased students’ language proficiency, there has been limited empirical research carried out with a focus on investigating the impact of the addition of gesture when teaching and learning a second language and none with a focus on ITG for Japanese. My interest in exploring a consistent approach to the use of gestures in a second language classroom context and investigating the addition of gesture with the second language has paved the way for this study.

I use the term ‘Intentional Teaching Gestures’ to distinguish ITG as “… those gestures which have been specifically designed to support each word as a tool to facilitate language teaching and learning and are intended to be used consistently” (Wilks-Smith, 2013). Intentional Teaching Gestures (ITG) is viewed as an additional approach or classroom tool that can be added to a language teacher’s repertoire.

Three approaches currently exist which utilise ITG for second language teaching; The Narrative Format Approach, The Accelerative Integrated Methodology (AIM) and Action Language (ACTLAN). In each of these, gestures have been specifically designed by a method developer to correspond with each word that is spoken in the second language. The design of these gestures and consistent use of these gestures is unique to these programs and positions ITG as a new area of focus for the study of gesture.

The most long-standing approach is the Narrative Format Approach, also known as the Magic Teacher, developed by Traute Taeschner in 1991 (Taeschner, 1992). It was developed in Italy for the teaching of English as an additional language. It is based on the concept of a ‘format’ which is a shared experience between children and teachers or caregivers. The shared experience in this approach is stories. Through these shared
experiences, the stories are acted out and gestures are used extensively, along with an emphasis on intonation and facial expressions. “Gestures are essential in the narrative format because they are cues that help children work out the meaning of what is being done” (Taeschner, Colibaba, & Gheorghiu, 2013, p. 227). The stories are based on two dinocrocs, Hocus and Lotus. The stories were developed to resemble children’s real-life experiences and create contexts where children can predict meaning. Professional musicians composed mini musicals to create the atmosphere of each story. Stories are also repeated using books, songs and cartoons. Another attribute of the approach is the use of a ‘magic t-shirt’ that children and the teacher wear throughout the narrative format. The children are told that the t-shirt will help them learn a new language. This approach was developed for young learners of kindergarten age. Kindergarten teachers, teachers of English as a second language (in an Italian context) and parents are the ‘trainers’ of the approach. The language abilities and experiences of the trainers differ greatly. The approach has since been developed for German, French, Spanish and Italian in addition to English. This method is used throughout many programs within Europe but not within Australia.

The Accelerative Integrated Methodology (AIM) was developed in 1993 by Wendy Maxwell for English speaking students learning French as an additional language in Canada (Maxwell, 2010). The AIM approach strives for critical fluency and supports this with a restricted vocabulary of 700 “pared down” words with an emphasis on verbs. In addition to the gestures, the use of story telling, dance and drama support the approach. Kinesthetic learning theory underpins the approach and gestures were developed to accompany each word. Maxwell claims that the use of gestures with language are the key to accelerating fluency. A large number of primary and secondary school second language teachers and learners use AIM all over the world. It has been developed for French, English (as a second language), Spanish, Chinese (Mandarin), and most recently Japanese.

The third approach using ITG, ACTLAN, will be discussed in greater detail in the next section since it was the focus for the current study. At the time this study was carried out, ACTLAN was the only gesture-based approach for Japanese. As the focus of this study is Japanese, ACTLAN was used to investigate ITG.
2.8. ACTLAN and types of ACTLAN gestures

Action Language, more commonly known as ACTLAN, was developed by Chizuko Gomura in 2008 for the teaching of Japanese as a second language in an Australian school context (Gomura, 2008). Gomura is a native speaker of Japanese living in Queensland, Australia and has been a teacher of Japanese in Australian schools. ACTLAN gestures are used with Japanese traditional stories and the telling of these stories form the base of this approach. Students hear the story while watching the teacher gesture and be encouraged to join in the gestures to tell the stories together. Eventually, students become competent in knowing the story through the use of these gestures. Stories can then be manipulated and personalised by changing the characters in the stories, the places, and the items to create new stories using the known story as a base. In such a way, students use these stories as a scaffold to support the creation of their own stories. The gestures are language and culturally specific to Japanese and an emphasis of this approach is on the use of verbs as being important for oral language development.

The focus of ACTLAN is on the system of ITG as a pedagogical tool for Japanese second language classrooms. ACTLAN gestures were created by Chizuko Gomura, the developer of the method. Each word has a related gesture and they are intended to be performed together.

Within the field of gesture research, a number of classification systems of gestures have been proposed. McNeill’s seminal work on the close relationship between spoken language and gestures, and on the classification of gestures (1992) are the most influential in gesture research and first language development. He first makes a distinction between imagistic and non-imagistic gestures. Imagistic gestures are those which may portray a word in images, whereas non-imagistic gestures are those that provide rhythm or beats to accompany language. These classifications are further broken down into various types of gestures. Iconic gestures represent an action or the physical properties of an object. Iconic gestures are the most common type of gestures used in ACTLAN. Deictic gestures are pointing gestures which are used to point to an object or participant or are used to indicate the abstract notion of time (such as pointing to refer to past and future). Deictic gestures are also commonly used in ACTLAN. Pictographic gestures represent pictures. One example of pictographic gestures used in ACTLAN are the days of the week which are identified according to their pictorial kanji
character. Beats show the rhythm of the language (and have different functions when used with naturally occurring speech). It is important to note here that McNeill’s work on gesture has involved naturally occurring gestures with speech in a first language so does not account for the distinctiveness of ITG. ITG is unique in the types of gestures, the purpose of the gestures and the context within which they are used. There is some overlap between various classifications of gestures and Gomura’s classification of ACTLAN gestures, however, rather than contrasting these, only the ITG gestures for ACTLAN will be focused on in the current study.

ACTLAN gestures have been classified by the developer of the methodology (C. Gomura, personal communication, July 27, 2013) into five types:

1. ‘O’ - Objects
2. ‘P’ - Participants
3. ‘G’ - Particles (“glue”)
4. ‘C’ - Circumstances,
5. ‘V’ - Processing (verbs); within ‘verbs’, an additional gesture shows the verb tense which I am adding as 6. ‘T’ - Tense.

To provide clarity, each of these categories of ACTLAN gestures are explained and photographic illustrations are provided as examples. The photographic illustrations have been reproduced from the ACTLAN Handbook (ACTLAN, 2010) with kind permission granted from the developer of ACTLAN, Chizuko Gomura (personal communication, February 2, 2018). A collection of ACTLAN gestures also appear in Appendix 1.

ACTLAN Category O gestures represent ‘objects’. (This category of gestures align with McNeill’s classification of iconic gestures and deictic gestures).

Some objects, such as ‘rice ball’ and ‘banana’ are gestured with iconic gestures, showing the physical properties of the object. Others are deictic, where an object may be pointed to (such as in a book or picture) rather than having a specific gesture assigned to each possible object. Some examples include:
ACTLAN Category P gestures represent ‘participants’. (This category of gestures align with McNeill’s classification of iconic gestures and some deictic gestures). Some category ‘P’ gestures are iconic, such as ‘caterpillar’ which is gestured by a finger moving like a caterpillar and a ‘mouse’ being represented by showing two fists on a head like mouse ears. Other ‘P’ gestures are deictic, where a participant may be pointed to (such as in a book or picture) rather than having a specific gesture assigned to each possible participant. One example is:

ACTLAN Category G gestures represent ‘glue’, or Japanese particles. (This category of gestures align with McNeill’s classification of pictographic gestures). Japanese particles are depicted with pictographic gestures, to identify the elements of speech in Japanese. There are ACTLAN gestures for all Japanese particles. An example
of two frequently used particles are ‘wa’ (identifying a topic) and ‘o’ (identifying the object that is the focus of an action).

Figure 4  ‘Wa’ ACTLAN gesture (particle identifying a topic)

ACTLAN Category C gestures represent ‘circumstances’, including days and adjectives. (This category of gestures align with McNeill’s classification of iconic gestures and pictographic gestures).

‘Circumstances’, such as the days of the week, are identified according to their pictorial kanji character. For example, Monday is ‘moon’ day and so the gesture is an iconic shape of the moon followed by the gesture for ‘day’, which is an iconic gesture of a sun. These gestures could also be referred to as pictographic since they represent the kanji character of the word. Similarly, Tuesday is ‘fire’ day and so the gesture represents fire. Wednesday is ‘water’ day so the iconic gesture shows a hand moving like the water. Category ‘C’ gestures also include adjectives. Adjectives in Japanese are depicted with iconic gestures that are also culturally appropriate in Japan, such as ‘oishii’ (delicious), represented by twisting each index finger in each cheek, and ‘kanashii’ (sad), represented by tracing a line with the right index finger down the cheek from the eye. These gestures differ from how an English speaker may show delicious (rubbing one's stomach) or sad (two fists under eyes), but are common to Japanese.
ACTLAN Category V gestures represent ‘verbs’. (This category of gestures align with McNeill’s classification of iconic gestures).
The gesture for each verb portrays the action of the verb. For example, the verb ‘tabemasu’ (to eat), is portrayed by the gesture of eating (with chopsticks as is culturally appropriate in Japan). This is another example that identifies the cultural relevance of ACTLAN gestures for Japanese.

Figure 10 ‘Tabemasu’ ACTLAN gesture (eat)

Figure 11 ‘Kikimasu’ ACTLAN gesture (listen)

ACTLAN Category T gestures represent ‘tenses’ of verbs. (This category of gestures align with McNeill’s classification of deictic gestures).

Verb tenses are gestured by demonstrating the position of time at the end of the verb gesture. For example, past tense is represented by a hand over the shoulder showing that the action has passed, whereas future tense is indicated by an outstretched arm in front.

Figure 12 ‘mashtita’ ACTLAN gesture (past tense)
ACTLAN’s categories of gestures differ from previous classifications of gestures. ITG as an intentional teaching gesture system for L2 contexts needs to be identified as a different system of gestures serving different purposes. Similarly, the variety of ITG methodologies and for different languages need to have their categories of ITG considered independently.

When considering the impact of ITG, one may question whether some kinds of gestures have a greater impact than others. The types of gestures students use, when they are used, those that are retained and those that drop off, will be a focus within the present study using the categories identified by the developer of the methodology.

More broadly, the question of whether learning with ITG has an impact on students’ oral language when telling stories in Japanese is asked. A comparison of learning with ITG and without ITG will be determined by comparing and contrasting the quantitative and qualitative data derived from students’ Storytelling and Story Re-tells after learning Japanese with and without ITG.

2.9. Research Questions

On the basis of the foregoing discussion about language policy and what it has aimed to achieve, the research showing scant proficiency gains, SLA theory, and teaching methods, consideration of SLA and program design and of the potential and promise of ITGs, the following research questions were selected as the focus of the present study.

1. What impact does the use of Intentional Teaching Gestures (ITG) in Japanese as additional language classes have on students’ oral language output?

2. What are the features of students’ oral language when ITG has been incorporated into learning Japanese?
3. What patterns of gesture use emerge when students tell stories in Japanese?

The next chapter provides an overview and discussion of academic literature selected to respond to and elaborate these research questions.
Chapter 3. THE ROLE OF GESTURE: LITERATURE REVIEW

3.1. Introduction

The literature reviewed in this chapter provides a theoretical underpinning and an historical background to our understandings of the role of gesture in language learning contexts. This knowledge is instrumental in shaping the line of future enquiry and also supplies the essential conceptual categories to build the argument for addressing the research questions which frame this investigation. The parameters of the current study have been defined, informed by selections made from academic and scholarly literature on the unique role of intentional teaching gestures (ITG) in second language learning contexts and its impact on students’ oral language output is then posed for investigation.

The review also identifies methods that have been undertaken to address similar research questions to those posed in the current study, and surveys various considerations about preferred methodologies for the field, setting the scene for the design of the current investigation; elaborated in the following chapter.

The reviewing of literature to sustain this research has been an ongoing process throughout the investigation. At the initial stages of the thesis, the literature surveyed served to inform understandings of critical concepts which then shaped the research questions and the study design. As the research proceeded there was a continuous review of scholarly literature to keep knowledge current. Finally, during the analysis of emerging findings, writing of the discussion and conclusion, further examination of academic literature supported the connections to be made between existing stocks of knowledge, emerging findings from my research and new knowledge.

The review commences with an introduction to the field of gesture by identifying the evolutionary connection between language and gesture, the physiological connection and the developmental role of gesture in language acquisition. Then research about gesture and receptive language are discussed followed by the themes of encoding and processing language and embodied cognition. These themes then lead on to the discussion of the role of gesture and productive language. The present study is then positioned to address the existing gap in current knowledge about the impact of ITG on students’ oral language output.
3.2. Evolutionary connection between language and gesture

It has long been speculated that gesture is connected with universal human communication, the first known being the Neopolitan philosopher Giambattista Vico in 1725 (Kendon, 2004). Vico believed that original humans were mute and communicated with gestures before the onset of oral language. Rock inscriptions depicting gestures discovered and reported in 1688 supported Vico’s theory. Kendon (2004) also shows how gestures were believed by some to be a ‘universal’ form of language which all humans naturally possess and understand.

Many more recent theorists also believe that spoken language evolved from gestured systems in our evolutionary past. Michael Arbib extensively analysed the evolutionary neurological development of gesture and language over time from monkeys to humans (Arbib, 2005) and developed a framework for neurolinguistic development. The “mirror system” (Rizzolatti & Arbib, 1998) is a well-known part of that framework which underlies the evolutionary process explaining the gestural abilities of monkeys and humans. The mirror system explains the process of action recognition and action production which supports early theories of gestural communication. Rizzolatti and Arbib suggest that the recognition of actions made by others was an integral initial form of communication and that speech developed from this foundational mode of communication (1998). The mirror system was itself a development from Liberman’s motor theory of speech perception (Liberman & Mattingly, 1985) which had identified mirror neurons as the important link between sending and receiving communication. Mirror neurons link action recognition with action production. Such findings support the claim that gestured communication systems preceded vocal communication and that this progression from gesturing to vocalising was related and connected. While Arbib (2005) has achieved support for his mirror system theory there is also some aspects of theory for what it neglects, his work did however, set up a position from which further research and theory continues.

In further support of the evolutionary connection between gestures and speech, Gentilucci and Corballis (2006) posit that there was a gradual and transitional process from manual gestures to vocal language, from a manual gestural communication system to the co-speech gestures that we know of today. Part of this transitional process occurred when arm and hand movements were integrated with mouth movements, an important evolutionary milestone towards the development of vocal language (Corballis,
When humans’ vocal tract systems evolved to the point where speech could be facilitated without being accompanied by a gestural communication system, vocal language as we know it emerged. Even with well-developed speech such as contemporary language use, gestures still usually accompany speech.

David McNeill is one of the pioneers in the field of gesture and language. Unlike the theories of language evolution based on the transition from gesture to speech, McNeill proposes that gesture and speech are part of a unified system (McNeill, 2012). His integration of the two modalities has been very influential for a wide range of subsequent studies of gesture. Essentially, McNeill asserts that gestures are not additions to speech but are integral components of an overall language system (McNeill, 2000). In earlier work McNeill described gestures as providing mental images to convey ideas (McNeill, 1992) and argued that gestures and speech co-exist and further that gesture had and continues to have an impact on thought (McNeill, 1992). In this expanded way we can see that gesture, which had once been understood as an accessory to speech, is now being understood as an integral component of thought and speech combined (McNeill, 2005). This current and broadly prevailing view of gesture and oral language as a unified and interrelated system, sets the foundation for current research.

This section has briefly discussed a variety of accounts of the evolutionary connection between gesture and language. There is also a great deal of physiological evidence to support this underlying notion that spoken language and physical gestures are intertwined, which will now be discussed.

3.3. Physiological connection between language and gestures

An increasingly wide range of physiological and neurological studies have provided evidence of the interaction between speech and gestures. Since the emergence of Magnetic Resonance Imaging (MRI) in the 1970s, its use has rapidly increased and has made a significant contribution to research knowledge in this field. As well as research in the field of medicine, MRI has added a great deal of information to what we know about language processing, including the relationship between language and gestures. One key finding shows participants who underwent MRI while listening to speech with gestures, showed MRI activity occurring in the left superior temporal gyrus and sulcus, which is well known for language processing, suggesting that speech and gesture are closely connected (Hubbard, Wilson, Callan, & Dapretto, 2009). Speech with gesture
produced greater MRI activity than speech alone or gesture alone, suggesting that greater communicative benefit could be attained when gestures accompany speech. This finding is supported by the research of Chieffi, Secchi and Gentilucci (2009) whose research found that when participants read words while gesturing, their MRI results show an interaction between the speech and gesture production systems in the brain, with greater brain activity detected when gestures accompanied reading.

Broca’s region of the brain has long been known to be associated with speech production. Pierre Broca discovered lesions in the same area of the brain of patients that were language impaired after accidents, leading to the claim that Broca’s region is the part of the brain specialised for language. Damage to this region of the brain results in a deficit of language. Early studies of the brain could only be carried out post-mortem, but with the deployment of current MRI technology, earlier evidence of brain functioning and injury effects are being revealed.

Broca’s region is now known to be associated with hand actions and gestures and neuroscientists have found that the neural systems for processing speech and hand actions overlap (Nishitani, Schurmann, Amunts, & Hari, 2005) and that Broca’s region is activated with gesture (Gentilucci, Bernardis, Crisi, & Dalla Volta, 2006). The identification of the same neural patterns in the same area of the brain for speech and actions indicate that speech and actions may be processed in the same way in the brain. Knowing this, connects action, including gesture, with speech and adds this to our broader knowledge about language processing. This knowledge contributes greater neurological evidence to claims about the association between language and gesture. Further supporting these findings, Willems, Ozyurek and Hagoort (2007) found that during sentence comprehension, MRI identified that Broca’s area processed gestures and speech in a similar way.

The neural patterns produced in premotor areas of the brain during action observation are similar to the patterns when producing actions and about-to-be-performed actions (Rizzolatti & Arbib, 1998). This indicates that both the production of actions and the planning for the production of actions influence neural processing. Further MRI studies on Broca’s area have also identified an anatomical association between language processing and action recognition and production (Skipper, Goldin-Meadow, Nusbaum, & Small, 2007). This research has identified that observing as well as producing actions is processed with language. Giving further support to these findings about the common
neural patterns for producing and observing actions, Pulvermuller has found that the same area of the brain has been shown to be activated when performing actions and hearing action words (2005). Another connected finding is that there is a common neural substrate in motor neurons that control hand and mouth movements (Rizzolatti & Arbib, 1998). Each of these findings shows a connection between actions and vocal language during neural processing.

The claims that gesture and speech are processed by the same system in the brain are supported by Xu, Gannon, Emmorey, Smith and Braun, who also add that communication is then supported by this process (2009). They explain that the brain’s language system is responsible for language processing but also suggest that it supports communication by connecting meaning with symbols, words, gestures, images, sounds and objects (Xu et al., 2009). This identifies the importance of multimodal representations of meaning together with speech for processing in the brain.

With an aim to investigate the interaction between gestures and language, one study asked participants to listen to two stories that contained co-speech gestures and two stories that contained self-grooming gestures. MRI was used to investigate the areas of the brain that were stimulated by each type of task. The investigation revealed that meaningful co-speech gestures supported the processing of language in both adults and children, whereas, self-grooming gestures did not (Dick, Goldin-Meadow, Solodkin, & Small, 2012).

There is also evidence that gesture is related to cognition with language. Armstrong, Stokoe, & Wilcox (1995) found that gesture provides conceptualising capacities that connect with our linguistic ability and propose that action or gesture can “unify our understanding” of language. This is a significant finding that action, such as gesture, can support cognition and language. These findings for first languages (L1), now lead us to question whether for second languages (L2), when greater support is needed for a new language, gesture may be able to support cognition and oral language.

‘Event-Related Potentials’ (ERP), is a technique to identify when neurocognitive processing occurs, and has been used to investigate the neurocognitive processing of speech and gesture. Kelly, Kravitz and Hopkins (2004) used ERP and found that there was a difference in the way the brain processed speech when it was accompanied with gesture. Further, they found that there was a difference between when gestures matched
speech by conveying the same information and when gestures and speech convey different information. Interestingly, when both the same information and different information was presented in speech and gesture the brain processed the speech-delivered information early, however, while substantially differing information that was presented through speech and gesture was processed later. This indicates that the brain processes speech faster when it is accompanied with gesture as long as the information presented in speech and gesture do not differ too greatly.

Another well-known study used ERP to measure the effect of gestures with speech when adults processed information from pictures (Wu & Coulson, 2007). Findings showed that adult respondents could comprehend meaning best when co-speech gestures were present, a finding which correlates positively with ERP measures of recognition during memory testing which compared different modes of encoding (Herzmann & Sommer, 2007).

Further ERP results suggest that gestures aid learning because they “help to index new words to concrete, imagistic, and embodied memory traces of the meaning of those words, and this enhances the accurate recollection…of those words in memory” (Kelly, McDevitt, & Esch, 2009, p. 331). Not only did speech with gestures produce better learning, but it also took about half as much time to teach. Students who gestured retained the knowledge longer than those who did not, demonstrating that not only did the teacher’s use of gestures support students’ learning, but that students own use of gestures had additional benefits.

Neurological research has found that words encoded deeply in long term memory produce an enhanced ‘Late Positive Complex’ (LPC) during the recollection of a word (Rugg & Curran, 2007). It has also been shown that the LPC is greater when people access imageable words from long-term memory (Klaver et al., 2005). Further research has provided neural evidence that learning Japanese words with gestures produce a larger LPC than speech alone (Kelly et al., 2009) which shows that gestures support new word learning and support the endurance of long term memory of these words.

These physiological findings show a strong connection between language and gesture and provide evidence that gestures can enhance language processing. These findings now lead us to question whether the use of gestures could also support the processing of second languages and would therefore be an influential tool for second language
teaching and learning. The review of literature now moves to the developmental role of gesture in language acquisition.

3.4. The developmental role of gesture in language acquisition

In this section the role of gesture in language acquisition is traced beginning with the foundational work of Adam Kendon, significant in establishing the academic field of gesture in language development. The role of gesture in infants’ first language development is then introduced before considering the influence on second language acquisition which shapes the focus for the current study.

Adam Kendon, a leading authority on gesture, set the context for gesture to be considered influential in communication. He researched the role of gesture throughout history and identified it as an integral component of communication that had been given little attention until his seminal work in 1983. In his work, Kendon asserts that gestures and speech are interrelated and that both are integral to communication (1980, 2004). Kendon’s claim that gestures share the same underlying process as speech is supported by McNeill in his statement that those meaning making systems share the same “computational stage” (1985). Kendon’s work has drawn attention to the different ways gesture can be used within communication and emphasises integration of gesture and speech for communication (2004). This situating of gesture as intertwined with speech and integral to communication rather than being an additional, external mode of communication separate from speech is considered foundational in the field of gesture, so that research scholars speak of ‘Kendon’s continuum’ (developed by McNeill, 1992), which essentially depicts the range of functions of gestures, described as follows in a detailed review by Stam (2013) with a description of each type:

“Gesticulation -> Speech-Linked Gestures -> Emblems -> Pantomimes -> Sign Languages” (Stam, 2013, p. 1)

Stam explains that ‘gesticulations’ refer to spontaneous gestures that occur with speech, are synchronous with and complement speech, by communicating different information not expressed in speech. As the name implies, ‘speech-linked gestures’ occur with speech but are not synchronous with speech but are instead used to fill gaps in speech. ‘Emblems’ can occur with or without speech and are internally recognised by members of a cultural group. Examples of emblems are the thumbs up gesture and the ok gesture in cultures that use these. ‘Pantomimes’ are gestures that occur without speech and can
replace parts of speech or entire communications of meaning. ‘Sign languages’ are codified gestures that contain linguistic properties and occur without speech. This continuum sets a strong foundation for the consideration of the role of ITG which would be situated somewhere towards the sign languages end of the spectrum because ITG are pre-determined gestures that have been specifically developed, yet occur together with speech.

With this framework and continuum in mind, the discussion of literature now turns to the role of gesture in language acquisition and is divided into two parts: 1. Gestures and L1 development and 2. Gestures and L2 development.

3.4.1. Gestures and L1 development

The rise of video technology during the 1970s fostered research interest in infants’ first language acquisition because infants’ use of gestures became obvious, revealing what previous research had not identified or had overlooked. It became clear that action within a socially communicative setting was driving first language acquisition. In 1979 Elizabeth Bates provided evidence that gesture and language develop together and are integral to the language acquisition process (Bates et al., 1979). Since these developments of four decades ago research has continually shown strong associations between the gestural and linguistic systems, from studies of child language development and supported with neurological evidence (Bates & Dick, 2002).

A collection of studies investigating infants’ gesture use and L1 development have added important information to what we know about the connection between gesture and language. One of the most considerable findings that has been well-established is that infants use gestures before verbal language is produced (Goodwyn, Acredolo, & Brown, 2000) establishing a positive correlation between infants’ early use of gesture and their later vocabulary size (Rowe & Goldin-Meadow, 2009). Specifically, high gesture use by infants at 14 months was found to be a strong predictor of high vocabulary use at 54 months. Similarly, it was shown that the early use of gestures by children strongly related to later word learning by those children (Ozcaliskan & Goldin-Meadow, 2010) and that gesture use is strongly associated with spoken language (Hall, Rumney, Holler, & Kidd, 2013). Further supporting these findings, infants’ use of gestures were found to relate highly to their prelingual and lingual production as well as strongly relate to all language milestones (Orr, 2018). Infants’ gesture use precedes their
oral speech and is therefore seen as a predictor of their soon-to-emerge speech (Iverson & Goldin-Meadow, 2005) which adds interesting theoretical considerations about the relationship between gesture and speech and raises questions about the use of gesture with L2.

Pointing gestures are a particularly important aspect of infants’ communicative language development (Tomasello, Carpenter, & Liszkowski, 2007). Pointing gestures play a communicative function for infants before meaning can be communicated verbally. It has been found that infants who point a lot, learn words easier and that new words that are orally produced relate to what had been previously pointed to (Bavin, 2014).

Many words that infants communicate with any kind of gesture also soon become part of their vocabulary. Infants who used single words when communicating verbally, used gestures to communicate more meaning than the words alone could express (Iverson & Goldin-Meadow, 2005). Thal and Tobias found that infants 18 months to 28 months old who orally produced only single words used communicative gestures to supplement their limited verbal language (1992). Their use of gesture was determined to be a predictor of their increasing oral language development beyond single words.

Children use gesture for varying purposes and their use of gesture indicates their development of speech and cognitive processing. A range of functions of gesture were used by children at different stages between the age of one and two, and at each stage their use of gesture predicted their soon-to-emerge language capabilities and provided insight into their cognitive development (Ozcaliskan & Goldin-Meadow, 2005a). Similarly, Calbris also identifies that gesture can anticipate verbal production and argues that gesture is strongly connected with thought and speech production (Calbris, 2011). These studies each support the claim of the integration of gesture, thought and speech.

When children’s language is developing, they can use gesture with speech to provide additional meaning (Butcher & Goldin-Meadow, 2000). Children’s use of gesture can express additional meaning to speech demonstrating their knowledge beyond what is known from their speech (Goldin-Meadow & Butcher, 2003). This shows that one of the functions of gesture in L1 development is for children to express meaning that they
are unable to express with speech. The meaning that children express in gesture, is soon followed by speech for that unit of meaning.

When a child produced a gesture with a word, it was found to be a predictor that a two-word utterance would soon follow (Iverson & Goldin-Meadow, 2005). These findings show that gesture not only precedes speech but is tied closely to the ongoing development of speech. Iverson and Goldin-Meadow explain that gestures function as a “transitional device” whereby gestures mark the transition from receptive language to productive language capabilities (2005) indicating that gesture continues to be important throughout the process of language development.

Gesture is not only important in children’s early language development but has been shown to continue to develop with speech by school-aged children. Children between the ages of six and ten demonstrated developing linguistic and gestural behaviour during oral narratives and explanations (Alamillo, Colletta, & Guidetti, 2013) showing that gesture continues to play a role in the development of children in the primary school years.

These studies have demonstrated that rather than being a binary of gesture followed by verbal language, which would suggest that gesture would gradually disappear, instead gesture continues to support further development of oral language beyond infancy and into childhood.

Supporting claims that gesture use by children leads to the increased development of verbal language by these children, Sauer LeBarton (2010) added that explicitly asking children to gesture significantly increased the amount of gestures that they produced and the quantity of verbal language that they could subsequently produce. If explicitly asking children to gesture in L1 supports an increase in the quantity of oral output they can produce, then it is well worth considering that introducing a system of gestures, such as ITG, and explicitly asking children to use those gestures, would similarly result in increased oral output.

Gesture can also support language development. One of the roles of gesture is as a support for oral language development in L1. The value of gesture to children’s first language development is highlighted by Kidd and Holler (2009) who found that children need to use multiple modes of communication for successful language
development. In their study, three-year-old children relied on pointing gestures to support their oral re-telling of a story, while four-year-old children used more ‘iconic’ gestures, related to the linguistic meaning of the story, such as gesturing a physical object or action. Five-year-old children used less gestures overall as they were more proficient in their oral story re-telling. In this situation, the gestures were no longer used when they were no longer needed to support oral language. This study shows the value of gestures to support communication when children’s verbal skills are not sufficient for children to express what they want to say.

Gestures can also support the development of language structures. Children’s early speech is supplemented by gesture to communicate more than their speech alone can convey (Ozcaliskan & Goldin-Meadow, 2005b). Gesture continues to precede oral language development and can be seen to be a signal that the child will soon orally produce what they communicated in gesture. Findings from Ozcaliskan et al (2005b) showed that gesture supports children to reach a greater level of complexity of verbal language and highlight the ongoing structural support that gestures provide for continuing language development.

A connection has been demonstrated between early gesture use and later verbal language. These findings have led to a number of studies that have investigated the impact of gesture on supporting language development. Acredolo and Goodwyn (1988) found that pre-verbal children who were introduced to a gesture system before they could talk, spoke sooner and had a greater vocabulary than those not taught the system. In addition, the children showed much less frustration when communicating. Gestures have been found to support word learning by ‘at-risk’ children (McGregor & Capone, 2004). Young children’s gestures demonstrate their knowledge, which is particularly insightful when their oral language is limited (Capone, 2007). It has also been found that children who performed poorly on gesture tasks were late talkers and those who performed well on gestures also performed well verbally at the appropriate age level (Sauer LeBarton, 2010). This indicates that gesture may be a critical tool to support L1 development and could be used to support children identified as being ‘at-risk’ in their L1 development. The same principle could be suggested for a second language teaching context to support the acquisition of the additional language.

This collection of research studies has demonstrated that gestures precede first language output and that gesturing is a strong predictor of children’s oral language development.
These findings show that high gesture use is an indicator of later high vocabulary use and that gesturing actually facilitates the language production stage. The research reported above has shown that explicitly asking children to gesture will increase their oral output which suggests that the benefits from gesture on oral output can be manipulated, having wide implications for teaching. The literature has also shown that gestures can support L1 oral language development. These findings invite the question as to whether the use of gesture in a second language learning context would also support speakers’ oral language development and so the discussion now turns to the role of gesture in L2 development.

3.4.2. Gestures and L2 development

Consideration of the role of gesture with second languages increased during the late 1990s. One important contribution to the field was the identification of the importance of ‘mime’ by Gullberg (1998). “In many reports of studies in second language acquisition, mime was often referred to as being resorted to as a means of overcoming a lack in vocabulary or other linguistic means of expression and hence it was important for Gullberg to be able to take account of it” (Kendon, 2004, p. 105). Gullberg added ‘mime’, where the whole body in addition to hand gestures is used, to Kendon’s continuum to take account of this form of gesture in second language learning situations. Gullberg investigated the ways second language learners used gestures for communication and found that they were used to elicit words, to clarify problems in communication, to signal lexical searches and to move on without resolution. Gullberg also identified gestures as part of what learners acquire when studying a second language (Gullberg, 2006b), referring to cultural and linguistic gestures unique to the second language.

Gullberg’s review of studies of gesture in SLA identifies two main functions of gestures, 1. a communicative function in which the gestures may be performed for the benefit of interlocutors, and 2. an internal function, where the gestures may benefit the language processing and cognitive function of the speaker (Gullberg, 2010). These important functions of gesture contribute to critical theoretical debate on the place of gesture in SLA. These studies and further discussion on the various functions of gestures will be expanded on throughout this chapter.
Gesture has also been identified as playing an integral role in second language proficiency (Gullberg & McCafferty, 2008). Gestures can overcome limitations in a second language and support developing L2 proficiency and when speech is unavailable, such as in a new language learning situation, “gestures can become the form of language” (Kendon, 2004, p. 3). It is very important to note that gestures provide ‘redundancy’ so that in an L2 learning context, when a verbal message is not understood, it may be understood by its accompanying gestures (Gregersen, Olivares-Cuhat, & Storm, 2009).

Learners often rely on gestures in a second language classroom to comprehend what the teacher is saying. The gestures need to convey enough information to be understood in contexts where teachers’ language may be opaque or unclear to them. This identifies the function of gestures in an L2 classroom context as being a significantly different context from L1 where gestures perform an important communicative role (Tellier, 2005). Gestures in an L2 context can also serve to support the management of classrooms, support evaluation and classroom explanations. Tellier discusses the conscious use of gestures in a second language context and investigated teaching gestures that were carried out by teachers for the benefit of learners’ comprehension however does not focus on students’ use of the gestures or on the impact on students’ productive language output as a result of gesture as input.

Much like the findings from L1, bilingual children’s use of gestures indicated their soon-to-produce verbal language (Mayberry & Nicoladis, 2000). Gesture was shown to relate to language development as children’s use of gesture differed depending on the language and the stage of language development of the children. Mayberry and Nicoladis found that two to three-year-old children’s gesture use increased as their utterance length increased with gesture predicting subsequent oral language development (2000). The Mayberry and Nicoladis study is particularly interesting because it examined the interplay between gesture and speech in French-English bilingual children and demonstrated that they are connected in relation to the development of each language rather than being age related or developmentally related across both languages together. Further, Nicoladis, Pika and Marentette (2009) found that French-English bilingual children gesture more than French monolingual children and English monolingual children. These findings indicate that it is not the intrinsic nature of the language, French or English, that evokes gestures, but rather, the
bilingualism of the users. The authors suggest that gestures are used to support the construction of bilingual children’s oral language.

Nicoladis, Mayberry and Genesee (1999) found a developmental relationship between bilingual children’s production of iconic and beat gestures and their oral language proficiency. The French-English bilingual preschoolers (between two and three and a half years old) could produce longer utterances when they used speech-related iconic and beat gestures as opposed to other types of gestures or no gestures (Nicoladis et al., 1999). The study was then replicated with slightly older children (average age of four years three months) finding a higher rate of iconic gestures being used in these children’s most proficient language (Nicoladis, 2002). Additionally, when using iconic gestures, children produced longer utterances. There was also a slight trend of iconic gestures being produced in situations of word finding difficulties, which was more apparent with the increasing age of the children (Nicoladis, 2002). When considered together, these two studies identify a developmental role of spontaneous iconic gestures related to the development of young children’s oral language. In a university second language learning context, beat gestures together with pitch of speech were found to support the second language learning of Russian words (Kushch, Igualada & Prieto, 2018). Each of these studies highlights the types of gestures that were shown to impact on L2 learning with different languages, different age groups with varied language learning experiences, and in varied contexts. Further research is still needed to investigate the impact of different types of gestures in diverse contexts. The question may also arise about whether the intentional use of certain types of gestures, such as in ITG, may have an impact on learners’ developing L2 oral language.

There has also been a focus in research on speakers use of gesture in L1 and L2 with an interest in whether speakers use L1 gestures when speaking L2 (Choi & Lantolf, 2008; Stam, 2006). In the process of learning a second language, speakers sometimes use L1 gestures when communicating in L2 (Kellerman & van Hoof, 2003). This behaviour demonstrates the influence of L1 gesture patterns on L2 use of gesture and can also provide an insight into the speaker’s thinking patterns or knowledge that is not detectable in their speech. Such findings draw our attention to the information that can be discovered through observation of speakers’ gestures. It also draws our attention to the importance of gesture in SLA. This knowledge is particularly useful for teachers of languages. Although the current thesis does not look at naturally occurring or cultural
gestures, the information supplied by observing speakers’ use of gesture can be very beneficial.

Spontaneous gestures that accompany speech are used differently with different languages. When speaking in L2, learners often use gestural patterns that resemble L1 and are indicative of their language development (Stam, 2006). A longitudinal study of one learner’s English L2 development identified changes both linguistically and gesturally (Stam, 2010) and these gestural changes continued to be evident as L2 proficiency increased over time (Stam, 2015). These developmental changes identify that patterns of gesture use in L2 develop in addition to linguistic development. Patterns in gesture use reflect learners’ interlanguage and changes in learners’ patterns of ‘thinking for speaking’, the thinking that occurs when speaking (Stam, 2015).

Until very recently, few empirical studies had been carried out investigating the role of gestures on second language learning. The first full volume dedicated to the role of gesture in second language acquisition (SLA), contains a unique collection of articles (McCafferty & Stam, 2008). Included in the book are such themes as how L2 speakers’ gestures reflect their thoughts, L2 learners’ comprehension being supported when observing gestures (Kida, 2008; Sime, 2008), how L2 speakers use gesture to support their developing language and use gesture to convey meaning (Negueruela & Lantolf, 2008). The role of gesture as an L2 communication strategy linked to cognition (Olsher, 2008) is also addressed. The importance of looking at learners’ gestures as well as speech is emphasised to understand more about learners’ developing L2 proficiency (Stam, 2008). Each of the fourteen research studies reported in the book contribute greatly to our current understanding about the function of gesture with L2. Each of the studies focuses on naturally occurring gestures in L2 communication contexts.

In keeping with the focus of the research discussed in McCafferty and Stam, most research about gestures and L2 refers to spontaneous gestures. There is far less examination of the impact of intentional teaching gestures on L2 oral language, so the exclusive focus of the present study into the role of ITG in Japanese as a second language, aims to add to this field of research.

Now that gesture has been combined with SLA as a field of research, a stronger focus on ITG as an aspect within that field also needs to be included. This section of the discussion of literature highlighted the role of gestures in language acquisition and
concluded with establishing the role within a second language context. The next section identifies teachers’ use of gestures in L2 contexts.

3.5. Teachers’ use of gestures in L2 contexts

The various functions of teachers’ gestures in an L2 context have been investigated identifying the importance of gestures as well as speech in such a context (Tellier, 2008b, 2016). Teachers’ gestures include “gestures of information” whereby gestures transmit grammatical, lexical, phonological or phonetic information (Tellier, 2016). The category of teachers’ gestures can also include “evaluation gestures” which signal approval or identify an error (Tellier, 2016). Another functional category of teachers’ gestures is “animation gestures”. These gestures support classroom management such as during the transitions between activities, the placement of learners and the giving of instructions. They also “manage interactions and participation” such as volume, repetitions and interrogations (Tellier, 2016).

In addition to the functional categories of teachers’ gestures, analysis of teachers’ use of gestures has identified that gestures can support “semantic links” between a word and its meaning, can “disambiguate speech” by illustrating a word or phrases with a gesture, and can “subtitle speech” by a gesture accompanying speech to provide a second mode to support comprehension (Tellier, 2016). Gesture can also occur without speech to indicate the speech to be produced by learners. Each of these functions and uses of gestures have identified the important pedagogical role of teachers’ production of gestures in a second language classroom context.

Learners in one study (Sime, 2006, 2008) perceived teachers’ gestures in the EFL language classroom as having three functions; 1. To support learning, such as by clarifying meaning, 2. To emotionally engage learners and provide feedback, and 3. To manage the classroom and organise interactions. Interestingly, some aspects of these findings about learners’ perceptions of teachers’ gestures correlate with the functions of teachers’ gestures that have been identified from observations of teachers using gestures in L2 classroom contexts (Tellier, 2016). This shows that learners do perceive many of the functions of teachers’ gestures that occur in the classroom and recognise the important role of gestures on their learning (Sime, 2006, 2008).

Gestures are often created and used by teachers in a second language context which creates a “common sign code” for this context (Tellier, 2008b). When there is a
common code, these gestures are a valuable tool to support learners’ comprehension. Three features are important for gesture to constitute and form this common code: 1. Gestures are always associated with the same meaning, 2. Gestures are used frequently and 3. Gestures always keep the same appearance (Tellier, 2008b). Although gestures can provide support to learners’ comprehension, there is evidence that occasionally gestures can cause confusion. Teachers’ gestures may reflect the ethnic or national culture of the teacher and differ from students’ cultural expectation of gestures. Children’s stage of development may also influence their understanding of the meaning of gestures. Adults may also have differing understandings of gestures depending on their individual experiences. These considerations underline the importance of developing a common sign code among all participants in classroom contexts and the importance of supporting the use of gestures in a classroom with other sources of non-verbal meaning (such as with pictures and realia) to enhance shared meaning and understanding of gestures.

The important role of gesture in the teaching and learning of L2 was also identified in a study of ten French five-year-old children learning English. A segment of the class was video-recorded and analysed revealing that the teacher used gesture to support the presentation of new L2 content and that gesture contributed to learners’ comprehension of the L2 (Tellier, 2009). In a follow-up study, 16 French children who had not previously learned English were exposed to the same English lesson via a video-recording and were then interviewed about their perceptions of how they understood English. The findings indicate that both gestures and pictures supported children’s learning and that individual children differed in the way they perceived and used each modality. This pair of studies identifies the importance of including gesture with spoken language in an L2 teaching and learning context.

Comparing teacher’s use of gestures in L1 and L2 contexts was the focus of a study to determine if the teacher’s gestures differ depending on learning context (Azaoui, 2013). The study found that the same teacher used a 72% higher rate of gestures to words in the L2 context than the L1 context. It was proposed that the higher rate of gestures produced by the teacher in the L2 context was to support the comprehension of the L2 learners’ limited L2 proficiency. This study suggests that teachers adapt their frequency of gesture use to the teaching context and the learners they are teaching.
In an effort to analyse the impact of teachers’ gestures on learners, an heteroscopic approach was used in one study which involved learners’ perceptions of one teacher’s gestures watched on video-recordings post-teaching, and then the teacher’s self-reflections of their gestures and responses to the video-recorded responses from the learners (Azaoui, 2016). Such an approach provides additional insight into the gestural intentions of the teacher and the perception of learners. The findings from the study identified that there is often a gap between teacher’s intentions and learners’ perceptions of gestures. The study identifies the importance of a shared sense of meaning of gestures among all participants in a classroom context.

Another study with a focus on the pedagogical use of gestures by two language teachers (Matsumoto & Dobs, 2017) focused on the use of gestures when teaching grammar in L2 English. The study identified that teachers’ gestures serve an important function in the L2 classroom by using gestures to explain concepts, such as tenses in English, and were used consistently. Teachers modified their use of gestures to support students’ understanding of the grammatical concepts and to scaffold their developing knowledge. Students used gestures to demonstrate their L2 understanding and align their gestures with the teacher’s gestures, which supported the interaction between them. Evidence that both teachers and students took meaning from each other’s gestures and themselves used gestures in their interactions demonstrated the broad value of gesturing in the context of teaching and learning L2 grammar. It is important that teachers and students are aware of the potential of gesturing practices and attending to gestures used by others as a teaching resource in an L2 context.

Another study, this time with a focus on how gesture was used to teach L2 English pronunciation (Smotrova, 2017), found that one teacher used gestures as a pedagogical tool by making the abstract concept of syllables visible, by demonstrating word stress and rhythm, and by supporting students’ comprehension of these features. Students imitated the teacher’s gestures during the process of learning which supported their learning of pronunciation and demonstrated their understanding. The study highlights a key pedagogical function of gesturing and pedagogical strategies which differs significantly from naturally occurring communicative contexts showing that such use of gesture as a learning tool for other purposes in L2 classroom contexts has great potential.

This section of the literature review has highlighted the important functions of teachers’ gestures in L2 classroom contexts and has also provided some insight into students’
perceptions of teachers’ gestures and students’ responses to teachers’ gestures. The next section discusses the literature about the Accelerative Integrated Method, AIM, which is the only method using ITG that has been studied in research.

3.6. ITG using AIM

An exploratory study was carried out with two groups of nine students; one group learning French in a core French program, and the other learning French with AIM (Maxwell, 2001). Interview tests were carried out with the students from each group which consisted of routine sentences and open-ended questions. It was concluded that students from the AIM group were able to achieve comprehension and fluency which exceeded the core French group (Maxwell, 2001). This study has been heavily criticised because it was carried out by the developer of the methodology, with the implication that she had a conflict of interest and this might have biased the study. Additionally, the developer actually taught the AIM class and conducted the interviews. Many differing variables also meant that results from the two groups being compared could not just be attributed to AIM or non-AIM conditions; such as different teachers in each group, different classroom contexts, resources, and different backgrounds of students and teachers. Despite these clear methodology limitations and criticisms, the findings, together with anecdotal classroom evidence provided, suggest that further research is worthwhile.

Another study investigated how AIM was being used in French L2 classrooms by eight teachers in Canada (Arnott, 2011). It involved classroom observations and interviews. The classroom observations included the organisation of students and activities, content, student modality and materials used. Interviews carried out with the teachers focused on the teaching context and local needs, instructional materials, the transition to becoming an AIM teacher, professional development and local support, and assessment and practicality. Three specific questions were asked of the teachers; 1. How teachers perceived their role in the implementation of AIM, 2. Whether teachers were experiencing challenges in using AIM, and 3. How teachers perceived their students were reacting to their use of AIM. Findings indicate that AIM teaching took a different form in different classrooms and across different grade levels. This study provides an interesting insight into the experiences of teachers working with the AIM method, but contributes little to our knowledge of the effectiveness of ITG in general.
Arnott also investigated teachers’ perspectives of using AIM and how they were implementing this method for teaching French as a second language in the Province of Ontario (Arnott, 2012). Educators from AIM-mandated schools and AIM-optional schools were participants in the study. Regardless of whether the requirements were mandated or optional, the study found a preference to use AIM by teachers, despite differences in how AIM was actually used.

Another study with a focus on AIM assessed the proficiency of grade eight students in French as a second language and compared the results of students from six AIM classes with those of six non-AIM classes (Mady, Arnott, & Lapkin, 2009). There were no significant differences in test scores between the results of AIM versus non-AIM students across a range of modes of language such as listening, reading, composition, dictation and speaking. Although the findings from this study identified no significant differences in test scores between AIM and non-AIM conditions, it is problematic to conclude that the comparison was actually between AIM versus non-AIM conditions since a wide range of potentially confounding variables existed between all the classes, such as how the methodology was carried out, differences between the class teachers, the experience of the teachers and students, the school context, timetable and provision of classes, and the large number of other variables that exist with the AIM method (such as gestures, dance, drama, and music) that may or may not be present to some extent in other programs. In fact, it was noted in the article that “…attempting to isolate the AIM method as the sole variable influencing Grade 8 student proficiency has led to more speculation about its implementation …” (Mady et al., 2009, p. 716). Although this study suggests no difference was generated with use of AIM, the question of students’ proficiency warrants further study with a comparison of like-groups (same school, same teacher, same experiences) and isolated variables for comparison (only one variable differing, such as the gestures). Qualitative findings from this study show that the AIM teachers used more French in class than the non-AIM teachers, and students from the AIM classes reported that they were more confident in both listening to and speaking French. Many students reported that their French skills were due to the change from core French to French taught with AIM in Grade 6. Despite these positive qualitative comments, many students reported that some aspects of AIM were “childish”.

Bourdages and Vignola compared the proficiency of students from one Grade 3 class using AIM (18 students) and one Grade 3 class in a regular core French program (16
students) (Bourdages & Vignola, 2009). Data were collected using semi-structured interviews of each student individually for 30 minutes; this included students’ saying their name, age, their school year and then identifying and describing familiar objects. Students were then questioned about their family, favourite animal and school. The final part of the interview involved students telling a story from a comic book, comparing images, describing an image, and creating a character to describe. Non-significant differences were identified according to teaching approach for linguistic or grammatical accuracy. The group learning with AIM produced more statements in French (95% compared with 38% for the non-AIM group), however the accuracy of word order was not superior. Both groups produced an equivalent number of one-word statements, and both demonstrated equal difficulty using gender and number. The group learning French with AIM produced a higher number of incomplete statements but were significantly more likely to use French than the non-AIM group. These findings, although not demonstrating that one group is superior verbally to the other, does indicate that students from the AIM group were much more likely to use the target language, French, risk-take in their productive use of French and were perhaps more confident in French.

There has not been any previous research with a focus on ITG using ACTLAN, the focus of this thesis. It is precisely the potential impact of ITG using ACTLAN on students’ Japanese oral language production that is the focus of the current study. Because the current study is interested in the impact of ITG on students’ L2 learning, the literature discussed below is selected to address the role of gesture on learners’ receptive language and the role of gesture on learners’ productive language.

The next section discusses the role of gestures on receptive language skills demonstrated by comprehension.

3.7. Receptive language - Gestures and comprehension

The focus in this section is on the relationship between gestures and comprehension, and is organised in three parts. First the impact of gestures on L1 comprehension will be considered, followed by the role of gestures on learning new concepts and finally, the impact of gestures on L2 comprehension will be discussed.
3.7.1. Gestures and L1 comprehension

The role of gestures in supporting listeners’ L1 comprehension has been a continual area for gesture research since the early 1970s based on the insight that one of the ways that gestures can support comprehension is by supporting meaning. Infants have been found to use gesture as a cue to meaning in early L1 development (Capone & McGregor, 2004). Even when L1 is fully developed, gesture can be used with speech by the listener to determine the speaker's intended meaning (Cienki & Muller, 2008). Speech and gestures have also been found to be used “co-expressively” together by L1 French speaking children and adults to strengthen the expression of meaning (Gullberg, Hendriks, & Hickmann, 2008). In these and other ways gestures have been found to align with speech to construct the same semantic information.

Gestures also strengthen meaning when word learning. As found by Booth, McGregor, and Rohlfing (2008) infants were taught three new words with gestural cues in four conditions; gaze alone, gaze and point, gaze and touch, or gaze and manipulate and were found to use information from each of these gesture conditions to support new word learning. Gesture can be used as a scaffold for children’s comprehension of unknown words using gaze along with pointing, touching and manipulating gestures (McGregor, 2008). It has also been shown that gesture serves as a cue to support the comprehension of meaning when words are unknown, whether by children or adults, and that training with gesture supports the ability of participants to utilise this strategy (Goodrich, 2009).

Gestures can contribute additional meaning to speech with complementary information being provided by gestures. Beattie and Shovelton (2011), found that one third of the meaning from gestures in natural language contexts contained important semantic information that was not contained in speech when telling a narrative. This finding highlights the important role of gesture in contributing valuable complementary meaning in L1 communication.

It was stated earlier in the chapter that it has long been recognised that meaning can be communicated non-verbally as well as through speech. A sequence of experiments was carried out which demonstrated that speech and gestures could mutually support meaning which may otherwise have been unclear in only one modality (Kelly, Barr, Breckinridge Church, & Lynch, 1999). These experiments revealed that listeners’
comprehension differs depending on the presence of gesture and whether gesture accompanies speech, that gesture and speech mutually support meaning, and that different types of gestures accompany different functions of speech. These findings position gesture as an important contributor to general communication of meaning. If we now consider this in a second language learning context, where the meaning of received speech may be unknown, we can identify a key role that gesture could play.

When speech is complex, gestures can support comprehension (McNeil, Alibali, & Evans, 2000). It was found that gestures supported preschool children’s comprehension of complex instructions, but only when the gestures were congruent with the meaning from speech (McNeil, Alibali, & Evans, 2000). Goldin-Meadow and McNeill (1999) suggest that gestures can enhance the content of messages, further emphasising the units of meaning provided from gesture.

A number of studies have compared listeners’ comprehension of speech with their comprehension of speech with gestures seeking to ascertain the influence of gesture on comprehension. One early experimental study asked listeners to write down what they heard when listening to utterances and then when listening to utterances accompanied with gestures (Berger & Popelka, 1971), finding that the inclusion of gestures provided listeners with additional knowledge. Another experimental study reported that listening accuracy was twice as high when gestures were presented with speech when comparing listeners’ responses when watching films where the image included gesture with sound to sound only (Rogers, 1978). It was claimed that the hand gestures in these films was influential to the findings, however the impact of gesture cannot be determined as it was only one aspect of the overall visual input in the films, so the results could have been affected by a number of factors.

Comparisons have been made of the impact of various modes of communication with speech. Children were found to be more likely to demonstrate comprehension and knowledge when words were presented with speech and gesture than when presented with speech and a picture or speech alone (McGregor, Rohlfing, Bean, & Marschner, 2009). These findings show the additional comprehension benefits that gesture can provide with speech.

Another first language study compared children’s responses to verbal scenarios in speech-only and speech-with-gesture conditions (Kirk, Pine, & Ryder, 2011). In the
speech-with-gesture condition, the gestures conveyed additional complementary information to speech. All children were able to answer more questions about the scenarios correctly when gestures had accompanied speech. This shows that children understood meaning conveyed in gesture as well as speech.

Also investigating the role of gesture on comprehension, was a series of experiments carried out to determine the impact of gestures with speech (Riseborough, 1981). One experiment found that participants could identify objects being described more quickly when they could view the whole body of the speaker, including the gestures that accompanied speech. A second experiment found that participants could recall verbs better when they were presented with gestures. A third experiment identified that participants recalled more of a story when gestures accompanied the telling of the story. Another study compared the information that listeners received from cartoon stories when in video and face-to-face contexts (Holler, Shovelton, & Beattie, 2009). It found that listeners received more information when gestures accompanied speech, compared with speech alone, and that more information was received face-to-face than when viewing video. This study supports the added value of gestures on comprehension whilst including the important social benefit from face-to-face interaction.

All of these experimental studies have demonstrated the additional comprehension benefits that listeners receive when gestures accompany speech compared with speech alone. Comparisons have also been made of the impact of gesture-only and speech-only on comprehension. One experimental study involved a comparison of gesture-only and speech-only instructions about how to assemble a piece of furniture (Lozano & Tversky, 2006). It found that gesture-only instructions resulted in learning how to assemble the object better and with fewer assembly errors than speech-only instructions. Gestures that demonstrated action were particularly effective in this type of task. This experiment showed that in this type of task gestures served the function of demonstrating the required action to perform the assembly task. In addition to these findings, participants following directions reported that they preferred to follow gesture-only directions than speech-only directions and that gestures were easier to understand. This shows the influence of gestures on both speakers and listeners; gestures facilitated clearer instructions by speakers and supported the listeners to understand with greater ease.

Listeners can integrate meaning from both speech and gesture into their knowledge. Together the modes of gesture and speech contributed to listeners’ knowledge about
how an engine works (Kang, 2012). Participants in the study listened to instructions with gestures and were found to integrate knowledge from these gestures into their overall knowledge when later explaining the concept of how an engine works. Adult listeners were able to comprehend information contained in speakers’ gestures as well as their speech.

Further support of the importance of gesture for listeners, comes from the results of an experimental task in which speakers described comic strips to listeners (Jacobs & Garnham, 2007). The pattern of speakers’ gesture use in different conditions; new information, repeated information, and with and without the listener viewing the comic strip, was consistent with the prediction that gestures were used for the benefit of listeners. Their findings concluded that speakers produced and vary their use of gestures according to their listeners. A second experiment was then set up to determine if the listener had an effect on the speaker’s production of gestures. This time the conditions involved comic strips being described to an attentive listener, an inattentive listener and an attentive listener who was able to view the comic strip whilst listening. This experiment found that more gestures were used by speakers when describing the comic strip to a listener who was unfamiliar with the comic strip and fewer gestures were produced by the speaker when the listener was able to also view the comic strip. These results show that gesture use was varied for the benefit of particular listeners. From these experiments, performed under different conditions, the impact of listener needs and characteristics was shown to influence the use of gestures.

This wide range of current empirical evidence adds strength to claims that gestures are beneficial for listeners. The evidence presented in the sections above rebuts earlier claims that producing gestures do not impact on listeners. Amongst these earlier claims is Rime’s (1983) belief that listeners’ attention is directed to the verbal channel, and that hand gestures are peripheral. He believes that gestures will only attract listeners’ attention when there is either a problem with the verbal channel, such as with noise, complexity or confusion, or when gestures are unusual or excessive. This view is supported by empirical research findings that listeners did not recall the content from gestures that they observed, did not display a comprehension difference when gestures were not used and could not guess speech content from gestures (Rime & Schiaratura, 1991).
Another claim against the impact of gestures for listeners was put forth by Krauss, Morrel-Samuels and Colasante (1991) who suggested that gestures play a minimal role. They carried out experiments where participants needed to match gestures with words, match gesture meanings with words, recognise previously viewed gestures, and categorise gestures. Performance with verbal stimuli was stronger than performance with gesture so the authors claim that gestures are not very informative and are redundant with speech.

A common question when considering the role of gesture on comprehension is whether the gestures need to match the speech or provide different information to speech. A distinction is often drawn between congruent gestures which provide the same information as speech, and incongruent gestures which provide different information to speech. Congruent gestures that accompanied speech were found to support monolingual Spanish speakers’ comprehension of metaphors better than incongruent gestures, as shown by differences in electrophysiological levels (Cornejo et al., 2009). This demonstrates that gestures that support the meaning of speech will support the processing of the meaning of metaphors. It has similarly been found that when an action and text meaning are congruent, comprehension is enhanced (Glenberg & Kaschak, 2003).

An analysis was carried out of 63 studies each involving the understanding of a message, comparing speech alone with gestures accompanying speech (Hostetter, 2011). It found that listeners’ comprehension of a message was enhanced when gestures were used with speech and the greatest benefit was detected when gestures contained some additional information that was not contained in speech (Hostetter, 2011). The effect sizes in the study were smaller when the same information was contained in gesture and speech, making the case that incongruent gestures are the most beneficial. It was noted that gestures may be ‘redundant’ if they contain the same information as speech and this was presented as a reason why congruent gestures may not be as effective as incongruent gestures on comprehension. This may be the case for L1 (although there are conflicting findings in Cornejo et al., 2009), however when investigating the role of gesture on L2 comprehension, the role of gesture in providing the same information as speech may be beneficial. The belief has been put forth that gestures that provide ‘redundancy’ in L2 are particularly powerful for the learning of L2 so that when a message is not understood verbally, it can be understood through gesture (Gregersen et al., 2009).
indicates that while incongruent gestures may support L1, congruent gestures that provide redundancy may be more beneficial in L2 situations than in L1. These findings highlight that further research is needed to determine the differential impact of gestures specifically in relation to L1 and L2 situations.

A study which examined the influence of gesture-speech mismatches, or incongruent gestures, on listeners’ later re-telling of a story was by McNeill, Cassell, and McCullough (1994). Its result showed that listeners take on meaning from gesture-speech mismatches as well as speech and use this meaning in their own re-telling of a story. A subsequent experimental study where participants watched cartoon stories and then re-told the story, compared the integration of co-speech gestures that are congruent to speech with mismatched gestures that add conflicting information to speech (Cassell, McNeill, & McCullough, 1999). Findings showed that participants integrated the meaning from gestures, both congruent and incongruent, into their telling of stories. These two studies demonstrate the impact of both congruent and incongruent gestures with speech on meaning.

When viewing a gesture that conflicts with verbal information, children predominantly trust the gesture in preference to the verbal information (Grassmann & Tomasello, 2010). In this study adults requested items from children that differed from items they pointed to. In each instance, young children at two and four years of age, consistently responded to the information from pointing gestures in preference to verbal information. This shows that not only do children pay attention to and take meaning from gesture, but that the gestured information prevailed over the verbally delivered information. Parents and educators need to be aware of the power of gesture and the important role that their gestures can play in relation to verbal communication in the overall messages conveyed to children.

Another role of gestures in communication is to support the sharing of meaning between speakers. The copied production of actions by speakers has been shown to connect with sharing meaning between speakers. One study investigating the role of copying gestures found that communicators only copied those gestures which represented meaning (Mol, Krahmer, Maes, & Swerts, 2012) and the copying related to shared meaning between the speakers at a conceptual level. This finding identifies ‘copying gestures’ as a strategy to support communication and the comprehension of meaning in L1. This finding is supported by the work of Kimbara who describes copying gestures as
“gestural mimicry” (2006). Kimbara’s study of gestural behaviour during pair conversations highlight that a speaker’s gestures influence the subsequent speaker’s gestures and these patterns of gestural mimicry support pair interactions and co-construction of communication.

Children’s gestures can also reveal knowledge that is not present in speech. This highlights that one role of observing children’s gestures is to gain a fuller awareness of their level of comprehension of a topic or subject being discussed. It has been found that children’s gestures can contain information lacking in their speech in contexts where five to eight year old children explained concepts of conservation and nine to ten year old children explained mathematical equivalence (Kelly, Singer, Hicks, & Goldin-Meadow, 2002). This shows that gestures can demonstrate knowledge not conveyed in speech. Adults successfully demonstrated an awareness of information contained in children’s gestures after being trained to do so. It has also been shown that gestures often reveal a speakers’ thoughts that are not present in their speech (Goldin-Meadow & Alibali, 2013). In this way gesture can serve as a “window” onto a speaker’s thoughts and knowledge. Encouraging gesture use supports teachers to better understand students’ comprehension and provides important information to teachers highlighting the pedagogical value of paying attention to children’s gestures as a window into their knowledge. Assessments of students’ knowledge and understandings can be enriched and made more accurate by attending to the gestural forms of communication, assisting teachers in identifying student needs.

Kellerman’s (1992) overview of the literature about gestures and listening comprehension identifies that gestures connect with both phonological features and semantics of language. Gestures can facilitate the decoding of speech, are used to process language (together with speech), and can also identify and emphasise certain features of discourse. In Kellerman’s discussion it is clear that gestures can also regulate communication by maintaining the flow of speech and turn-taking leading Kellerman to speculate that these functions of gesture in L1 suggest implications for the role of gestures in supporting L2 communication.

It has been well established that the use of gestures can support comprehension of the spoken message in a first language. This section of the review has identified that gestures can support listeners’ comprehension of meaning and that speech with gestures can support comprehension better than speech alone. Listeners can derive meaning from
both congruent and incongruent gestures and can benefit from viewing gestures even when they have not explicitly been made aware of the gestures. Children’s own gestures can express meaning absent from their speech, which suggests that children’s comprehension can be more fully grasped when observing their knowledge and understandings demonstrated through their gestures in addition to their verbalisation. The review now turns to focus on the learning of new L1 content with gestures.

### 3.7.2. Gestures and learning new concepts

Many empirical studies have been carried out to investigate the role of gesture when school-aged children learn new concepts. This collection of literature focuses on the learning of new curriculum content with gesture in L1. The most well-known and influential are the collection of studies investigating gesture with the learning of mathematical concepts. Several experimental studies have been carried out comparing children’s learning of mathematical concepts with and without gestures to determine the impact of the gestures. One study compared students’ learning of mathematical equivalence using gesture with verbal instructions to verbal only instructions (Perry, Berch, & Singleton, 1995). It found that a greater number of students learned the new mathematical content when it was presented with gesture compared with verbal only instructions. This finding suggests that the learning of new academic content can be strengthened when gesture is used to supplement verbally communicated information and supports earlier claims that teaching is more effective when learners are exposed to multimodal input (Rubin, 2006; Skipper et al., 2007). The findings from Perry et al (1995) also demonstrate that when students are processing new concepts, they extract information from both speech and gesture.

Another experimental study involved instructional videos that taught students mathematical conservation concepts with and without gestures (Breckinridge Church, Ayman-Nolley, & Mahootian, 2004). Findings showed that those who had viewed the videos with gestures achieved far greater results in a post-test of the concepts learned than those who did not view the gestures. These findings highlight additional benefits of adding gesture to speech to increase comprehension of new mathematics concepts. It has also been found that gestures can facilitate the comprehension of instructional material in classrooms (Valenzeno, Alibali, & Klatzky, 2003). Children were taught symmetry in gesture with speech, and speech only, conditions. The results show that gesture supported children’s comprehension of symmetry. A post-test where children
were required to judge if an item was symmetrical or asymmetrical and explain their reasoning showed that gestures supported this learning activity as well. In a later study on gestures resulting in greater recall of mathematical concepts, students were able to apply new knowledge to later mathematical problems (Wagner Cook, Duffy, & Fenn, 2013). This identifies that gestures may also support the transfer of learning to subsequent practical application.

As well as the viewing of gestures being beneficial to children’s learning of mathematical concepts, children’s own use of gestures has been shown to impact on their learning. Gestures can be used to support the sharing of meaning between speakers to support learning. Observations of a teacher and an ESL learner in a Grade two primary school classroom showed that gesture was used by both the teacher and student to share meaning together and solve mathematical problems (Rosborough, 2014). In this study gestures, such as using hands and fingers to help solve mathematical equations, provided an additional mode to speech and also modelled learning strategies. This study emphasises the role of gesture as a form of embodied learning and shows that gesture was also used to create joint attention between the teacher and student in this context which supported the meaning making process.

A study where students learned mathematical equivalence with and without teachers’ gestures found that when teachers gestured, students were more likely to produce their own gestures and that this enhanced their learning (Wagner Cook & Goldin-Meadow, 2006). Post-test scores from these students were positively related to their gesture performance during instruction. In a related study two years later children’s use of gesture was also linked to increased memory and was realised most fully over time (Wagner Cook, Mitchell, & Goldin-Meadow, 2008). Asking children to gesture when learning a new mathematical concept helped them retain that new concept. In contrast, asking children to speak while learning the new concept had no effect on retaining their knowledge. These contrasted findings showed that the use of gesture by students maintained memory for their learning and suggests the importance of requesting students to use gestures while learning new mathematical concepts.

Learners who spontaneously gestured on a task were more likely to retain what they had learned than those who did not gesture at all (Alibali & Goldin-Meadow, 1993). Similarly, explicitly asking children to gesture while learning, results in additional benefits, with children more likely to maintain their learning three weeks later than
those who did not gesture (Wagner Cook & Goldin-Meadow, 2006) and led to an increase in their retention of that new concept (Church, Ayman-Nolley, & Mahootian, 2004; Valenzeno et al., 2003). Gerofofsky also identified the important role of gesture when students were working with graphs in mathematics classes (2010). Students’ spontaneous use of gestures as well as elicited use of gestures supported their learning and highlighted the important features of graphs. In another study, when students were explicitly told to use gestures, they were found to adopt new and often more correct problem solving strategies (Broaders, Wagner Cook, Mitchell, & Goldin-Meadow, 2007). Also, the students who had used gestures were more likely to benefit from instruction about the mathematical concept than students who had not used gestures. These findings suggest that explicitly asking students to gesture adds to the learning strategies available to students and increases their likelihood of problem solving success. This collection of studies also highlights the important role of gestures on learning, whether the gestures are spontaneous or enacted.

There is also a widespread claim that gestures can demonstrate additional knowledge that the speaker has that is not evident in their speech. Alibali and Goldin-Meadow (1993) found that children expressed meaning in gesture before being able to produce the same meaning in speech. This study involved 90 Year 4 children in solving mathematical equivalence problems. Video footage of the children showed that they first presented their incorrect or developing understanding in gesture and speech, with each mode showing a different process of solving the problem. For example, children demonstrated equivalence in one way, using hand gestures, whilst verbally explaining a different process. This was then followed by the correct process being explained in speech. This shows that gesture supports cognitive development and forms part of the process of comprehending new concepts. Similarly, with a focus on students’ own use of gesture when explaining their problem solving in mathematics, it was found that students’ gestures often conveyed knowledge that was not present in their speech (Garber, Alibali, & Goldin-Meadow, 1998). Findings also showed that students’ knowledge in gesture from one task could be transferred to other mathematical tasks. This finding highlights the importance of teachers attending to students’ gestures as well as their speech when assessing their mathematical knowledge and shows that students’ knowledge in gesture can be transferred across different learning contexts.
Goldin-Meadow and Wagner (2005) identified that gestures can contain information absent from speech when the learner is “on the verge” of making progress on a task or ready to learn the task. This is a critical piece of information for teachers as it identifies that learners’ knowledge through gesture can provide precise points of information to teachers in highly specific instances of learning challenging potential. This gesture behaviour also provides an insight to the underlying process the learner is using to grasp taught material. The gestures children use also reflect their current knowledge of a concept. Children not only reflect their knowledge of mathematical concepts in gesture but through gesture create new knowledge (Wagner Cook & Goldin-Meadow, 2006). These findings are supported by Wagner Cook et al. (2008) who claim that the use of gesture by children is a window to view their “transitional state of learning”, somewhere between the not-knowing and the not-yet-able to articulate state. They also found that the gestures children used when explaining a task predicted their future learning of that task. Supporting these beliefs that gesture indicates a learner being “on the verge” of learning or being in a “transitional state”, it has been shown in practice that when children produce gesture-speech mismatches in their mathematical explanations, they benefit from further support (Breckinridge Church & Goldin-Meadow, 1986).

Connecting with these findings, a later study explored what teachers would learn from observing learners’ gestures and whether they would alter their teaching as a result of their observations (Goldin-Meadow, 2004). This study showed that teachers did in fact pay attention to the information portrayed in gesture as well as speech and altered their teaching by giving more support to the learners who produced gesture-speech mismatches, demonstrating the need for further support. These findings suggest that one role of gesture is to gain insight into the full knowledge of students that is not revealed through speech alone. Conceptually, if students demonstrate knowledge through gesture that they are not yet able to articulate, this tunes the teacher-observer in to what the student knows or needs to know in their learning of a concept.

This range of empirical evidence has identified a crucial and recurring role of gesture in supporting conceptual development in mathematics. The question is now raised as to whether these findings are unique to the curriculum area of mathematics or whether gesture would play a similar role in other curriculum areas.
The role of gesture in acquisition of scientific concepts is now examined, showing that gesture use was also found to increase overall meaning of new content in science learning. One example is the comprehension of scientific concepts studied through adding gestures to photographs during lectures (Pozzer-Ardenghi & Roth, 2005). In their study, teachers’ body orientation and gestures were found to support the meaning of ecology content presented in lectures to Year seven students and provide an additional resource along with pictures and verbal text. This is a very good example of gestures providing multimodal input to learners and strengthening the overall communication of meaning. This finding was further supported in a subsequent study by these authors in which they investigated science lectures for Year 12 students (Pozzer-Ardenghi & Roth, 2007). Findings showed that scientific knowledge of human biology was demonstrated with a combination of verbal and non-verbal modes of communication. The authors assert that the modes of non-verbal communication provide additional resources that support ‘meaning units’ and bolsters the overall conclusion from this review for teachers to view multimodal input as supplementary and productive pedagogical resources.

A later study identified that gestures supported students’ learning of new content in a biology topic of mitosis, a type of cell-division (Kang, Hallman, Son, & Black, 2013). Instructional videos contained content with or without gestures for comparison. Students’ comprehension of the content increased when gestures were included. Gestures were found to support the learning of scientific concepts related to processes of cell division by providing semantic information in addition to speech which supported the meaning of the content.

These studies complement the research on mathematics learning, reinforcing a general contribution that children’s gestures during the learning of academic concepts contain meaning that was not provided in their speech. In a 2016 study by Davis, Year one students’ gestures analysed whilst carrying out science activities that included a ‘melting and freezing’ activity and a ‘requirements for a seed to grow’ activity extends these considerations. Meaning contained in children’s gestures were not always present in their speech and hence provided a broader range of information to teachers of their knowledge of science concepts (Davis, 2016).

In both science and mathematics, these research studies show that students use gesture in addition to speech when constructing meaning and new content understandings
(Singer, Radinsky, & Goldman, 2008) and is also found when students engage in co-
construction of meanings when problem solving in small groups. Interestingly, each
new concept was apparent in gesture before it appeared in speech, showing that the
presence of gesture tends to predict the soon-to-emerge language of the concept that
was demonstrated in gesture. This finding that knowledge appears in gesture before
speech has consistently been identified in numerous early first language acquisition
studies and is now being replicated within studies of gesture when learning new
mathematical and scientific concepts.

Beyond the sciences and mathematical disciplines gesture in learning has long been
studied in humanities disciplines other than language, specifically musical concept
acquisition. A long-standing approach to the teaching of music is the Kodaly method,
developed by Zoltan Kodaly in Hungary in 1945 (Eösze, 1962). One of its key features
is the use of hand gestures to provide a visual aid of tone and to indicate height and
depth of pitch (Wheeler, 1985). There have been numerous claims that the Kodaly
method has supported students’ learning of musical intonation, rhythm and pitch
(DeVries, 2001). Kodaly has gained worldwide recognition for his work and in 2016
was inscribed in the register of World Intangible Heritage by The United Nations
Educational, Scientific and Cultural Organisation (UNESCO). This international
recognition of gesture as a pedagogical teaching tool in music is ample demonstration of
a very wide acceptance of its utility in teaching and learning.

At a more local Australian level, an investigation into the use of gesture in teaching
musical concepts (Nafisi, 2010) found that gestures were used to ‘illustrate a technical
phenomenon like a physiological process or an acoustic phenomenon’ while other
gestures were used to support visualisation of ‘a particular thought or sensation’. In the
music lessons that were observed in the study, gestures were used heavily,
demonstrating the power they have as a pedagogic tool to convey music concepts and
ease their comprehension. These findings demonstrate the enriching and additional
benefit that gesture provides for the learning of music.

With a focus on the learning of a new language concept as new curriculum content, one
study investigated children’s learning of palindromes (Wakefield & James, 2015). This
identified that children’s learning of new language content was supported by their use of
gestures; both those that supported speech and those that complemented speech. Other
studies with a focus on learning language are either related to first language acquisition
or second language learning, and not as new curriculum content, hence are discussed elsewhere in this literature review.

A final study discussed here investigated the comparative role of gesture within four different curriculum areas. Wilson, Boatright and Landon-Hays (2014) found that the types of gestures teachers used and their frequency of use varied in different curriculum areas. Six teachers’ use of gestures in science, language, mathematics and social studies were observed throughout an entire school year. It was found that in science the majority of the teachers’ gestures involved representation of observable images used in supporting conceptual instruction of science while in language, only 1% of teachers’ gestures represented observable images. Gestures in language lessons and in social studies tended to portray characters’ actions. These gestures were not deployed to support the objectives of the lesson to the same extent as the gestures used in science. By contrast, in mathematics, teachers’ gestures provided observable representations of numbers and images. The researchers proposed that gesture use in mathematics was the most beneficial because the gestures provided observable representations of concepts as well as of the action involved in performing mathematical tasks. This study focused only on teachers’ use of naturally occurring gestures, not intentional teaching gestures, and did not study students’ use of gesture so it remains unclear if or how teachers’ gestures influenced students’ use of gesture and if or how teachers’ gestures impacted on students’ learning of each subject. Nevertheless Wilson et al (2014) explore the potentially very rich field of comparative discipline and topic connections to gesture use.

This section of the review has shown numerous benefits from including gesture when teaching and learning new concepts across a range of curriculum areas and further strengthens assertions of the important role of gesture on L1 receptive language skills as well as cognition. The question now arises whether gestures can support second language comprehension, addressed in the discussion below.

3.7.3. Gestures and L2 comprehension

It is often suggested that visually rich gestures serve as input to learners of a second language during comprehension. Gullberg (2006b) supports this, stating that hand gestures are crucial in learning a new language. Gestures can help listeners understand the meaning of unknown words (Calbris, 1990) and are often used by language teachers to prevent the need for translation. Similarly, learners’ L2 comprehension is supported
when L1 speakers use gestures (Mori & Hayashi, 2006) identifying gestures as a strategy to scaffold L2 comprehension. The “message-carrying function” of gestures in an L2 context is emphasised, showing that listeners’ comprehension is supported by observing message-carrying gestures with speech (Harris, 2003). This finding sees gesture as integrated with the meaning of speech during language comprehension.

Listeners pay greater attention to gestures in L2 than in L1. One study found that listeners demonstrated a low level of attention to gestures produced when listening to L1, almost twice as much attention to gestures when listening to a familiar L2, and almost three times as much attention when listening to a completely new language (Rime, Boulanger, & d'Ydewalle, 1988). This considerable rise in attention to gestures demonstrates the increasing reliance on gesture by listeners when comprehension of input is lowest.

Gestures impact on second language comprehension positively, with students scoring higher on comprehension tests when they had viewed gestures than those who had not (Ludvigsen, 2008). The gestures were found to help students make inferences and comprehend implicit information. Another study also identified comprehension benefits for L2, finding that learners within the early stages of L2 learning benefitted most from viewing teachers’ gestures (Sueyoshi & Hardison, 2005). In their experimental study investigating English as Second Language (ESL) students’ listening comprehension within three conditions, (1. Audiovisual-gestures-face, 2. Audiovisual-face and 3. Audio-only), the researchers found that students scored significantly higher on comprehension tasks when visual cues were used. This finding highlights the increase in students’ L2 comprehension when in face-to-face interaction and when gestures were present. Questionnaire responses from students revealed that students with high proficiency in English felt more strongly about the benefit of gestures in listening comprehension, while comprehension tests found that both proficiency level students responded positively to gestures as aids, with the lowest proficiency learners benefitting the most.

Students were most likely to recall the meaning of French expressions when they were presented with gestures and retained the knowledge better over time (Quinn-Allen, 1995). Ten French expressions were presented to English L1 students in five sessions via video within gesture and non-gesture conditions. Results of the study showed that the inclusion of gestures when the new French expressions were presented significantly
increased students’ recall of the meaning of the French expressions evidenced when writing the English equivalents and increased their retention over time. This is an important study demonstrating empirically how the inclusion of gestures supports memory of a second language. This study demonstrates the pedagogical value of including gestures when teaching L2 on learners’ passive knowledge of the L2 in an experimental context. The next step would now be to ascertain whether the inclusion of gestures would support learners’ productive use of the L2 and in an authentic classroom context.

Both young children and adult learners demonstrated their understanding of meaning when gestures were viewed while listening to verbs in an artificial language (Goodrich & Hudson Kam, 2009). This study highlighted the role of gesture when learning a new language and specifically when interpreting unfamiliar speech such as in a second language context. Although, providing some persuasive findings, further examination with authentic languages in authentic language contexts needs to be carried out to verify these findings for transferability to L2 learning contexts.

Similarly, 62 pre-school children were taught six new words in an artificial language to determine the effects of learning in three conditions; 1. a word alone, 2. a word with a picture and 3. a word with an iconic gesture (Rowe, Silverman, & Mullan, 2013). Children were tested on English translation and comprehension after learning the words and were tested on comprehension one week later. The individual differences of English language ability (L1), language background, and gender were considered with the results. Results from the translation tests found no difference by conditions. Results from the immediate comprehension tests identified a significant difference by condition, showing that gender and language ability influenced results. Different language ability and language background groupings responded differently to the conditions of word, word with picture, and word with gesture. The high monolingual and language background student groups performed best when words were presented alone, whereas the low monolingual students preferred words with pictures and the low language background students preferred words with gestures. Results from the comprehension tests one week later showed no difference between conditions. This study draws attention to the influence of characteristics of learners, such as language ability, language background and gender, when considering findings.
Of importance to the current study is the work of Cabrera and Martinez (2001) due to the similar research setting, involving stories in a second language within two conditions, including gestures. Cabrera and Martinez investigated the role of different types of input on English as a foreign language (EFL) comprehension. Participants listened to two stories, one with simplified language and the other including modifications including repetitions, comprehension checks and gestures. Students demonstrated better comprehension of the story with modifications than with just simplified language. As a variety of modifications were made to one story, the impact of each modification cannot be determined. We cannot correlate the use of gestures conclusively with increased comprehension from this study however, it does suggest that further investigation is worthwhile.

Gestures supported the learning of L2 linguistic forms as well as word meaning (Gullberg, Dimroth, Roberts, & Indefrey, 2007). Dutch participants exposed to Chinese Mandarin for the first time used the input of gesture with speech to comprehend the L2 input. This study highlights the role of gesture as input to support word learning as well as to identify linguistic forms. Another study with a focus on the role of gestures when native English speakers learn Chinese Mandarin lexical tones (Morett & Chang, 2014) found that words learned with gestures that conveyed tonal pitch helped learners to identify the meanings of words differing in tone, whereas semantic gestures that conveyed word meaning did not support learners’ identification of tones in words. The findings from this study highlight the differing functions of different types of gestures. Conflicting with these findings, however, Hirata and Kelly’s study of native English speakers being trained to perceive vowel length contrasts in Japanese (Hirata & Kelly, 2010) found that learners who heard Japanese and saw the lips of the speaker outperformed learners who only heard the speech or heard the speech while viewing hand gestures. This finding does not support the claim that gestures impact on language learning in this learning context for the learning of Japanese vowel length contrasts with native English speakers but lexical tones do not exist in Japanese and so the second study does not really contradict Morett and Chang.

This section of the literature review presented a range of evidence demonstrating the impact of gesture on L2 comprehension. It showed that much less is known about the impact of gesture in L2 contexts than in L1 contexts. The literature identified that gestures can support the comprehension of L2 meaning and that viewing gestures has a
positive impact in L2 contexts. Gestures with speech support L2 learning more than speech alone, and students’ scores on L2 comprehension tests increased when gestures were included with speech. The next section of the literature review will discuss the theories of encoding and processing language. The ways language is encoded and processed are important to a speaker’s productive language output and as will be discussed, these theories may be drawn on to support productive language output.

3.8. Gestures for encoding and processing language

The ‘Encoding Specificity Principle’, developed by Tulving and Thompson (1973), has been foundational in identifying that the context in which language is first learned can be used to access the mental representation of that language and support later retrieval of the language. Tulving and Thompson stress the importance of the retrieval environment matching the encoding environment (1973) to support recall. This principle is based on the link between the depth of processing and greater retention.

A memory processing framework put forth by Craik and Lockhart (1972), suggests that speakers’ response time may indicate depth of storage in memory. This suggestion, although met with some scepticism, led the way for further research into the features of language during encoding and their relationship to memory. Craik and Tulving later suggested that the ‘depth of processing’ (1975) was important to memory and explained that the durability of language depends on the depth of semantic involvement when the language is initially processed. They found that words associated with meaning were retained in memory better than memory for a word’s sound or its physical characteristics and therefore memory for what is meaningful creates a stronger depth of processing important for retention (Craik et. al., 1975).

Mental imagery is also strongly associated with learning and memory (Paivio, 1969) and strongly related to the notion of encoding. A series of experiments reported on in 1973 found that ‘Dual Encoding’ through both images and words strengthened recall (Paivio & Csapo, 1973). It was claimed that saying words does not often help remember those words, but encoding with images and words, strengthens recall (Paivio & Csapo, 1973). Throughout each of these studies, imagery has been compared with verbal learning and found to be superior in terms of memory benefits.
Following the dual encoding theory (Paivio & Csapo, 1973), it was suggested that learning is most effective if presented through at least two modalities (Mayer & Sims, 1994). Processing information through two or more modalities strengthens memorisation. It is claimed that language that has been encoded in both visual and verbal formats should be easier to maintain in memory than those only in a verbal format (Clark & Paivio, 1991). Memory encoded with both a spoken and visual component is stronger than when memory encoding occurs in only one modality. Experimental research has supported this theory finding that learning through two modalities strengthens the learning of lists of words (Goolkasian & Foos, 2005). Baddeley’s research has identified ‘working memory’ as involving two systems of storage, one for phonological and the other for visual storage (Baddeley, 1990). It has been found that auditory information is automatically stored phonologically whereas visual information can be stored in both the phonological and visual storage systems. This knowledge opens up further possibilities about the role of visual learning together with phonological learning to strengthen memory.

Theories of encoding language have then led to speculation about ‘internalisation’ of language. Internalisation involves making a connection between language and meaning. If gesture, which scaffolds meaning, is in line with the learner's Zone of Proximal Development, then internalisation may take place. The process of internalisation is also explained by Terrell’s “binding” theory (1986) which identifies the formation of mental representations for the language. To internalise a language, it is also important to be able to process the language which Garrett discusses as “mapping”, that is the ability to access meaning from memory to be able to apply it subsequently in a real context (1991). Rivers also supports these views asserting the need for mental representations to access language (1991).

The early theories of encoding did not explicitly connect encoding with gesture research, however, studies of gesture have connected findings back to the seminal work on encoding. Theories of encoding have provided a foundation from which to view the role of gesture when encoding language. A number of empirical studies have since supported the theory of encoding and connected it with gesture research both for L1 and L2.

There is a widely held belief that gestures support spatial memory and gestures activate the spatial memory to support recall (Morsella & Krauss, 2004). Gesture has also been
identified as providing contextual cues that support language retrieval. Riseborough’s (1981) study found that participants recalled more verbs when they were presented with gestures and could recall more items in a story when they saw a gesture to accompany the word. Engelkamp (1991) found that when learners are specifically asked to gesture during language encoding, they make strong connections between the words and actions. By using gestures and speech, it is believed that strong and lasting memory traces are created. These findings demonstrate that gestures support language learning, supporting the theory of dual encoding (Paivio & Csapo, 1973). Woodall and Folger (1985) also conducted experiments based on the encoding principle and found that when gestures were presented with a word, the gesture supported the retrieval of that word. It was found that gestures were most likely to lead to successful language recall.

Wagner Cook and Goldin-Meadow (2006) emphasise the role of using gestures and propose that the production of gestures influence the way new language is stored in memory. It has also been determined that gesturing during encoding leads to information being stored more deeply which results in greater recall, with the greatest effect of gesture on learning seen over time (Wagner Cook et al., 2008). Wagner Cook, Yip and Goldin-Meadow (2010) then found that gesturing during encoding led to better language recall, whether the speaker chose to gesture or was instructed to gesture. This collection of studies identifies that the process of actively gesturing during encoding facilitates memory. Church, Ayman-Nolley and Mahootian (2004) believe that gestures serve both an encoding and decoding function which affirms claims that gestures support language encoding, therefore supporting memory, as well as decoding, supporting language recall.

In a second language study, Quinn-Allen found that students recalled the meaning of more French expressions when presented with gestures at the time of initial encoding (1995). Although all students experienced a decay in memory over time, the students who were presented with French expressions with gestures forgot fewer expressions than those who were not exposed to gestures. These findings support the view that gestures presented with speech can strengthen the internalisation of language and strengthen recall of the meaning and retention.

Each of these studies have shown the role of gesture both at the time of encoding language as well as at the time of recall of that language. These studies add evidence to the encoding theory by demonstrating that gestures support the encoding of language by
providing dual modes of coding for memory and can be used as a strategy to recall the language encoded.

The ‘Information Packaging Hypothesis’ (Kita, 2000) claims that gestures support the ‘conceptual packaging of information’ before it is coded into speech. This theory identifies the role of gesture in organising information for speech. Gestures are important for the internalisation of language and lead to a greater depth of processing. Kita’s work has introduced the idea that gesture can support the overall packaging of information. This view sees the role of gesture as critical in conceptual packaging and as a mode for thinking. It supports the use of gestures to help speakers organise their thinking when constructing utterances. Previously, gesture had only been connected with lexical retrieval. This theory explains how gestures and speech are encoded.

Adding support to this theory, are early claims that gestures support language processing as well as communication (McNeill, 1992) and that gestures support the stage of language encoding which then supports speech production (Rime & Schiaratura, 1991). Situating this in a second language learning context, gesture can be used to support comprehension and linguistic conceptualisation. In Kita’s study of an L2 learner, it was shown that gesture was used to organise thoughts and plan for oral output by identifying points in space which then supported L2 speech (Kita, 2000). Imagistic information, such as that provided by gesture, and linguistic information interact together at the conceptual level (Kita & Ozyurek, 2003). De Ruiter also supports the idea that gesture and speech are integrated conceptually (2000), finding that gesture with speech supports the conceptual representations of L2 and therefore supports the learning of the second language. This provides further evidence that gestures are important to the encoding and processing of language.

This section of the literature review has identified the theories of encoding and processing of language and has discussed key studies of gesture which connect with these theories. Encoding and processing language are important internal processes which precede speakers’ productive language output. This section has identified the role of gesture in encoding and processing which can then support speech production. The next section will discuss the theory of embodied cognition and connects it with the role of gestures to support productive language output.
3.9. Embodied cognition

The theory of ‘Embodied Cognition’, developed by Glenberg, is based on the belief that the physical body plays a role in cognitive processing (1997). The term ‘embodied’ was first used by Varela, Thompson and Rosch (1993) to argue that bodily action is interpreted with communication in context, rather than a separate unrelated form of expression. Glenberg adds that memory is grounded by embodied action and that memory can be retrieved by those representations of actions. Embodied cognitive theory highlights the importance of bodily action for memory. Previous approaches saw memory as a passive process whereas Glenberg argued that bodily actions play a role in action being stored in memory (1997).

Following from this foundational theory, Kaschak and Glenberg developed a hypothesis to explain how language and actions work together (2000). The first stage is when words and phrases are “indexed” to, or remembered with, actions in the environment. This process draws from the work of Barsalou (1999) who proposed that memory is supported by simulations of sensory and motor action. The second stage of the process is to determine meaning from the indexed actions, with a third stage when meaning from language is determined together with those indexed actions. This process explains how language and action are encoded in memory as a set.

Embodiment effects on memory have been identified in reasoning and language understanding tasks (Wilson, 2001). It is suggested that by using our bodies during cognitive processing, we “off-load storage” to better enable demanding cognitive tasks such as memory (Donald, 1991). This view is shared by Goldin-Meadow who claims that gestures “lighten the load” of cognitive processing (2001).

Supporting embodied cognition, Rubin developed a ‘Basic Systems Theory’ (2006) to account for the roles of multimodal components in memory. Rubin claims that retrieving a memory involves simulating multimodal components. Together, these theories have raised the profile of multimodal components of cognition and intellectual functioning as important for memory.

There are many theories of grounded cognition (Gibbs, 2006), one which is particularly relevant for this thesis is the role of the body in cognition and the view that the states of the body can cause the states of cognition (Barsalou, Simmons, Barbey, & Wilson,
2003) and another is the role of simulation in cognition (Barsalou, 1999). Simulation is the re-enactment of a physical state which was assumed during an experience. It is claimed that the brain will store memories across multiple modes and that these multiple modes can be used to retrieve memories. The ancient ars memoriae, or the art of memory, arose in European antiquity based on suppositions and insights compatible with what contemporary research is finding such as using various mnemonic principles and methods to increase memory and recall, including bodily action (Bolzoni, 2004).

There are also theories that specifically connect gesture with embodied cognition. One theoretical view supports the integration of gesture as action and cognition. This view makes a strong connection between gesture and the cognitive system and is based on the work of David McNeill who takes a Vygotskian view of gesture as being part of the thinking and speaking process (McNeill, 1992) which sees gesture and language as both integral to meaning making and communication. Further work by McNeill has resulted in claims that synchronised gesture with speech forms an “idea unit” (McNeill, 2008) that ties gesture and thought strongly together. Kendon supports this and claims that gestures are integral to communication rather than being “add-ons” (Kendon, 2008).

Embodied learning connects strongly with the notion of using gesture to ground language to meaning. Embodied learning is when an action is performed which then stimulates the memory of the word connected to the action. Gestures support learning by creating embodied memory traces of the meaning of words which then supports the recall of those words. This view identifies the important role that gestures can play to support language learning, memory and the recall of language.

Gesture is also strongly connected with theories of grounded cognition. Behavioural research exemplifies the claim that gestures ‘ground’ language to meaning and that the use of gestures with language is a natural part of human development. It is proposed that action underlies cognition and gesture is strongly connected with cognition as action (Barsalou, 2008). It is claimed that a word alone may not represent the full or complete meaning of a word, whereas a gesture which portrays an action, can communicate nuances, levels or dimensions of word meaning (Barsalou, 2008). This role of gesture to visually represent the spoken word involves grounding meaning via physical representations, so that meaning can be more fully understood.
The claim that body posture can strengthen a memory trace during the encoding of an experience also supports these findings (Barsalou et al., 2003). Behavioral data has shown that if the body posture held during an experience is reenacted, then it can cue the recall of a memory (Dijkstra, Kaschak, & Zwaan, 2007). The evidence supplements other views that show that embodied action, whether posture, movement or gesture, strengthens memory during encoding and can be reenacted to recall the memory.

When considering the role of gesture in L2 contexts, it is recognised that gesture can enact meaning in addition to language and provide psychological associations between language and meaning (McCafferty & Ahmed, 2000). Such a theory connects strongly to Vygotsky’s idea of internalisation. If action through gesture supports meaning when it is in line with the learner's Zone of Proximal Development, it may also support learners’ internalisation of the language. These findings provide strong evidence that embodied information is stored as part of the memory trace. This indicates that to store information most strongly, embodied encoding is stronger than only hearing or saying information.

Connecting with such theories of embodied cognition are theories and supporting experimental evidence about the general role of ‘enactment’ in learning. Jerome Bruner introduced the concept of “enactive representation” to stress the importance of learners having multi-sensory experiences (1966) to enact and strengthen their learning. This idea, extended from John Dewey’s theory of ‘experiential learning’ (1938) whereby learners need to be actively involved in order to learn something new.

Enactment during the encoding of new information influences the way information is stored in memory and how it can be retrieved from memory. Mulligan and Hornstein (2003) found that enactment during encoding led to increased memory and that memory was further supported when participants re-enacted during retrieval. Findings from a wide range of studies on ‘enactment’ suggest that including physical enactment with other modes of learning strengthens learning. These theories underpin the suggestion that gesture supports learning because it adds a sensory mode to learning in addition to speech and actively involves learners in their learning.

Enactment plays an important role in language processing and memory (Engelkamp, 1998). Enactment during the initial processing of language adds an important motoric element that strengthens a memory trace (Cohen, 1989). An example of this is a study
showing that the enactment of the meaning of an utterance supports the later recall of that utterance as a result of enactment strengthening the memory trace (Saltz & Donnenwerth-Nolan, 1981). In this study it was found that participants were more likely to recall sentences that they had acted out themselves. This suggestion that motoric enactment strengthens the memory trace opens up questions about the role of gesture as a form of motoric enactment.

Memory processing by different types of input have been compared, such as verbal learning linked to enacted learning. In one early study, Cohen (1981) identified that memory processes differed between action tasks and verbal tasks with findings showing that action tasks supported memory more than verbal tasks. Also in support of these findings, experiments comparing the memory of phrases that were enacted, with those verbally learned, showed the superiority of enacted encoding (Koriat, Ben-Zur, & Nussbaum, 1990).

When comparing verbal and physical task performance Koriat and Pearlman-Avnion (2003), reported findings that showed that enactment enhanced memory quantity and accuracy suggesting that enactment supports the organisation of memory as well as memory processing. Interestingly, it has been claimed that whether enactment was only at the time of learning and not at recall or, only at the time of recall and not while learning, nevertheless still enhanced memory. These findings support the role of enactment at either the encoding or retrieval stages, whereas other studies found that enactment at retrieval was only beneficial if enactment had occurred during initial encoding (Engelkamp, Zimmer, Mohr, & Sellen, 1994).

Both overt enactment as well as imagined enactment can support the recall of actions when learning lists of nouns (Denis, Engelkamp, & Mohr, 1991). This tells us that learners do not necessarily need to perform the actions themselves but can benefit from imagining the actions being performed. A previous study by Engelkamp, Zimmer and Denis (1989) had found that imagining someone else perform an action taps into the visual imaging system, whereas imagining oneself perform an action taps into the motoric system. These results deepen understandings of the role of imagined enactment in supporting recall in addition to physical enactment. Similarly, when participants observed or imagined enactment, with real or imagined objects, recall was still increased (Kormi-Nouri, 2000). This underscores that enactment benefits can be realised even when the speaker does not perform the action themselves.
Research that specifically connects enactment with gesture, also claims benefits for gesturing. Engelkamp (1991) found that when participants are asked to gesture during language encoding they are involved in the explicit process of making a connection between words and actions. In this way, it is believed that enacting with gesture leads to stronger memory traces than spontaneous gesturing.

The question then arises as to whether enactment during encoding is superior due to physical movement or due to the physical representation in memory strengthening cognitive function (Masumoto, Yamaguchi, Sutani, Tsuneto, Fujita, & Tonoike, 2006). In order to address this question, Magnetoencephalography, more commonly known as MEG, data was collected to locate which area of the brain was being activated during enacted encoding. This data determines the influence of physical movement and compares it with physical representation during cognition. Findings showed that the reactivation of physical movement led to the enactment effect. Enacted encoding resulted in stronger stimulation in the brain than verbal encoding as well as occurring quicker. Findings support the claim that enacted encoding is superior to verbal encoding which is also supported by neurological studies using MRI (Russ, Mack, Grama, Lanfermann, & Knopf, 2003) and MEG data (Masumoto et al., 2006).

Linked to enactment are a number of supporting studies that have investigated the role of ‘actions’ on learning. Actions provide an active experience for speakers which supports knowledge, memory and learning. Experimental evidence demonstrates a connection between participants’ actions and judgements when carrying out action and conceptual knowledge tasks (Tucker & Ellis, 1998) and a connection between actions and cognition was also demonstrated in a sentence response task, in which participants responded to sentences with an action that was congruent with the meaning of the sentence (Glenberg & Kaschak, 2002). Experiments conducted by Engelkamp, Zimmer, Mohr and Sellen (1994) showed that phrases were remembered better by participants when their actions accompanied recall but this was only significant when actions had been used during the initial encoding of the phrases. Results showed significantly enhanced recall by participants performing actions compared with verbal encoding and recall. These findings are also supported by neurocognitive evidence that shows that the same area of the motor cortex is stimulated from hearing an action word as it is from performing the action (Pulvermüller, 2005).
It is claimed that an action enhances the memory of that action and therefore strengthens recall for words which have been connected with action (Cohen, 1981). In 1981 Cohen coined the term ‘subject-performed tasks’ when referring to actions which participants performed themselves. Recall of this type was not age sensitive, so benefits could be realised at any age (Cohen & Stewart, 1982). Unlike the recall of lists of words that showed a developmental effect, the recall of the performance of tasks did not show an age related developmental effect. Performing an action also leads to a shorter response time than when the action is spoken verbally (Engelkamp & Zimmer, 1984). This study showed that participants responded sooner when doing an action than when verbalising the action and that being presented with information via ‘doing’ before verbalising, further strengthened responses. These findings support previous research results about the importance of enactment during the initial encoding of new information or language.

Research findings have shown that action supports memory. One example is a comparison of different modes of learning a theatrical script, upon which those participants who learned the script with active dramatisation had the strongest recall (Scott, Harris, & Rothe, 2001). The role of action with language and the retention of speech by professional actors was also investigated by Noice and Noice (1999). Their investigation centred around the efficient learning of text and its retrieval 20 days after learning, and five months subsequently. Two actors recalled their script lines in two conditions; first when sitting on a chair and second, when performing actions. It was found that the actions greatly supported the retrieval of speech. It is suggested that actors store mental representations, supported by their actions, rather than memorising dialogue and that these mental representations encoded with actions support the retrieval of oral language. A later follow-up study by Noice, Noice, and Kennedy (2000), also found that movement supported the recall of lines from a play by six actors compared with sitting still. This finding was in line with results from the earlier 1999 study. Results also showed that action during retrieval further supported actors’ recall of script lines. Another experimental study by the same authors found that non-professional actor participants retained more from a script when reading and simultaneously performing actions than participants who only read the material (Noice & Noice, 2001). Participants who were involved in active experience of the script recalled 76% of the script, compared with a recall of 37% for participants reading the script with an attempt to memorise it. These results strongly demonstrate the increased efficiency of active experience in learning and subsequent recall. Noice and Noice
(2001) conclude that action with speech provides extra encoding to support a deeper memory of speech. Together, these findings demonstrate the impact of embodied learning with actions on speech and recall and represent lengthy, connected language in context.

Physiological evidence supplements the connection between cognition and action, both when producing and observing actions. Mirror neurons fire when we produce an action as well as when we observe others producing actions (Rizzolatti & Craighero, 2004). This would suggest that there would be benefits from both observing as well as producing actions when learning. A number of studies have investigated the interplay between observed and produced actions with some supporting the memory benefits of observed actions. Observing another person perform actions has been shown to help facilitate memory of those actions (Cohen, 1981; Cohen, Petersen, & Mantini-Atkinson, 1987). Other findings have shown the benefits of both observed and performed actions. Mulligan and Hornstein (2003) found that both self-performed and observed actions support recall. There are also findings that show that performed actions result in superior memory benefits compared with observed actions. Englekamp (1998) found that enactment via self-performed tasks led to better recall than enactment via observed tasks. Another study compared the language recall of observed actions with speech with performed actions with speech after delays of one week and then two weeks (Manzi & Nigro, 2008). Memory for performed actions was better than memory for observed actions after a one week delay, but did not persist after a two week delay. This suggests that although the early recall of language may be improved when participants perform actions with speech, these benefits may not endure over longer time periods.

Each of these examples shows the impact of action, both observed and performed, on facilitating memory. Although it could be argued that gesture is action, further research needs to determine whether findings about the impact of ‘action’ on memory are the same as for gesture. Despite this, the much broader body of knowledge about embodied cognition and enactment have demonstrated clearly the impact of gesture on cognition.

This section of the review has provided evidence that embodied learning, and specifically including gesture when learning, enhances cognition, language processing and language retrieval. This evidence supports the suggestion that adding gesture as embodied learning to the second language learning experiences of students would enhance their learning and impact on their productive language output. The current
study aims to investigate this further with ITG and Japanese oral language output. The next section discusses the role of gesture on productive language.

3.10. Productive language - Gestures and oral output

The literature review now turns to consider the critical role of gestures on oral output. The focus of the current study is on oral output so this section is particularly relevant to informing what is already known in the field. This section will be discussed in two parts; first the impact of gestures on L1 oral output will be discussed, followed by the impact of gestures on L2 oral output.

3.10.1. Gestures and L1 oral output

Gestures help speakers access the language they are trying to retrieve (Krauss et al., 1991). This role of gestures, also known as ‘Lexical Access Hypothesis’ (Krauss, 1998), highlights the role of gestures on language retrieval and speech production. Krauss theorised that gestures help speakers search for the words they need when speaking and therefore support their speech production. Krauss also claims that gestures support speakers’ fluency. This claim is supported by findings that gestures are produced before the production of words and that gestures are produced considerably earlier when words are unfamiliar (Morrel-Samuels & Krauss, 1992). Consistent with these findings, speakers have been shown to use gesture to retrieve a word being searched for (Streek, 1993).

Supporting this theory, experimental evidence has shown that the rate of gestures increases when retrieval becomes difficult (Morsella & Krauss, 2004). When speakers are not permitted to gesture, they have more difficulty retrieving words (Frick-Horbury & Guttentag, 1998) and prohibiting gestures makes speech less fluent (Krauss, 1998). Speakers who are told to gesture, recall more words than those told not to gesture, and when in a “tip of the tongue” state were more likely to find the right word when they had gestured than when they had not (Frick-Horbury & Guttentag, 1998). Additionally, children who were told to gesture when recalling an event, recalled more details than those prevented from gesturing (Stevanoni & Salmon, 2005). The study involved 60 six and seven-year-old children in ‘an event’ in one of four conditions; 1. gesture-instructed, 2. gesture-modelled, 3. gesture-allowed and 4. gesture-not allowed. Children recalled the event two weeks later. Children in the gesture-instructed condition were able to
recall significantly more information than children in all other conditions, suggesting the benefit of adding gesture to speech for increased recall.

The ‘Lexical Retrieval Hypothesis’ (Rauscher, Krauss, & Chen, 1996) claims that gestures help the speaker to find the right words during speech production. This view of the function of gesture sees gestures as supporting the formulation of speech by facilitating lexical retrieval. In their experimental study, Rauscher, Krauss and Chen (1996) had participants tell action cartoon stories to listeners in two conditions; with gestures and when prevented from gesturing. It was found that preventing gestures impaired the speakers’ oral descriptions of the cartoon stories.

The role of gestures for speaking is also highlighted by Rime and Schiaratura (1991) who claim that gestures support speakers’ communication. They found evidence that gesture production remains stable whether speakers can see the listener or not, demonstrating that gestures are not only produced for the benefit of listeners, but hold value for the speaker. Also in support of the view that gestures support the speaking function, we know that when movement is restricted, there is a decrease in speakers’ depth of description and level of content (Stevanoni & Salmon, 2005). Speakers gesture more when speech content is more complex and when speaking about visual images or actions.

Task complexity has also been identified as a factor in gesture use. When speakers are engaged in a difficult task that involves speech production, gesture use increases (Alibali, Kita, & Young, 2000). With an increased difficulty of tasks, participants use more gestures to help access the language (Kita, 2000; Krauss & Hadar, 1999). It has also been found that speakers use a greater quantity of gestures when the linguistic task is more demanding (Goldin-Meadow & Singer, 2003; Kita, 1993; Marcos, 1979; Nobe, 1993). The more difficult a word is to retrieve, the longer the time needed between the production of the gesture and the production of the word (Morrel-Samuels & Krauss, 1992).

Different types of language tasks evoke different levels of gesture use. More gestures are used when speakers spontaneously construct their own utterances than when saying rehearsed utterances (Chawla & Krauss, 1994). This shows that one role of gesture could be to support cognitive processing during the creation of language. Gestures are also used more when speakers need to justify or explain something as opposed to more
simply describing something (Alibali et al., 2000). Although, in a second language context, it could be suggested that describing may also be challenging so may also evoke gestures.

Hadar, Dar and Teitelman (2001) suggest that gestures are produced when speakers are focused on the semantic level of oral production. Gestures support the organisation of thinking for speaking and the overall productive output of speakers. Further making a claim for the role of gestures for thinking for speaking, are studies that have focused on speakers’ use of gesture when listeners are not present. One such example is when speakers use gestures even when a listener cannot see their gestures, such as when talking on the telephone (De Ruiter, 1995), demonstrating that gestures are not only performed for the benefit of listeners, but for speakers.

Gestures are known to support memory, particularly of spatial images (Wesp, Hesse, Keutmann, & Wheaton, 2001). Speakers have been found to gesture more when describing a picture from memory than when describing the same picture when it is present in front of them. These findings show the cognitive function of gestures for speakers as serving to support retrieval of memory and language.

The role of gesture on language recall has been a common focus of research and increasingly persuasive evidence has demonstrated its impact (Wagner Cook et al., 2010). Gestures are important in the retrieval of speech (Butterworth & Hadar, 1989) and for lexical access (Hadar & Butterworth, 1997) with evidence showing that gestures precede speech which is later retrieved, supporting this claim. To test the hypothesis further, Beattie and Shovelton (2000) carried out a series of three experiments. They found that the retrieval of words was more likely after pauses than fluent speech, and that gestures supported the retrieval of unpredictable words. These two findings matched the claims and findings of Butterworth and Hadar about the role of gesture in language retrieval. In a subsequent study, Beattie and Shovelton found that different types of gestures had different influences on communication and that ‘iconic’ gestures, those gestures which represent a bodily action or the physical properties of an object, could support the semantic information of speech (Beattie & Shovelton, 2002).

Viewing gestures can support language recall. The inclusion of gestures in a story re-telling task with native English speakers (Riseborough, 1981) found that more information was recalled by the group of participants that saw the speaker’s gestures.
These findings identified the impact of viewing gestures on productive language output. This was an L1 study and involved the use of naturally occurring gestures. It would now be interesting to see if comparable findings are evident in a second language learning context and with intentional teaching gestures.

Speakers who gesture while encoding remember more than those who do not gesture. Participants of one study were experimentally asked to gesture or not gesture to enable a comparison of results. A statistically reliable effect was found of gesture on the number of words spoken (Wagner Cook et al., 2010). Participants in the gesture condition, recalled more, both immediately and after a three-week delay. These findings support the claim that gesture can strengthen encoding into long-term memory and increase productive output. Similarly, in a picture naming task within gesture and non-gesture conditions (Pine, Bird, & Kirk, 2007), children named more words correctly and resolved more “tip of tongue states” when gestures were used. This study also highlights the role of gesture to facilitate the retrieval of speech to support productive output.

Later work by Wagner Cook, Yip and Goldin-Meadow (2012) involved participants in remembering letters while explaining their solutions to mathematical problems and producing gestures. The participants were found to recall significantly more letters when producing the gestures coordinated with their verbal explanations. These findings further support the use of gestures with oral language to increase memory and recall. Importantly, the act of moving one’s hands, such as in rhythm, does not aid memory however, gesturing meaningfully with speech serves to “lighten the load” on memory and increase memory. This finding highlights the importance of gesture relating to the meaning and content of speech. This study was carried out in L1 and involved mathematics content and further research is needed to determine the impact of gesture in L2 contexts where speech access and fluency has not yet been fully developed.

An experiment involving 42 L1 French speaking five-year-olds was carried out to determine the impact of gestures on their memorisation of words after watching videos presenting new words, with and without gestures (Tellier, 2005). Some children were asked to look at the gestures and repeat the words while others were asked to look at the gestures and repeat the words with gestures. Tellier’s research found that children who also produced the gestures memorised the words better than those who did not produce gestures. The results showed statistically significant benefits for the children producing
gestures in their memorisation of words. This study contributes to current understandings about short term memorisation of words in a first language.

In another study with a focus on word learning, Dutch speaking primary school children were taught 15 new Dutch verbs in four conditions; 1. No imitation, 2. Imitation during encoding, 3. Imitation during retrieval, and 4. Imitation during both encoding and retrieval, to investigate the effects of the different instructional conditions (de Nooijer, van Gog, Paas, & Zwaan, 2013). The words and gestures were presented via video to students who were asked to imitate the gestures, depending on their condition. Findings identified that gesture imitation was effective for learning object manipulation verbs, however, did not increase the learning of locomotion or abstract verbs. Recall scores decreased at the post-test one week later, showing a decline in students’ retention of learning. This study has shown that gestures had a different effect on different types of verbs, highlighting the complexity of factors involved when considering the impact of gestures on word learning.

A recent study with two-year-old L1 Slovakian children, investigated the impact of gestures and pictures as non-verbal support with speech (Kapalkova, Polisenska, & Sussova, 2016). It found that gestures supported word learning significantly more than pictures. Children were asked to produce words immediately after the training and at two subsequent intervals: two weeks and six weeks later. Across each time period, learning with gestures outperformed learning with pictures. Although there was some decline in memory over time, memory remained strong. Another study required adults to write down what they remembered after watching videos in either a speech only or speech and gesture condition (Breckinridge Church, Garber, & Rogalski, 2007). It found that recall was stronger when gesture was added to speech. Responses were collected either immediately after watching the video or thirty minutes subsequently. Unlike responses from the speech-only condition, responses that included gesture were less likely to deteriorate over time.

The importance of the congruence of speech associated gestures was highlighted in a study of English speaking university students (Galati & Samuel, 2011). Students watched video stories in three conditions: 1. Congruent speech and gesture, where the speech and gestures matched and conveyed the same information, 2. Incongruent speech and gesture, where speech and gestures conveyed different information, and 3. Speech with no gesture. Students then re-told the stories as accurately as they could after two
minutes, six minutes and then 18 minutes. It was found that the inclusion of gestures led to better recall of the story. Incongruent gestures sometimes led to inaccuracies in speech. These findings would suggest that congruent speech-associated gestures should be performed when teaching. Galati and Samuel found that seeing a gesture “increases the likelihood of mentioning the target action… and reproducing the target event more completely…” (2011, p. 429). Participants were more likely to use a gesture themselves when they had seen a gesture, and more so when the gesture was congruent with the utterance. Producing a gesture was more likely for a short delay than a long delay and content was remembered more accurately after long delays. It does however, need to be remembered that with each repeated recall, the repetition may influence the enhanced recall, demonstrating a ‘practice effect’ where more is remembered after each repeated attempt, rather than it exclusively being an effect of the use of gestures.

In a study comparing verbal and visuospatial memory with university students (Wagner, Nusbaum, & Goldin-Meadow, 2004), it was found that the use of gestures strongly influenced the number of items that participants remembered. When speech and gestures contained the same information, they were most effective. Participants explained how to solve mathematics problems while at the same time remembering unrelated vocabulary items within a gesture and non-gesture condition. Gestures were strongly associated with memory benefits, in particular, visuospatial memory.

The question is now asked as to whether any gestures support the recall of language or only particular gestures. To determine whether gestures need to communicate meaning to be effective or whether any gestures can support learning, a study was carried out with adults and children where they learned lists of words in three conditions; 1. words with iconic gestures, 2. words with beat gestures and 3. words without gestures (So, Chen-Hui, & Wei-Shan, 2012). Findings showed that words that were accompanied with iconic gestures supported both adults’ and children’s recall of the words. Beat gestures supported word recall for adults but not for children suggesting that there may be an age difference in how beat gestures can support words. These findings showed that both meaningful and non-meaningful gestures supported word recall for adults, whereas only meaningful gestures supported word learning for children. Similarly, the question about whether any movement is significant to supporting recall is also asked. In order to address this question, Ravizza (2003) conducted experiments where participants recalled words under ‘no movement’ and ‘tapping’ conditions. Tapping
supported the retrieval of words significantly more than no movement, particularly supporting ‘tip-of-tongue’ states. The study showed that movement did not need to be semantically connected with the linguistic items to be influential to their increased retrieval.

The type of gestures can be influential in an L1 vocabulary learning context. Cohen and Otterbein’s (1992) research involved adult participants in writing down as many sentences as they could remember after watching videos containing sentences. The conditions of the videos were different for three groups of participants; one exposed only the sentences, another showed somebody illustrating the sentences with a pantomime gesture and a third presented the sentences with non-pantomime gestures. Findings showed that the illustrative, pantomime gestures helped participants remember the most L1 sentences.

Another study carried out in L1 French set out to determine the impact of representational versus non-representational gestures on participants’ recall of sentences (Feyereisen, 2006a). Findings showed that representational gestures, those that portrayed meaning with speech, supported participants’ recall as opposed to any gestures that may attract participants’ attention. Feyereisen believes that this is the case because gestures are integrated with the meaning of speech during the learning process creating stronger multimodal representations of the language. This process supports language being retained in memory and also supports language retrieval. These findings would suggest that by grounding words in meaning with gesture, new word learning is strengthened.

Debate about whether gesturing with speech creates cognitive load or decreases cognitive load has been explored over the past decade. When considering gestures with communicative output, the question arises whether gesturing while speaking adds additional demand and increases cognitive load for speakers, or whether gesturing and speaking work together to reduce overall cognitive load. Some theorists suggest that cognitive load would be increased based on the prediction that gestures and speech would involve separate cognitive and motor systems (Andersen, 1995; Petersen, Fox, Posner, Mintun, & Raichle, 1988) and therefore would involve twice as much learning. By contrast, other theorists (Goldin-Meadow, Alibali, & Church, 1993; McNeill, 1992), supported the view that gestures and speech work together and would reduce overall cognitive load.
Susan Goldin-Meadow and her colleagues set out to address this debate with a number of experimental studies. One study asked participants to remember letters or words while explaining how to solve mathematics problems (Goldin-Meadow et al., 2001) finding that participants remembered significantly more when they gestured. It was suggested that the use of gestures reduced cognitive load and in doing so, increased memory. It is also believed that gesture production reduces cognitive load (Goldin-Meadow & Singer, 2003) and such a use of gestures indicate processing and planning for oral production. Giving further support to these findings, was another study which demonstrated a strong connection between the use of gestures and memory benefits (Wagner et al., 2004). Participants remembered either a string of letters or a visual grid pattern while explaining mathematical problems in both gesture and non-gesture conditions. Participants from both groups remembered more items when they gestured. Speech and gestures containing the same information were the most effective.

Earlier studies about the role of gesture in “lightening the load” on speakers’ memory found that it did so when objects spoken about were present in the here-and-now, however, it has also been found that gestures “lighten cognitive load” when speakers talk about objects not present (Ping & Goldin-Meadow, 2010). In this latter condition the benefit was greatest when the gestures conveyed information additional to that which was stated in speech, rather than the same information. This collection of evidence presents a strong case that not only does the addition of gesture to speech not increase a speaker’s cognitive load, but it actually serves to reduce cognitive load, demonstrated by increased memory when gestures are used with speech.

This section of the review has demonstrated the connection between gestures and first language output. Findings support the argument that gestures impact the retrieval of language, fluency and the organisation of thinking for speaking. There have also been persuasive claims that gestures can reduce cognitive load for speakers. Despite these claims, the persistence of opposing views about the role of gesture on communicative output remains, identifying this as an area of need for further research. The next section now addresses the role of gesture on L2 output.

3.10.2. Gestures and L2 oral output

A number of functions of gestures have been identified in second language learning contexts which relate to oral output. One of these functions of gesture is to compensate
for limited proficiency in the second language. It has been shown within numerous empirical studies that L2 learners often use gestures when they do not have another mode of expression available to use (Breckinridge Church et al., 2004; Gullberg, 1998, 2006a; Kelly, Manning, & Rodack, 2008) and that gestures supplement the limited language of early proficiency second language learners (Quinn-Allen, 2000).

Bilingual Spanish-English primary school students used both words and gestures when communicating their mathematical understandings (Domínguez, 2005). Using verbal and non-verbal modes of communication was claimed to support these students’ bilingual proficiency. This indicates that adding non-verbal communication to speech provides an additional mode of communication for students. Additionally, when teachers are aware of learners’ non-verbal communication, they can pay attention to their knowledge via this mode and support learners’ developing knowledge and language more fully. Similarly, students learning French as a second language used gestures which demonstrated what they knew in French as well as provided an insight into the way they processed the language (van Compernolle & Williams, 2011).

Another function of gesture in L2 is to support ongoing speech. Gesture can “contribute to the production of continued speech and, therefore, to the creation of potential contexts of acquisition” (Gullberg, 2008, p. 205). Gesture also serves to facilitate and sustain interaction between speakers and are also often used to signal a need for help when there are communication difficulties (McCafferty, 2002).

Gestures can also support fluency. Primary school second language learners at an early stage of language learning were found to benefit from teachers using gestures to accompany each word when learning and performing a play (Ulbricht, 2018) and importantly, there were also positive effects on the oral fluency of these learners after learning with gestures. In another study, L2 learners’ use of beat gestures in synchrony with words was found to support fluency (McCafferty, 2006) and it is suggested that these gestures would drop off with increased levels of proficiency. The use of beat gestures in this second language context showed to support fluency as well as contribute to shared communication between speakers. Another study found that gestures support L2 learners’ developing L2 skills, and with greater proficiency, fewer gestures are used (Stam, 1999), suggesting that gestures more functionally support early stages of L2 acquisition than later stages and that this differing presence and role of gestures for students at different stages of proficiency is an interesting learning supplement.
Speakers of second languages often use gesture as a planning tool for the language they are about to orally produce (Gullberg, 1998). This highlights the role of gesture in the processing stage of language production; during thinking and planning for language output. Using gesture in this way appears to reduce the speaker’s cognitive load. The role of gesture in the L2 thinking process is also supported by McCafferty (2004) who found that a second language learner of English used gesture for both intrapersonal and interpersonal purposes. Analysis of the learner’s gestures with language demonstrates the thinking role of gesture in addition to its role as a resource supporting communication with another person.

Speakers’ use of gestures can also provide insight into L2 processing. Bilingual Korean-English speakers’ use of gestures demonstrated that they used gesture to support communication and support their thinking (Kim, 2010). The participants’ use of gestures provided insights into their mental processing in L2 English which can supply valuable information to teachers. Gestures were used by L2 speakers to support their construction of L2 speech and provided evidence of their thinking patterns. Negueruela and Lantolf (2008) found that gestures supported L2 learners’ thinking process as well as their speech when re-telling a narrative. This demonstrates a strong connection between gesture for thinking and speaking in L2.

The rate of gesture use in L1 and L2 has been addressed in a large number of studies. Some have identified that second language speakers use more gestures in their second than their first language. Second language learners use more gestures than native speakers to support fluency and the retrieval of language (Krauss & Hadar, 1999). It is also suggested that L2 speakers use more gestures in their second language than in their first language to support access to L2 words and visualise the related concepts. These findings are supported by a study with Spanish and English learners (Sherman & Nicoladis, 2004) in which participants retold two cartoons, one in each language, their L1 and L2. Gestures were coded and comparisons were made between learners of different proficiency levels. Findings showed that all participants used more gestures in their second language and that gesture use did not appear related to proficiency.

In another study, this time with Chinese-English bilinguals, it was found that more gestures were used in L2 compared with L1 (Nicoladis, Pika, Yin, & Marentette, 2007). The use of gesture in L1 Chinese and L2 English was investigated with adult participants by asking them to watch a cartoon story of Pink Panther and then retell it in
both languages. Participants used more gestures in their L2 (English) than their L1 (Chinese) and the findings support the notion that gesture use supports speakers with reduced proficiency in a second language who rely most on gestures when tasks are linguistically demanding. This study gives further evidence of the role of gesture in an L2 context in supporting linguistic proficiency.

Nagpal, Nicoladis and Marentette (2011) compared the gestures Hindi-English bilingual adults used when telling the same cartoon story, Pink Panther, as just mentioned (Nicoladis, Pika, Yin, & Marentette, 2007) in L1 and L2. They also found that more gestures were used in L2 than L1 and gestures were used to aid access of language. Individual differences were found between participants, however similar patterns of gesture use were found for individuals in their L1 and L2 in terms of rate of gestures, story length and vocabulary, and did not relate only to L2 proficiency. This study highlights the need to make comparisons between L1 and L2 when commenting on L2 gesture behaviour to avoid confounding behaviour patterns due to individual differences attributed with L2 learning. This finding is relevant for naturally occurring gestures. It is not predicted that individuals’ naturally occurring gestures in L1 will have an impact on new ITG learned with L2 in a classroom context, however, an individuals’ propensity to use gestures and integrate them with speech as a preferred learning style, needs to be taken into consideration.

In contrast with findings showing a greater use of gestures in L2, some researchers predict that speakers use more gestures in their first and strongest language because they communicate more complex meanings in this language (Nicoladis, Mayberry, & Genesee, 1999). Affirming this prediction, Gregersen, Olivares-Cuhat and Storm (2009) found that learners used more gestures in their native language than in their second language. They also found that advanced learners of Spanish used more speech related gestures conveying meaning than beginning or intermediate learners, suggesting that with increasing learner proficiency more gestures are used. The study suggests that all learners could complement their spoken language and enhance meaning by using gestures. It is even suggested that formal instruction on gesture strategies could support students to become better communicators more quickly.

Other studies found no differences in the quantity of gestures used between L1 and L2. A study of gesture and narrative abilities with French-English bilingual children (Laurent, Nicoladis, & Marentette, 2015) found that gestures were used in both
languages and gesture use was not strongly connected to children’s narrative ability. Suggestions were made that gesture use may be connected to lexical retrieval, information packaging or task difficulty, rather than level of proficiency in either language.

Culturally appropriate gestures have been a focus for research in SLA. The importance of learning L2 cultural gestures when learning L2 oral language (White, 2003) has been emphasised due to the belief that L2 cultural gestures, together with oral language, contribute to successful L2 communication.

A focus on Italian gestures in a second language learning university context showed that teachers’ gestures were used as a pedagogical tool to support students’ linguistic as well as cultural knowledge (Peltier & McCafferty, 2010). Teachers from this study believed that culturally appropriate gestures were an important component to teaching students about communicating in Italian. Students’ use of gestures were found to have Italian characteristics demonstrating that they had modelled the gestures and were then able to use them with their own Italian speech.

The importance of teaching culturally-specific gestures with a new second language has been identified in response to reporting of numerous examples of confusion or offense amongst ESL students in Britain (Hauge, 1997). The differences in “… the type of gestures we use, the number of gestures we employ, the manner in which we use gestures and, most importantly, the meanings which we ascribe to our gestures, are all culturally determined to a large extent” (Hauge, 1997, p. 274). It is important for L2 learners to learn cultural gestures as well as speech, because gestures can convey additional meaning that would otherwise not be understood and because learners aspire to achieve native like communication ability with its authentic naturally occurring and culturally appropriate gesturing.

A number of studies have identified that learners’ memory for words are improved when encoded with gesture and speech. One such study found that learners’ memory for new words were improved when presented with gestures (Macedonia & Knösche, 2011). Participants in the study were able to recall words learned with gestures better than words that had not been accompanied with gestures. Importantly, the learners could transfer their knowledge of the new words learned with gestures to produce new utterances. The words encoded with gestures were used more frequently than words
without gestures suggesting that the addition of gesture increased memory of the words. The learners were German L1 university students learning an artificial language for the purpose of the experiment. The authors concluded that their findings can inform L2 language teaching and learning. Similar experiments now need to be carried out using natural languages in an authentic language context to find out if their results are replicated. Another study found that German L1 learners benefitted from seeing and using iconic gestures when learning words in an artificial language (Macedonia, Mueller, & Friederici, 2010; Macedonia, Muller, & Friederici, 2011). The gestures supported learners’ memory of the words and the retention of their learning. MRI scans identified “greater signal intensity in the dorsal medial premotor cortex” when learning words with iconic gestures (Macedonia et al., 2010, p. 131), whereas words learned with meaningless gestures “elicited a network for cognitive control indicating incongruence detection” (Macedonia et al., 2010, p. 131). The results from learners’ translation tests together with the MRI findings identify the benefit of learning words with iconic gestures, and the hindering effects of meaningless gestures. In contrast with these findings, another study found that both iconic gestures with well-established meanings and arbitrary gestures without associated meanings can benefit second language word learning (Huang, Kim & Christianson, 2018). These results highlight the usefulness of viewing gestures for L2 word learning of Mandarin Chinese by English speaking university students. These contrasting findings show that further research is needed to investigate the roles of different types of gestures on learning.

Macedonia (2013) advocates for the use of “Voice Movement Icons” to support L2 learning whereby an action or gesture is synchronously produced with L2 speech. Voice Movement Icons are created by teachers to be used with learners, observed by learners, and then imitated. In this way, the observation of the gestures serve to support the decoding of L2 speech and subsequent production of the gestures serves to encode the new L2. These gestures have been found to enhance learners’ storage of L2 vocabulary (Macedonia & Knösche, 2011; Macedonia et al., 2010; Macedonia et al., 2011). This claim has been subsequently supported by Morett who found that viewing non-spontaneous gestures impacts learners’ spontaneous production of gestures that in turn, supported learners recall of second language Hungarian words (Morett, 2018). This finding highlights the roles of viewing and using gestures for L2 learning.
A fourteen month longitudinal study examined the effects of gesture when German university students were learning an artificial language (Macedonia & Klimesch, 2014). Students learned 36 words in two training conditions in the classroom; 1. Audio-visual, where students read, heard and spoke the words, and 2. Gestural, where students gestured with the words in addition to reading, hearing and saying the words. Translation tests at five time points were used to assess students’ memory of the words. Adding gesture to word learning resulted in significantly increased learning, both in the short term and over time. It was shown that gestures “… made words much more resistant against decay…” (Macedonia & Klimesch, 2014, p. 81). Interestingly, this study claimed that it was carried out in classrooms to support ecological validity, however, the study did not consider the learning in the classroom but rather ‘interrupted’ the classroom to carry out the ‘experiment’ in this context. The learning in the experiment was not connected to the classroom learning and the learning of isolated artificial words was not set in any context for authentic language use.

Contrary to the previous findings, a study of 11 German L1 adults learning artificial words found that word learning with gestures did not outperform word learning without gestures (Kronke, Mueller, Friederici, & Obrig, 2013). Participants learned words in three conditions; 1. Words alone, 2. Words with meaningful iconic gestures, and 3. Words with meaningless grooming gestures. Recall test data identified that words learned with iconic gestures and no gestures outperformed learning with meaningless grooming gestures. There were no significant differences between iconic gestures and word alone conditions. These findings show that iconic gestures are more beneficial than grooming gestures, but equally as beneficial as learning words alone. In addition, the study examined the impact of enactment on learning by comparing results when the words were actively repeated with gestures and when passively viewed. Recall test data did not differ between actively using or passively viewing gestures, however MRI data identified that the regions of the brain that were activated during each of these conditions differed. This brain imaging data reveals that using and viewing gestures each influence how language is processed in the brain differently.

Further strengthening the claim that seeing gestures supports second language learning, and adding that using gestures supports learning, is a study carried out by Tellier (2008a). Tellier investigated the memorisation of eight English words by twenty monolingual French children after watching video recordings presenting the words in
two conditions; 1. Words with pictures and 2. Words with gestures. The children who viewed the videos with gestures also produced the gestures. There was one session per week for four weeks. The children in both the picture and gesture groups demonstrated an equal passive knowledge of the new words by either identifying the corresponding picture or producing the corresponding gesture for the English word heard. However, children in the gesture group performed significantly better when producing the English words after seeing the gestures, than children from the picture group who produced words after seeing the pictures. This second finding identifies the effect of seeing and using gestures on children’s productive ability of English L2 words. A final assessment after one week of not hearing the English words showed that children’s passive knowledge remained unchanged between the groups whereas the productive ability by children in the gesture group remained significantly better highlighting the impact of viewing and producing gestures on children’s production of English L2 words.

Turning to Japanese as a target language, research studies in this field are relatively few. In one study adults learning Japanese as a second language were presented with a set of new words within gesture and non-gesture conditions (Kelly et al., 2009). Memory tests of these words were carried out after five minutes, two days and one week, finding that adults remembered the most words with hand gestures. Words learnt with gestures led to a larger ‘Late Positive Complex’ or ‘indexing recollection’ in the brain than those learnt without gestures. These findings demonstrate that the impact of gestures were identified from the quantity of words recalled as well as from neurological evidence. The authors concluded that simultaneously distributing information through gesture and speech will produce better learning than presenting the same information through speech alone. This study is particularly significant to the current study in which Japanese is being learned as a second language with and without gestures.

A further study of English speaking adults learning Japanese words (Kelly & Lee, 2012) found that gestures support word learning but only when phonetic demands are not too high. They found that gestures supported Japanese word learning by adults when easy, dissimilar word pairs were taught, but that when difficult word pairs were taught, those which were similar with only a differential long or short vowel sound, gestures served to confuse the learners. In this study, it was claimed that gestures “hurt” the learning of difficult word pairs in Japanese, however it is difficult to ascertain whether it was the addition of gesture that confused learners or that the teaching of the similar words in
pairs was problematic. The specific impact of gestures on word learning could be determined more reliably if words were taught in gesture and non-gesture conditions, without the additional and possibly confounding variable of teaching words in similar or dissimilar pairs.

In another L2 study, this time situated in a classroom context, a comparison was made of the quantity of language recalled by 24 four to seven-year-old second language learners of French (Porter, 2016) when learning stories with and without gestures. Two stories were taught to the children over three 45-minute lessons; one incorporated pictures, while the other incorporated both pictures and gestures. The stories were different but were matched as much as possible for length and difficulty to enable comparison of output by children after each of the stories. Immediately after the third lesson and two weeks later, students in groups were requested to recall the stories. Individual student performance was calculated from the video footage of the lesson. Statistical analysis of the quantity of words that students could recall for each story immediately after the third lesson showed significantly improved recall when gestures accompanied the story and pictures. Overall, students could recall 94% of the story that was gestured compared with 78% of the non-gestured story. There were individual differences amongst learners, with some showing improvement in recall with gestures, whilst others did not. Recall two weeks later however, showed greater attrition of the gestured story than the non-gestured story. Porter’s study concluded with a call for future research to include a quasi-experimental study including a control group to enable a more reliable comparison. Although carried out prior to this call for research, the current study incorporates a control group within a quasi-experimental design, comparing ITG and non-ITG approaches with the same stories, and includes a large sample size to support the reliability of findings.

This collection of empirical findings demonstrates learners’ increased L2 recall and overall oral language output with gesture. These findings make a considerable contribution to second language teaching methodology and provide evidence for pedagogy. They provide the base for future research into the impact of gesture on learners’ oral output within second language teaching contexts. The literature reviewed in this chapter has demonstrated some of the key areas of knowledge in the field of gesture research to date. Despite the growing body of research into gesture in an L2 context, the gestures that have been investigated are mostly naturally occurring,
culturally specific or have involved small-scale planned use of gestures. Investigations into the role of ITG where each gesture is pre-determined and are consistently used with each word have not yet been carried out. This thesis draws from what is known about gesture research but makes a clear distinction between spontaneous and naturally occurring gestures and ITG. There is limited knowledge about the impact of gesture on students’ oral language output, particularly when the language contains greater amounts of language and content in contexts such as through stories rather than on isolated lists of words removed from context. There is particularly sparse literature within the context of classroom second language programs. The empirical question as to whether ITG impacts on students’ second language oral output has remained unanswered. This study intends to address this gap. The unique role of ITG in second language learning contexts and its impact on students’ Japanese oral language output is posed for investigation. The next chapter outlines the methodology and research approach employed in the study, the influential theoretical frameworks, the methods used and the procedure for data collection and analysis, to address the research questions.
Chapter 4. INVESTIGATING THE IMPACT OF ITG: METHODOLOGY

4.1. Introduction
This study commenced with an aim to investigate the impact of ITG on students’ Japanese oral language output. It specifically sought to find out if students’ oral output would increase as a result of learning Japanese with ITG. The literature review in the previous chapter illuminated many benefits of using gestures, however, little is known about students’ oral language output through the use of ITG within a naturalistic L2 classroom environment. This chapter begins by detailing the research approach to the study.

4.2. The research approach
This project is a quasi-experimental study in one school. It is a case study (Stake, 1995; Yin, 2009, 2012) of Japanese language learning in two delivery modes, ITG and non-ITG, within Prep to Year 4 classes at an Independent Girls’ School in Melbourne, Australia. The scope of the study consisted of ten Japanese classes, two from each year level, in the first five years at the school within the regular classroom environment. Japanese is taught as a core subject for the first five years at the school, which determined the selection of classes for inclusion in this research. The school called the first year of primary school ‘Prep’ (occasionally Foundation is used), so this term is applied in the thesis, followed by Year 1, Year 2, Year 3 and Year 4.

Naturalistic inquiry within a case study school reflects the underpinning ontological perspective of the study and also demonstrates a valuing of the ecological validity of classroom-based research. Since the research question arose from the researcher’s practical familiarity with the field, it was important that the methodology to investigate the question occurred in as natural as possible a classroom environment, collecting language samples that typically occur in this environment. The current project was designed to do this.

A study of classroom second language learning within a classroom setting ensures that typical classroom conditions inform pedagogy and that the investigation focuses on the practical prospects of ITG use in such a setting. Theoretical accounts of language pedagogy can then be balanced with what actually happens in classrooms. “The
classroom affords an opportunity to control very precisely the nature of the input that learners are exposed to. This in turn allows the researcher to formulate and test very specific hypotheses regarding how particular features of an L2 [second language] are acquired” (Cohen, 1994, p. 17). A case study approach represents educational research that is ecologically valid so that findings can be more readily transferrable to the language classroom.

Of particular importance to the study was the selection of tasks and procedures suitable for primary school-aged students. Tasks needed to be suitable for students from Prep to Year 4, be open-ended enough to demonstrate a range of Japanese language abilities, resemble regular classroom activities for familiarity, as well as engage and interest students. McKay (2006) advises that in such research contexts careful consideration needs to be given to the age of young learners, their developmental stage and recognise that they are developing L1 literacy skills while learning their L2. McKay also recommends that classroom relevant research should acknowledge the diversity of language programs and the need to report on learner achievement in context. Possibly the most extensive study of young learner achievements in second languages in an Australian school context, ‘Student Achievement in Asian Languages Education’ (SAALE) (Scarino et al., 2011), concluded that assessments of learner achievement take into account the school and classroom context and the nature of the particular language for maximum reliability. This stresses the importance of “contextualised descriptions of learner achievement” (Scarino et al., 2011, p. 27). The present research purpose, informed by the literature, has determined the need to create a data collection procedure in keeping with the developmental level of primary school children and the importance of creating suitable tasks and processes to elicit oral language from these students in their language learning context.

Since the focus of the study is a comparison of students’ output from classes incorporating ITG with those not incorporating ITG, a quasi-experimental approach was adopted for this investigation. This framework allows the variable of ITG to be isolated to compare students’ output between the ITG and non-ITG classes. This method of investigation is very common in studies of gesture, as identified throughout the literature review. The current study fits the quasi-experimental design as it is a “non-equivalent control group design” (Cohen, Manion, & Morrison, 2011, p. 316). Classes were already determined by the school so individual student allocation to each class was not random. However, allocation of each class to an approach was randomly determined,
thus making it quasi-experimental in nature. This method attempts to establish causative links between ITG and Japanese second language learning. The variable of ITG was isolated to investigate its impact, whilst valuing language in context and the authentic L2 classroom environment from which the language is taught and learned.

A pragmatist approach underpins the methodology for this study. Such an approach is based on the belief that research methods are selected primarily in response to the nature of the research questions. A mixed methods design was employed to address the individual research questions according to their specific focus. Methodological pluralism “… contends that we are free to combine the best methodological tools in answering our research questions” (Teddlie & Tashakkori, 2011, p. 295). Mixed methods research is also known as the “third methodological movement” which can be positioned between quantitatively and qualitatively oriented research. It has a pragmatic orientation in which “… the two methodological approaches are compatible and can be fruitfully used in conjunction with one another” (Teddlie & Tashakkori, 2011, p. 285).

The power of integrating quantitative and qualitative data allows for the varied research questions to be addressed and strengthens inferences that can be drawn. Methodological pluralism enables meaning from data to be viewed in more than one way and new levels of thinking and knowing to emerge. In this way, theory is tested within the quantitative dimension of the study and explorative theory conceptualisation can be developed within the qualitative dimension. The research findings are presented in a way in which “quantitative and qualitative components are mutually illuminating” (Bryman, 2007, p.8). This principled combination of approaches grounds the study in the circumstances and constraints of the primary school classroom context, as advised by (McKay, 2006) enabling the varied research questions to be addressed with both theoretical vigour and practical application in mind.

The mixed methods utilised in this study are a combination of experimental, empirical investigation and constructivist investigation principally because particular epistemologies are more suited to some research questions than others. An empirical epistemology, where the quantifiable data is gathered in order to determine any difference in the quantity of students’ Japanese oral language output between ITG and non-ITG approaches comprised one aspect of the study. Research question 1 (What impact does the use of Intentional Teaching Gestures (ITG) in Japanese as additional language classes have on students’ oral language output?) sought to discover
quantifiable differences in the language output of students between the ITG and non-ITG approaches. Quantitative methods were best suited to investigate and report on this research question. Another important aspect of the epistemology of the study is constructivism. Research question 2 (What are the features of students’ oral language when ITG has been incorporated into learning Japanese?) sought to find out about the nature of students’ language. Qualitative methods were best suited to investigate and report on this research question. Thematic analysis from transcription data provided valuable qualitative evidence for the study. Thick descriptions and examples of the types of language that students produced in each approach provided important qualitative evidence to address research question two. Research question 3 (What patterns of gesture use emerge when students tell stories in Japanese?) sought to find out about students’ use of gestures. A mix of quantitative and qualitative techniques of inquiry addressed this question with quantitative evidence used to address the numerical question of students’ use of ITG, and qualitative evidence used to describe the patterns of gesture use by students.

The following figure provides a summative overview of the overall research design, highlighting the quantitative and qualitative dimensions of the study and how each informs the research questions under investigation.

### Research Questions

1. What impact does the use of Intentional Teaching Gestures (ITG) in Japanese as additional language classes have on students’ oral language output?
2. What are the features of students’ oral language when ITG has been incorporated into learning Japanese?
3. What patterns of gesture use emerge when students tell stories in Japanese?

### Naturalistic Inquiry
- Case study in one school sensitive to classroom procedures and school life
- Acknowledgement of age-specific learner achievement and development
- Comparative study between ITG and non-ITG teaching approaches
- Students’ Storytelling and Story Re-tell are the measures of Japanese oral language output (both conventional Australian primary school pedagogical practices)

### Mixed Methods Paradigm
- Pragmatist approach
- Principled selection of methods suited to particular questions (mixed methods)
- Quasi-experimental, empirical and constructivist elements to the investigation
- To examine the impact of ITG on students’ Japanese oral language output
To determine the number of Japanese words and length of utterances produced by students within the ITG and non-ITG teaching approaches, addressing research question 1
To examine and describe patterns of Japanese oral language use, addressing research question 2
To examine students’ gesture use, including number of gestures and patterns of gesture use, addressing research question 3

Quantitative and Qualitative Methods

- Non-participant observer in both ITG and non-ITG approaches at regular intervals building rapport with students to be comfortable with video recording and to determine the nature of each classroom environment
- Video recorded Storytelling and Story Re-tell at three different time intervals within each approach
- Quantitative and qualitative analysis of video recorded data

<table>
<thead>
<tr>
<th>Quantitative</th>
<th>Qualitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerical data of the quantity of students’ language output; the number of words and average length of utterances, within each approach; to address research question 1</td>
<td></td>
</tr>
<tr>
<td>Numerical data about the number of students using ITG, the number of ITG used and the categories of use; to address research question 3</td>
<td></td>
</tr>
<tr>
<td>Thematic analysis with thick descriptions of the types of language produced by students with examples and excerpts of their language; to address research question 2</td>
<td></td>
</tr>
<tr>
<td>Thick descriptions and examples of patterns of students’ ITG use; to address research question 3</td>
<td></td>
</tr>
</tbody>
</table>

Reliability through:
- crossover of classes between programs half-way through data collection,
- same teacher used for ITG and non-ITG classes,
- independent transcriber to transcribe a sample of video data for checking validity,
- member checking of qualitative themes

Figure 14 Diagram of the main research design features

4.3. Participants and school context

Ten classes learning Japanese as an additional language within an Independent Girls’ School in Melbourne were invited to be the participants of the study. At the commencement of the new school year in 2014, all students from Prep to Year 4 were invited to participate in the research via a Plain Language Statement explaining the aim and nature of the study and inviting them to participate. Japanese is a core part of the teaching program at the school in which all students from Prep to Year 4 study the
language, after which students are required to take another language. The total number of enrolments from Prep to Year 4 at the time of the study was 211 students. The response rate to the invitation was 81% of the total number of students, meaning that 171 students agreed to participate. The remaining 40 students or their families either did not wish to participate or simply failed to return their Plain Language Statements. One student’s data was eliminated from the study because she is a native speaker of Japanese and the focus of the research is on second language learning. The resulting total participant number was 170 students drawn from ten classes.

There were two classes from each year level (Prep, Year 1, Year 2, Year 3, and Year 4). In the Prep classes students are taught Japanese for three 40 minute lessons per week, while in Years 1 to 4 there are two 40 minute Japanese lessons each week. These classes were ideal for the study as they had not yet been exposed to ITG in any way meaning that there were two classes at each year level well suited for the study design. The following table shows the number of student participants from each class in each year level.

<table>
<thead>
<tr>
<th>Year</th>
<th>Class A</th>
<th>Class B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prep</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Year 1</td>
<td>17</td>
<td>19</td>
</tr>
<tr>
<td>Year 2</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Year 3</td>
<td>21</td>
<td>14</td>
</tr>
<tr>
<td>Year 4</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>(n = \frac{170}{211})</td>
<td>(n = 87)</td>
<td>(n = 83)</td>
</tr>
</tbody>
</table>

At the time of the study, primary school language programs in Victorian government public schools used the AusVELs curriculum (Victorian Curriculum and Assessment Authority, 2015) and although the research school is outside the public system it had elected to use the same AusVELs curriculum. A feature of this curriculum is that it sets standards for learning attainment at each level of schooling but devolves to the discretion of individual schools and teachers’ decisions related to the type of teaching and learning activities to be carried out in order to achieve these standards. Within AusVELs Languages is one of the core ‘discipline-based’ learning ‘domains’. Students
within the first five years at the research school learn Japanese as part of the core curriculum.

Students in Prep (or Foundation) must be five years of age by 30 April of the year they start school in Victoria. This means that such students may be five or six-years old with a possible age range of 18 months within any one year level. Students in Year 1 are six or seven-years old, students in Year 2 are seven or eight-years old, students in Year 3 are eight or nine-years old and students in Year 4 are nine or ten-years old.

The Japanese teacher is an experienced professional who conducts all language classes through the medium of Japanese. Students are well accustomed to this target language approach to teaching. The teacher was involved in professional development to learn the ACTLAN gestures with the developer of the methodology, Chizuko Gomura (2008), and subsequently became interested to trial the use of the gestures within her classes and agreed to participate in the study.

4.4. ITG and non-ITG teaching approaches

As this study involved a comparison of students’ oral output from classes incorporating ‘ITG’ and ‘non-ITG’, it was important to minimise the potential confounding effects from other variables and, as much as possible, ensure the only differing variable between the classes was the inclusion of ITG, in the ITG classes, and non-use of ITG, in the non-ITG classes. The same teacher of Japanese taught Japanese to each of the ten classes involved in the study and as stated above Japanese was the medium of teaching in all classes. Each class of the same year level had the same number of Japanese lessons each week and the duration of each lesson was equivalent. The lesson content, teaching activities and resources were the same for each class of the same year level. For the ITG classes, ITG was performed with the production of each word that the teacher said throughout the totality of each lesson; such as for classroom instructions, interactions with the class and individual students, class tasks, explanations, and for behaviour management, using the full range of ACTLAN gestures (ACTLAN, 2010). Students in the ITG classes were also encouraged to use the ITG themselves. The non-ITG classes were carried out with the same lesson plan and resources but without ITG being used. Careful pre-planning of each lesson contributed to supporting the consistency between classes. Of course, it can never be claimed that each class is exactly identical. This is due to the different students present in each class and their individual differences, personalities and abilities, however, planning of the study with
advice from the statistical consultation service of The University of Melbourne, ensured that class groups could be compared and that findings could be statistically accurate.

4.5. Language elicitation techniques

Within a quasi-experimental framework (Cohen et al., 2011), “Story Re-tell” and “Storytelling” were the methods used to elicit students’ oral language. Within this section, I will first discuss the method of “Story Re-tell” (Bamburg, 1987) and then the method of “Storytelling” used to elicit students’ Japanese oral language output.

4.5.1. Story Re-tell

Story Re-tell is a well-established methodology for language study (Bamburg, 1987). The method of using stories to elicit language provides a context for the language from which to analyse language samples. The telling of a story reveals a learner’s ability to use oral language in a narrative situation. Story Re-tell requires students to use their Japanese language in context, purposefully and meaningfully.

A large number of research projects within the field of gesture studies, have used stories as a means to investigate interaction between gestures and language. McNeill (1992) developed a Story Re-tell method with a carefully selected cartoon to observe participants’ gestures. McNeill’s view that speech and gesture are a single integrated system has led the way for research to consider gesture along with speech in order to better understand second language acquisition process (as discussed by Stam, 2007). This methodology has been used with a number of languages and has included participants’ use of gestures within their first and second languages (Gullberg, 1998; Kellerman & van Hoof, 2003) and the types of gestures that L1 and L2 speakers use (Stam, 2006). Story Re-tell was used to provide content in context to elicit a wide variety of language from speakers (Wong, Au, & Stokes, 2004), gathering the number of words, structure scores and mean length of utterances. This collection of research has demonstrated that Story Re-tell is a productive technique to elicit oral language output from speakers and on this basis was selected as a suitable language elicitation method for the current study.

The focus of Story Re-tell is often on the accuracy of recount, relying heavily on memorisation without necessarily understanding the language or being able to apply the language within a real context. In the current study, students were not informed that they would be re-telling a story that they had learned in class six weeks prior to the
Story Re-tell, reducing the possibility of students trying to memorise the story or rehearsing for this purpose.

It was also important to the researcher to find out if ITG influenced the way that students could construct their own stories. This also provided a comparison of types of oral language tasks, Story Re-tell and Storytelling.

4.5.2. Storytelling

Many post-positivist approaches stress the need for ‘humans to exercise agency’ and for ‘individual choice and intention’ (Cohen et al., 2011, p. 15) to be valued, as does the current study. Students’ oral language was elicited by the open-ended telling of stories where students could say what they wished and were empowered to use language that was meaningful and important to them.

The Scenario Framework (Di Pietro, 1981, 1982, 1987) informed the elicitation technique, now being referred to in this study as “Storytelling”. Di Pietro’s Scenario Framework (1987) has been an influential theoretical framework to view students’ oral language through stories. This method encourages students to create their own language, demonstrating their interests, creative abilities and personalities rather than learning pre-determined language. Scenarios generate students’ own language performance and are important because they require learners to improvise, create their own expressive means and make choices about the direction of their language. Di Pietro highlights the use of scenarios to enable students to divert from a set role play which requires them to demonstrate and perform pre-determined language, where accuracy in recount is important, to asking students to be innovative with their language, and expand the possibilities of their output. In these ways, scenarios “allow for the widest range of solutions possible” (Di Pietro, 1987, p. 374).

Although the scenario model was designed as an alternative to role plays, where the language is pre-determined, the same could be applied to a story telling situation. Rather than re-telling the story, students are requested to tell a story in which they are free to be creative, to include their interests, and demonstrate the language they know. This is an excellent example of an open-ended task to showcase students’ optimal oral language output abilities. As the focus of the present study is on students’ oral language output, it is particularly important they are given the opportunity to show their language abilities beyond the constraints of one pre-determined story and this serves to maximise students’ opportunities to demonstrate the language that they know.
The use of scenarios as a framework to inform the present study enables students to divert from the recall of a known story to create their own story with personal adaptations and additions as they wish. This also taps into students’ higher order thinking (Anderson, Krathwohl, & Bloom, 2001) as they are encouraged to apply the language they know to generate and expand storylines and themes or to introduce wholly original content, in a new story rather than demonstrate existing stocks of knowledge and comprehension of prior input, a lower order of thinking.

Storytelling as a pedagogy for teaching and learning (Phillips, 2013) is fundamental to the development of oral language and personal expression. It is open-ended, maximising students’ imaginations, and is open to displays of students’ own knowledge and meaning, and is a shared experience with an audience. When students create their own stories they take ownership of them and personalise them, often placing themselves and those close to them in the stories. Storytelling is unlike reading a book which is predetermined with the narratological content and structure of a pre-existing context.

This way of developing oral language from a known story to a new original story is central to the ACTLAN approach, making it particularly relevant for the present study. Telling familiar stories gives students content to elaborate and personalise as well as a scaffold and structure. Storytelling occurs within the students’ natural language classroom and as such provides the context for the collection of oral language from students in this natural setting. By eliciting language from students where a context is critical and meaning is attached to the language Storytelling is a suitable vehicle for display and demonstration of students’ oral output and underlying language abilities. This is in stark contrast with previous research that has had students learning lists of words and then recalling them, without any necessary comprehension, or contextual application. Storytelling also reduces students’ anxiety compared with an external test of oral proficiency.

Including both Story Re-tell and Storytelling as oral language elicitation tasks provides a deeper overall picture of students’ oral language capabilities in Japanese across both types of tasks.

In the methodology used the researcher was the collector of stories. Students told stories in Japanese one-on-one with the researcher whilst being video-recorded. The students were aware that they were participants in a research study and were told that the
researcher was not allowed to speak during Storytelling and Story Re-tell as part of the study. Although there was no verbal communication between the researcher and the students during performance of the tasks, non-verbal feedback was provided with smiles and nods to encourage learners whilst they were speaking.

4.6. Data collection instruments

Two main resources were used for students’ video recorded Japanese stories, 1, textless picture books for Story Re-tell, and 2, picture sets with whiteboards for Storytelling. An explanation of these resources and their use is contained in the next sections.

4.6.1. Textless picture books

For Story Re-tell, two A3 sized textless picture books were used, one for each school term. In Term 1, a modified version of ‘The Very Hungry Caterpillar’ story (Carle, 1979) was used with classes while referring to a textless picture book. Although the story does exist in Japanese, a modified version was created by the researcher with the teacher of Japanese (Appendix 3) to ensure that the language level would be appropriate for the level of Japanese of the students. The teacher of Japanese used the script of The Very Hungry Caterpillar to ensure consistency of telling the story with each class. The students did not ever see the script. The story consists of 142 words and 158 ITG (many of which are repeated throughout the story). One ITG was performed with each word produced, with an additional ITG added to the end of the verbs to signal verb tenses. For the ITG classes, ITG was performed accompanying each word of the story, in addition to occurring throughout the totality of each lesson; such as for classroom instructions, interactions with students, class tasks, explanations, and for behaviour management, using the full range of ACTLAN gestures (ACTLAN, 2010). The teacher did not provide any explanation of the gestures.

The story was used in class during the first two weeks of Japanese lessons in both the ITG and non-ITG approaches. Shared telling of the story with the class and class activities based on the story were carried out. Six weeks after the story was read in class, the book was given to students individually who were part of the study for the purpose of data collection. Students were asked to do a Story Re-tell but prior to this, they had time individually to turn the pages of the book, look at the pictures, and remind themselves of the content of the story while perhaps rehearsing the story to themselves. Story Re-tell occurred at the second stage of data collection in each approach.
Students who had learned with the ITG approach were additionally asked to do a Story Re-tell while viewing ITG. This time students would again refer to the textless picture book but were also permitted to view the researcher performing the ITG for the story. The researcher did this using the script that had been originally used when introducing the story to each class. Every ITG for every word of the entire story was shown to every student in the ITG classes when doing the Story Re-tell with viewing ITG task. It was important that the viewing ITG condition was the same for each student. As far as possible, the ITG were performed by the researcher synchronous to the students’ oral production of the story in Japanese. At times, ITG were performed when the student did not produce any speech, upon which the student may have then matched their speech with the ITG, or may have just watched until they could produce more of the story again.

In Term 2, a modified version of the traditional Japanese story ‘The Rolling Rice Ball’ (Yoda, 1969) was used, with a script for the teacher of Japanese to ensure the consistency of telling the story with each class (Appendix 4). The story consisted of 127 words and 139 ITG (many of which were repeated throughout the story). Exactly as with The Very Hungry Caterpillar, one ITG was performed with each word produced, with an additional ITG added to the end of the verbs to signal verb tenses. Although the total number of words and ITG were less in The Rolling Rice Ball in Term 2 than in The Very Hungry Caterpillar in Term 1, the complexity of the story increased in Term 2 while the level of repetition decreased. The same process of Story Re-tell and Story Re-tell with viewing ITG was carried out in Term 2, this time with classes learning in a different approach after the crossover of ITG and non-ITG.

4.6.2. Picture sets

For Storytelling, sets of small pictures were used as a resource for students to create stories and elicit oral language from students. Often in second language classrooms a sequence of pre-determined pictures is given to students from which they create a story. Doing this tends to limit students’ oral output by limiting the language to the content within the pictures. The length of the story is also pre-determined to some extent by the number of pictures given. This type of task focuses on story comprehension and accuracy of recount, without showing if students can create their own stories or apply the language from a known story in an original or creative way. In contrast, the picture sets for the current study were developed to create an open-ended task that overcome the above limitation and would elicit as much oral language as possible.
Observations of classes supported the development of the picture sets as a tool for data collection by creating lists of what the students could currently say and ensure that these could be represented as pictures for inclusion in students’ stories. Having pictures based on students’ current level of language supports students’ oral output. The picture sets provided options so that students could choose what they wished to express and include and exclude content from their stories to the extent of their Japanese language ability. A large number of small picture cards including characters, settings, items, actions and emotions, together with the inclusion of many blank cards, provided further options for students’ language production. Blank cards provided choice, extended the possibilities for language, made the task open-ended, and allowed students scope to say what they wanted to say, whilst also providing an option for them to include language for which there was no picture stimulus. No text was included, in either English or Japanese. There was no set order to the pictures, facilitating choice in the length, content and sequencing of students’ stories. In these various ways students were aided to take ownership of their stories and personalise them.

Large A3 sized magnetic whiteboards were provided to each student with the picture sets to create their stories. Each of the picture cards had small magnets attached to the back of them so that they could be magnetised to the whiteboards. The size of the whiteboards ensured that students were not limited by space and that it was also possible for them to use more than one board to create their story.

The decision to use pictures as a resource for second language output has a strong pedagogical underpinning. Pictures provide a context and meaning suggestion for the language, and serve as prompts and possible content for discussion. Storytelling using pictures creates open-ended possibilities that provides for a range of levels in which all students can participate and succeed, and allows for creative extensions and additions of content by the storyteller.

This procedure has a high level of ecological validity as it reflects the preferred and typical classroom second language learning practice in Australia. The use of picture sets as a tool for eliciting second language oral output has potential as a tool for wide use gauging oral capabilities of students. A large number of past research projects involve “testing” tasks, including restricted, pre-determined language, which do not fully represent students’ capabilities in the second language. These tasks involve a restricted and small number of questions, a pre-determined sequencing of stimulus pictures and
thereby constrain responses to a certain topic or content area. The use of picture sets, by comparison, is as open-ended as possible allowing maximum student output and in this naturalistic way conform to the theoretical and methodological principles of the current study.

It is believed that pictures can support word learning and can be more memorable than words (Paivio, 1969; Paivio & Csapo, 1973). Paivio identifies the important role of imagery to evoke learning and memory (1969). Based on this assumption, it is possible that the pictures will act as an additional encoding tool and contribute to the overall effects on oral language output by students. This has been taken into account within the study as all students are equally exposed to the pictures while the variable of ITG remains different between the two research populations, ITG and non-ITG.

The procedure of creating stories using picture cards was used within Japanese classes to familiarise students with the Storytelling technique but the stories were changed each time they were created. Stories were not rehearsed. Oral Storytelling in this way is indicative of students’ current, unrehearsed, oral language abilities with the aid of picture cues. The pictures served as language prompts, and students’ manipulation of the picture cards to create a story formed the planning stage of the Storytelling task which was deployed on three occasions, for the purpose of gathering baseline data, at the first and then the third stages of data collection, within each teaching approach.

4.6.3. Transcription sheets

Transcription sheets were designed and used to keep a record of the language students produced and the ITG they produced from the video recordings (Appendix 2). A separate transcription sheet was used for each story that each student told with every word that was said in Japanese was transcribed in Japanese. If any words were said in English, these were transcribed in English. Language was transcribed as accurately as possible, including any student errors or mispronunciation of words. The transcriptions included every word and part words that were uttered, including false starts and all repetitions. Each new utterance was written on a new line so that the total number of words and the average length of utterance could be clearly identified, documented and measured.

Each ITG that was produced was highlighted on each transcription sheet. If the ITG occurred with a word, the word was highlighted. If the ITG was produced without a
word, the word it corresponds with was written in brackets and highlighted. If an ITG was produced with a word that did not match the word orally produced, the ITG would be highlighted in brackets with an = sign. The following table depicts these conventions of transcription. The total number of ITG produced in each story was counted including a breakdown of the number of each ITG from each ACTLAN category.

**Table 2 Key to interpret students’ use of ITG on transcription sheets**

<table>
<thead>
<tr>
<th>Highlighted word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>あおむし</td>
<td>Highlighted words show that the appropriate ITG was performed as the word was said.</td>
</tr>
<tr>
<td>(あおむし)</td>
<td>Highlighted words in brackets show the appropriate ITG was performed without verbalising the corresponding word.</td>
</tr>
<tr>
<td>あおむし(=ちょうちょ)</td>
<td>An = sign means that the ITG was performed while saying a non-corresponding, incorrect word.</td>
</tr>
</tbody>
</table>

The transcription sheet included the student identifying code, the story number, the teaching approach and the date of the task. This information enabled the data to be recorded with the correct stage of data collection and the correct teaching approach. The transcription sheet also included a space for annotations so that comments and observations could be recorded during the qualitative phase of analysis of the transcriptions.

**4.7. Study trial**

A trial of the study was conducted in Term 4 of 2013 with Year 4 students who were not participants in the study during 2014. One of the purposes of the trial was for the teacher of Japanese to have the opportunity to practise using ITG within her teaching. The teacher had already participated in professional learning for the ACTLAN gesture method but had not yet used it with students and requested a trial prior to the research period. This also provided the opportunity to observe how the students would respond to the methodology and decide if any adjustments to the teaching plans would be required. Draft lesson plans and resources were developed. Trials included classes being delivered with the use of ITG by the teacher of Japanese, including the telling of the stories that would be used the following year. A trial of the first Japanese story was carried out with the use of ITG for each word of the story. Classes were conducted in Japanese with ITG and students were encouraged to also use ITG during class tasks. This trial was effective in confirming the viability of the teaching methodology. A research journal was commenced during trialling and continued throughout the course of the formal study in order to record thoughts and observations.
During the last four weeks of Term 4, 2013, visits were carried out in order to familiarise the researcher with the classes who would be the potential students for the study in 2014 (apart from the new Preps to arrive in 2014) and develop rapport with the students. This time also provided the opportunity to carry out observations of students’ language use in class. Notes were taken about the students’ overall language output with language that students could use being written down to be used as the starting point for the creation of the picture sets to be used for the Storytelling process of data collection. Blank cards were then added to the picture sets to be used for any additional language needed by students when Storytelling.

The data gathering process was also trialled at the end of 2013 with these Year 4 students. The students were asked during a class activity to create their own stories using the picture sets with A3 whiteboards and tell their stories to a partner. This replicated the Storytelling process that would be used with students participating in the research project commencing in the following year, 2014. Students of all abilities were able to carry out this task and create a story. The open-ended nature of the task indicated that it would be an appropriate methodology for all ability levels in Year 4 and it was predicted to also be equally applicable for younger year levels too. The transcription sheet was used to record a sample of students’ Japanese stories. This process involved counting the number of words that each student said and working out the average length of utterances. It also involved highlighting the ITG that students produced. Consistency in the approach was determined and cross-checked for reliability with the teacher of Japanese. While in the school at this time, a quiet area close to each classroom was selected to carry out the individual video recordings of students’ stories during data collection in 2014.

4.8. Data Collection Procedure

At the commencement of the formal study in 2014, baseline data was collected from all students who had signed consent to participate. The purpose of the baseline data was to ascertain the starting point of the number of words and the average length of utterances that students could produce and to determine if there were any pre-existing differences in Japanese oral language ability between each class, at each year level. This was collected by asking each student to tell a story in Japanese. Students were given picture sets and an A3 whiteboard to plan their stories. The picture sets also included blank cards for students to be able to include their own language that may not have been
represented in the picture sets. Students who were participants in the study came out of class individually to an allocated small room where their stories were video recorded. The baseline data was used as a measure of the starting point of each individual student’s Japanese language.

After the baseline data was collected, one class from each year level was randomly assigned to the order of each approach by flipping a coin. Each class spent one school term learning with ITG and one term in the non-ITG approach. Five classes from Prep to Year 4, constituting 87 students, commenced with ITG in Term 1 and then swapped to non-ITG in Term 2. Five classes from Prep to Year 4, constituting 83 students, commenced with the non-ITG approach in Term 1 and then swapped to ITG for Term 2. The total sample was 170 students.

As previously described Prep classes had three 40 minute Japanese language lessons per week, while the Year 1 to 4 classes had two 40 minute Japanese lessons each week. Students spent five weeks of one school term learning with ITG, where the teacher of Japanese used ITG with Japanese language throughout each lesson and encouraged the students to use ITG themselves, and five weeks of one school term in the non-ITG mode, without any use of ITG. The students were in each teaching approach for five weeks of Japanese classes, totalling 15 lessons for Prep classes and 10 lessons for Years 1 to 4 classes.

For both classes in each year level, the frequency of Japanese classes, duration of the lessons, the language content and class activities was identical. In all classes the teacher was the same individual and the medium of instruction was always exclusively Japanese. The only difference between the approaches was the addition of ITG with the teachers’ language throughout the ITG approach classes and the encouragement of students to also use the ITG. The decision to base the study within one school allowed for any differences between classes to be minimised. The crossover of approaches after one school term supported the equity in teaching to all classes and was planned to further minimise any possible effects of differences in abilities between classes.

At the beginning of each school term the lessons commenced with the classes learning a story in Japanese. In Term 1 the story was はらぺこ あおむし (Harapeko Aomushi) ‘The Very Hungry Caterpillar’. The story script used with classes was a modified version of ‘The Very Hungry Caterpillar’ story (Carle, 1979), (Appendix 3). The story was told for two weeks with the children sharing in the telling of the story and doing
class activities based on it. The remaining three weeks involved students telling their own stories in Japanese. At the end of the five weeks of each approach, the ITG in those classes ceased so that data from each approach could be collected. Students’ oral language was collected three times within each approach, the first immediately after the five teaching weeks, the second three weeks subsequently and the third stage occurred after a further six weeks. The stages of data gathering were designed to provide a measure of students’ oral language to be compared between the ITG and non-ITG approaches. At each stage, students’ oral language was measured by recording the number of words and average length of utterances produced. Additionally, the quantity of ITG used by students within each category of ACTLAN gesture (Gomura, 2008) was recorded. The transcriptions of students’ stories provided qualitative evidence of the features of students’ language and patterns of ITG use in each approach.

The process was mirrored in Term 2 when classes crossed over between the ITG and non-ITG approaches. The five teaching weeks in Term 2 commenced with the story おむすびころりん (Omusubi Kororin) ‘The Rolling Rice Ball’. The story script used with classes was a modified version of ‘The Rolling Rice Ball’ story (Yoda, 1969). (Appendix 4). Like with the story in Term 1, the story was told for two weeks with the children sharing in the telling of the story and doing class activities based on the story, after which students were encouraged to tell their own stories. At the end of the five weeks, the classes with ITG stopped the use of ITG ready for data collection. The three stages of data collection were carried out at the same time intervals as had been carried out in Term 1; weeks one, three and six after each teaching approach. Similarly, the same aspects of students’ oral language were measured; the number of words, average length of utterances and students’ ITG use. As in Term 1, the transcriptions of students’ stories provided qualitative evidence of the features of students’ language and patterns of ITG use in each approach.

The first and third stages of oral language data were collected by asking students to do Storytelling. They were given time to think and prepare with picture sets and an A3 whiteboard to plan their stories before being video recorded Storytelling. Storytelling was used as a measure of oral language output by each individual student in each approach, by determining the quantity of words and average length of utterances they could produce. Students’ use of ITG and the categories of ITG used were also recorded.
The second stage of data collection in each approach was in the form of Story Re-tell. Students from the ITG and non-ITG approaches were given a textless picture book of the story that had been introduced to the classes at the beginning of each school term and then asked to re-tell the story in Japanese. It had been six weeks since students had heard the story or referred to it in class. When classes had learned the story in the ITG approach, they were additionally asked to re-tell the story using the textless picture book while viewing the researcher do the ITG for the story. This was carried out immediately after the first Story Re-tell. A different book was selected to be used in class at the beginning of each school term and then used for Story Re-tell so that in each case, each book was new for the students on commencement of the new teaching approach. Each book had been read to the students in all classes the same number of times over the same number of lessons and students had the same opportunities to join in the reading of the story in classes. Similarly, each term, it had been six weeks between using the story in class and being asked to do a Story Re-tell of it. Story Re-tell was also used as a measure of oral language output by each individual student in each approach, by determining the quantity of words and average length of utterances they could produce. Students’ use of ITG and the categories of ITG used were also recorded.

At each stage of data collection, the transcriptions of each student’s stories provided valuable qualitative evidence of the features of students’ language and patterns of ITG use.

The following table provides an overview of the method and phases of data collection.
### Table 3 Method and phases of data collection

<table>
<thead>
<tr>
<th>Term 1, 2014 week 1</th>
<th>Class A</th>
<th>Class B</th>
<th>Data Collection Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>week 2</td>
<td>Storytelling</td>
<td>Storytelling</td>
<td>Baseline data</td>
</tr>
<tr>
<td>week 3</td>
<td>‘ITG’</td>
<td>‘non-ITG’</td>
<td>Teacher introduces Story 1</td>
</tr>
<tr>
<td>week 4</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>week 5</td>
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<td>week 6</td>
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<tr>
<td>week 7</td>
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<tr>
<td>week 8</td>
<td>Storytelling</td>
<td>Storytelling</td>
<td></td>
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<tr>
<td>week 9</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>week 10</td>
<td>Story Re-tell (with book and then with book while viewing ITG)</td>
<td>Story Re-tell (with book)</td>
<td></td>
</tr>
<tr>
<td>2 weeks school holidays</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>TERM 2, 2014 week 1</td>
<td>Storytelling</td>
<td>Storytelling</td>
<td></td>
</tr>
<tr>
<td>week 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>week 3</td>
<td>‘non-ITG’</td>
<td>‘ITG’</td>
<td>Teacher introduces Story 2</td>
</tr>
<tr>
<td>week 4</td>
<td></td>
<td></td>
<td></td>
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<td>week 5</td>
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<td>week 10</td>
<td>Story Re-tell (with book)</td>
<td>Story Re-tell (with book and then with book while viewing ITG)</td>
<td></td>
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<tr>
<td>2 weeks school holidays</td>
<td></td>
<td></td>
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<tr>
<td>TERM 3, 2014 week 1</td>
<td>Storytelling</td>
<td>Storytelling</td>
<td></td>
</tr>
</tbody>
</table>

**Key:** ITG [non-ITG] Data collection phases

As explained above the nature of the research questions was the determining factor in selection of the methods used to investigate them, with use of both quantitative data and emergent qualitative data. Each of these categories of data is now explained.

#### 4.8.1. Quantitative data

Reiterating that numerical data was gathered from the 170 student participants’ video recorded Japanese stories provided baseline data and then at three stages within each
approach, ITG and non-ITG, totalling seven video recordings per student throughout the study. This process results in 1,190 video recorded Japanese stories. However, when subtracting student absences and ten recordings that were accidently erased or recorded over, a total of 1,113 video recordings were available for analysis.

The video recordings were stored on a hard drive and backed up on an additional hard drive to be used for data analysis. The hard drives were kept secure in a locked cabinet in a locked office and were only accessed by the researcher and supervisors for the purpose of the study. The data capacity of the hard drives enabled a large volume of video recorded data to be stored and be done so securely. To ensure temporal stability, two copies of the video recorded data were retained. Multiple data recording ensured that there was a back-up. The transcription sheets which were used to record the language and ITG use from each student’s Japanese story also provided a record of the data set.

The procedure of giving instructions, recording students’ language and using the transcription sheet was trialled to ensure collections of the required data. This process ensured that any incidental findings throughout the trial could also be explored and investigated.

Following the whole data collection process, all video recordings were transcribed. The total number of Japanese words produced and the average length of utterances, determined by the number of words divided by the number of utterances, were counted and documented. Any ITG that students used were highlighted, counted and categorised into each of the categories of ACTLAN gestures, as classified by the developer of the methodology (Gomura, 2013a). An independent person who speaks Japanese rated a sample of recordings using the transcription sheets and the data was checked for agreement between raters to assess inter-rater reliability and consistency in the documentation of the data.

The numerical results were entered onto an Excel spreadsheet. The data from the Excel spreadsheet was then imported to Minitab to enable the statistical analysis and presentation of the data. Minitab was used as it enables the frequency of data to be counted and compared, data to be classified and coded, as well as data to be retrieved from subsets such as to compare data from the ITG and non-ITG teaching approaches and between year levels.
I consulted a specialist with statistical expertise from the early stages of the study to ensure that the data would enable the research questions to be answered. The sample size was checked to increase the likelihood that statistical significance could be drawn from the results. Statistical support was provided by The Statistical Consultancy Service of The University of Melbourne during all phases of gathering, analysis and presentation of the quantitative data.

In recognition that experimental error can occur when other factors influence results such as participant, intervention and situational factors, the research design used a large number of classes to minimise influence from other variables. Cohen et al. (2011) supports this procedure recommending that “enough subjects are included in the experiment that the principle of randomisation has a chance to operate as a powerful control…” (p. 317). Teaching variables between classes were matched as much as possible and the use of a crossover design where classes swapped between the ITG and non-ITG approaches after one school term was implemented to support this further. Consistency was maintained between approaches as much as possible with classroom observations carried out to ensure that the classes were representing the approach they said they were. These regular observations also supported the researcher to establish rapport with the students so that they were more comfortable with her presence when speaking Japanese during the video recordings. The role of the researcher was to collect samples of students’ language but minimise involvement in the classes to avoid influencing the way the students were working.

Quantitative data enabled the question of whether there were any quantifiable differences in the output of students in the ITG and non-ITG approaches to be answered. This data addressed research question 1 (What impact does the use of Intentional Teaching Gestures (ITG) in Japanese as additional language classes have on students’ oral language output?) Quantitative evidence was also used to address the numerical question of students’ use of ITG. Research question 3 asked (What patterns of gesture use emerge when students tell stories in Japanese?) One aspect of this question was addressed with quantifiable data of the number of students who used ITG and the quantity of each category of ITG used.

Qualitative data was used to address other aspects of the research questions which will now be discussed.
4.8.2. Qualitative data

Transcription data provided qualitative evidence to address the research questions seeking to find out about the nature of the language that students produced and their use of ITG. The transcriptions of students’ Japanese stories provided specific examples of students’ language output and ITG use in the context of stories. Excerpts and examples of students’ language provided rich qualitative data to enable the comparison of stories produced within the ITG and non-ITG approaches and the comparison of Story Re-tell with the book and Story Re-tell with the book while viewing ITG.

Thematic analysis was carried out on the transcription data. “…thematic analysis involves the searching across a data set – be that a number of interviews or focus groups, or a range of texts – to find repeated patterns of meaning” (Braun & Clarke, 2006, p. 86). In the current study, this involved repeated reading of the transcriptions of students’ Japanese stories to identify patterns. An inductive approach (Braun & Clarke, 2006) to thematic analysis was used, whereby the themes were derived from the actual data. A strong focus was on the semantic level of thematic analysis (Boyatzis, 1998) which involved the identification of patterns in the semantic meaning content of the transcription data. Patterns in students’ use of ITG were also identified.

The physical gathering of the video recorded stories from students and subsequent transcription process was a crucial process in becoming familiar with the data. The process of conducting the thematic analysis in this study began when patterns in the data were noticed during data collection. These patterns became potential themes that were developed while going back and forth in various “sweeps” of analysis through the data set. Repeated reading of the transcription data was carried out, analysing the data and identifying patterns. The coding and development of themes was created throughout the repeated reading process. The data was coded using a constructivist approach to identify themes without a pre-existing coding frame or any pre-conceived ideas about which themes might be plausible or present in the data. The qualitative analysis aimed to generate new accounts of the data rather than test existing theories (Richards, 2015) to enrich and deepen the interpretation and understanding of the phenomenon of ITG in an L2 teaching context.

Various coloured “post-it” notes were used to identify themes within the transcriptions, different colours corresponding to different themes. The next level of sorting involved
organising and classifying coded emergent themes into broader themes. These were continually refined throughout the analysis. This involved ensuring that all coded extracts within each theme fitted together coherently and that there were clear distinctions between them. Codes were produced for the data based on the patterns and themes developed with each identifying a unique feature of the data (Boyatzis, 1998). Excerpts from the transcriptions that provided clear examples of each theme and could demonstrate them clearly in context were then isolated and selected.

Member checking was carried out to confirm the themes and to ensure that the examples were typical of the themes. This process was carried out in order to strengthen the reliability of the qualitative analysis. After the identification and description of themes, there was an attempt to theorise the significance of the patterns and their broader meanings and implications (Patton, 1990).

Qualitative data enabled the questions about the features of students’ language and ITG use to be addressed. Transcription data provided evidence to address research question 2 \textit{(What are the features of students’ oral language when ITG has been incorporated into learning Japanese?)}. Qualitative evidence was also used to describe the patterns of ITG use by students, addressing research question 3 \textit{(What patterns of gesture use emerge when students tell stories in Japanese?)}.  

4.8.3. Triangulation of data

The process of data triangulation is conventionally adapted to enable multiple perspectives, to clarify meaning. The use of mixed methods helps to overcome the weaknesses or biases on emerging results of any single method. Denzin (1988) asserts that because the world is socially constructed and that the observer, those observed, (and meaning) are constantly changing, no single research method can capture every feature of the social world. Interpretations derived from triangulation can be stronger than interpretive generalisations derived from a single research method.

The current study aimed for triangulation through the adoption of mixed methods, from the broad categories of quantitative and qualitative approaches, deployed at different points in time from a large number of students from ten classes using two different types of oral language tasks. Each source of data provided a different source of information to contribute to the whole picture when answering the research questions. Methodological pluralism of this kind supports the rigour of investigation by attaching
the heightened perspective available when looking at the data with multiple perspectives. The quantitative data enabled the numerical answers to the research questions to be addressed, while the qualitative data provided examples of what these findings looked like in terms of the actual language that students produced.

Reliability of the quantitative data was strengthened by using an independent expert to scrutinise and rate a sample of the video recorded data, and subsequently the transcription sheets were compared between raters. Qualitative research discipline through continual re-reading and rechecking of the sets of transcription data, and carrying out member checking as validation of the themes that arose from the transcriptions, supported the robustness of the findings and conclusions drawn from the data. These various procedures helped reduce any possible misinterpretations from the data (Denzin & Lincoln, 2000).

4.9. Ethical Considerations

Ethics approval was granted for this ‘minimal risk’ study from The University of Melbourne Ethics Committee, ethics identity number 1340664 (Appendix 5). Additionally, the College Principal and Head of Junior School from the independent school in which the study took place gave written approval for the research to be carried out within the school and with the nominated classes (Appendix 6). A Plain Language Statement (Appendix 7) and a Consent Form (Appendix 8) were produced as part of the Ethics process, seeking permission with informed consent from all involved. The teacher of Japanese, each of the 10 classroom teachers whose classes were part of the study, and the parents of the children learning Japanese from Prep to Year 4, were invited to participate and were given Plain Language Statements explaining the aims and methods of the research and Consent Forms to indicate their agreement to participate.

The ages of the children involved was an important factor to consider. This study aimed to minimise its interference in the normal running of the language programs in the school and consequently the stories the children were involved in listening to and retelling resembled closely regular classroom tasks that the students would be involved in within their normal language lessons. By the researcher visiting the classes and establishing a rapport with students, it was hoped that the students would feel more at ease when telling the stories. The location of the recordings, in a quiet area of the open-planned learning environment the students use regularly, enabled privacy, while still
allowing the sense that the research was not disconnected from the classroom environment.

The results from the study will now be presented over two chapters. The next chapter will report on the quantitative findings, reporting findings related to the question of the quantity of oral language output that students produced comparing and contrasting two research groups, the ITG and non-ITG approaches, in Storytelling and Story Re-tell and between the Story Re-tell with and without viewing ITG. The chapter also presents data about students’ use of ITG and categories of use when Storytelling and when doing Story Re-tell.
Chapter 5. WHAT IS THE IMPACT OF ITG?

QUANTITATIVE DATA

5.1. Introduction

The principal aim of the research was to examine the impact of Intentional Teaching Gestures (ITG) on students’ oral language output in Japanese as an additional language in primary school classes. The key indicators that were used to assess the impact of ITG were the number of words and the average length of utterances produced by students. These were compared and contrasted to the verbal output, the number of words and the average length of utterances, from students when ITG was not used. Quantitative and qualitative data was collected to address this overarching research purpose.

The findings from the study have been divided into two chapters. This current chapter will focus on the quantitative findings and will present the numerical data that was gathered, illustrating the number of words students produced, the average length of utterances produced and the quantity of ITG used by students within each gesture category. The qualitative data will be discussed in the next chapter which will present the themes of findings from the transcriptions of students’ Japanese stories.

The total set of data is summarised in Table 4 with the quantitative aspect of the data coloured blue to show the data that will be discussed in this chapter.

Table 4 Table of data highlighting quantitative data

<table>
<thead>
<tr>
<th>QUANTITATIVE DATA: Numerical findings</th>
<th>QUALITATIVE DATA: Transcriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addresses Research Questions 1 and 3</td>
<td>Addresses Research Questions 2 and 3</td>
</tr>
<tr>
<td>Four clusters of findings: 1. Comparison of the two teaching approaches 2. Comparison of Storytelling at two stages 3. Comparison of Story Re-tell with and without viewing ITG 4. Students’ use of ITG</td>
<td>Nine themes within two clusters of findings: Viewing ITG 1. ITG increasing language output 2. ITG increasing content 3. ITG increasing students’ use of verbs 4. ITG increasing students’ use of particles 5. ITG supporting the structuring of utterances 6. ITG encouraging students’ self-correcting 7. ITG increasing students’ fluency Using ITG 1. Students’ use of ITG without a word 2. Students’ mismatch of ITG and word</td>
</tr>
</tbody>
</table>
5.2. Data set

The quantitative data comprises numerical data from 170 students’ video-recorded Japanese stories. Each student told a total of seven stories throughout the study, one for baseline data collection and then three stories within each teaching approach, ITG and non-ITG. Subtracting student absences and ten video recordings that were erased, damaged or otherwise unusable, results in a total corpus of 1,113 video recordings.

Each of these video recording was transcribed onto a transcription sheet with every word each student produced recorded and any use of ITG identified and recorded. The total number of words and the average length of utterance was determined for each story. The total number of ITG used within each story, including the number of ITG used within each category, was also counted and recorded. These numerical results were then entered onto an Excel spreadsheet and the entirety of the resultant data set was identified according to year level, (Prep to Year 4), teaching approach, (ITG or non-ITG), and then marked for each stage and modality of data collection (Storytelling and Story Re-tell). All of this annotated and clarified information was then imported into Minitab to enable statistical analysis and facilitate the presentation of the data for analysis and discussion.

The complete process of assembling, classifying and analysing the quantitative data enabled research question 1 (What impact does the use of Intentional Teaching Gestures (ITG) in Japanese as additional language classes have on students’ oral language output?) to be addressed by quantifying the linguistic output from students from both of the research modes. As stated previously, the numerical component of research question 3 (What patterns of gesture use emerge when students tell stories in Japanese?) was also addressed with these quantifying processes, by providing the number of students who used ITG in their Japanese stories and the quantity of each category of ITG used. Figure 15 illustrates the process in diagrammatic form.
**Quantitative data set**

**Term 1, 2014**

Baseline data

- Taught ITG approach, 5 weeks
  - Prep A
  - Year 1 A
  - Year 2 A
  - Year 3 A
  - Year 4 A
  - 12 chn
- Taught non-ITG approach, 5 weeks
  - Prep B
  - Year 1 B
  - Year 2 B
  - Year 3 B
  - Year 4 B
  - 15 chn

Three stories per student video recorded over six weeks; one week after the 5-week teaching block, three weeks later, then six weeks later.

Measurement: 1. Number of words, 2. Average length of utterances, 3. Quantity of ITG used by students within each ITG category.

**Term 2, 2014**

Cross-over of approaches

- Taught ITG approach, 5 weeks
  - Prep B
  - Year 1 B
  - Year 2 B
  - Year 3 B
  - Year 4 B
  - 15 chn
- Taught non-ITG approach, 5 weeks
  - Prep A
  - Year 1 A
  - Year 2 A
  - Year 3 A
  - Year 4 A
  - 12 chn

Data gathering process repeated: Three stories per student video recorded over six weeks; one week after the 5-week teaching block, three weeks later, then six weeks later.

Same measures of data: 1. Number of words, 2. Average length of utterances, 3. Quantity of ITG used by students within each ITG category.

**Figure 15** Quantitative Data Set

These procedures of analysis generated data that resulted in enabling four clusters of findings; 1, comparison of the two teaching approaches; 2, comparison of Storytelling at two stages; 3, comparison of Story Re-tell with and without viewing ITG; and 4, students’ use of ITG. The results and outcomes of these analytical procedures will now
be presented and discussed in the following sections of this chapter according to this cluster of findings.

5.3. **Comparison of the two teaching approaches**

The analysis of the word count and average length of utterances is now presented comparing and contrasting students’ output between the ITG approach and the non-ITG approach. These comparisons were made at the three stages of data collection; Storytelling at stage one, Story Re-tell at stage two and Storytelling at stage three.

The analysis first looks at the results for students who participated in the ITG teaching approach and students who participated in the non-ITG teaching approach in Term 1. The Term 2 data will be presented separately in acknowledgement that the results from both school terms cannot be treated as equivalent due to students experiencing each teaching approach in a different order, and in a different school term. It is also recognised that there are possible carry-over effects from the learning in Term 1 into Term 2 which might also confound the comparison.

The analysis is based on class level averages because the teaching approach of interest in this study was at the class level. Although some responses were missing for some students, these were identified as missing at random, and all available cases contributed to the averages. The analysis therefore enables comparison of year levels and comparison of teaching approaches.

5.3.1. **Term 1 Number of words**

The following figure shows the class averages for the number of words students in each year level produced within each stage of data collection, comparing and contrasting results between the two main research conditions, ITG and non-ITG.
Figure 16 shows that the mean of the average number of words produced by students was very similar in the two research approaches. In Storytelling at stage one, the average number of words produced was similar across the ITG and non-ITG approaches, in the former condition a total of 9 words was generated by students while the latter, non-ITG approach, generated 11 words at the Prep level. By contrast at the non-ITG approach yielded 41 words and the ITG approach 50 words in Year 4. By stage three, slightly more words on average were produced by most year levels in the non-ITG approach, for example, 11 in the ITG approach and 17 words in the non-ITG approach in Prep. In Story Re-tell at stage two, a greater impact of ITG on the average number of words is evident. The most noticeable differences were between the ITG and non-ITG classes in Year 1, 2 and 3. In Year 1, 19 words were produced in the non-ITG approach and 34 in the ITG approach, in Year 2, 26 in the non-ITG approach and 39 in the ITG approach, and in Year 3, 30 words were produced in the non-ITG approach and 42 in the ITG approach.

The approach to statistical analysis involved general linear models, three of which are reported. The outcomes, or dependent variables, are the average number of words produced at each point in time. The explanatory, or independent variables are the year level and the teaching approach, ITG and non-ITG. The main interest is in the comparison of teaching approaches. The overall analyses are reported in the following table.
The small $p$-values in Table 5, $p \leq 0.05$, show significant mean differences for year level which in turn indicates an association of year level with the average number of words that students could produce. This finding is reflective of the increased number of years that students had been learning Japanese from Prep to Year 4.

The large $p$-values in Table 5, $p > 0.05$, shows that there were non-significant mean differences between the teaching approaches indicating that the teaching approach was not associated with the quantity of words that students could produce. Although a difference was not detected statistically, we can see in Figure 16 that there is a noticeable increase in the average number of words produced by some year level students within the ITG approach when doing Story Re-tell at stage two.

The mean values for teaching approach and the estimated mean difference are now presented.

Table 6 presents a comparison of means between the teaching approaches at each stage of data collection. When subtracting the mean of the non-ITG approach from the mean

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>ITG mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITG</td>
<td>23.23</td>
<td>19.12, 27.34</td>
</tr>
<tr>
<td>Non-ITG</td>
<td>21.79</td>
<td>17.68, 25.9</td>
</tr>
<tr>
<td>ITG minus non-ITG</td>
<td>1.44</td>
<td>-4.35, 7.23</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage 2</th>
<th>ITG mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITG</td>
<td>30.96</td>
<td>21.24, 40.68</td>
</tr>
<tr>
<td>Non-ITG</td>
<td>24.63</td>
<td>14.91, 34.35</td>
</tr>
<tr>
<td>ITG minus non-ITG</td>
<td>6.34</td>
<td>-7.41, 20.08</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage 3</th>
<th>ITG mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITG</td>
<td>21.22</td>
<td>17.83, 24.61</td>
</tr>
<tr>
<td>Non-ITG</td>
<td>23.72</td>
<td>20.33, 27.11</td>
</tr>
<tr>
<td>ITG minus non-ITG</td>
<td>-2.50</td>
<td>-7.29, 2.29</td>
</tr>
</tbody>
</table>

Table 5 Analysis of number of words in each approach, Term 1

<table>
<thead>
<tr>
<th>Explanatory variable</th>
<th>F</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching approach</td>
<td>0.48</td>
<td>1, 4</td>
<td>0.528</td>
</tr>
<tr>
<td>Year level</td>
<td>33.21</td>
<td>4, 4</td>
<td>0.003</td>
</tr>
<tr>
<td>Stage 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching approach</td>
<td>1.64</td>
<td>1, 4</td>
<td>0.270</td>
</tr>
<tr>
<td>Year level</td>
<td>4.76</td>
<td>4, 4</td>
<td>0.080</td>
</tr>
<tr>
<td>Stage 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching approach</td>
<td>2.11</td>
<td>1, 4</td>
<td>0.220</td>
</tr>
<tr>
<td>Year level</td>
<td>22.00</td>
<td>4, 4</td>
<td>0.006</td>
</tr>
</tbody>
</table>

| Table 6 Mean number of words for each approach, Term 1

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-ITG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITG minus non-ITG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-ITG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITG minus non-ITG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-ITG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITG minus non-ITG</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
of the ITG approach we can determine the difference between the means. A clear difference in mean scores is revealed in this comparison, specifically that students produced slightly more words, (an average of 1.44 more words) in the ITG approach when Storytelling at Stage one compared with the non-ITG approach. When Storytelling at stage three, students produced fewer words, (an average of -2.50 words) in the ITG than in the non-ITG approach. In Story Re-tell at stage two, students produced an average of 6.34 more words in the ITG approach. The confidence intervals at each stage show the level of uncertainty in the mean differences.

The modelled mean values are now presented for each year level. These are the mean values predicted by the statistical model; the means adjusted for the average value of the baseline number of words.

Table 7  Mean number of words for each year level, Term 1

<table>
<thead>
<tr>
<th>Year level</th>
<th>Predicted mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prep</td>
<td>9.90</td>
<td>3.43, 16.37</td>
</tr>
<tr>
<td>One</td>
<td>17.20</td>
<td>10.73, 23.67</td>
</tr>
<tr>
<td>Two</td>
<td>21.16</td>
<td>14.69, 27.63</td>
</tr>
<tr>
<td>Three</td>
<td>19.06</td>
<td>12.59, 25.53</td>
</tr>
<tr>
<td>Four</td>
<td>45.34</td>
<td>38.87, 51.81</td>
</tr>
<tr>
<td>Stage 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prep</td>
<td>7.60</td>
<td>-7.75, 22.95</td>
</tr>
<tr>
<td>One</td>
<td>25.97</td>
<td>10.62, 41.32</td>
</tr>
<tr>
<td>Two</td>
<td>32.54</td>
<td>17.19, 47.89</td>
</tr>
<tr>
<td>Three</td>
<td>36.16</td>
<td>20.81, 51.51</td>
</tr>
<tr>
<td>Four</td>
<td>36.71</td>
<td>21.36, 52.06</td>
</tr>
<tr>
<td>Stage 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prep</td>
<td>13.48</td>
<td>8.12, 18.84</td>
</tr>
<tr>
<td>One</td>
<td>16.06</td>
<td>10.70, 21.42</td>
</tr>
<tr>
<td>Two</td>
<td>23.63</td>
<td>18.27, 28.99</td>
</tr>
<tr>
<td>Three</td>
<td>22.43</td>
<td>17.07, 27.79</td>
</tr>
<tr>
<td>Four</td>
<td>36.75</td>
<td>31.39, 42.11</td>
</tr>
</tbody>
</table>

The data in Table 7 identifies the predicted mean for each year level at each stage of data collection. The greatest differences are between Prep and the other year levels at stage one Storytelling and stage two Story Re-tell. There is also a noticeable increase in the data for Year 4 at stage one Storytelling and stage three Storytelling.
5.3.2. Term 1 Average length of utterance

Figure 17 presents the mean length of utterances produced by each year level at each stage of data collection comparing the ITG and non-ITG approaches in Term 1.

![Graph showing mean length of utterance](image)

Key: □ ITG approach, ▯ non-ITG approach

Figure 17  Mean length of utterances in each approach at each stage, Term 1

The data in Figure 17 indicates that students generally produced longer utterances after learning in the ITG approach compared to the non-ITG condition, when Storytelling at stage one and when doing Story Re-tell at stage two. The difference in length of utterances is between one and 2 words for Prep, and between 3 and 4 words at Year 4 when Storytelling at stage one; in effect constituting a very slight difference in length of utterance. Similarly, when doing Story Re-tell at stage two, the difference in length of utterances is between one and a fraction over two words for Prep, and between 2 and 3 words in Year 1. However, when Storytelling at stage three, Prep and Year 1 students produced longer average utterances after the ITG approach while students in Years 2, 3 and 4 produced longer average utterances following the non-ITG approach. In Prep, 1.5 word utterances were generated in the non-ITG condition whilst 2 word utterances were produced in the ITG approach. In Year 4, the difference was greater, with 4 words produced in the ITG approach and almost 7 words in the non-ITG approach. The overall analyses are reported in the following table.
Table 8: Analysis of length of utterances in each approach, Term 1

<table>
<thead>
<tr>
<th>Explanatory variable</th>
<th>F</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stage 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching approach</td>
<td>1.19</td>
<td>1, 4</td>
<td>0.337</td>
</tr>
<tr>
<td>Year level</td>
<td>5.64</td>
<td>4, 4</td>
<td>0.061</td>
</tr>
<tr>
<td><strong>Stage 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching approach</td>
<td>49.79</td>
<td>1, 4</td>
<td>0.030</td>
</tr>
<tr>
<td>Year level</td>
<td>10.86</td>
<td>4, 4</td>
<td>0.001</td>
</tr>
<tr>
<td><strong>Stage 3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching approach</td>
<td>1.10</td>
<td>1, 4</td>
<td>0.353</td>
</tr>
<tr>
<td>Year level</td>
<td>4.06</td>
<td>4, 4</td>
<td>0.102</td>
</tr>
</tbody>
</table>

The large p-values in Table 8 for Storytelling at stage one and stage three, show that there were non-significant mean differences in the average length of utterances between the teaching approaches. This shows that teaching approach was not associated with the average length of student utterance.

However, when doing Story Re-tell at stage two, the small p-value shows significant mean differences according to teaching approach. This demonstrates an association of teaching approach with the average length of utterances that students could produce so that on average across year levels, longer utterances could be produced by students when doing Story Re-tell who had learned Japanese in the ITG teaching approach.

To ground this discussion on output differences more solidly, Table 9 sets out the mean values and the estimated mean difference for length of utterances in the ITG and non-ITG approaches.

Table 9: Mean length of utterances for each approach, Term 1

<table>
<thead>
<tr>
<th>Term 1</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>95% confidence interval</td>
</tr>
<tr>
<td><strong>Stage 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITG</td>
<td>2.99</td>
<td>2.32, 3.66</td>
</tr>
<tr>
<td>Non-ITG</td>
<td>2.62</td>
<td>1.95, 3.29</td>
</tr>
<tr>
<td>ITG minus non-ITG</td>
<td>0.37</td>
<td>-0.57, 1.31</td>
</tr>
<tr>
<td><strong>Stage 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITG</td>
<td>3.87</td>
<td>3.54, 4.20</td>
</tr>
<tr>
<td>Non-ITG</td>
<td>3.31</td>
<td>2.98, 3.64</td>
</tr>
<tr>
<td>ITG minus non-ITG</td>
<td>0.56</td>
<td>0.09, 1.03</td>
</tr>
<tr>
<td><strong>Stage 3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITG</td>
<td>2.69</td>
<td>1.40, 3.98</td>
</tr>
<tr>
<td>Non-ITG</td>
<td>3.37</td>
<td>2.08, 4.66</td>
</tr>
<tr>
<td>ITG minus non-ITG</td>
<td>-0.69</td>
<td>-2.51, 1.13</td>
</tr>
</tbody>
</table>

The data presented in Table 9 identifies a mean difference of 0.56 longer utterances in stage two, Story Re-tell, a statistically significant result (Table 8). This mean difference
identifies that, on average, longer utterances were produced in Story Re-tell from the ITG approach. The magnitude of the stage three, Storytelling, mean difference is larger, although in the opposite direction, -0.69. However, this result was not statistically significant because there was more variation in the stage three data. The effects of year level are harder to detect for utterance length in general.

The modelled mean values for each year level are now presented.

Table 10 identifies the mean length of utterances for each year level at each stage of data collection. No clear pattern emerges, however, mean length of utterance generally increased as year level increased.

The data is now presented for students who followed the ITG teaching approach and students in the non-ITG teaching approach in Term 2. As discussed for Term 1 above, the results describe the average word count and average length of utterance of students at the three stages of data collection in Term 2 from the ITG and non-ITG classes in Storytelling and Story Re-tell. When interpreting these findings, it needs to be remembered that these results were generated in Term 2 making it possible that some effect of Term 1 learning is carried over into Term 2. The comparison here is of non-ITG in Term 1 followed by ITG in Term 2, and the reverse of ITG in Term 1 followed by non-ITG in Term 2. Although we cannot consider the results from each school term
as equivalent due to the order within which they were learned being different, it is interesting and worthwhile to consider the impact of each approach in each term.

The analysis which follows is again based on class level averages, as the teaching approach of interest in this study was implemented at the class level. Although some responses were missing for some students, these were missing at random, and all available cases contributed to the averages. The analysis enables a comparison of year levels and teaching approaches.

5.3.3. Term 2 Number of words

Figure 18 presents the year level averages of the quantity of words students produced for each stage of data collection comparing the two main teaching approaches, ITG and non-ITG.

### Figure 18  Mean number of words in each approach at each stage, Term 2

The main finding shown in Figure 18 is that the average number of words produced by students is similar in the two teaching approaches at each stage of data collection. The Year 2 class learning with ITG in Term 2 produced more words on average when Storytelling at Stage 1 than the Year 2 class learning without ITG (35 words produced in the ITG approach compared with 24 words produced in the non-ITG approach) and Stage 3 (23 words produced in the ITG approach compared with 38 words produced in the non-ITG approach). The reason for this is unknown. The other year levels were closer in their production of words, for example, when Storytelling at stage 1, Prep students in the non-ITG approach produced 13 words whilst students in the ITG
approach produced 16 words and in Story Re-tell at stage two, Year 4 students in the non-ITG approach produced 21 words whilst students in the ITG approach produced 25 words.

Table 11: Analysis of number of words in each approach, Term 2

<table>
<thead>
<tr>
<th>Explanatory variable</th>
<th>F</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching approach</td>
<td>0.02</td>
<td>1, 4</td>
<td>0.898</td>
</tr>
<tr>
<td>Year level</td>
<td>14.11</td>
<td>4, 4</td>
<td>0.013</td>
</tr>
<tr>
<td>Stage 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching approach</td>
<td>1.30</td>
<td>1, 4</td>
<td>0.318</td>
</tr>
<tr>
<td>Year level</td>
<td>6.78</td>
<td>4, 4</td>
<td>0.045</td>
</tr>
<tr>
<td>Stage 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching approach</td>
<td>0.11</td>
<td>1, 4</td>
<td>0.757</td>
</tr>
<tr>
<td>Year level</td>
<td>6.60</td>
<td>4, 4</td>
<td>0.047</td>
</tr>
</tbody>
</table>

The generally large p-values in Table 11 show that there were non-significant mean differences between the teaching approaches which in turn shows that teaching approach was not associated with the quantity of words that students could produce. These findings were consistent with the findings in Term 1 for Storytelling at both stages. For Story Re-tell, the Term 1 data showed an increase in the number of words in the ITG approach, but this was not the case for the Term 2 data.

The small p-values identify significant mean differences for each year level, showing an association of year level and average number of words that students could produce, reflective of their increased years of learning Japanese from Prep to Year 4.

The mean values for teaching approach and the estimated mean difference are now presented.
Table 12  Mean number of words for each approach, Term 2

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Mean number of words for each approach</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-ITG then ITG</td>
<td>27.68</td>
<td>21.9, 33.46</td>
</tr>
<tr>
<td>ITG then non-ITG</td>
<td>27.28</td>
<td>21.5, 33.06</td>
</tr>
<tr>
<td>(non-ITG then ITG) minus (ITG then non-ITG)</td>
<td>0.40</td>
<td>-7.78, 8.59</td>
</tr>
<tr>
<td>Stage 2</td>
<td>Non-ITG then ITG</td>
<td>17.38</td>
</tr>
<tr>
<td>ITG then non-ITG</td>
<td>15.70</td>
<td>12.81, 18.59</td>
</tr>
<tr>
<td>(non-ITG then ITG) minus (ITG then non-ITG)</td>
<td>1.68</td>
<td>-2.41, 5.77</td>
</tr>
<tr>
<td>Stage 3</td>
<td>Non-ITG then ITG</td>
<td>27.68</td>
</tr>
<tr>
<td>ITG then non-ITG</td>
<td>26.41</td>
<td>20.66, 32.16</td>
</tr>
<tr>
<td>(non-ITG then ITG) minus (ITG then non-ITG)</td>
<td>1.27</td>
<td>-9.33, 11.86</td>
</tr>
</tbody>
</table>

The differences in the means show the size of the effect of each teaching approach. The very small difference between the means reveal that the number of words students could produce at each stage of Storytelling and Story Re-tell were similar in each teaching approach; a difference of 0.40 words when Storytelling at stage one, a difference of 1.68 words when doing Story Re-tell at stage two, and a difference of 1.27 words when Storytelling at stage three. The modelled mean values for year level are presented below.

Table 13  Mean number of words for each year level, Term 2

<table>
<thead>
<tr>
<th>Year level</th>
<th>Predicted mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prep</td>
<td>14.16</td>
<td>5.00, 23.32</td>
</tr>
<tr>
<td>One</td>
<td>19.45</td>
<td>10.29, 28.61</td>
</tr>
<tr>
<td>Two</td>
<td>29.22</td>
<td>20.06, 38.38</td>
</tr>
<tr>
<td>Three</td>
<td>27.90</td>
<td>18.74, 37.06</td>
</tr>
<tr>
<td>Four</td>
<td>46.67</td>
<td>37.51, 55.83</td>
</tr>
<tr>
<td>Stage 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prep</td>
<td>10.76</td>
<td>6.18, 15.34</td>
</tr>
<tr>
<td>One</td>
<td>18.10</td>
<td>13.52, 22.68</td>
</tr>
<tr>
<td>Two</td>
<td>15.96</td>
<td>11.38, 20.54</td>
</tr>
<tr>
<td>Three</td>
<td>15.33</td>
<td>10.75, 19.91</td>
</tr>
<tr>
<td>Four</td>
<td>22.53</td>
<td>17.95, 27.11</td>
</tr>
<tr>
<td>Stage 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prep</td>
<td>15.54</td>
<td>3.68, 27.40</td>
</tr>
<tr>
<td>One</td>
<td>18.00</td>
<td>6.14, 29.86</td>
</tr>
<tr>
<td>Two</td>
<td>30.75</td>
<td>18.89, 42.61</td>
</tr>
<tr>
<td>Three</td>
<td>28.02</td>
<td>16.16, 39.88</td>
</tr>
<tr>
<td>Four</td>
<td>42.90</td>
<td>31.04, 54.76</td>
</tr>
</tbody>
</table>
The modelled means show the variation in the number of words that could be produced by each year level at each stage of data collection.

5.3.4. **Term 2 Average length of utterance**

Figure 19 presents the mean length of utterances produced by each year level at each stage of data collection comparing the ITG and non-ITG approaches in Term 2.

![Graph showing mean length of utterance](image)

**Key:** □ ITG approach, □ non-ITG approach

**Figure 19**  
**Mean length of utterances in each approach at each stage, Term 2**

The data presented in Figure 19 shows that the average length of utterances produced in Term 2 generally appears to be similar in the two teaching approaches at each stage of data collection. The Year 2 class learning with ITG noticeably outperformed the other Year 2 class in the mean length of utterances that they could produce in Stage 3 Storytelling, with a mean of 4-word utterances produced in the non-ITG approach and 7-word utterances in the ITG approach, which Figure 19 illustrates clearly.

The overall analyses are reported in the following table.
Table 14  Analysis of length of utterances in each approach, Term 2

<table>
<thead>
<tr>
<th>Explanatory variable</th>
<th>F</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching approach</td>
<td>0.28</td>
<td>1, 4</td>
<td>0.662</td>
</tr>
<tr>
<td>Year level</td>
<td>44.38</td>
<td>4, 4</td>
<td>0.001</td>
</tr>
<tr>
<td>Stage 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching approach</td>
<td>0.56</td>
<td>1, 4</td>
<td>0.497</td>
</tr>
<tr>
<td>Year level</td>
<td>1.32</td>
<td>4, 4</td>
<td>0.398</td>
</tr>
<tr>
<td>Stage 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching approach</td>
<td>0.76</td>
<td>1, 4</td>
<td>0.433</td>
</tr>
<tr>
<td>Year level</td>
<td>2.01</td>
<td>4, 4</td>
<td>0.257</td>
</tr>
</tbody>
</table>

The large p-values for teaching approach at each stage of data collection show non-significant differences indicating no association between teaching approach and the average length of utterance students produced. These results are consistent with the Term 1 findings for Storytelling at stage one and stage three but are however, different for Story Re-tell at stage two, where an increase in the average length of utterances was associated with the ITG approach in Term 1 (refer to Table 8) but not Term 2.

The data show a statistically significant difference in length of utterance (p-value <0.001) relating to year level at stage one however, not at stage two and three. The mean values for teaching approach and the estimated mean difference are now presented.

Table 15  Mean length of utterances for each approach, Term 2

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-ITG then ITG</td>
<td>3.35</td>
<td>3.04, 3.66</td>
</tr>
<tr>
<td>ITG then non-ITG</td>
<td>3.44</td>
<td>3.13, 3.75</td>
</tr>
<tr>
<td>(Non-ITG then ITG) minus (ITG then non-ITG)</td>
<td>-0.08</td>
<td>-0.52, 0.35</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage 2</th>
<th>Mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-ITG then ITG</td>
<td>2.12</td>
<td>1.75, 2.50</td>
</tr>
<tr>
<td>ITG then non-ITG</td>
<td>1.98</td>
<td>1.6, 2.36</td>
</tr>
<tr>
<td>(Non-ITG then ITG) minus (ITG then non-ITG)</td>
<td>0.14</td>
<td>-0.391, 0.679</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage 3</th>
<th>Mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-ITG then ITG</td>
<td>4.79</td>
<td>3.32, 6.27</td>
</tr>
<tr>
<td>ITG then non-ITG</td>
<td>4.14</td>
<td>2.66, 5.62</td>
</tr>
<tr>
<td>(Non-ITG then ITG) minus (ITG then non-ITG)</td>
<td>0.66</td>
<td>-1.434, 2.745</td>
</tr>
</tbody>
</table>

The differences in the means show the size of the effect of each teaching approach. The very small difference between the means show that the average length of utterance that
students could produce at each stage of Storytelling and Story Re-tell was very similar in each teaching approach. At each stage of data collection, the difference between means from the ITG and non-ITG approach is less than one word per utterance.

The modelled mean values for year level are now presented.

<table>
<thead>
<tr>
<th>Table 16</th>
<th>Mean length of utterances for each year level, Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year level</td>
<td>Predicted mean</td>
</tr>
<tr>
<td>Stage 1</td>
<td></td>
</tr>
<tr>
<td>Prep</td>
<td>1.65</td>
</tr>
<tr>
<td>One</td>
<td>2.81</td>
</tr>
<tr>
<td>Two</td>
<td>4.10</td>
</tr>
<tr>
<td>Three</td>
<td>3.78</td>
</tr>
<tr>
<td>Four</td>
<td>4.63</td>
</tr>
<tr>
<td>Stage 2</td>
<td></td>
</tr>
<tr>
<td>Prep</td>
<td>1.79</td>
</tr>
<tr>
<td>One</td>
<td>2.11</td>
</tr>
<tr>
<td>Two</td>
<td>2.16</td>
</tr>
<tr>
<td>Three</td>
<td>1.82</td>
</tr>
<tr>
<td>Four</td>
<td>2.38</td>
</tr>
<tr>
<td>Stage 3</td>
<td></td>
</tr>
<tr>
<td>Prep</td>
<td>2.52</td>
</tr>
<tr>
<td>One</td>
<td>4.18</td>
</tr>
<tr>
<td>Two</td>
<td>5.49</td>
</tr>
<tr>
<td>Three</td>
<td>4.95</td>
</tr>
<tr>
<td>Four</td>
<td>5.20</td>
</tr>
</tbody>
</table>

The modelled means show the variation in the average length of utterances that could be produced by each year level at each stage of data collection. There is not a clear pattern, however, the mean length of utterance generally increased as year level increased. All year levels produced longer utterances in stage three Storytelling than in the other stages of data collection.

5.3.5. Discussion of cluster one findings

The results for the first cluster of findings, the comparison of the two teaching approaches, ITG and non-ITG, have enabled research question 1 to be addressed. The question asked *What impact does the use of Intentional Teaching Gestures (ITG) in Japanese as additional language classes have on students’ oral language output?* The findings show that for Storytelling at both stages of data collection in Terms 1 and 2, the quantity of words that students produced after learning Japanese with ITG did not differ from the quantity of words produced after the non-ITG approach.
In Story Re-tell in Term 1, there was a non-significant but noticeable, difference in the mean number of words, with an average of 6.34 more words (Table 6) being produced by students who had learned in the ITG approach than those in the non-ITG approach. In Term 2 there was not an association between teaching approach and the average number of words.

There were non-significant differences in the average length of utterances that students in the ITG and non-ITG approaches produced when Storytelling at stages one and three in both Terms 1 and 2. There was however, a significant difference in the average length of utterances produced during Story Re-tell ($P$-value 0.030) (Table 8), with longer utterances on average produced by students who had learned in the ITG approach compared with the non-ITG approach in Term 1. In Term 2, there were non-significant differences in the average length of utterances when comparing approaches.

These results have drawn attention to the differences between the two types of Japanese stories, Storytelling and Story Re-tell. For Storytelling, the data did not reveal an association between the number of words and the teaching approach or the length of utterances and the teaching approach. For Story Re-tell in Term 1, there was an association of teaching approach on both the number of words and length of utterances. On average, a greater quantity of words and longer utterances were produced by students who had learned Japanese in the ITG approach. Although there were non-significant differences in Story Re-tell in Term 2, we need to remember that the order of approaches differed and that students who had benefitted from ITG in Term 1 may have carried over some learning effect into Term 2 when they were in the non-ITG classes, confounding the Term 2 comparison.

In general, these findings show that ITG had a differential impact on Storytelling and Story Re-tell and that the impact of ITG may depend on the context and type of oral task from which the language is learned, such as with Storytelling and Story Re-tell. Further research could now investigate the impact of ITG on other oral language tasks.

The greatest differences revealed in students’ output between the two teaching approaches were in Story Re-tell, which involved them in telling the story used in the ITG approach first learned with ITG. This may suggest that replicating the condition in which ITG was first learned activates the recall of language through ITG. This connects strongly with Tulving and Thompson’s ‘Encoding Specificity Principle’ (1973) which
identifies the importance of the language learning context for encoding. According to this principle language recall is strengthened when the language retrieval environment matches the original encoding environment. In the present research Story Re-tell provided a context where the language retrieval environment, the picture book, matched the encoding environment, when the picture book was introduced and has found that the ITG teaching approach has produced an impact on students’ oral output in Story Re-tell done to the matching of encoding and retrieval contexts. The Storytelling task did not provide a matching retrieval and encoding environment, which may be a factor contributing to the non-significant differences in teaching approach for this type of task. Similarity in input and output environments is one factor that may have impacted on the difference in results between Story Re-tell and Storytelling, however, a broader range of differing factors also needs to be considered.

Another difference between the two types of narratological tasks, Storytelling and Story Re-tell, is that the latter measured the quantity of oral output that students produced when recalling a familiar story, whereas Storytelling involved students’ own originally created story, unrelated to the Japanese learning encoding environment. This contextual difference underscores that although learning with ITG was found to support recall of a known story when doing Story Re-tell, ITG did not impact on students’ independent production of Japanese when Storytelling. It also needs to be acknowledged that Story Re-tell may have been an easier task for the learners because it was the recall of a known story rather than the independent creation of a new story. Storytelling required much more creative abilities which reflected what the student already possesses in terms of Japanese language knowledge. Further research is needed now to determine whether after a longer period of ITG mediated second language learning, there is an impact on students’ independent production of the second language in a task comparable with Storytelling.

Another pertinent factor is that the Storytelling task involved students in creating personal narratives using pictures attached to large magnetic whiteboards. This mode of Storytelling requires students’ hands to be engaged in holding the whiteboard or touching, pointing or manipulating the order of the picture cards while speaking. These conditions of Storytelling might have influenced students’ non-use of ITG, which may otherwise have provided a support for them.
The data is now presented and discussed for the second cluster of findings presenting a comparison of students’ output when Storytelling at two stages of data collection in the ITG and non-ITG teaching approaches.

5.4. Comparison of Storytelling at two stages

The analysis of the average number of words and average length of utterances is now presented comparing ITG and non-ITG approaches when Storytelling at two stages of data collection. This comparison was carried out to determine whether the teaching approach had an impact on students’ oral language output at either time. To enable this comparison, the average number of words and average length of utterances produced by students when Storytelling are compared and contrasted between the ITG and non-ITG teaching approaches at these two stages. Storytelling occurred at stage one, one week after each teaching approach ceased and at stage three, six weeks later. Stage two was the data collection point of Story Re-tell which is discussed separately. It is possible that the impact of ITG on students’ oral output when Storytelling is more fully realised at stage one, one week after the approach ceased, or at stage three, six weeks later. This data will enable this possibility to be explored.

The analysis first looks at the results for students who participated in the ITG teaching approach and students who participated in the non-ITG teaching approach in Term 1. The Term 2 data will be presented separately in acknowledgement that the results from both school terms cannot be treated as equivalent due to students experiencing each teaching approach in a different order and in a different school term. It is also recognised that there are possible carry-over effects from the learning in Term 1 into Term 2 which also confounds the comparison.

5.4.1. Term 1 Number of words

Figure 20 shows the class averages for the number of words that students could produce when Storytelling at two stages of data collection.
We can see from the Figure 20 data that the average number of words students produced when Storytelling was very similar at both stages of data collection. For example, when Storytelling at stage one, Prep students in the non-ITG approach produced 9 words whilst Prep students in the ITG approach produced 11 words. When Storytelling at stage three, Prep students in the ITG approach produced 11 words whilst Prep students in the non-ITG approach produced 17 words. The overall analyses are reported in the following table.

**Table 17  Analysis of number of words at two stages of Storytelling, Term 1**

<table>
<thead>
<tr>
<th>Explanatory variable</th>
<th>F</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year level</td>
<td>28.82</td>
<td>4,4</td>
<td>0.003</td>
</tr>
<tr>
<td>Teaching approach</td>
<td>0.08</td>
<td>1,4</td>
<td>0.790</td>
</tr>
<tr>
<td>Stage (1 or 3)</td>
<td>0.00</td>
<td>1,9</td>
<td>0.981</td>
</tr>
</tbody>
</table>

The large p-values in Table 17 show that there were non-significant mean differences in teaching approach and stage of data collection. This shows that neither teaching approach nor data gathering stage was strongly associated with the mean number of words that students could produce.
The small $p$-value (0.003) shows significant differences for year level; an association of year level with the mean number of words produced but as noted previously, this difference in the quantity of output by students in different year levels reflects the increase in the number of years’ experience in learning Japanese.

As per previous practice, to ground the discussion comparing and contrasting the output differences between teaching approaches when Storytelling, the mean values for each teaching approach and the estimated mean difference, and the mean values for stage of data collection and the estimated mean difference are presented.

### Table 18  
**Mean number of words at each stage of Storytelling, Term 1**

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITG</td>
<td>22.22</td>
<td>18.57, 25.87</td>
</tr>
<tr>
<td>Non-ITG</td>
<td>22.75</td>
<td>19.10, 26.40</td>
</tr>
<tr>
<td>ITG minus non-ITG</td>
<td>-0.53</td>
<td>-5.69, 4.63</td>
</tr>
<tr>
<td>Stage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage 1</td>
<td>22.51</td>
<td>19.66, 25.36</td>
</tr>
<tr>
<td>Stage 3</td>
<td>22.47</td>
<td>19.62, 25.32</td>
</tr>
<tr>
<td>Stage 1 minus Stage 3</td>
<td>0.04</td>
<td>-3.80, 3.88</td>
</tr>
</tbody>
</table>

We can see from the data in Table 18 that there is very little mean difference in the number of words produced between teaching approaches (-0.53 words difference) and between stage one and stage three of Storytelling (0.04 words difference).

The modelled mean values are now provided for each year level. This is the average across both teaching approaches and each stage of data collection.

### Table 19  
**Mean number of words for year level, Term 1**

<table>
<thead>
<tr>
<th>Year level</th>
<th>Predicted mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prep</td>
<td>11.68</td>
<td>5.90, 17.46</td>
</tr>
<tr>
<td>One</td>
<td>16.63</td>
<td>10.85, 22.41</td>
</tr>
<tr>
<td>Two</td>
<td>22.34</td>
<td>16.56, 28.12</td>
</tr>
<tr>
<td>Three</td>
<td>20.74</td>
<td>14.96, 26.52</td>
</tr>
<tr>
<td>Four</td>
<td>41.05</td>
<td>35.27, 46.83</td>
</tr>
</tbody>
</table>

The data in Table 19 identifies the mean of the average number of words for each year level in Term 1 showing increase in the mean of the average number of words between...
Prep and Year 1, and between Year 1 and Year 2, with the greatest increase in the average number of words produced between Year 3 and Year 4.

5.4.2. Term 1 Average length of utterance

Figure 21 shows the class averages for the length of utterances that students could produce when Storytelling at two stages of data collection.

![Figure 21](image)

**Key:** □ ITG approach. ▼ non-ITG approach

**Figure 21** Mean length of utterances at two stages of Storytelling, Term 1

The evidence from Figure 21 indicates that the average length of utterances students produced when Storytelling was very similar at both stages that data was collected. For example, Prep classes in both the ITG and non-ITG approaches in both stages of Storytelling produced between 1 and 2-word utterances. The greatest difference evident was between the two Year 4 classes when Storytelling at stage three; 4-word utterances were produced on average by the class in the ITG approach whilst almost 7-word utterances were produced on average by the non-ITG approach class. The teaching approach was not statistically significant in the average length of utterances that students could produce at either stage. The overall analyses are reported in the following table.
Table 20 Analysis of length of utterances at two stages of Storytelling, Term 1

<table>
<thead>
<tr>
<th>Explanatory variable</th>
<th>F</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year level</td>
<td>4.96</td>
<td>4,4</td>
<td>0.075</td>
</tr>
<tr>
<td>Teaching approach</td>
<td>0.11</td>
<td>1,4</td>
<td>0.752</td>
</tr>
<tr>
<td>Stage (1 or 3)</td>
<td>0.49</td>
<td>1,9</td>
<td>0.502</td>
</tr>
</tbody>
</table>

As was found when comparing the average number of words when Storytelling at two stages, the average length of utterances produced in the ITG and non-ITG approaches was also very similar at both stages.

The large p-values in Table 20 show that there were non-significant mean differences for teaching approach and stage of data collection showing that the teaching approach and stage were not associated with the average length of utterances that students produced when Storytelling. The estimated mean differences are presented below.

Table 21 Mean length of utterances at each stage of Storytelling, Term 1

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITG</td>
<td>2.84</td>
<td>1.92, 3.76</td>
</tr>
<tr>
<td>Non-ITG</td>
<td>3.00</td>
<td>2.08, 3.92</td>
</tr>
<tr>
<td>ITG minus non-ITG</td>
<td>-0.16</td>
<td>-1.46, 1.14</td>
</tr>
<tr>
<td>Stage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage 1</td>
<td>2.81</td>
<td>2.17, 3.45</td>
</tr>
<tr>
<td>Stage 3</td>
<td>3.03</td>
<td>2.39, 3.67</td>
</tr>
<tr>
<td>Stage 1 minus Stage 3</td>
<td>-0.22</td>
<td>-0.94, 0.50</td>
</tr>
</tbody>
</table>

The data in Table 21 shows that there is very little difference in the mean length of utterance produced between teaching approaches (-0.16) and between stage one and stage three of Storytelling (-0.22).

The modelled mean values present this data for each year level, averaged across teaching approach and stage.
The data presented in Table 22 identifies that the mean length of utterance gradually increased between each year level, apart from Year 2, with the greatest increase in mean length of utterance at Year 4.

The analysis is now presented for students who had the ITG teaching approach and students who had the non-ITG teaching approach in Term 2.

As was presented for Term 1, this analysis presents the average word count and average length of utterance produced by students when Storytelling at two stages of data collection in Term 2. It must be kept in mind when interpreting the findings that these results came in Term 2 so there may be effects from learning in Term 1 that are carried over into Term 2. In Term 2, the comparison is of non-ITG in Term 1 followed by ITG in Term 2 with ITG in Term 1 followed by non-ITG in Term 2. Although we cannot consider the results from each school term as equivalent due to the order within which they were learned being different, it is worth determining the impact of each approach in each term.

### 5.4.3. Term 2 Number of words

Figure 22 shows the class averages for the number of words students produced when Storytelling at two stages in Term 2.
The data shows that the average number of words produced by students when Storytelling was very similar at the two stages of data collection. The Year 2 class learning with the ITG approach in Term 2 produced noticeably more words than the Year 2 class in the non-ITG approach when Storytelling at both stages; 35 words were produced in the ITG approach compared with 24 words in the non-ITG approach in Storytelling at stage one and 38 words were produced in the ITG approach compared with 23 words in the non-ITG approach in Storytelling at stage three. This raises the question of whether one class responded particularly well to ITG in comparison to the other class, or whether as a class on average they were particularly good at creating long stories. This is unknown. Data from other year levels was more similar, for example Year 4 students produced 45 words in the ITG approach and 48 words in the non-ITG approach when Storytelling at stage one and 43 words in the ITG approach and 42 words in the non-ITG approach when Storytelling at stage three. The overall analyses are reported in the following table.
Table 23 Analysis of number of words at two stages of Storytelling, Term 2

<table>
<thead>
<tr>
<th>Explanatory variable</th>
<th>F</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year level</td>
<td>9.96</td>
<td>4.4</td>
<td>0.023</td>
</tr>
<tr>
<td>Teaching approach</td>
<td>0.06</td>
<td>1.4</td>
<td>0.813</td>
</tr>
<tr>
<td>Stage (1 or 3)</td>
<td>0.24</td>
<td>1.9</td>
<td>0.635</td>
</tr>
</tbody>
</table>

Non-significant differences for teaching approach and stage of data collection are understood from the large p-values in Table 23. This shows that the teaching approach and stage were not associated with the number of words that students produced when Storytelling.

The small p-value (0.023) shows significant differences for year level as would be expected by learners who have studied Japanese for increasing numbers of years.

The estimated mean differences for teaching approach and stage of Storytelling are presented below.

Table 24 Mean number of words at each stage of Storytelling, Term 2

<table>
<thead>
<tr>
<th>Predicted mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-ITG then ITG</td>
<td>27.68</td>
</tr>
<tr>
<td>ITG then non-ITG</td>
<td>26.84</td>
</tr>
<tr>
<td>(Non-ITG then ITG) minus (ITG then non-ITG)</td>
<td>0.84</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage</th>
<th>Predicted mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>27.48</td>
<td>23.62, 31.34</td>
</tr>
<tr>
<td>Stage 3</td>
<td>27.04</td>
<td>23.18, 30.90</td>
</tr>
<tr>
<td>Stage 1 minus Stage 3</td>
<td>0.44</td>
<td>-1.57, 2.45</td>
</tr>
</tbody>
</table>

The data in Table 24 shows a very small difference in the mean number of words produced by students when comparing teaching approaches (0.84) and each stage of Storytelling (0.44). This suggests that neither the teaching approach nor stage of data collection was associated with the average number of words produced when Storytelling. The modelled mean values for year level are now presented.

Table 25 Mean number of words for year level, Term 2

<table>
<thead>
<tr>
<th>Year level</th>
<th>Predicted mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prep</td>
<td>14.85</td>
<td>4.61, 25.09</td>
</tr>
<tr>
<td>One</td>
<td>18.73</td>
<td>8.49, 28.97</td>
</tr>
<tr>
<td>Two</td>
<td>29.99</td>
<td>19.75, 40.23</td>
</tr>
<tr>
<td>Three</td>
<td>27.96</td>
<td>17.72, 38.2</td>
</tr>
<tr>
<td>Four</td>
<td>44.79</td>
<td>34.55, 55.03</td>
</tr>
</tbody>
</table>
The data presented in Table 25 identifies that the mean number of words gradually increased between each year level, apart from Year 2, with the greatest increase in the mean number of words at Year 4. This pattern is consistent with the pattern of means of the number of words that was identified in the data for Term 1.

5.4.4. Term 2 Average length of utterance

The average length of utterance produced by students when Storytelling is compared between the ITG and non-ITG approach at each stage of data collection in Term 2.

Key: ITG approach, non-ITG approach

Figure 23 Mean length of utterances at two stages of Storytelling, Term 2

There is a noticeable increase in the average length of utterances that students could produce when comparing stage one and stage three in Figure 23. This shows that students’ ability to produce Japanese orally increased over time. The teaching approach, ITG or non-ITG, did not appear to be influential to students’ length of utterances. The mean length of utterances did not vary greatly between teaching approaches in most year levels, for example the greatest difference in Storytelling at stage one is between the two Year 2 classes which is still approximately 4-word utterances for each class. Particularly noticeable is the difference between the Year 2 classes at the stage three Storytelling; the Year 2 class that learned with ITG in Term 2 produced longer
utterances (7-word utterances) than the Year 2 class in the non-ITG approach (4-word utterances). The overall analyses are reported in the following table.

<table>
<thead>
<tr>
<th>Table 26</th>
<th>Analysis of length of utterances at two stages of Storytelling, Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploratory variable</td>
<td>F</td>
</tr>
<tr>
<td>Year level</td>
<td>8.13</td>
</tr>
<tr>
<td>Teaching approach</td>
<td>0.60</td>
</tr>
<tr>
<td>Stage (1 or 3)</td>
<td>11.81</td>
</tr>
</tbody>
</table>

The large p-value in Table 26 shows a non-significant mean difference in the teaching approach on the average length of utterances produced. This shows that the teaching approach was not associated with the average length of utterances.

The small p-values in the data for year level and stage of data collection show significant differences on the average length of utterances. This shows that the year level was associated with the average length of utterances that students could produce. It also shows that the stage of data collection was statistically significant for the average length of utterances. Collectively these show an overall increase in the mean length of utterances that was produced by students over time. This is also shown by the pattern of estimated means in Table 27. The mean values for teaching approach and the estimated mean difference, as well as the mean values for stage of data collection and the estimated mean difference are presented.

<table>
<thead>
<tr>
<th>Table 27</th>
<th>Mean length of utterances at each stage of Storytelling, Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean length of</td>
<td>Mean</td>
</tr>
<tr>
<td>Non-ITG then ITG</td>
<td>4.07</td>
</tr>
<tr>
<td>ITG then non-ITG</td>
<td>3.78</td>
</tr>
<tr>
<td>(Non-ITG then ITG) minus (ITG then non-ITG)</td>
<td>0.29</td>
</tr>
<tr>
<td>Stage</td>
<td></td>
</tr>
<tr>
<td>Stage 1</td>
<td>3.39</td>
</tr>
<tr>
<td>Stage 3</td>
<td>4.46</td>
</tr>
<tr>
<td>Stage 1 minus Stage 3</td>
<td>-1.07</td>
</tr>
</tbody>
</table>

The data in Table 27 shows a very small difference in the mean length of utterances produced by students when comparing teaching approaches (0.29) but a greater
difference between each stage of data collection (-1.07). The modelled mean values for year level are now presented.

<table>
<thead>
<tr>
<th>Year level</th>
<th>Predicted mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prep</td>
<td>2.08</td>
<td>0.94, 3.23</td>
</tr>
<tr>
<td>One</td>
<td>3.49</td>
<td>2.35, 4.64</td>
</tr>
<tr>
<td>Two</td>
<td>4.79</td>
<td>3.65, 5.94</td>
</tr>
<tr>
<td>Three</td>
<td>4.36</td>
<td>3.22, 5.51</td>
</tr>
<tr>
<td>Four</td>
<td>4.91</td>
<td>3.77, 6.06</td>
</tr>
</tbody>
</table>

The data in Table 28 identifies that the mean length of utterance increased between each year level, apart from Year 3, as would be expected after increased years of study of Japanese. The confidence intervals suggest great variance between students within each year level.

5.4.5. Discussion of cluster two findings

The data presented in this section of the chapter has shown the comparison of the average number of words and average length of utterances that students could produce when Storytelling at two stages of data collection in the ITG and non-ITG teaching approaches. Results have shown non-significant differences in the average number of words and the average length of utterances that students could produce in each teaching approach at each stage of data collection. These findings further support the findings from the earlier comparison of teaching approaches showing non-significant differences between the ITG and non-ITG teaching approaches when Storytelling.

The third cluster of findings, the comparison of Story Re-tell with and without viewing ITG, is now presented.

5.5. Comparison of Story Re-tell with and without viewing ITG

The average number of words and average length of utterances produced by students when doing Story Re-tell with the textless picture book and then when doing Story Re-tell with the textless picture book while viewing ITG was compared and contrasted.
The analysis was carried out separately for each school term in acknowledgement that the order of approaches could be influential to carry-over effects of learning from Term 1 into Term 2. Term 1 data will be presented first.

5.5.1. Term 1 Number of words

Figure 24 shows the class averages of the number of words that could be produced by students when doing Story Re-tell with and without viewing ITG in Term 1.

![Graph showing mean number of words in Story Re-tell with and without ITG, Term 1](image)

Key:
- Book = Story Re-tell with a textless picture book
- Book + Viewing ITG = Story Re-tell with a textless picture book while viewing ITG

Figure 24  Mean number of words in Story Re-tell with and without ITG, Term 1

We can see clearly from the data that the average number of words produced by students when doing Story Re-tell while viewing ITG is much higher than when doing Story Re-tell without ITG. There is a statistically significant difference in the mean number of words students produced when viewing ITG compared to without ITG in all year levels. For example, Prep classes produced an average of 10 words when doing Story Re-tell with the book and then produced an average of 66 words when doing Story Re-tell with the book whilst viewing ITG. Year 4 classes produced an average of 26 words when doing Story Re-tell with the book and then produced an average of 101 words when doing Story Re-tell with the book whilst viewing ITG. The overall analysis is reported in the following table.
Table 29  
Analysis of number of words in Story Re-tell with and without ITG, Term 1

<table>
<thead>
<tr>
<th>Explanatory variable</th>
<th>F</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of task</td>
<td>613.7</td>
<td>1, 4</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Year level</td>
<td>20.5</td>
<td>4, 4</td>
<td>0.006</td>
</tr>
</tbody>
</table>

The small p-value in Table 29 for year level (0.006) shows a significant difference in the mean number of words produced associated with year level.

The very small p-value for type of task (<0.001) shows a significant difference in the mean number of words produced associated with the type of task representing a significant increase in the number of words that students could produce when doing Story Re-tell with the textless picture book while viewing ITG compared with the Story Re-tell without viewing ITG. These results show us clearly that the viewing of ITG was associated with students’ increased oral production of Japanese words across all year levels.

The mean values for task type and the estimated mean difference are now presented.

Table 30  
Mean number of words in two Story Re-tell tasks, Term 1

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Book with ITG</td>
<td>92.76</td>
<td>87.87, 97.65</td>
</tr>
<tr>
<td>Book</td>
<td>30.96</td>
<td>26.07, 35.85</td>
</tr>
<tr>
<td>Book with ITG min Book</td>
<td>61.79</td>
<td>54.87, 68.72</td>
</tr>
</tbody>
</table>

Table 30 shows that, on average, 62 more words (61.79) were produced when students were doing Story Re-tell while viewing ITG than without. This is the best estimate of the true mean difference because the confidence interval provides a range of plausible values for the true mean difference ranging between 55 and 69 more words on average with ITG than without. These results highlight the significant difference in the quantity of words that students produced when viewing ITG during Story Re-tell. Across all year levels, there was an increase of 62 more words when viewing ITG. Table 31 now identifies the increase in the mean number of words for each year level. The modelled mean values for each year level are presented.
Table 31  Mean number of words for each year level, Term 1

<table>
<thead>
<tr>
<th>Year level</th>
<th>Predicted mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prep</td>
<td>40.0</td>
<td>32.3, 47.7</td>
</tr>
<tr>
<td>One</td>
<td>62.6</td>
<td>54.9, 70.3</td>
</tr>
<tr>
<td>Two</td>
<td>70.2</td>
<td>62.5, 77.9</td>
</tr>
<tr>
<td>Three</td>
<td>70.1</td>
<td>62.4, 77.8</td>
</tr>
<tr>
<td>Four</td>
<td>66.4</td>
<td>58.7, 74.1</td>
</tr>
</tbody>
</table>

The data presented in Table 31 shows that the mean number of words, averaged over each year level, increased when viewing ITG compared to without. The strongest mean difference is between Prep and the other year levels, with all year levels increasing in the production of words when viewing ITG, reflecting the statistically significant difference identified in Table 29, $p$-value < 0.001.

5.5.2. Term 1 Average length of utterance

The class averages of the length of utterance produced when doing Story Re-tell with and without viewing ITG in Term 1 are presented in Figure 25. The same procedures as in the previous section were used to determine average length of utterance.

![Figure 25 Mean length of utterances in Story Re-tell with and without ITG, Term 1](image.jpg)

Key:  
- Book = Story Re-tell with a textless picture book  
- Book + Viewing ITG = Story Re-tell with a textless picture book while viewing ITG
In Figure 25 we can see that the mean length of utterances were greater for students who viewed ITG during Story Re-tell in Prep and Year 1, but less for students in Years 2, 3 and 4. Prep classes produced between two and three word utterances with longer utterances being produced on average by classes who did Story Re-tell whilst viewing ITG. Year 4 classes produced shorter utterances on average when doing Story Re-tell whilst viewing ITG (approximately 3.5 word utterances) compared with when doing Story Re-tell without viewing ITG (almost 5.5 word utterances). It appears that viewing ITG during Story Re-tell did not increase the length of utterances that Year 2, 3 or 4 students could produce. It is important when considering these results that a longer length of utterance does not equate to a higher quality of language produced. The transcriptions of students’ stories needs to be used to determine quality, as will be discussed further in the next chapter which presents the qualitative findings.

The overall analysis is reported in the following table.

<table>
<thead>
<tr>
<th>Explanatory variable</th>
<th>F</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of task</td>
<td>1.77</td>
<td>1, 4</td>
<td>0.254</td>
</tr>
<tr>
<td>Year level</td>
<td>3.10</td>
<td>4, 4</td>
<td>0.150</td>
</tr>
</tbody>
</table>

The large p-value in Table 32 for year level shows that there were non-significant differences in the average length of utterances that students produced between year levels. This shows that the data did not detect an association between the year level of students and the average length of utterance that they could produce.

The large p-value for type of task shows that there were non-significant differences in the average length of utterances that students produced in Story Re-tell with and without ITG. This shows that the viewing of ITG when doing Story Re-tell was not associated with the average length of utterances that students could produce.

The mean values for Story Re-tell with and without ITG and the estimated mean difference are now presented.

| Mean length of utterances in Story Re-tell with and without ITG, Term 1 |
|-----------------------------|-------------------|------------------|
| Book and ITG                | 3.32              | 2.50, 4.14       |
| Book                        | 3.87              | 3.05, 4.69       |
| Book and ITG minus Book     | -0.56             | -1.72, 0.61      |
Table 33 shows a minimal difference in the mean length of utterances produced when comparing Story Re-tell with and without ITG. The estimated mean difference in the average length of utterances is slightly shorter when students did Story Re-tell while viewing ITG; -0.56 words per utterance. However, the confidence interval suggests that this could range between -1.72 and 0.61. This is an interesting finding showing that the length of utterances produced by students decreased when viewing ITG during Story Re-tell. A question is now raised about the quality of the utterances that students produced and whether shorter or longer utterances actually reflect ‘better’ language output. This question will be explored further when transcription examples are discussed in the next chapter.

The modelled mean values are now presented for year level.

<table>
<thead>
<tr>
<th>Year level</th>
<th>Predicted mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prep</td>
<td>2.51</td>
<td>1.21, 3.81</td>
</tr>
<tr>
<td>One</td>
<td>3.05</td>
<td>1.75, 4.35</td>
</tr>
<tr>
<td>Two</td>
<td>4.19</td>
<td>2.89, 5.49</td>
</tr>
<tr>
<td>Three</td>
<td>3.68</td>
<td>2.38, 4.98</td>
</tr>
<tr>
<td>Four</td>
<td>4.53</td>
<td>3.23, 5.83</td>
</tr>
</tbody>
</table>

The data presented in Table 34 shows the mean length of utterances produced by students at each year level. There appears to be a trend in the table showing increasing average length of utterance with year level, apart from Year 2, however, the analysis was not sensitive enough to detect this increase.

The analysis now turns to look at the results for students who had the ITG teaching approach in Term 2. The analysis is of the word count and average length of utterance by students when doing Story Re-tell with a textless picture book and when doing Story Re-tell with a textless picture book while viewing ITG. The interpretation of the analysis must consider that these students learned Japanese with the non-ITG approach in Term 1 followed by ITG in Term 2. Presenting the results for each school term separately acknowledges that these sets of data occurred at different times however, unlike other comparisons presented earlier, the two tasks, (Story Re-tell with a textless picture book and Story Re-tell with a textless picture book while viewing ITG), each occurred when students were engaged in learning Japanese through the ITG approach.
No comparison is being made here with the non-ITG approach so there can be no question of carry-over effects between school terms for this task comparison.

### 5.5.3. Term 2 Number of words

Figure 26 shows the year level averages of the number of words produced comparing Story Re-tell with and without viewing ITG.

![Figure 26 Mean number of words in Story Re-tell with and without ITG, Term 2](image)

**Key:**
- **Book** = Story Re-tell with a textless picture book
- **Book + Viewing ITG** = Story Re-tell with a textless picture book while viewing ITG

The data presented in Figure 26 clearly identifies that the average number of words produced by students when viewing ITG during Story Re-tell is much higher than without viewing ITG. The difference is evident for all year levels. For example, Prep classes produced an average of 12 words when doing Story Re-tell with the book and then produced an average of 97 words when doing Story Re-tell with the book whilst viewing ITG. Year 4 classes produced an average of 23 words when doing Story Re-tell with the book and then produced an average of 97 words when doing Story Re-tell with the book whilst viewing ITG. The analysis enables a comparison of year levels and a comparison of type of task to be made. The overall analysis is reported in the following table.
The large $p$-value in Table 35 for year level shows that there were non-significant differences in the average number of words that students could produce according to year level. This shows that the year level was not associated with the number of words produced.

The very small $p$-value ($< 0.001$) shows statistically significant differences between Story Re-tell with and without viewing ITG. This shows an association of type of task with the number of words that students could produce. This tells us that adding the viewing of ITG to Story Re-tell significantly increased the quantity of words that students across all year levels could produce. In both the Term 1 and Term 2 data now, findings have shown a significant increase in the number of words that students in the ITG approach could produce when doing Story Re-tell while viewing ITG.

The mean values for Story Re-tell with and without ITG and the estimated mean difference are now presented.

### Table 35

<table>
<thead>
<tr>
<th>Explanatory variable</th>
<th>$F$</th>
<th>$df$</th>
<th>$p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of task</td>
<td>1107</td>
<td>1, 4</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Year level</td>
<td>0.70</td>
<td>4, 4</td>
<td>0.629</td>
</tr>
</tbody>
</table>

### Table 36

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Book with ITG</td>
<td>96.71</td>
<td>92.02, 101.4</td>
</tr>
<tr>
<td>Book</td>
<td>17.38</td>
<td>12.69, 22.07</td>
</tr>
<tr>
<td>Book with ITG minus Book</td>
<td>79.34</td>
<td>72.72, 85.96</td>
</tr>
</tbody>
</table>

Table 36 shows that, on average, students produced 79 more words when ITG was viewed during Story Re-tell. This is the best estimate of the true mean difference because the confidence interval provides a range of plausible values for the true mean difference, ranging between 73 and 86 more words on average when viewing ITG compared to without.

The data presented in Table 36 clearly shows that across all year levels, there was an average increase of 79 more words when viewing ITG. Table 37 identifies the increase in the mean number of words for each year level separately.
Table 37  Mean number of words for each year level, Term 2

<table>
<thead>
<tr>
<th>Year level</th>
<th>Predicted mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prep</td>
<td>54.19</td>
<td>46.8, 61.6</td>
</tr>
<tr>
<td>One</td>
<td>57.44</td>
<td>50.0, 64.9</td>
</tr>
<tr>
<td>Two</td>
<td>56.29</td>
<td>48.9, 63.7</td>
</tr>
<tr>
<td>Three</td>
<td>56.92</td>
<td>49.5, 64.3</td>
</tr>
<tr>
<td>Four</td>
<td>60.38</td>
<td>53.0, 67.8</td>
</tr>
</tbody>
</table>

The data presented in Table 37 identifies the increase in the mean number of words for each year level when viewing ITG. The differences between year levels are relatively small showing that the effect of type of task was similar at each year level.

The data is now presented for average length of utterances in Term 2.

5.5.4. Term 2 Average length of utterance

Figure 27 shows the class averages of the length of utterances produced when doing Story Re-tell with and without viewing ITG in Term 2.

Key: 
- ▢ Book = Story Re-tell with a textless picture book
- ▢ Book + Viewing ITG = Story Re-tell with a textless picture book while viewing ITG

Figure 27  Mean length of utterances in Story Re-tell with and without ITG, Term 2

In Figure 27 we can clearly identify that the average length of utterances produced by students when viewing ITG during Story Re-tell is much higher than without viewing
The difference is evident for all year levels. In Prep, students produced an average of one-word utterances when doing Story Re-tell and more than 3-word utterances when doing Story Re-tell whilst viewing ITG. In Year 4, results were much closer, with students producing an average of two and a half word utterances when doing Story Re-tell and three word utterances when doing Story Re-tell whilst viewing ITG. The overall analysis is reported in the following table.

### Table 38 Analysis of length of utterances in Story Re-tell with and without ITG, Term 2

<table>
<thead>
<tr>
<th>Explanatory variable</th>
<th>F</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of task</td>
<td>37.62</td>
<td>1, 4</td>
<td>0.004</td>
</tr>
<tr>
<td>Year level</td>
<td>0.41</td>
<td>4, 4</td>
<td>0.797</td>
</tr>
</tbody>
</table>

The large p-value in Table 38 for year level (0.797) shows that there were non-significant differences between the average length of utterances in each year level. This shows that the year level was not associated with the average length of utterances that students could produce.

The very small p-value for type of task (0.004) shows statistically significant differences in the average length of utterances produced by students according to the task. Students were able to produce significantly longer utterances when doing Story Re-tell while viewing ITG than without.

The mean values for Story Re-tell with and without ITG and the estimated mean difference are now presented.

### Table 39 Mean length of utterances in Story Re-tell with and without ITG, Term 2

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Book with ITG</td>
<td>3.27</td>
<td>2.9, 3.64</td>
</tr>
<tr>
<td>Book</td>
<td>2.12</td>
<td>1.76, 2.49</td>
</tr>
<tr>
<td>Book with ITG minus Book</td>
<td>1.14</td>
<td>0.63, 1.67</td>
</tr>
</tbody>
</table>

The estimated mean difference in the average length of utterance is 1.1 words per utterance longer with ITG. However, the confidence interval suggests that this could range between 0.63 and 1.67 words per utterance. This is an interesting finding as it differs from the findings on average length of utterance from Term 1. In Term 1, it was found that the length of utterances slightly decreased (-0.6 of a word per utterance) when doing Story Re-tell with ITG whereas in Term 2, the utterances were found to increase (1.1 words per utterance). This highlights an area for further investigation.

The modelled mean values are now presented for each year level.
Table 40

Mean length of utterances for each year level, Term 2

<table>
<thead>
<tr>
<th>Year level</th>
<th>Predicted mean</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prep</td>
<td>2.53</td>
<td>1.96, 3.12</td>
</tr>
<tr>
<td>One</td>
<td>2.81</td>
<td>2.23, 3.39</td>
</tr>
<tr>
<td>Two</td>
<td>2.57</td>
<td>1.99, 3.16</td>
</tr>
<tr>
<td>Three</td>
<td>2.74</td>
<td>2.16, 3.32</td>
</tr>
<tr>
<td>Four</td>
<td>2.82</td>
<td>2.24, 3.40</td>
</tr>
</tbody>
</table>

The data presented in Table 40 shows that the mean differences are very small, showing that the effect of type of task on the mean length of utterance was similar at all year levels.

5.5.5. Discussion of cluster three findings

The results from the third cluster of findings, the comparison of Story Re-tell with and without viewing ITG, provide further evidence of the impact of ITG on students’ oral output. In answering research question 1 (What impact does the use of Intentional Teaching Gestures (ITG) in Japanese as additional language classes have on students’ oral language output?), the findings have shown that viewing ITG plays a role in increasing the quantity of Japanese words that students produced during Story Re-tell. A greater quantity of words could be produced by students in all year levels when the viewing of ITG was added to the Story Re-tell task and students could produce significantly more words (Term 1, $p$-value <0.001; Term 2, $p$-value <0.001) when doing Story Re-tell while viewing ITG, compared to without. This difference means that students were saying on average an additional 62 words in Term 1, and on average an additional 79 words in Term 2, after having viewed ITG during Story Re-tell. This has highlighted the additional support that the viewing of ITG provides students when speaking Japanese.

Greater variation was seen in the results for the length of utterances. In Term 1 students produced slightly shorter utterances when viewing ITG (0.6 words per utterance shorter), while in Term 2 students produced significantly longer utterances while viewing ITG ($p$-value 0.004, an average of 1.1 words per utterance longer).

These overall results show the considerable impact that the ITG approach had on students’ oral language output when doing Story Re-tell while viewing ITG.

The Story Re-tell task emulated the context that students learnt ITG in so it is now suggested that when re-activating the context that the learning took place in with ITG,
through Story Re-tell, students were more likely to demonstrate increased oral language output. These findings connect again with Tulving and Thompson’s ‘Encoding Specificity Principle’ (1973) which as discussed above emphasises the benefit on retrieval of language when the retrieval environment matches the original language encoding environment. This was mentioned in the discussion of the first cluster of findings, identifying environment matching as a possible reason for an increase in students’ oral output in the Story Re-tell task. The encoding specificity principle is emphasised further in this cluster of findings where the addition of viewing ITG at language retrieval, produced an even greater level of language output by students.

The data from the third cluster of findings extends the finding that viewing of ITG significantly increased the quantity of the average number of words that students could produce when doing Story Re-tell. It is likely that viewing ITG provided an additional retrieval cue that further supported students’ recall.

It may also be suggested that ITG provided an additional memory cue for students. This suggestion is made in previous literature that emphasises the importance of strengthening the ‘depth of processing’ with greater semantic involvement (Craik & Tulving, 1975). ITG could be one way to increase learners’ semantic involvement when language learning.

Another connection with the findings from the current study can be found in literature about ‘dual encoding’. This concept emphasises the memory benefits of encoding through both images and words (Clark & Paivio, 1991; Paivio & Csapo, 1973) and theories of dual encoding beyond images and words to consider learning through at least two modalities, widening the possibilities for encoding (Mayer & Sims, 1994). Experimental research has supported these claims with one study finding that learning through at least two modalities strengthens the learning of lists of words (Goolkasian & Foos, 2005).

Morsella and Krauss have specifically connected the theory of dual encoding with gesture research (2004). They found that gestures support spatial memory and gestures activate the spatial memory to support recall. Also, connecting the theories of encoding with gesture research, it is claimed that gestures provide an encoding and decoding function to support language recall (Breckinridge Church et al., 2004). Similarly, gesturing during encoding has been associated with better subsequent language recall
(Wagner Cook et al., 2010). Findings from the current study now provide Japanese second language learning evidence to support these claims.

Observation of actions has been claimed to facilitate memory for actions (Cohen, 1981; Cohen et al., 1987) by strengthening the visual imaging system (Engelkamp et al., 1989) and supporting recall (Kormi-Nouri, 2000; Mulligan & Hornstein, 2003). Findings from the current study can now add that the observation of ITG as actions (during Story Retell) also support memory for the ITG, as well as supporting retrieval of the related language for the ITG.

Numerous claims have been made that gestures can support language retrieval; one L1 study found that participants could recall more of a story when they saw the speaker’s gestures (Riseborough, 1981). The current study extends such findings, to a second language context and with intentional teaching gestures rather than naturally occurring gestures with speech.

Despite the differing conditions of the studies, there are similarities between the findings in L1 and L2 contexts, including the current L2 context. It has been found that ESL learners could recall more words when these words had been learned accompanied by gestures (Sueyoshi & Hardison, 2005), and that ESL learners could recall more words when gestures were viewed and produced and that this had an impact on learners’ productive ability (Tellier, 2008a). Japanese second language sets of words were recalled better when presented with gestures (Kelly et al., 2009), the memory for words in an artificial language were strengthened when learned with gestures (Macedonia & Knösche, 2011) and French second language expressions were recalled more when presented with gestures (Quinn-Allen, 1995). It is recognised that learning sets of words out of context does not ensure comprehension of the recalled words nor does it suggest that learners will be able to use these words in their own production of the second language. Other types of tasks that involve language use in context need to be investigated.

Within a story learning context, it was found that French second language primary school-aged learners could recall more of a story that was gestured compared with a non-gestured story (Porter, 2016). A control group comparing two identical stories strengthens the reliability of these findings. The current study provides such a comparison specifically in a primary school Japanese learning context, finding that
students were able to produce a greater quantity of oral output when a story was taught with ITG and output was increased further when the students viewed ITG at the time of Story Re-tell.

As pointed out earlier the interpretation of the data needed to consider the sequencing of teaching approaches through cross-over of classes swapped between ITG and non-ITG after one school term resulting in some possible carry-over effect of ITG use and learning into Term 2. This is less of a concern when comparing the two Story Re-tell tasks because the research design did not involve comparison between the two main teaching approaches.

The text on which each Story Re-tell was based differed each term raising the possibility of an inherent difference between them in their capacity to elicit more language from students. This concern is reduced by comparing the difference in individual students output between Story Re-tell with and without ITG carried out with the same text.

The interpretation of results needs to take into account the risk of a possible practice effect in Story Re-tell. Video footage of the students’ performance and the transcriptions of their language clearly show that students did not just remember more of the original narrative the second time but were actually focussed on the ITG while they were speaking Japanese and that this enhanced performance was cued by the viewing of ITG. Finally, consideration needs to be given to the human interaction factor that the researcher doing ITG provided. The added variable of viewing ITG was paired with a greater sense of human interaction that Story Re-tell without ITG did not provide.

The presentation of the data now turns to the fourth cluster of findings, students’ use of intentional teaching gestures.

5.6. Students’ use of ITG

Given the focus of the study on intentional teaching gestures, it was important to identify whether students actually used the gestures themselves, which ITG they used and to attempt to discern any patterns in their use of ITG. Students usage of ITG was explored by counting the number of students in each year level who used ITG at every stage of data collection through the transcriptions from each Japanese story. Each incident of ITG use observed in every video recording was highlighted on the student’s
transcription record of each Japanese story. In this way the total number of gestures used by each student in each story was counted as a total and classified according to each category of types of ACTLAN ITG. This method of counting and classifying yielded the quantity of gestures used and their types to be readily ascertained.

Before any students were introduced to ITG, baseline data was collected revealing that no students used any ITG. It was also expected that those students from classes that had commenced learning Japanese through the non-ITG approach and were therefore not exposed to ITG until Term 2 would not use any ITG in Term 1, which was found to be correct. As a result of this baseline investigation, the data presented in this section is of students’ ITG use in their participation in Japanese study in the ITG approach in Terms 1 and 2. Any use of ITG by students in the non-ITG approach in Term 2, reflecting a possible carry-over effect of the use of ITG, is separately identified.

Findings are presented first for Storytelling and subsequently for Story Re-tell, giving the number of students who used ITG at each stage of story, and the quantity and categories of ITG.

5.6.1. Students’ use of ITG when Storytelling

The data presents the number of students in each year level who used ITG during stage one and stage three of Storytelling in each school term.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of students using ITG when Storytelling at stage 1</th>
<th>Number of students using ITG when Storytelling at stage 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prep</td>
<td>Term 1: 1 student out of 12 = 8.3% Term 2: 0 out of 14 students = 0%</td>
<td>Term 1: 0 out of 10 students = 0% Term 2: 0 out of 14 students = 0%</td>
</tr>
<tr>
<td>Year 1</td>
<td>Term 1: 3 students out of 17 = 17.6% Term 2: 1 student out of 19 = 5.2%</td>
<td>Term 1: 3 out of 17 students = 17.6% Term 2: 0 out of 18 students = 0%</td>
</tr>
<tr>
<td>Year 2</td>
<td>Term 1: 1 student out of 17 = 5.9% Term 2: 0 out of 16 students = 0%</td>
<td>Term 1: 3 out of 15 students = 20% Term 2: 2 out of 14 students = 14.3%</td>
</tr>
<tr>
<td>Year 3</td>
<td>Term 1: 2 students out of 21 = 9.5% Term 2: 0 out of 14 students = 0%</td>
<td>Term 1: 1 out of 20 students = 5% Term 2: 0 out of 12 students = 0%</td>
</tr>
<tr>
<td>Year 4</td>
<td>Term 1: 1 student out of 20 = 5% Term 2: 1 student out of 16 = 6.3%</td>
<td>Term 1: 0 out of 20 students = 0% Term 2: 2 out of 17 students = 11.8%</td>
</tr>
</tbody>
</table>
The above table shows that very few students used ITG when Storytelling at stages one and three of data collection. The percentage of students who used ITG range from 0% and 20% between year levels and school terms. The actual number of students using ITG varies between 0 and 3 students from each year level each term, indicating that there was very little use overall.

Most of the students who used ITG learned with that approach in Term 1 and fewer ITG were used by students while learning with the ITG approach during Term 2, apart from students in Year 4 who showed the opposite pattern. This evidence points to the fact that those students who were first exposed to the ITG approach tended to use more ITG themselves. This may suggest that the sequencing between the two teaching approaches may have had an influence on students’ own use of ITG.

A different pattern can be observed when we look at data comparing stage one and three of Storytelling. Some year levels showed an increase in students’ ITG use from stage one to stage three, some showed a decrease, while for others there was no change.

<table>
<thead>
<tr>
<th>Stage one Storytelling</th>
<th>Stage three Storytelling</th>
</tr>
</thead>
<tbody>
<tr>
<td>87 students in non-ITG approach (students who crossed-over from ITG in Term 1 to non-ITG in Term 2)</td>
<td>87 students in non-ITG approach (students who crossed-over from ITG in Term 1 to non-ITG in Term 2)</td>
</tr>
<tr>
<td>5 students used ITG</td>
<td>2 students used ITG</td>
</tr>
<tr>
<td>5/87 students = 5.7%</td>
<td>2/87 students = 2.3%</td>
</tr>
</tbody>
</table>

In the data reported above in Table 42 we can see that there were five students who used ITG when doing the stage one Storytelling in the non-ITG approach during Term 2. This demonstrates a likely small carry-over effect from their exposure to the ITG approach in Term 1. These five are from a total of 87 students who commenced with the ITG approach and then crossed over to the non-ITG approach (5.7%) reflecting a very slight carry-over effect. Although not statistically significant, this finding is interesting posing the further question of why ITG did continue to be used by some students and whether and how this continued gesturing influenced students’ oral language.

In Storytelling at stage three, there were two students who used ITG in the non-ITG approach in Term 2 again demonstrating a carry-over effect from the ITG approach used in Term 1. Out of the total of 87 students taught using the ITG approach and then crossing over to the non-ITG approach, only two students (2.3%) continued to use ITG.

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Although statistically not significant a decreased carry-over effect between stages one and three of Storytelling is found for a group of five to two students. It is important to note that it had been 18 weeks since these students had participated in the ITG use in class, and for only five weeks, so although the numbers are small, they retain interest and suggest the possibility of individual disposition towards a multiple input modality of learning or even a preferred style, though these must both be considered speculations for further investigation at a later time.

Additionally interpretation of the carry-over use of ITG must consider that we are here measuring only the ITG that was physically observable to the researcher. It cannot be automatically assumed that this minimal ITG use by students equates with such a minimal effect over time because there may have been an effect on students’ learning that is less visible. A distinction is now drawn between the impact of viewing ITG and the impact of using ITG.

Out of those students who did use ITG, the following table identifies the number of ITG produced.

<table>
<thead>
<tr>
<th>Year Level</th>
<th>Mean number of ITG, Term 1</th>
<th>Mean number of ITG, Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prep</td>
<td>5 (1 student used ITG)</td>
<td>0 (0 students used ITG)</td>
</tr>
<tr>
<td>Year 1</td>
<td>1 (3 students used ITG)</td>
<td>12 (1 student used ITG)</td>
</tr>
<tr>
<td>Year 2</td>
<td>2 (1 student used ITG)</td>
<td>0 (0 students used ITG)</td>
</tr>
<tr>
<td>Year 3</td>
<td>6 (2 students used ITG)</td>
<td>0 (0 students used ITG)</td>
</tr>
<tr>
<td>Year 4</td>
<td>21 (1 student used ITG)</td>
<td>12 (1 student used ITG)</td>
</tr>
</tbody>
</table>

The above table reports on the small number of ITG produced, on average, across the small number of students who produced ITG while Storytelling at Stage 1. The greatest number of ITG produced was 21 by a Year 4 student in Term 1. No students produced any ITG from Prep, Years 2 and 3 in Term 2.

We now turn to look at the data showing which categories of ITG these students used and the quantity of ITG in each category at each year level when Storytelling.
Figure 28 confirms that very few students used ITG in the stage one Storytelling, more used ITG in Term 1 than in Term 2 and that a range of gesture categories were used by these students.

To interpret the data, the reader is reminded that there are six categories of ACTLAN gestures (Gomura, 2013a). The codes are identified as:

‘O’, representing ‘objects’
‘P’, representing ‘participants’
‘G’, representing ‘glue’, the Japanese particles
‘C’, representing ‘circumstances’, including days, time and adjectives
‘V’, representing ‘verbs’
‘T’, representing verb ‘tense’
Figure 29 below presents the data on these categories of ITG used in stage one Storytelling, representing them in different colours to more easily expose patterns of use.

![Figure 29](chart)

**Figure 29**  **Mean of each category of ITG used in stage one Storytelling**

The data in Figure 29 reveal that there is no single or uniform pattern in the categories of ITG, although some categories stand out ‘Glue’, ‘Verbs’ and ‘Circumstances’ being the most common. In Term 2, only some Year 1 and 4 students used gestures with no obvious pattern. It is possible that ITG drew attention to Japanese particles as a salient feature of Japanese and so the ‘Glue’ gestures for Japanese particles were in turn used more by some students.

The following table identifies the number of ITG produced in the Stage 3 Storytelling.
Table 44  Mean number of ITG produced when Storytelling at Stage 3

<table>
<thead>
<tr>
<th>Stage 3 Storytelling</th>
<th>Mean number of ITG, Term 1</th>
<th>Mean number of ITG, Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prep</td>
<td>0  (0 students used ITG)</td>
<td>0  (0 students used ITG)</td>
</tr>
<tr>
<td>Year 1</td>
<td>4  (3 students used ITG)</td>
<td>0  (0 students used ITG)</td>
</tr>
<tr>
<td>Year 2</td>
<td>7  (3 students used ITG)</td>
<td>1  (2 students used ITG)</td>
</tr>
<tr>
<td>Year 3</td>
<td>1  (1 student used ITG)</td>
<td>0  (0 students used ITG)</td>
</tr>
<tr>
<td>Year 4</td>
<td>0  (0 students used ITG)</td>
<td>5  (2 students used ITG)</td>
</tr>
</tbody>
</table>

The small number of ITG produced by these students is shown above. The highest number of ITG is 7, on average, by three students in Year 2 in Term 1. No ITG were produced by students in Prep and Year 4 in Term 1 and Prep, Years 1 and 3 in Term 2. The percentage of gestures produced from each category of ITG in Stage 3 Storytelling are now presented.

Figure 30  Mean of each category in each year level in stage three Storytelling
The data presented in Figure 30 identifies the low frequency of ITG use by students in stage three of the Storytelling task. Students across some year levels did not use ITG at all in this task and stage in Terms 1 and 2 however, those who did use ITG showed a preference for one gesture category, with ‘Glue’, ‘Objects’ and ‘Circumstances’ featuring most prominently, but these differed between year levels and across school terms.

![Storytelling Stage 3](image)

**Figure 31**  Mean of each category of ITG used in stage three Storytelling

Figure 31 presents the total quantum of results of ITG used in stage three Storytelling. In Term 1, two gesture categories stand out to be used the most, ‘Glue’ and ‘Objects’, with much less use of the other categories. In Term 2, gestures were only used by some Years 2 and 4 students with a preference for ‘Circumstances’. It is useful to remember the important role that particles play in Japanese grammar when interpreting these results. Particles are known to be used infrequently and often incorrectly by second language learners of Japanese. These results suggest that ITG has provided a visual cue for Japanese particles through the use of ‘Glue’ gestures and that these gestures have then been used by students.

Although representing only a very small number of students (see Table 44) this information is useful to teachers as it shows which ITG categories students preferred, and which potentially helped their Japanese comprehension and communication...
supplying potentially useful information for teaching strategies. If students are using more of one category gestures, as was shown by some year levels when Storytelling, and are being supported in their oral language through the use of these ITG, then teaching can respond to this by emphasising these gestures, using them strategically and deliberately in classes and encouraging students to employ these gestures in an expanded communication approach. Increases and decreases in use are also important as these can isolate which categories of gesture tend to persist over time and were possibly most productive for students and conversely which declined.

5.6.2. Students’ use of ITG when doing Story Re-tell

The data is now presented showing students’ use of ITG during the two Story Re-tell tasks; Story Re-tell with the textless picture book and Story Re-tell with the textless picture book while viewing ITG.

Table 45 Number of students using ITG when doing Story Re-tell

<table>
<thead>
<tr>
<th>Year</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 1</th>
<th>Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prep</td>
<td>Term 1: 3 out of 11 students = 27.3%</td>
<td>Term 2: 3 out of 13 students = 23.1%</td>
<td>Term 1: 5 out of 11 students = 45.5%</td>
<td>Term 2: 8 out of 13 students = 61.5%</td>
</tr>
<tr>
<td>Year 1</td>
<td>Term 1: 7 out of 14 students = 50%</td>
<td>Term 2: 6 out of 18 students = 33.3%</td>
<td>Term 1: 12 out of 14 students = 85.7%</td>
<td>Term 2: 13 out of 18 students = 72.2%</td>
</tr>
<tr>
<td>Year 2</td>
<td>Term 1: 5 out of 16 students = 31%</td>
<td>Term 2: 3 out of 14 students = 21%</td>
<td>Term 1: 7 out of 16 students = 43.8%</td>
<td>Term 2: 9 out of 14 students = 64.3%</td>
</tr>
<tr>
<td>Year 3</td>
<td>Term 1: 11 out of 19 students = 57.9%</td>
<td>Term 2: 5 out of 13 students = 38.5%</td>
<td>Term 1: 15 out of 19 students = 78.9%</td>
<td>Term 2: 6 out of 13 students = 46.2%</td>
</tr>
<tr>
<td>Year 4</td>
<td>Term 1: 5 out of 17 students = 29.4%</td>
<td>Term 2: 9 out of 16 students = 56.3%</td>
<td>Term 1: 9 out of 17 students = 52.9%</td>
<td>Term 2: 10 out of 16 students = 62.5%</td>
</tr>
</tbody>
</table>

The left side column of Table 45 shows that between 21% and 57.9% of students across all year levels used ITG during the Story Re-tell with the book. It is interesting to note that students from Prep, Years 1, 2 and 3 all produced more ITG in Term 1 than those students who learned in Term 2. By contrast, Year 4 students in Term 2 produced more ITG than students in Term 1. This suggests that with the exception of Year 4 students’
results, the ITG approach had a greater impact on students’ own use of ITG for students in classes that first utilised the ITG approach.

The task data reported in the right side column of Table 45 involves students re-telling in their own words a story they had learned with ITG while viewing the book and the researcher perform the ITG and this task elicited the most ITG use compared with both the Story Re-tell without ITG and Storytelling at both stages of data collection. Between 43.8% and 85.7% of students across all year levels produced ITG during the Story Re-tell while viewing ITG task and this indicates that Story Re-tell with the addition of viewing ITG seems to generate an increase in students’ own ITG use. As discussed earlier, the number of words (in Term 1, in Figure 24 and Term 2, in Figure 26) and average length of utterances that students could produce (in Term 2, in Figure 27) increased when viewing ITG during Story Re-tell. The current findings now add an additional element of information that students’ own use of ITG increased markedly during this time and this suggests an association between increased use of ITG by students and their increased oral language output.

Table 46 Carry-over use of ITG when doing Story Re-tell

<table>
<thead>
<tr>
<th>Stage two Story Re-tell</th>
</tr>
</thead>
<tbody>
<tr>
<td>87 students in non-ITG approach</td>
</tr>
<tr>
<td>(students who crossed-over from ITG in Term 1 to non-ITG in Term 2)</td>
</tr>
<tr>
<td>3 students used ITG</td>
</tr>
<tr>
<td>3/ 87 students = 3.4%</td>
</tr>
</tbody>
</table>

Table 46 shows that of the 87 students who commenced learning in the ITG approach in Term 1 and then crossed over to the non-ITG approach in Term 2, 3 students continued to use ITG when doing Story Re-tell in the non-ITG approach in Term 2. This shows a carry-over effect by a small number of students into the non-ITG approach when doing Story Re-tell in Term 2.

The following table sets out the number of ITG produced by students who did use ITG.
Table 47 shows that on average the number of ITG produced by students when doing Story Re-tell was greater than the number of ITG produced by students during both Storytelling 1 (Table 43) and Storytelling 3 (Table 44). The greatest number of ITG produced was 27, on average, by 5 students in Year 2 in Term 1 while the lowest number of ITG produced was 2, on average, by 5 students in Year 3 in Term 2. These findings highlight that the Story Re-tell task elicited more ITG use by students than Storytelling, suggesting that task type influences students’ use of ITG.

We now turn to look at the data showing which categories of ITG they used and the quantity of use.
In Figure 32 we can see that use of ITG by students when doing Story Re-tell is spread across each year level and each school term. There appears to be a pattern in the categories of ITG used by students. The categories of ‘Glue’ and ‘Circumstances’ were used most often by students in Term 1 with less use of ‘Objects’, ‘Participants’ and ‘Tenses’. In Term 2, the categories that were used the most by students were ‘Verbs’ and ‘Circumstances’ with limited use of ‘Glue’ and ‘Tenses’. The following figure presents data for the categories of ITG used in different colours which identifies a pattern of use more clearly.
In Figure 33 we can more readily see that when doing Story Re-tell in Term 1, more ITG were used from the categories ‘Glue’, ‘Circumstances’ and ‘Verbs’. In Term 2, the most ITG were used from ‘Verbs’ and ‘Circumstances’. This may suggest that ‘Glue’, ‘Circumstances’ and ‘Verb’ gestures were useful to students when speaking in Japanese. Verbs are particularly prominent and convey rich meaning in Japanese language communication and particles, identified with ‘Glue’ gestures, are very important in Japanese grammar. It is possible that these elements of Japanese have been supported with the use of these categories of ITG.

The following table identifies the number of ITG students produced when doing Story Re-tell while viewing ITG.

![Figure 33: Mean of each category of ITG used in Story Re-tell](image)

<table>
<thead>
<tr>
<th>Year level</th>
<th>Term 1</th>
<th>Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>prep</td>
<td></td>
<td></td>
</tr>
<tr>
<td>one</td>
<td></td>
<td></td>
</tr>
<tr>
<td>two</td>
<td></td>
<td></td>
</tr>
<tr>
<td>three</td>
<td></td>
<td></td>
</tr>
<tr>
<td>four</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Objects
Participants
Glue
Circumstances
Verbs
Tense
Table 48  Mean number of ITG produced when doing Story Re-tell (with book + viewing ITG)

<table>
<thead>
<tr>
<th>Story Re-tell (with book while viewing ITG)</th>
<th>Mean number of ITG, Term 1</th>
<th>Mean number of ITG, Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prep</td>
<td>14 (5 students used ITG)</td>
<td>35 (8 students used ITG)</td>
</tr>
<tr>
<td>Year 1</td>
<td>52 (12 students used ITG)</td>
<td>22 (13 students used ITG)</td>
</tr>
<tr>
<td>Year 2</td>
<td>45 (7 students used ITG)</td>
<td>41 (9 students used ITG)</td>
</tr>
<tr>
<td>Year 3</td>
<td>45 (15 students used ITG)</td>
<td>40 (6 students used ITG)</td>
</tr>
<tr>
<td>Year 4</td>
<td>39 (9 students used ITG)</td>
<td>39 (10 students used ITG)</td>
</tr>
</tbody>
</table>

Compared with Story Re-tell without viewing ITG (presented in Table 47), the Story Re-tell task that included the viewing of ITG (presented above in Table 48), shows the greatest number of ITG produced by students. The greatest quantity produced was 52, on average, by 12 students in Year 1 in Term 1, with the least number of ITG, 14, on average, produced by 5 students in Prep in Term 1. Story Re-tell while viewing ITG was the task in which students produced the greatest quantity of oral language (Figure 24 and Figure 26). A question may now be asked as to whether the increased use of ITG by students contributed to the increased quantity of oral language that they produced. The current study cannot affirm any causation between the increased production of ITG and increased oral output that has been revealed in this research, however, the correlation between increases in these two variables is important to note. Future research could focus on investigating possible connections between ITG production and quantity of output by examining this relationship more directly.

The data is now presented for students’ use of ITG and categories of use during Story Re-tell while viewing ITG.
Figure 34 presents the data for the categories of ITG used by students during Story Re-tell with ITG. We can see that more students across each year level and across both school terms used ITG when viewing ITG during Story Re-tell compared with the other oral story tasks. The data shows similar patterns of ITG use by each year level in each school term. There were particularly high levels of ITG use of ‘Glue’, ‘Circumstances’ and ‘Verbs’ in Term 1 and of ‘Verbs’ and ‘Glue’ in Term 2. The following figure, Figure 35, highlights the patterns in the categories of use that are revealed.
In Figure 35 above three categories of ITG stand out as the ones most often used and three categories are least used by students across all year levels and in each school term. Students used the most gestures from ‘Verbs’, ‘Glue’ (Japanese particles) and ‘Circumstances’ (days, time & adjectives). The gesture categories ‘Participants’, ‘Objects’, and ‘Tenses’ (verb tenses), were used least. The categories used most and least are very similar in the two Story Re-tell tasks, with and without viewing ITG. It is possible that students’ patterns of ITG use suggest which ITG have supported them when speaking Japanese and this information provides teachers with suggestions for teaching practice. These patterns of ITG use will be considered along with the qualitative evidence from the transcriptions of students’ stories presented in the next chapter to enable further speculation about any relationship between patterns of ITG use and students’ oral output.

5.6.3. Discussion of cluster four findings

In this cluster of findings, the data reported above identified minimal use of ITG by students when Storytelling at each stage of data collection. There was an increased use of ITG by students when doing Story Re-tell compared with Storytelling and an even greater increase when viewing ITG during Story Re-tell. This finding is particularly interesting as it identifies that the context and type of task is very important when investigating students’ ITG use and its effects.
The increase in students’ use of ITG mirrored their increased oral output in Story Re-tell compared with Storytelling and in Story Re-tell while viewing ITG compared with Story Re-tell without ITG. This suggests a relationship along the following lines: the greater quantity of ITG students use themselves, the greater quantity of output they are likely to produce overall. It may now be suggested that the viewing of ITG supported students in the production of more ITG themselves and in oral production of Japanese. However, further research is needed to test this correlation more robustly.

Research literature has already reported that students’ own use of gestures can enhance their learning. Learners who spontaneously gestured on a task, using their own naturally occurring gestures with speech while explaining problems of mathematical equivalence, were more likely to retain what they had learned than learners who did not use gestures (Alibali & Goldin-Meadow, 1993). A number of experimental studies explicitly asking participants to use gestures also found benefits from their use of gestures compared with participants who did not use gestures. One study found that when children were explicitly asked to gesture, the quantity of gestures they produced increased and the quantity of verbal language that they could produce also increased (Sauer LeBarton, 2010). Another study found that when teachers gestured, students were more likely to gesture, which in turn produced greater learning, evidenced by post-test scores (Wagner Cook & Goldin-Meadow, 2006). Explicitly asking students to gesture when learning a new mathematical concept helped them learn that concept (Wagner Cook et al., 2008) and enhanced their retention of the concept (Church et al., 2004; Valenzeno et al., 2003). Another study found that children who were told to gesture recalled more information than children who did not use gestures at all (Stevanoni & Salmon, 2005). In a cartoon story description task, participants who used gestures could provide more detailed descriptions of the cartoon story than those who did not use gestures (Rauscher et al., 1996).

These studies highlight the value of students using gestures when learning, whether they spontaneously gesture or respond to teacher requests to gesture. The current study contributes to this literature the specific setting and dynamics of learning a system of intentional teaching gestures, ACTLAN in this specific case, and the use of these ITG, and has presented data showing increases in students’ oral output when doing Story Re-tell in a Japanese second language learning context.
The evidence reported in this chapter shows the increase in students’ ITG use when doing Story Re-tell compared with Storytelling, and of greater increase when doing Story Re-tell while viewing ITG, and points to the conditions which elicit the greatest ITG use from students. Students’ increased use of ITG occurred alongside the increase in students’ oral language output in each story condition. Story Re-tell recreates the situation students experienced when they first learned ITG. It is now suggested that by reactivating the original context as visual memory, through the use of the same story with the textless picture book that students were introduced to, they will recall more Japanese and will use more ITG themselves. This pattern was found to be intensified when students were viewing ITG during Story Re-tell, with the viewing of ITG providing an additional prompt for visual memory.

As a caution it should be stated that students’ use of ITG when doing Story Re-tell while viewing ITG could well involve students choosing to mirror the researcher’s ITG. However, even allowing for some mirroring of the researcher’s ITG and the copying this implies, the findings reveal that increased use of ITG by students occurred with the increased quantity of oral language that students themselves could produce. In effect, students’ oral language production increased without any additional oral cues being provided to them, so regardless of whether students’ ITG use was self-initiated or copied, the research evidence shows that it led to the production of more language.

Due to the Story Re-tell while viewing ITG sequentially following the first Story Re-tell without ITG, acknowledgement has been made of a possible practice effect, as mentioned earlier in the chapter when commenting on the increase in the quantity of students’ output. This caveat is now particularly relevant to the increased production of students’ own use of ITG. It is possible that because students repeated the Story Re-tell they recalled more of the story and more words due to the simple psychology of practice effect. However, this is mitigated by the video recordings of students’ Japanese stories in which the increase in their language strongly connects with their viewing of the researcher’s ITG. The timing of students’ language with the viewing of ITG, and the structure of students’ language matching the ITG, provides support for the belief that students’ oral language was cued strongly by the viewing of ITG, and was not just the result of additional memory from practice.

It is important to note here that students were aware that the research involved Japanese stories. Their use of ITG was not identified as a central focus during data collection, nor
was it discussed. Students’ use of ITG during the oral telling of stories was purely of their own volition, whether it involved intentional or unintentional use.

Examining the carry-over use of ITG after students had finished learning in the ITG approach and transitioned over to the non-ITG modality provides a further source of information about the impact of ITG. Only 5 of the 87 students in this category (Term 1 ITG and Term 2 non-ITG) used ITG in the non-ITG approach when Storytelling at stage one in Term 2. Two students continued to use ITG when Storytelling at stage three, 18 weeks after exposure to learning with ITG, while 3 used ITG when doing Story Re-tell in the non-ITG approach in Term 2. These figures show only a very slight carry-over effect of students continued use of ITG in the non-ITG approach. Despite these low numbers, it is still worth reporting that some continued use of ITG remained. This highlights an ongoing visible impact of ITG when observing students. However, we cannot assume that limited use of ITG by students will have less of an impact on their oral language output and instead need to acknowledge that there could be an invisible or non-visibly detectable effect from the ITG approach. Students may have still benefitted from ITG as an approach without themselves choosing to use ITG in such a way that it cannot be observed.

The findings of students’ carry-over use of ITG, both within Storytelling and Story Re-tell, show that for some students, ITG was still present with their oral language long after the ITG approach ceased for them. When examining such persistence of ITG usage, it is interesting to consider whether these students consciously or unconsciously continued using gesture. Students may have consciously chosen to use ITG to support their Japanese in some way, or their ITG use may have been an unconscious process while concentrating on their oral language. No claim to know why students chose to continue to use ITG can be made, but it may be suggested that consciously or unconsciously, ITG continued to supply for them an additional communicative resource.

The findings also suggest that ITG has an impact on students differentially and may also have an impact on other aspects of their language. Some individuals or categories of individuals may be communicatively or cognitively disposed to prefer or enjoy or benefit from gesture accompaniment to meaning making in quite personal ways. In this way, the differing impact on students could connect with the different learning styles of students. The impact of ITG may be stronger for students who are kinaesthetic or visual learners who may then be more likely to continue to benefit from using ITG themselves.
The connection between students’ own ITG use and their preferred learning styles is interesting and worth further and more targeted investigation.

The data presented in the fourth cluster of findings, students’ use of ITG, can now address research question 3 (What patterns of gesture use emerge when students tell stories in Japanese?) The data demonstrates that there was a strong pattern of students’ increased use of ITG themselves when doing Story Re-tell compared with Storytelling. Students’ use of ITG was further increased while viewing ITG during Story Re-tell. Students increased use of ITG matched their increased quantity of oral output. Students produced more ITG and oral language when doing Story Re-tell compared with Storytelling and produced more ITG and oral language when doing Story Re-tell while viewing ITG compared with Story Re-tell without ITG. This may suggest that by encouraging students to maximally use ITG themselves would enhance their oral output to its full potential.

There was minimal use of ITG by students when Storytelling and no clear pattern to the ACTLAN categories they chose to use. In Story Re-tell, with and without viewing ITG, a pattern did emerge with the categories of ITG that students employed. Three gesture categories were most used (‘Verbs’, ‘Glue’ (Japanese particles) and ‘Circumstances’) and three categories were least used (‘Participants’, ‘Objects’, and ‘Tenses’). Given this finding, it may be suggested that these categories supported students’ oral language the most and this now is available as a potential pedagogical strategy to support students further in the second language classroom.

These findings provide valuable information for the teacher of Japanese from the study, and are also important to other second language teachers who may be using ITG in related contexts. Further research could confirm whether similar findings are evident in other schools and with other oral language tasks and with different languages.

5.7. Chapter Summary

This chapter presented four clusters of findings from the quantitative data. The first three clusters of findings provided evidence to address research question 1 (What impact does the use of Intentional Teaching Gestures (ITG) in Japanese as additional language classes have on students’ oral language output?)
The first cluster of findings, the comparison of the two teaching approaches, found non-significant differences between them for Storytelling in both the number of words and length of utterances in both school terms. For Story Re-tell there were non-significant but noticeable differences between the quantity of words produced in the ITG approach compared with the non-ITG approach in Term 1, and non-significant differences in Term 2. There were significant differences in the length of utterances for teaching approaches in Story Re-tell in Term 1 but not in Term 2. These findings show some impact of ITG on Story Re-tell but not on Storytelling exposing a different impact of ITG on these two different story tasks.

The second cluster of findings, the comparison of Storytelling at two stages, found non-significant differences between the teaching approaches at both stages of Storytelling for number of words and length of utterances.

The third cluster of findings, the comparison of Story Re-tell with and without viewing ITG, showed statistically significant differences between these two tasks. The greatest impact of ITG was on the quantity of words that students could produce when viewing ITG during Story Re-tell. There was variation in the length of utterances produced.

The fourth cluster of findings, students’ use of ITG, provided evidence to address research question 3 (What patterns of gesture use emerge when students tell stories in Japanese?) The data presented showed minimal use of ITG by students when Storytelling. No overarching or dominant patterns were evident in the categories of use when Storytelling. There was a greater use of ITG by students when doing Story Re-tell and even greater use of ITG when doing Story Re-tell while viewing ITG. The increased use of ITG by students occurred while there was an increase in their production of Japanese, suggesting an association between these two variable increases. There was some carry-over use of ITG by some students from the ITG approach in Term 1 into the non-ITG approach in Term 2. Although minimal, this does reflect an ongoing impact of ITG for some individual students and poses a future topic of research to identify any common characteristics amongst them. In Story Re-tell a very clear pattern was evident of three categories of ITG that were used the most and three categories that were used the least, suggesting possible preferences for some types of gestures or a greater support that some types of gestures may have provided students.
The subsequent chapter presents and discusses the qualitative data drawing findings from the transcriptions of students’ Japanese stories. The chapter presents the features of students’ oral language in themes and address the patterns of students’ ITG use.
Chapter 6. “THE GESTURES WERE USEFUL TO REMEMBER THE WORDS MORE” QUALITATIVE DATA

6.1. Introduction

This chapter focuses on the second large component of the research results, the qualitative data. Findings emerging from the transcription data are presented and discussed within this chapter. The quote cited above in the title is from a Year 4 student and was chosen because it captures the essence of the outcome of the qualitative data.

The overall effect of qualitative data is to enrich and exemplify features of students’ language and its relationship with the deployment by the teacher of ITG and complements the findings from the quantitative data presented previously. However, the outcomes of the results from the transcriptions of student data functions to provide a general triangulation of all the data sets.

The table below summarises the complete corpus of data from the two primary methodologies utilised in this research. The qualitative component is coloured blue to highlight the specific component discussed in this chapter.

Table 49 Table of data highlighting qualitative data

<table>
<thead>
<tr>
<th>QUANTITATIVE DATA: Numerical findings</th>
<th>QUALITATIVE DATA: Transcriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addresses Research Questions 1 and 3</td>
<td>Addresses Research Questions 2 and 3</td>
</tr>
<tr>
<td>Four clusters of findings: 1. Comparison of the two teaching approaches 2. Comparison of Storytelling at two stages 3. Comparison of Story Re-tell with and without viewing ITG 4. Students’ use of ITG</td>
<td>Nine themes within two clusters of findings: <strong>Viewing ITG</strong> 1. ITG increasing language output 2. ITG increasing content 3. ITG increasing students’ use of verbs 4. ITG increasing students’ use of particles 5. ITG supporting the structuring of utterances 6. ITG encouraging students’ self-correcting 7. ITG increasing students’ fluency <strong>Using ITG</strong> 1. Students’ use of ITG without a word 2. Students’ mismatch of ITG and word</td>
</tr>
</tbody>
</table>
6.2. Data set

The qualitative corpus of data informing the present research comprises transcriptions of 170 students’ video-recorded Japanese stories. Each student told a total of seven stories, one for baseline evidence and three within each teaching approach, ITG and non-ITG. Subtracting student absences and ten video recordings that were erased or recorded over, produces a total of 1,113 video recordings. The transcriptions of these stories recorded every word each student uttered and highlighted each use of ITG. This set of data from transcriptions provided the evidence analysed and presented below of students’ language output and ITG use.

The quantitative data presented in Chapter Five showed individual variation in the quantity of language produced by students when Storytelling, and revealed non-significant differences between the ITG and non-ITG teaching approaches. Similarly, when reading and analysing the Storytelling transcriptions, individual student differences were identified demonstrating no discernable patterns in the features of language that students produced relating to the teaching approach. For this reason, Storytelling transcriptions are not included in the current presentation.

By contrast, significant differences were revealed in the quantitative data for the two Story Re-tell tasks, Story Re-tell with and without viewing ITG. The qualitative analysis of the transcriptions exposed differences in the features of students’ language when comparing and contrasting the transcriptions from these two Story Re-tell tasks. This process enabled a direct comparison of each individual student’s oral output and ITG use between each Story Re-tell task and this data is reported on below.

Thematic analysis was applied on the Story Re-tell transcription data “to find repeated patterns of meaning” (Braun & Clarke, 2006, p. 86) through an inductive approach (Braun & Clarke, 2006) involving repeated reading of the transcriptions to generate thematic consistencies through ever more fine-grained observation of consistencies and patterns. The themes were derived without any pre-conceived ideas about their existence or otherwise. Coloured post-it-notes were used to identify themes within the transcriptions with each colour corresponding to a distinctive theme confirmed through repeated analysis. This refinement process throughout the analysis revealed unique features of the data (Boyatzis, 1998). Excerpts from the transcriptions that provided
clear examples for each theme and which could demonstrate them in context were selected. Thick descriptions of the features of language produced by students are provided with examples and excerpts of the language and also examples of patterns of students’ ITG use are provided for each theme below. A member checking process confirmed the themes and further confirmed that the excerpts were typical of the identified themes. This rigorous qualitative research process enabled explorative theory conceptualisation and provided the approach to assess and theorise the significance of the patterns found and discuss the implications (Patton, 1990).

The results of the methodological procedure described above enabled research question 2 (What are the features of students’ oral language when ITG has been incorporated into learning Japanese?) to be addressed directly with transcription data providing the evidence of the features of students’ oral language. The comparison of transcriptions from the two Story Retell modes (with and without viewing ITG) were used to provide insight into the impact of ITG on students’ oral language. Research question 3 (What patterns of gesture use emerge when students tell stories in Japanese?) was addressed through analysis of the transcriptions to supply evidence of the patterns of ITG as used by students.

The data is presented within two clusters of findings, Viewing ITG and Using ITG. The first of these clusters of findings, (Viewing ITG), identifies seven themes that account for students’ oral output when viewing ITG. The second cluster of findings, (Using ITG), identifies two themes that account for students’ ITG use.

**Viewing ITG**

i. ITG increasing language output

ii. ITG increasing content

iii. ITG increasing students’ use of verbs

iv. ITG increasing students’ use of particles

v. ITG supporting the structuring of utterances

vi. ITG encouraging students’ self-correcting

vii. ITG increasing students’ fluency

**Using ITG**

i. Students’ use of ITG unaccompanied by a word

ii. Students’ mismatch of ITG and word
Each of the themes is defined and evidence from students’ transcriptions are presented through excerpts to facilitate discussion of each theme. The themes within the first cluster of findings, Viewing ITG, are discussed first.

6.3. Viewing ITG

The first of the seven themes is the most straightforward reflecting growth in oral language output in response to the two modes of Story Re-tell.

6.3.1. ITG increasing language output

The nature of the following discussion is a comparison of the differential increase in oral language output that students produced when comparing Story Re-tell with and without viewing ITG.

The transcription evidence presented below is laid out vertically to allow rapid visual comparison identifying the increase in oral language output and the difference in the language that could be produced between the two modalities. The transcription shows relative quantity of language between the two modalities produced by a Prep student with Story Re-tell and then Story Re-tell while viewing ITG. The focus of Story Re-tell in Term 1 was ‘The Hungry Caterpillar’.

Table 50 ‘ITG increasing language output’ excerpt

<table>
<thead>
<tr>
<th>Prep-j-01 SR-T2 ITG (Prep student doing Story Re-tell)</th>
<th>Prep-j-01 SR-T2+ ITG (Prep student doing Story Re-tell while viewing ITG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 words with an average of 1.5 word utterances.</td>
<td>88 words with an average of 3 word utterances.</td>
</tr>
<tr>
<td>あおむし は ソセージ</td>
<td></td>
</tr>
<tr>
<td>Translation: The caterpillar. Sausage.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prep-j-01 SR-T2 ITG (Prep student doing Story Re-tell)</th>
<th>Prep-j-01 SR-T2+ ITG (Prep student doing Story Re-tell while viewing ITG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;ペコペコ あおむし は Leaf-oo</td>
<td></td>
</tr>
<tr>
<td>Egg です。を たべました。Sunday たべました。</td>
<td></td>
</tr>
<tr>
<td>あおむし は apple, apple たべました。</td>
<td></td>
</tr>
<tr>
<td>あおむし は ペコペコ です。</td>
<td></td>
</tr>
<tr>
<td>あおむし は ... を みました。</td>
<td></td>
</tr>
<tr>
<td>を first たべました。</td>
<td></td>
</tr>
<tr>
<td>まだまだ ペコペコ です。</td>
<td></td>
</tr>
<tr>
<td>を two たべました。</td>
<td></td>
</tr>
<tr>
<td>まだまだ ペコペコ です。</td>
<td></td>
</tr>
<tr>
<td>Plum-oo を third たべました。</td>
<td></td>
</tr>
<tr>
<td>まだまだ ペコペコ です。</td>
<td></td>
</tr>
<tr>
<td>Strawberries を fourth たべました。</td>
<td></td>
</tr>
<tr>
<td>まだまだ ペコペコ です。</td>
<td></td>
</tr>
<tr>
<td>Orange-oo を fifth たべました。</td>
<td></td>
</tr>
</tbody>
</table>
まだまだ ベコベコ です。
ケーキと アイスクリームと pickle と チーズ と salami と ぺろぺろキャンデイと... と ソセジュと cupcake と watermelon を たべました。
あおむし は tummy ache-oo です。
あおむし は leaf-oo を たべました。
おいしい leaf-oo です。
Fifth
げんき です。
あおむし は ベコベコ じゃない です。
あおむし は fat-oo です。
Big です。
あおむし は bed たべました。
Cocoon たべました。
あおむし は butterfly を です。

Translation:
The hungry caterpillar.

Leaf(E).
It’s an egg(E).
He ate.

Ate Sunday(E).
The caterpillar ate an apple(E), apple(E).
The caterpillar was hungry.
The caterpillar saw...
First(E), he ate...
But he was still hungry.
He ate two(E)...
But he was still hungry.
Third(E), he ate plums(E).
But he was still hungry.
Fourth(E), he ate strawberries(E).
But he was still hungry.
Fifth(E), he ate oranges(E).
But he was still hungry.
He ate cake and ice-cream and pickle(E), and cheese and salami(E) and lollypop and ... and sausage and cup-cake(E) and watermelon(E).
The caterpillar had a tummy(E) ache(E).
It is.
The caterpillar ate a leaf(E).
It was a delicious leaf(E).
Fifth(E).
He felt good.
The caterpillar wasn’t hungry anymore.
The caterpillar was fat(E).
He was big(E).
The caterpillar ate a bed(E).
He ate a cocoon(E).
The caterpillar was a butterfly(E).

Key: (E) indicates a word that was said and therefore transcribed in English

The above table reveals a clear expansion in the quantity of Japanese that a Prep student could produce when viewing ITG while doing Story Re-tell, an increase from 3 to 88 words with an average of 1.5 word utterances to an average of 3 word utterances. This numerical increase is accompanied by clear changes in the features of language the student was able to produce. When viewing ITG, the student produced more words from
the story, spoke in longer utterances, told more of the story and with a greater depth of information. By contrast when reading the first Story Re-tell transcription, a coherent story line is not evident at all so that the Japanese produced by the student does not resemble the story of The Hungry Caterpillar. In comparison, when reading the transcription of the Story Re-tell while viewing ITG, a very clear and mostly coherent story line is told and the meaning is clear throughout, despite some gaps and errors in the utterances.

The excerpt cited above was not unique. Data showed that every student in every year level increased in the quantity of language that they could produce when comparing their output between the two Story Re-tell tasks. In the previous chapter, we saw the numerical evidence of the statistical significance of this (words, significant differences, \( P \)-value <0.001, in Terms 1 & 2; utterances, non-significant differences in Term 1, significant differences, \( P \)-value 0.004, in Term 2) showing clearly that the viewing of ITG was an influential factor in increasing the oral language output of all students.

When probing this extended output more deeply, the most striking point of improvement attributable to viewing ITG was the increased amount of new content introduced by students in their re-telling. This increase in new content is now presented within the next theme extracted from the qualitative corpus.

### 6.3.2. ITG increasing content

The essential nature of this second theme of findings generated by viewing ITG concerns the additional content that students included in their Japanese language Story Re-tell when viewing ITG. It contrasts markedly with the Story Re-tell of students when they had not viewed ITG. The analysis of transcriptions of students’ Story Re-tells, highlight the features of supplementary or additional factual or informational content, and this characteristic of richer informational content was found for all students at all year levels.

The following excerpt from the transcription provides evidence to demonstrate this finding. The presentation of the excerpt includes shaded highlighting to mark the additional content that a Year 1 student included in her Story Re-tell while viewing ITG. As with the previous table, the left hand column reports the Story Re-tell without ITG; the right hand side shows the result for the same student when they had viewed ITG, again based on The Hungry Caterpillar story as the stimulus text.
### Table 51  ‘ITG increasing content’ excerpt

<table>
<thead>
<tr>
<th>One-t-06 SR-T2 ITG (Year 1 student doing Story Re-tell)</th>
<th>One-t-06 SR-T2+ ITG (Year 1 student doing Story Re-tell while viewing ITG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>46 words with an average of 3.3 word utterances.</td>
<td>131 words with an average of 4 word utterances.</td>
</tr>
<tr>
<td>あおむしは。</td>
<td>ペコペコ あおむし。</td>
</tr>
<tr>
<td>あおむしは。</td>
<td>Leaf-oo と いちさい です。</td>
</tr>
<tr>
<td>たま…</td>
<td>しを にち を みね しました。</td>
</tr>
<tr>
<td>りんごを たべました。</td>
<td>あおむしは か しました。</td>
</tr>
<tr>
<td>なしを たべました。</td>
<td>Leaf-oo です。</td>
</tr>
<tr>
<td>Plum を たべました。</td>
<td>あおむしは open あおむしは きました。</td>
</tr>
<tr>
<td>Strawberry を たべました。</td>
<td>あおむしは ペコペコ です。</td>
</tr>
<tr>
<td>Orange を たべました。</td>
<td>あおむしは リンゴを みました。</td>
</tr>
<tr>
<td>Chocolate ケーキとアイスクリームとピクルとチーズと</td>
<td>りんごを たべました。</td>
</tr>
<tr>
<td>サラミとすべろちゃんキャンデイとペイと</td>
<td>まだまだ ペコペコ です。</td>
</tr>
<tr>
<td>sausage-eeとmuffin とwatermelon をたべました。</td>
<td>すいようび plum-oo をみを たべました。</td>
</tr>
<tr>
<td>いたい。</td>
<td>すいようび straw…いちごを たべました。</td>
</tr>
<tr>
<td>あおむしは おおきい leaf をたべました。</td>
<td>まだまだ ペコペコ です。</td>
</tr>
<tr>
<td>味のうち。</td>
<td>すいようびオレンジを いつを ふいつを たべました。</td>
</tr>
<tr>
<td>ペコペコ あおむし。</td>
<td>まだまだ ペコペコ です。</td>
</tr>
<tr>
<td>$is_{1}$を にちを みねました。</td>
<td>ペコペコ です。</td>
</tr>
<tr>
<td>あおむしは 植物の方   です。</td>
<td>ペコペコ です。</td>
</tr>
<tr>
<td>おおきいです。</td>
<td>ペコペコ です。</td>
</tr>
<tr>
<td>おおきいです。</td>
<td>ペコペコ じゃないです。</td>
</tr>
<tr>
<td>おいしいです。</td>
<td>ベコベコです。</td>
</tr>
<tr>
<td>おいしいです。</td>
<td>ペコペコ です。</td>
</tr>
<tr>
<td>おおきいです。</td>
<td>ペコペコ です。</td>
</tr>
<tr>
<td>ふといです。</td>
<td>ペコペコ です。</td>
</tr>
<tr>
<td>おいしいです。</td>
<td>ペコペコ です。</td>
</tr>
<tr>
<td>ちょうようを。</td>
<td>ペコペコ です。</td>
</tr>
<tr>
<td><strong>Translation:</strong></td>
<td><strong>Translation:</strong></td>
</tr>
<tr>
<td>The hungry caterpillar.</td>
<td>The hungry caterpillar.</td>
</tr>
<tr>
<td>He ate an apple.</td>
<td>It’s a leaf(E) and small.</td>
</tr>
<tr>
<td>He ate a pear.</td>
<td>He did it...(non word) on Sunday...(non word).</td>
</tr>
<tr>
<td>He ate a plum(E).</td>
<td>The caterpillar did (non word).</td>
</tr>
<tr>
<td>He ate a strawberry(E).</td>
<td>It’s a leaf(E).</td>
</tr>
<tr>
<td>He ate an orange(E).</td>
<td>The caterpillar open(E) the caterpillar came out.</td>
</tr>
<tr>
<td>He ate a chocolate(E) cake and ice-cream and pickles</td>
<td>The caterpillar is hungry.</td>
</tr>
<tr>
<td>and cheese and salami and lollypop and pie and</td>
<td>The caterpillar saw an apple.</td>
</tr>
<tr>
<td>sausage(E) and muffin(E) and watermelon(E).</td>
<td>He ate...ate...one apple.</td>
</tr>
<tr>
<td></td>
<td>But he was still hungry.</td>
</tr>
<tr>
<td></td>
<td>On Friday he ate two (shina – inverted nashi ‘pears’).</td>
</tr>
<tr>
<td></td>
<td>But he was still hungry.</td>
</tr>
<tr>
<td></td>
<td>On Wednesday he ate ‘mi’ (non word) plums(E).</td>
</tr>
</tbody>
</table>
It hurts.
The caterpillar ate a big leaf.
Delicious.
The caterpillar.
Butterfly.

But he was still hungry.
On Sunday he ate a straw... strawberry.
But he was still hungry.
On Wednesday he ate itsu(non word), fuitsu(non word) oranges.
But he was still hungry.
On Saturday he ate a chocolate cake and ice cream and pickle and cheese and salami and roly poly candy and ranbu ranbu(non word) pie and a sausage and muffin and watermelon.
The caterpillar hungry... was still hungry.
It’s kinsanyoubi(non word resembling kinyoubi = Friday).
The caterpillar ate a big leaf.
Delicious.
It was big.
But he was still hungry.
It was delicious.
The caterpillar wasn’t hungry anymore.
The caterpillar was big.
He was fat.
The caterpillar went to sleep in a big cocoon.
A big cocoon came.
The caterpillar is a butterfly.

From the above table the large amount of additional content that this Year 1 student included when doing Story Re-tell while viewing ITG is very evident, showing both increased language output in absolute terms and also the additional content that was introduced. From the transcription, it is revealed that the student was able to add rich description to her story and that these additions, when combined, provided a much more detailed account of the story.

Also noticeable in this comparison between the two Story Re-tell tasks was significant improvement in utterance completion stimulated by viewing ITG. Specifically, in the first Story Re-tell many single words and part utterances characterised the student’s Re-tell with the student apparently unsure of how to complete the utterance, whereas this phenomenon occurred infrequently in the Story Re-tell while viewing ITG.

Another prominent feature of the data is the increase in verbs added to the quantity of content produced. The increased use of verbs in the excerpt in Table 51 is important to identify within this discussion because it led to the creation of longer utterances and contributed to the greater level of content and detail embedded in the story. In the first Story Re-tell only the verb たべました (to eat) was used. It was used seven times. By contrast in the Story Re-tell while viewing ITG, five different verbs were used; です (it is), しました (did), みました (saw), たべました (ate) and きました (came) and for a total of 30 times. This represents a great increase in the student’s use of verbs allowing the student to significantly expand the physical actions they were able to recount about
the stimulus text. The next theme now expands on this specific dimension of expanded expression facilitated by ITG.

6.3.3 ITG increasing students’ use of verbs

The following excerpt from the transcription shows the range and extent of verb use generated in the Story Re-tell while viewing ITG. The excerpt comes from Term 2 of the study when the focus for Story Re-tell was on the traditional Japanese story ‘The Rolling Rice Ball’. The verbs are highlighted in shading to identify them clearly.

Table 52 ‘ITG increasing students’ use of verbs’ excerpt

<table>
<thead>
<tr>
<th>Table 52</th>
<th>‘ITG increasing students’ use of verbs’ excerpt</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-s-05 SR-T5 ITG (Year 1 student doing Story Re-tell)</td>
<td>One-s-05 SR-T5+ ITG (Year 1 student doing Story Re-tell while viewing ITG)</td>
</tr>
<tr>
<td>33 words with an average of 3 word utterances.</td>
<td>114 words with an average of 3.9 word utterances.</td>
</tr>
<tr>
<td><strong>こんにちは</strong> ペコペコです。</td>
<td>おむすびころりん。</td>
</tr>
<tr>
<td>おじいさんはおむすびをたべました。</td>
<td>むかしむかしのです。</td>
</tr>
<tr>
<td>おじいさんはおおきいにいきました。</td>
<td>おじいさんはつかれてました。</td>
</tr>
<tr>
<td>おじいさんはペコペコです。</td>
<td>おじいさんはおむすびをたべましょう。</td>
</tr>
<tr>
<td>おじいさんはたいへんです。</td>
<td>いただきます。</td>
</tr>
<tr>
<td>おじいさんはたちずにたべましょう。</td>
<td>でも、おいしいおむすびはころころころりんをなかにはいりました。</td>
</tr>
<tr>
<td>おじいさんはたのしいです。</td>
<td>ころころころりんすとんとん。</td>
</tr>
<tr>
<td>おじいさんはまぐもぐむしゃむしゃあーおいしい。</td>
<td>おじいさんははとにでも。</td>
</tr>
<tr>
<td><strong>こんにちは</strong>ペコペコです。</td>
<td>ちゅーちゅーちゅーおじいさんにおもうむすびをあげました。</td>
</tr>
<tr>
<td><strong>こんにちは</strong>ペコペコです。</td>
<td>ちゅーちゅーちゅーおじいさんこんにちは。</td>
</tr>
<tr>
<td><strong>こんにちは</strong>ペコペコです。</td>
<td>ちゅーちゅーちゅーおじいさんがとう。</td>
</tr>
<tr>
<td>おじいさんはむしゃむしゃあーおいしい。</td>
<td>おじいさんはおむすびがとう。</td>
</tr>
<tr>
<td>おじいさんはむしゃむしゃあーおいしい。</td>
<td>おじいさんはおむすびをたべましょう。</td>
</tr>
</tbody>
</table>

**Translation:**
Hello.
The old man ate a rice ball.
The rice ball rolled.
Rice ball rolling, rolling down.
The mice are hungry.
Squeak, squeak, squeak, we are hungry.
Hello old man.

It is hungry.

The old man ate a rice ball.
The rice ball rolled.
Rice ball rolling, rolling down.
The mice are hungry.
Squeak, squeak, squeak, we are hungry.
Hello old man.

It is a long, long ago’s ...
The old man is a rice ball. It is fun. Thank-you old man.

The old man went to a big ...
The old man was tired.
The old man was hungry.
He was going to eat a delicious rice ball.
Let's eat.
But, the delicious rice ball went rolling, rolling and entered inside.
Squeak, squeak, squeak, hello old man.
Let's eat the rice ball together.
Gobble, gobble, ah, delicious.
The old man together.
It is fun.
Thank-you for the rice ball old man.
The mice gave the old man a ...
'Rolling, rolling, rolling down.
The rice ball went rolling down'.

Key: Verbs are marked with shaded highlighting

The table above identifies the ‘ITG increasing students’ use of verbs’ theme. The expansion, both in absolute numbers overall and frequency, is visually apparent from the shaded marking in the table. It represents a significant advance due to the ITG mode and more target language use, more subtly used and with a greater frequency of use of specific items associated with more complex and subtle expression. More details from the stimulus story were captured by the student when viewing ITG while doing Story Re-tell so she was able to supply more information enabling a story with clearer and more coherent sequencing. In the first Story Re-tell only two verbs were used, です (it is) and たべました (ate) while in the second Story Re-tell when the student viewed ITG, eight different verbs featured, です (it is), いきました (went), つかれた (exhausted), たべましょう (going to eat), いただきます (let’s eat), はいりました (entered), みて (look) and あげました (gave). These represent physical and mental states (went, exhausted) and this variety of expressive potential is considerable. The impact of this use of expansion in number and frequency of verbs on creating extended utterances and supporting a more coherent and clearer story is very influential to students’ overall increase in total target language output.

The next theme explores students’ use of Japanese particles within each Story Re-tell mode.

6.3.4 ITG increasing students’ use of particles

Since this theme identifies the difference in students’ use of Japanese particles in utterances, comparing the two Story Re-tell tasks it is important to reiterate the important role of particles in Japanese expression. As explained by Nihongoichiban, a Japanese learning website, “Japanese particles are small words that indicate relations of
words within a sentence. They follow other words such as nouns, verbs, adjectives [and] are parts of a sentence. Some but not all can be compared to prepositions in English” (Nihongoichiban, 2016). As we can see from this quote it is important not to reduce the role of Japanese particles to prepositions in English, even though some resemble prepositions, some have a wider function in Japanese and count as a lexical item of major importance.

The following transcription demonstrates the theme by comparing the overall use of particles by a Year 3 student in each Story Re-tell of ‘The Rolling Rice Ball’. The particles are marked with shaded highlighting to identify them clearly.

Table 53 ‘ITG increasing students’ use of particles’ excerpt

<table>
<thead>
<tr>
<th>Three-s-10 SR-T5 ITG (Year 3 student doing Story Re-tell)</th>
<th>Three-s-10 SR-T5+ ITG (Year 3 student doing Story Re-tell while viewing ITG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>26 words with an average of 2.6 word utterances.</td>
<td>124 words with an average of 4 word utterances.</td>
</tr>
</tbody>
</table>
| こんにちは。おむすびころりん。おじいさん。おむすびころりん。おじいさんペコペコです。おむすびころりんすっとんとん。ねずみペコペコです。おいしいおむすび。おじいさんはおおきいさまにいきました。おじいさんはあーつかれた。おじいさんはペコペコです。おいしいおむすびを食べましょう。いただきます。でも、おいしいおむすびはころりんあなのなかにはいりました。ころころころりんすっとんとん。おむすびころりんすっとんとん。おいしいおじいさんはおいしいです。ちいさいねずみはあなのなかにペコペコです。むかむかむちゃむちゃペコペコです。みてみておむすびです。おいしいおむすびを食べましょう。いただきます。むかむかむちゃむちゃあーつかれた。おじいさんはあなをみてあした。でも、あーおじいさんはころころころりんあなのあなにはいりました。ちゅうちゅうちゅう、おじいさんこんにちは。あなにおむすびをたべましょう。ちゅうちゅうちゅうちゅう、あーおいしい。おじいさんあなに。たのしいです。おじいさんおむすび。ねずみはおじいさんに…をあげました。
The first Story Re-tell is remarkable for the complete absence of particles, consisting of a collection of individual words uttered together to transmit meaning. By contrast, the Story Re-tell while viewing ITG uses 5 particles and much more closely resembles complete, grammatically correct Japanese. One example from the transcription which shows this very clearly is the utterance produced during the first Story Re-tell ねずみペコペコ です meaning, ‘Mice are hungry’. Compared with the equivalent part of the story in the Story Re-tell while viewing ITG, the student said ちいさいねずみはあなたのなかにペコペコです meaning, ‘The small mice were hungry inside the hole’. The absence of particles in the first utterance, compared to the three particles used in the second, contributes to the communicative effectiveness of the second in a major way producing a complete, grammatically correct and information-rich utterance.
In summary, the data show clearly how the increased use of verbs and particles improve the construction of utterances and underscore the value of the qualitative discussion of the research to ascertaining the value of ITG in teaching second languages. The next theme will further elaborate on the role of viewing ITG in supporting the structuring of utterances.

6.3.5 ITG supporting the structuring of utterances

The data presented below highlights this growing appreciation of the contribution ITG makes in supporting utterance structure.

The excerpts reveal some characteristics of utterances that students could produce when doing Story Re-tell and then the utterances that could be produced when doing Story Re-tell while viewing ITG in the following ways:

- ITG supporting the structuring from individual words into utterances
- ITG supporting utterance completion
- ITG supporting Japanese word order
- ITG supporting the creation of extended utterances.

The first excerpt shows that during Story Re-tell Japanese utterances consisted of separate words. In the ITG supported Story Re-tell mode complete and coherent utterances which form sentence-like cohesion were produced.

Table 54 ‘ITG supporting the structuring of words to utterances’ excerpt

<table>
<thead>
<tr>
<th>Prep-g-06 SR-T5 ITG (Prep student doing Story Re-tell)</th>
<th>Prep-g-06 SR-T5+ ITG (Prep student doing Story Re-tell while viewing ITG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 words with an average of 2.3 word utterances.</td>
<td>113 words with an average of 3.1 word utterances.</td>
</tr>
<tr>
<td>たべました。おいしい。</td>
<td>おいしいおむすびをたべました。</td>
</tr>
<tr>
<td>Translation: Ate. Delicious.</td>
<td>Translation: He ate a delicious rice ball.</td>
</tr>
</tbody>
</table>

The above table is an excerpt from a Prep student’s transcription comparing the utterances produced in each Story Re-tell. The contrast between the two separated words ‘ate’ and ‘delicious’, are transformed into the complete, information rich: ‘He ate a delicious rice ball’. This is a well-structured utterance using conventional Japanese word order and demonstrates the ability of students to produce the required structure of Japanese expression.
The next excerpt extends these findings by presenting data which illustrates how the viewing of ITG supports utterance completion.

Table 55  ‘ITG supporting utterance completion’ excerpt

<table>
<thead>
<tr>
<th>One-t-01 SR-T2 ITG</th>
<th>One-t-01 SR-T2+ ITG</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(Year 1 student doing Story Re-tell)</strong></td>
<td><strong>(Year 1 student doing Story Re-tell while viewing ITG)</strong></td>
</tr>
<tr>
<td>44 words with an average of 2.9 word utterances.</td>
<td>121 words with an average of 2.8 word utterances.</td>
</tr>
</tbody>
</table>

**Translation:**

*Ice-cream and pickle and cheese and salami and lollypop and pie and sausage and cake and watermelon and.*

The above table compares two utterances produced by a Year 1 student. The first, produced when doing Story Re-tell, lists food items each joined by ‘and’ while the second, produced when doing Story Re-tell while viewing ITG, shows a complete and coherent listing of the food items with the “he ate” part at the end of the utterance in typical and conventional Japanese word order. This clearly demonstrates an utterance completion effect for the Story Re-tell mode following viewing of ITG.

The next excerpt further illustrates how the viewing of ITG supports Japanese word order.

Table 56  ‘ITG supporting Japanese word order’ excerpt

<table>
<thead>
<tr>
<th>Two-k-02 SR-T2 ITG</th>
<th>Two-k-02 SR-T2+ ITG</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(Year 2 student doing Story Re-tell)</strong></td>
<td><strong>(Year 2 student doing Story Re-tell while viewing ITG)</strong></td>
</tr>
<tr>
<td>73 words with an average of 4.1 word utterances.</td>
<td>131 words with an average of 4.4 word utterances.</td>
</tr>
</tbody>
</table>

**Translation:**

*On Tuesday two pears it was hungry.*

The above table shows a comparison of the same elements of the story that could be produced by a Year 2 student when doing Story Re-tell and when doing Story Re-tell while viewing ITG. The utterance when doing Story Re-tell shows that the student could communicate her meaning in Japanese and combine the key concepts of ‘On Tuesday’, ‘two pears’ and ‘it was hungry’ together. However, the utterance does not follow correct standard Japanese word order, in that the particles are used incorrectly and the chosen verb at the end does not clearly match the utterance. The meaning is
however very clear and all of the words were enunciated clearly in Japanese. Comparatively, while viewing ITG, the student was able to form the complete utterance in acceptable standard Japanese word order. In both utterances, the number ‘two’ was said as ‘ni’, which is correct when counting in Japanese, however, the Japanese counter word for counting objects ‘futatsu’ should have been used. This identifies the difference between ordinary counting and the counting of particular items that require a different set of counting words in Japanese. There is no discrimination between the sets of counting words with ITG.

The final excerpt for this theme demonstrates the role of viewing ITG on the creation of extended utterances.

Table 57 ‘ITG supporting extended utterances’ excerpt

<table>
<thead>
<tr>
<th>Three-s-23 SR-T5 ITG</th>
<th>Three-s-23 SR-T5+ ITG</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Year 3 student doing Story Re-tell)</td>
<td>(Year 3 student doing Story Re-tell while viewing ITG)</td>
</tr>
<tr>
<td>おじいさんは。</td>
<td>むかしむかしおじいさんはおおきないきました。</td>
</tr>
<tr>
<td>Translation: The old man.</td>
<td>Translation: Long, long ago, the old man went to the ya.</td>
</tr>
</tbody>
</table>

Table 57 shows the difference between the utterances that a Year 3 student could produce in each Story Re-tell task demonstrating the superior extended and more richly elaborated utterance that could be produced when viewing ITG.

The presentation of data now turns to focus on the next theme which identifies students’ self-correcting while viewing ITG.

6.3.6 ITG encouraging students’ self-correcting

The analysis of the transcriptions identified five main ways in which self-correcting processes occurred:

- Self-correcting from English to Japanese
- Self-correcting from incorrect word to correct word
- Self-correcting to add extra information
- Self-correcting from incorrect particle to correct particle
- Self-correcting verb tense.
Excerpts are presented to show each of these types of self-correcting and the context in which they occurred.

The first excerpt shows self-correcting from English to Japanese.

Table 58 ‘ITG encouraging self-correcting from English to Japanese’ excerpt

<table>
<thead>
<tr>
<th>Prep-j-05 SR-T2+ ITG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prep student doing Story Re-tell while viewing ITG</td>
</tr>
</tbody>
</table>

The cat… あおむし は、 あおむし は ペコペコ です。

*Translation:* The cat… The caterpillar, The caterpillar is hungry.

This is an excerpt from the transcription of a Prep student’s Story Re-tell while viewing ITG. It is a clear example of self-correcting from English to Japanese in that we can see the student, having started to say “The cat…” in English, paused and then shifted to Japanese finding the Japanese word for caterpillar which enabled her to complete the utterance in Japanese.

The next excerpt shows self-correcting from an incorrect to a correct word.

Table 59 ‘ITG encouraging self-correcting an incorrect to a correct word’ excerpt

<table>
<thead>
<tr>
<th>Three-w-13 SR-T2+ ITG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 3 student doing Story Re-tell while viewing ITG</td>
</tr>
</tbody>
</table>

おなか が いた… げんき です。

*Translation:* It’s tummy was sore… feeling good.

This above excerpt shows a student self-correcting from saying, its tummy was ‘sore’ to ‘feeling good’. This would suggest that the viewing of ITG played a role in cueing the correct meaning for the student, enabling the utterance repair to replace an incorrect with a correct word.

The next excerpt shows the type of self-correcting in which additional information is introduced into an utterance.

Table 60 ‘ITG encouraging self-correcting to add extra information’ excerpt

<table>
<thead>
<tr>
<th>One-t-06 SR-T2+ ITG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1 student doing Story Re-tell while viewing ITG</td>
</tr>
</tbody>
</table>

りんごを た… 一 たべました。

*Translation:* A(ate)... an apple, ate one.
This is an excerpt from the transcription of a Year 1 student’s Story Re-tell while viewing ITG. It shows that the student commencing the utterance with ‘ate’, pausing and then self-correcting by introducing the precise quantity of apples, ‘one’, and then completing the utterance with “ate”. In doing this the Year 1 student has added further information to the utterance than the initial amount.

The next excerpt shows the type of self-correction from an incorrect to a correct particle.

Table 61 ‘ITG encouraging self-correcting of particles’ excerpt

<table>
<thead>
<tr>
<th>Prep-j-09 SR-T2+ ITG</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Prep student doing Story Re-tell while viewing ITG)</td>
</tr>
<tr>
<td>ケーキと アイスクリームと pe...と チーズと サラミと ベロベロキャンデイと pie oo と sausage と ケーキと watermelon と...を たべました。</td>
</tr>
<tr>
<td>Translation:</td>
</tr>
<tr>
<td>He ate a cake and ice-cream and pe... and cheese and salami and lollypop and pie(E) and sausage(E) and cake and watermelon(E) and.</td>
</tr>
</tbody>
</table>

This excerpt is from the transcription of a Prep student’s Story Re-tell while viewing ITG and shows the self-correction from particle と ‘to’ to particle を ‘o’. The student listed the various food items eaten and then said ‘to’, meaning ‘and’, to list another item, even though she had already said all the items. Upon viewing ITG, she then self-corrected to say を たべました, ‘o tabemashita’ meaning ‘he ate’ showing how viewing of ITG cued her towards completion of the utterance.

The final excerpt shows the self-correcting of verb tense.

Table 62 ‘ITG encouraging self-correcting of verb tenses’ excerpt

<table>
<thead>
<tr>
<th>Two-c-14 SR-T5+ ITG</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Year 2 student doing Story Re-tell while viewing ITG)</td>
</tr>
<tr>
<td>おむすび を たべました... しょう。</td>
</tr>
<tr>
<td>Translation:</td>
</tr>
<tr>
<td>He ate... is going to eat the rice ball.</td>
</tr>
</tbody>
</table>

This is an excerpt from the transcription of a Year 2 student’s Story Re-tell while viewing ITG. It shows that the student said ‘ate’ at the end of the utterance and then self-corrected to しょう ‘sho’ signalling ‘going to’ eat. This suggests that the viewing of ITG supported the student in self-correcting to the correct verb tense.

The final theme from the first cluster of findings is now presented.
6.3.7 ITG increasing students’ fluency

This theme identifies students’ increased fluency when doing Story Re-tell while viewing ITG. The following transcription demonstrates the theme.

**Table 63 ‘ITG increasing students’ fluency’ excerpt**

<table>
<thead>
<tr>
<th>Four-a-07 SR-T2 ITG (Year 4 student doing Story Re-tell)</th>
<th>Four-a-07 SR-T2+ ITG (Year 4 student doing Story Re-tell while viewing ITG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>45 words with an average of 5.6 word utterances.</td>
<td>126 words with an average of 4.2 word utterances.</td>
</tr>
</tbody>
</table>

| なしが ふたつを たべました。 | ペコペコ あおむし。
| まだまだ ペコペコ です。 | たまご です。
| いちごは ひとつを たべました。 | たまごを みますか。
| オレンジは いっぱいを たべました。 | でって きます。
| ケーキと アイス cream と ピクルとチーズと サラミと ぺろぺろキャンデイと muffin と すいかを たべました。 | げつようび りんごを たべました。
| おなかは いっぱいです。 | まだまだ ぺコペコ です。
| あおむしは おおきいです。 | もくようび ケーキと アイスクリームと ピクルとチーズと サラミと ぺろぺろキャンデイと ソセジと muffin と すいかを たべました。

**Translation:**

He ate two pears.

**He ate four strawberries.**

He ate five oranges.

He ate a cake and ice-cream(E) and pickle and cheese and salami and lollypop and sausage and muffin(E) and watermelon.

He had a tummy ache.

The caterpillar was big.

Butterfly.

| おいしいです。 | おなかは げんきです。
| あおむしは おおきいです。 | あおむしは ぺコペコじゃないです。
| あおむしは おおきいです。 | あおむしは おおきいです。
| あおむしは おおめし です。 | でって きました。
| あおむしは ちょうちょうです。 | Translation:

*The hungry caterpillar.*

It’s an egg. Did he see an egg?

He came out.

It was Monday.

It was Friday.

The caterpillar came out from the egg.

The caterpillar was hungry.
The caterpillar....
On Monday he ate an apple.
But he was still hungry.
On Tuesday he ate two pears.
But he was still hungry.
On Wednesday he ate three plums.
But he was still hungry.
On Thursday he ate four strawberries.
But he was still hungry.
On Friday he ate five oranges.
But he was still hungry.
On Saturday he ate a cake and ice-cream and pickle and cheese and salami and lollypop and ... and sausage and muffin(E) and watermelon.
The caterpillar had a sore stomach.
It was Sun..., Mon..., Sunday.
The caterpillar ate a leaf.
It was delicious.
His stomach was feeling good.
The caterpillar wasn’t hungry anymore.
The caterpillar was big.
The caterpillar...
He came out.
The caterpillar was a butterfly.

In the above table there is an evident difference in the quantity of language that could be produced by this Year 4 student when doing Story Re-tell compared with doing Story Re-tell while viewing ITG. The quantity of words produced increased dramatically when the student viewed ITG. Although the average length of utterances decreased between the two Story Re-tell tasks, we can see that the long utterance that the student produced when listing a large number of food items in the first Story Re-tell influenced this. This excerpt also shows that the quality of the language improved when the student viewed ITG. She was able to tell a story with clearer sequencing, tell more parts of the story, add extra information and speak in more complete and standard Japanese utterances. When comparing the number of verbs within the utterances the student could produce in each Story Re-tell, it is striking that in the first Story Re-tell the student used only two verbs but six when doing the second Story Re-tell while viewing ITG. This increase in verbs generated a more complete and articulate story.

Each of these aspects of Japanese language show the student’s enhanced quality of language when doing Story Re-tell while viewing ITG and further support the themes already presented.

This transcription additionally draws the reader’s attention to the student’s increased fluency during the Story Re-tell while viewing ITG. The student was able to tell the story more fluently including the repetition and rhythm of the original stimulus story, which was evident in the video recording, including aspects such as the repetition of the
“but he was still hungry” part of the story after each food item was eaten by the caterpillar. The aspects of the story about what the caterpillar ate on each day and the quantity eaten were stated with rhythm and in the same pattern as in the original story which not only provided supplementary information to the Re-tell but also elevated the quality of the Re-tell into a more fluent flowing one. In the first Story Re-tell the student was able to state the quantity of each food item but used the wrong particles between words thereby rendering the utterances somewhat disjointed. When viewing ITG, the student was able to improve this significantly by adhering to correct Japanese word order, using correct particles and by adding the additional information of the day of the week that the food items were eaten. Towards the end of the Story Re-tell when viewing ITG, the student was able to insert the further information that the caterpillar was no longer hungry which represents a main turning point in the original story. This aspect of an end to the caterpillar’s hunger was not mentioned in the first Story Re-tell. This item of information also contributed to the repetitive quality of the story and increased the sense of fluency because the ‘hungry’ part was mentioned continuously throughout the story, and recapitulated at the end when the caterpillar was no longer hungry. This excerpt therefore highlights the finding that students’ increased output when viewing ITG contributed directly to improved overall fluency when doing Story Re-tell.

Interestingly, after the Story Re-tell while viewing ITG, the student herself commented that the exercise was “better” and volunteered that “the gestures were useful to remember the words more”. The student’s self-awareness of the improvements in the retention of information and recognition and greater use of conventional Japanese (particles in particular) underscores the observed evidence from the data.

6.3.3. Discussion of findings about viewing ITG

The first cluster of findings, Viewing ITG, presented seven themes addressing research question 2 (*What are the features of students’ oral language when ITG has been incorporated into learning Japanese?*) These seven themes demonstrate the features of students’ oral language when viewing ITG during Story Re-tell and has shown both the extent and quality of impact of ITG on increasing students’ language output, further strengthening the quantitative data that were presented in the previous chapter. This increased output included additional story content, a greater use and more correct deployment of verbs and particles and improved structuring of utterances. Further,
students were more likely to self-correct when viewing ITG and their overall fluency was also evident, particularly when viewing their video recorded Japanese stories.

These findings demonstrate the general but specifiable impact of viewing ITG on students’ language output and connect with neurological research which has identified that the observation of actions supports language processing (Rizzolatti & Arbib, 1998) and experimental research demonstrates observed enactment supports recall (Kormi-Nouri, 2000). Connecting more specifically with gesture research, it has been identified that the viewing of gestures supports the recall of L1 words (So et al., 2012) and L1 sentences (Feyereisen, 2006b). In an L1 story context (Riseborough, 1981), the viewing of gestures has been found to support an increase in the quantity of language that can be recalled, an increase in story content and an increase in the use of verbs. Riseborough’s findings connect with three of the themes from the current L2 study which also involves a story context: increasing quantity of output, content improvement and verb expansion. Affirming the impact of the viewing of gestures in another L2 context, research by Quinn-Allen (1995) showed that speakers could recall more French expressions when the expressions were learned while observing gestures. A range of research studies coalesce on similar points: when gestures are observed, word learning of an artificial language is increased (Macedonia & Knösche, 2011), the recall of L2 Japanese words is increased (Kelly et al., 2009) and in a story learning context in L2 French, students’ output is increased, and students include more story content when gestures were observed with the story (Porter, 2016). This collection of literature, despite being diverse in the languages involved, the ages of the learners, the contexts and settings, and the types of gestures and conditions under which the studies were conducted, nevertheless support three of the themes identified in this cluster of findings from the current study: that the viewing of gestures leads to an increase in the quantity of language output; an increase in content recalled; and an increase in use of verbs. The current study adds to this existing knowledge having identified that the observation of ITG when doing Story Re-tell had an impact on students’ language in a Japanese primary school L2 context.

The current study has identified a connection between viewing ITG and increased fluency whereas previous literature has only connected use of gestures with fluency. This connection suggests an area for further research and a focus on the viewing of gestures. The distinction between ‘using’ and ‘viewing’ gestures in the literature is not
always clearly drawn or observed. The current study draws a clear distinction between viewing and using ITG and identifies benefits from each.

Three of the themes identified in this cluster of findings have provided new insights into the impact of viewing ITG. First, the increase in students’ use of particles when viewing ITG highlighting that the viewing of ITG has raised students’ awareness of Japanese particles and their appropriate and required use in Japanese communication. Second, that the viewing of ITG has assisted students to structure and organise utterances in more conventional form. ITG provided a scaffold that enabled students to complete and structure their utterances in appropriate Japanese word order. Third, the viewing of ITG encouraged students’ self-correction. Students were able to self-correct when their language did not match the ITG they had viewed. Each of these three themes adds further knowledge to the field of gesture research and demonstrates the role of viewing ITG on supporting students’ metalinguistic awareness.

These findings provide valuable information for the teacher of Japanese who participated in the study. An understanding of the linguistic benefits of viewing ITG enables teachers to make informed and strategic pedagogical choices for the language classroom. Teachers may also discuss with their students the possible benefits of viewing ITG to support their learning and in this way engage them in discussion about aspects of Japanese and how it is impacted in class thereby promoting students’ metacognitive awareness.

In section 6.2 I divided the data into two clusters, Viewing ITG and Using ITG. Section 6.3 has presented the seven types of Viewing ITG. The next section, 6.4, turns to the second cluster of findings, the two types of Using ITG.

6.4 Using ITG

Two themes involving students’ use of ITG have been identified, the first being students’ use of ITG in the absence of or unaccompanied by a word. Many of those were silent though sometimes accompanied by sound.

6.4.1 Students’ use of ITG without a word

Under this theme the data provides evidence and instances in which students used ITG themselves without accompanying the gesture with a word. There are five different ways in which this was manifested in the data, as follows:
• ITG without a word expressing the meaning of a word
• ITG without a word providing additional information
• ITG without a word preceding production of a word
• ITG without a word giving emphasis to the word
• ITG without a word highlighting when students are having difficulty with that aspect of language.

When presenting the following excerpts showing students’ ITG use, it is important to point out the formatting style that has been used to provide as much information as possible about each transcription, including what the student actually said and how they used ITG. The following key will support the interpretation of the excerpts for the two themes within this cluster of findings.

Table 64  Key to interpret ‘Students’ use of ITG’ excerpts

| (E) | A word with an (E) next to it indicates that the word was said in English and was therefore transcribed in English. |
| あおむし | Highlighted words show that the appropriate ITG was performed as the word was said. |
| (あおむし) | Highlighted words in brackets show the appropriate ITG was performed without verbalising the corresponding word. |
| あおむし（＝ちょうちょ） | An = sign means that the ITG was performed while saying a non-corresponding, incorrect word. |

The first instance of this theme was when an ITG was used unaccompanied by either a Japanese or English word. The following excerpt depicts this.

Table 65  ‘Students’ use of ITG without a word expressing meaning’ excerpt

One-t-01 SR-T2+ (ITG)  
(Year 1 student doing Story Re-tell while viewing ITG)  
(おいしい)  
Translation:  
(delicious)

Table 65 is an excerpt from the transcription of a Year 1 student’s Story Re-tell while viewing ITG. It shows that the student used an ITG to express おいしい ‘oishii’, delicious, without saying a word in either English or Japanese. The use of ITG in such a way demonstrates the student's intended meaning and shows that they knew the meaning of this part of the story and could demonstrate that through ITG even when not recalling the word in Japanese. Using ITG without verbal accompaniment, when the word isn’t known in Japanese, allows the story to proceed without loss of flow or reduction in the meaning the student wanted to convey. It also has the added advantage of avoiding a switch to English. In a classroom context, this demonstrates to the teacher
that the student intends to say a particular word, and therefore is an indication of the student’s "point of readiness". In this respect the ITG provides a diagnostic function for the teacher, revealing a learning or language acquisition state (point of readiness) that the teacher can utilise strategically to plan pedagogical interventions. Additionally the teacher then comes to know the meaning the student is conveying through the ITG and can then supply the word for the student at his or her point of need.

The next excerpt, also illustrating when ITG without a word expresses meaning, shows the use of ITG without a word when it occurs within an utterance.

Table 66  ‘Students’ use of ITG expressing meaning 2’ excerpt

<table>
<thead>
<tr>
<th>Two-k-13 SR-T2+ (ITG) (Year 2 student doing Story Re-tell while viewing ITG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>あおむし は (おなか) が いたい です。</td>
</tr>
<tr>
<td>Translation: The caterpillar had a sore (stomach).</td>
</tr>
</tbody>
</table>

This is an excerpt from the transcription of a Year 2 student’s Story Re-tell while viewing ITG. The student’s use of ITG in the above excerpt demonstrates how an ITG unaccompanied by a word, i.e., silently, expressed the meaning the student wanted to express. The ITG allowed the student to continue the utterance uninterrupted by the inability to recall the appropriate word in Japanese. In this excerpt, the ITG was used in the middle of the utterance substituting for an unknown word indicating that the student was aware of Japanese syntax.

The next way the theme is evident is when ITG without a word provides additional information. The following excerpt shows this occurring when ITG is used in place of a single word within an utterance.

Table 67  ‘Students’ use of ITG providing additional information’ excerpt

<table>
<thead>
<tr>
<th>One-t-10 SR-T2+ (ITG) (Year 1 student doing Story Re-tell while viewing ITG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>まだまだ ペコペコ です。</td>
</tr>
<tr>
<td>Translation: He was (still) hungry.</td>
</tr>
</tbody>
</table>

Table 67 is an excerpt from the transcription of a Year 3 student’s Story Re-tell while viewing ITG. In this instance the use of ITG supplies supplementary information in the verbalised utterance. In the purely spoken form the student omitted “still”; a vital piece of dramatic information in the story. The addition of the ITG まだまだ ‘madamada’,
(still), supplied critical information, giving a more thorough account of that part of the story. We know that the caterpillar was not just hungry, but ‘still’ hungry, despite all that he had eaten.

Another way this occurred was to provide supplementary information to an utterance, such as in the following excerpt.

Table 68 ‘Students’ use of ITG providing additional information 2’ excerpt

<table>
<thead>
<tr>
<th>Two-k-12 SR-T2+ (ITG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Year 2 student doing Story Re-tell while viewing ITG)</td>
</tr>
<tr>
<td>（きんようび）は オレンジ を five たべました。</td>
</tr>
<tr>
<td>Translation: On (Friday) he ate five(E) oranges.</td>
</tr>
</tbody>
</table>

This excerpt shows ITG being used to express the day of the week on which five oranges were eaten. This too exemplifies how ITG provides information that supplements that which is verbalised.

ITG also provided additional information when a phrase clarifying a process extended an utterance, such as in the following excerpt.

Table 69 ‘Students’ use of ITG providing additional information 3’ excerpt

<table>
<thead>
<tr>
<th>One-s-04 SR-T5+ (ITG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Year 1 student doing Story Re-tell while viewing ITG)</td>
</tr>
<tr>
<td>でも、 おいしい おむすび は ころころころりんす… を （あな の なか）には いりました。</td>
</tr>
<tr>
<td>Translation: But, the delicious rice ball wen... rolling, rolling and entered (inside the hole).</td>
</tr>
</tbody>
</table>

Table 69 is an excerpt from the transcription of a Year 1 student’s Story Re-tell while viewing ITG. It shows an additional phrasal language being inserted into the utterance through the use of ITG, specifically the phrase ‘inside the hole’. Without this information, a reader or listener would not know into what space the rice ball had entered. The use of ITG confirmed that the student knew these details of this traditional Japanese story and had the knowledge of appropriate Japanese syntax to insert this phrase into the correct place in the utterance.

The theme also found instances of use of ITG without a word preceding production of a word. The following excerpt shows this occurring when ITG was used in place of a word and was immediately followed by the relevant word.
This is an excerpt from the transcription of a Year 1 student’s Story Re-tell. It shows that the student first produced the word “five” in English, followed by the ITG of the number five and then produced the Japanese word for five. In this excerpt, we can see the following sequence of English, ITG, and then Japanese. This use of ITG illustrates its role in recalling the word in Japanese for subsequent use after initial use of English, and so the ITG might also represent a kind of self-reproach by the student to herself to recall the Japanese word and not rely on English.

This use of ITG was also identified when ITG preceded the ongoing use of a word, such as in the next excerpt.

Table 71 is an excerpt from the transcription of a Year 2 student’s Story Re-tell while viewing ITG. It shows that the concept ‘hungry’ first appeared in ITG only when this student was doing a Story Re-tell of The Hungry Caterpillar. The next three times that this word was used in the story, the student used ITG while saying the word. Following this, the student was able to produce the word ぺこぺこ ‘peko peko’ without the ITG. This illustrates an instance of ITG supporting recall of the Japanese word and how in doing this the ITG supported the subsequent use of the word throughout the remainder of the Re-tell. It also demonstrates that when the student had mastered the word orally, the reliance on ITG declined or ceased altogether. This suggests strategic use of ITG. ITG is discarded when no longer needed as a scaffold. This is of particular interest to second language teachers as it shows that close observation of students’ use of ITG can serve as an indicator of gaps in target language or it can assist teachers to isolate an aspect of the target language students are struggling to acquire.
This use of ITG was also observed in instances of introducing a concept in Japanese which consisted of a phrase, such as in the following excerpt.

Table 72   ‘Students’ use of ITG preceding production of a word 3’ excerpt

<table>
<thead>
<tr>
<th>Three-s-19 SR-T5+ (ITG)</th>
<th>(Year 3 student doing Story Re-tell while viewing ITG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(おじいさん は)</td>
<td>Translation: (The old man).</td>
</tr>
</tbody>
</table>

This is an excerpt from the transcription of a Year 3 student’s Story Re-tell while viewing ITG. It shows the student producing the concept ‘the old man’ initially through the ITG. But later in the story, she was able to say ‘the old man’ in Japanese, showing the sequence of a concept first being expressed in the ITG and then later produced orally in the target language.

A related ITG use concerns Japanese particles with data showing these being produced only with ITG and subsequently in the Story Re-tell sequences students were able to verbalise them appropriately in Japanese. This is shown in the next excerpt.

Table 73   ‘Students’ use of ITG preceding the production of a word 4’ excerpt

<table>
<thead>
<tr>
<th>Prep-j-02 SR-T2+ (ITG)</th>
<th>(Prep student doing Story Re-tell while viewing ITG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( を)</td>
<td>Translation: ( ).</td>
</tr>
</tbody>
</table>

The above excerpt drawn from the transcription of a Prep student’s Story Re-tell while viewing ITG shows this student first producing the particle ‘o’ ( を) using only the particular ITG, without a word. At its next occurrence in the story, the student again relied on the ITG but this time verbalised the Japanese particle “o”. Following this sequence the student could subsequently verbally use the particle ‘o’ ( を) in the rest of her utterances. We can see here evidence of a significant aspect of ITG. Given the importance of particles in creating grammatically standard utterances in Japanese makes this finding significant. Viewing ITG supports students’ use and identification of particles and hence fosters more accurate target language expression.

Another ITG without word use involves the function of giving emphasis to the word or concept. The following excerpt shows this.
‘Students’ use of ITG giving emphasis’ excerpt

This is an excerpt from the transcription of a Year 2 student’s Story Re-tell while viewing ITG. This student only used one ITG ‘でも’ throughout her whole story seeming to prefer to supply emphasis by making a strong point of ‘But…’ in the story by using ITG. This emphasis was not a feature of the student’s Story Re-tell without viewing ITG. Viewing ITG assisted the student to notice this part of the story and to include it in her Re-tell, even if only through the ITG. This use of ITG attaches extra meaning through emphasis to the word. The section of ‘The Rolling Rice Ball’ story which precedes the excerpt involves the man preparing to eat a delicious rice ball. The student’s portrayal of ‘but’ via ITG marks the text that follows as unexpected and counter to what the story had led the reader to anticipate. Accordingly, the ITG have functions to insert emphasis and an arrested expectation.

A further finding of wordless ITG use involves resolution of difficulties, as shown in the following excerpt.

‘Students’ use of ITG highlighting an area of difficulty’ excerpt

The above excerpt is from the transcription of a Year 4 student’s Story Re-tell while viewing ITG. It shows that the student produced the ‘he’s hungry’ concept through the use of ITG without saying anything in English or Japanese. This suggests the student did not recall the relevant words in Japanese but did recall the story meaning. The use of ITG in this instance shows how failure to acquire or recall target language labels for concepts understood can be compensated by ITG use. As a pedagogical device ITG can be invaluable, allowing the teacher's attention to be drawn to this use of ITG as an indication of student gaps in target language word knowledge.
This theme also identifies the student’s individual point of readiness indicative of the student reaching a point in which she is ready to learn the new Japanese word and include it in her target language repertoire.

The presentation of data now turns to focus on the second of the two findings from the using ITG cluster introduced in section 6.2 above.

6.4.2 Students’ mismatch of ITG and word

A mismatch between the ITG and the target language words or concepts was identified when students stated a word intended to correspond to the ITG used but which was incorrect. When performed simultaneously this mismatch of ITG and a phrase or word was found to arise for five different reasons:

1. words with different meanings
2. words which share the same ITG
3. particles
4. verb tenses
5. words preceding the correct word.

The first excerpt presents students’ ITG and word mismatch between words with different meanings.

Table 76 ‘Mismatch of words with different meanings’ excerpt

<table>
<thead>
<tr>
<th>Four-a-04 SR-T2+ (ITG) (Year 4 student doing Story Re-tell while viewing ITG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>げんき (=おいしい) おいしい です。</td>
</tr>
<tr>
<td>Translation: Feeling well (=delicious). It is delicious.</td>
</tr>
</tbody>
</table>

Table 76 is an excerpt from the transcription of a Year 4 student’s Story Re-tell while viewing ITG. It shows that the student said “it’s feeling well…” (a single word in Japanese, ‘genki’) while producing the ITG for “delicious” and then added “…it’s delicious”. Whether the student intended to say ‘feeling well’, or ‘delicious’ was unclear from the mismatch, however, the subsequent addition of “it’s delicious” clarified that the meaning communicated via ITG was the intended meaning.

As we saw in the previous theme, the use of ITG preceded the production of the intended word that then resulted in the student producing the correct word and
completing the utterance. This suggests that meaning is often first learned through the observation of ITG and is a predictor of later oral production.

With a mismatch, it is difficult to determine if a student’s intended meaning is to be deduced from the stated word or from the ITG meaning, yet, it does indicate the student’s uncertainty about which word corresponds to the gesture. Mismatches of this kind can inform attentive teachers of student learning needs and point of readiness but the confusion between saying a word while gesturing a different ITG is compounded when the words are not only different but have opposite meanings, such as in the next excerpt.

Table 77  ‘Mismatch of words with different meanings 2’ excerpt

| One-t-10 SR-T2+ (ITG) (Year 1 student doing Story Re-tell while viewing ITG) |
| ☑じゃない（まだまだ）ペコペコです。 |
| Translation: |
| It is (still) not hungry. |

Table 77 is an excerpt from the transcription of a Year 1 student’s Story Re-tell while viewing ITG. The student repeated the utterance with the ITG-word mismatch three times throughout her Story Re-tell, giving opposite meanings. If listeners only attend to what is verbalised, the meaning expressed is “it is not hungry”, however, while ITG communicates the message that the caterpillar is ‘still’ hungry.

This problem imposes on teachers of languages the requirement to attend carefully to students’ use of ITG because the gestures are conveyers of meaning. The repetitive part of the original story tells that the caterpillar is ‘still hungry’, despite the many things it has eaten, again revealing that the meaning is portrayed in ITG before being verbally produced. As a consequence, not only do teachers need to attend to meaning in ITG, but since meaning can be portrayed through ITG prior to its verbalisation, and in cases of ITG-word mismatch, the ITG is usually the more accurate source of the speaker’s intended meaning.

Another way that mismatch of ITG and word was revealed in the data concerned cases where two words share the same ITG. The following excerpt demonstrates this.
Table 78  ‘Mismatch of words which share the same ITG’ excerpt

<table>
<thead>
<tr>
<th>Three-s-22 SR-T5+ (ITG)</th>
<th>(Year 3 student doing Story Re-tell while viewing ITG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ねずみ は おじいさん に きん（＝お金）を あげました。</td>
<td></td>
</tr>
</tbody>
</table>

Translation:
The mouse gave gold (=money) to the old man.

Table 78 is an excerpt from the transcription of a Year 3 student’s Story Re-tell while viewing ITG. It shows a mismatch between saying “gold” and using the ITG for “money”. In the traditional Japanese story of ‘The Rolling Rice Ball’, the mice gave the old man money. Both gold and money, as well as Friday, ‘money day’, are expressed with an identical ITG, but the words are not at all interchangeable. The excerpt shows that the student used the correct ITG for “money”, in accordance with the story, and demonstrated her knowledge of that part of the story, even though she stated the wrong word.

The root of the meaning which the ITG symbolises is the same for “gold”, “money” and “Friday”. The ITG highlights this shared meaning as an important feature of Japanese, however, it should be noted that in the busy flow of a lesson, these words could easily be confused and used interchangeably by students.

A further mismatch of ITG and word involves Japanese particles. The following excerpt demonstrates this.

Table 79  ‘Mismatch of particles’ excerpt

<table>
<thead>
<tr>
<th>Two-k-01 SR-T2+ (ITG)</th>
<th>(Year 2 student doing Story Re-tell while viewing ITG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>あおむしは chrysalis-oo が(で) sleep-oo を たべました。</td>
<td></td>
</tr>
</tbody>
</table>

Translation:
The caterpillar ate a sleep (in) the chrysalis.

This is an excerpt from the transcription of a Year 2 student’s Story Re-tell while viewing ITG and shows an ITG-word mismatch of Japanese particles. One particle was said while a different one was demonstrated with ITG indicating the student’s uncertainty about which to use.

This too has pedagogical value offering teacher insight into individual students’ point of readiness to learn and level of current language ability. In a classroom learning context, the observation of students’ use of ITG would reveal to the teacher of Japanese which particles the student had mastered correctly and which were still beyond their control.
The mismatch of ITG and word was also identified between the verb tense verbalised and the ITG demonstrated. The following excerpt and discussion addresses this.

Table 80  ‘Mismatch of verb tenses’ excerpt

<table>
<thead>
<tr>
<th>Prep-g-08 SR-T5+ (ITG) (Prep student doing Story Re-tell while viewing ITG)</th>
</tr>
</thead>
</table>
| ころりん  あたまに(=の) こ はいりましょう(=ました)。
*Translation:* Rolling in (= hole) entering (=ed/in). |

Table 80 is an excerpt from a Prep student’s transcription when doing Story Re-tell while viewing ITG. The excerpt identifies that a mismatch occurred between students’ verbalisation of ‘entering’ while using ITG for ‘entered’, showing confusion about the intended meaning; that conveyed by gesture or by word, whether the action was proceeding or past. The correct tense for this part of the story is the past, so ‘entered’, demonstrates again that the ITG form was the correct and intended meaning.

The final instance of mismatch was when a students’ word preceded the correct word being produced. The following excerpt demonstrates this.

Table 81  ‘Mismatch of words preceding the correct word’ excerpt

<table>
<thead>
<tr>
<th>Three-w-04 SR-T2+ (ITG) (Year 3 student doing Story Re-tell while viewing ITG)</th>
</tr>
</thead>
</table>
| ペコ (=まだ) あお…ペコペコ (=まだ) です (=ペコ)。
*Translation:* Hung (=still)… cater…it is=hungry... hungry (=still). |

The excerpt in Table 81 is noteworthy in showing the role of ITG in modelling and correcting this student’s oral language production. The excerpt identifies that the student produced a number of ITG-word mismatches and had difficulty producing a clear utterance, even though the intended meaning was still clear. In the subsequent occasion when the relevant phrase occurred in the student’s Story Re-tell a successful matching was produced, both ITG and words saying まだまだ ペコペコ です。, meaning  He was still hungry. Following this, the student said まだまだ ペコペコ です。 and only used ITG for the first two of the three words and later gestured all 3 words while saying まだまだ ペコペコ です。 The final time the phrase occurred in her story, the student said the utterance correctly without any use of ITG, まだまだ ペコペコ です。
This demonstrates that the student used ITG as a support and scaffold for her oral language, particularly during moments of difficulty, and that she gradually dropped her use of ITG as she was able to produce the utterance. This self-correction involved her observation of ITG, showing that ITG was retained while the student was learning and indeed rehearsing the target language expression, and that finally she ceased any use of ITG once she had mastered the language needed.

6.3.4. Discussion of findings about using ITG

The second cluster of findings, Using ITG, discussed above has presented two themes addressing research question 3 (What patterns of gesture use emerge when students tell stories in Japanese?) These two themes demonstrated the patterns of students’ use of ITG when doing Story Re-tell and the data identified various ways in which students used ITG without accompanying their gesture with a word and occasions in which they produced a mismatch of ITG and word.

Five types of Using ITG were identified. One was when students used ITG without a word but in which the ITG preceded the production of a target language word. This finding connects with a wide range of literature from first language acquisition research. This literature shows that gestures are used prior to oral language (Goodwyn et al., 2000) and that gestures are therefore seen as a predictor of soon-to-emerge speech (Calbris, 2011; Iverson & Goldin-Meadow, 2005; Ozcaliskan & Goldin-Meadow, 2005b). Primary school-aged students were also found to use gesture whilst their linguistic skills in oral narratives and explanations developed (Alamillo et al., 2013), showing an ongoing role of gesture in preceding speech production. L2 studies with bilingual children also showed that their use of gesture indicated their soon-to-produce verbal language (Mayberry & Nicoladis, 2000). This collection of literature, despite being highly differentiated in the languages studied, the ages of the learners, the contexts, the types of gesture involved and the conditions under which the studies were conducted, nevertheless support the findings from the current study. The findings reported above and in the previous chapter add to this evidence by the specific focus of ITG in a second language primary school learning context.

Students also used ITG without a word to express meaning, perhaps when it could not be expressed verbally in the L2, and to provide additional meaning with an utterance. This finding also connects with a wide range of existing literature. L1 research has
identified that early speech is supplemented with gestures to communicate more meaning (Ozcaliskan & Goldin-Meadow, 2005b) and that gestures can support communication when verbal skills are not sufficient (Kidd & Holler, 2009). Gestures can provide extra information not contained in speech (Beattie & Shovelton, 2011; Berger & Popelka, 1971; Kirk et al., 2011) and the dual modalities of gesture and speech support meaning (Kelly et al., 1999). Students’ gestures can express meaning, often demonstrating knowledge beyond that evident from their speech (Goldin-Meadow & Butcher, 2003). In L2 contexts, gesture can be used to overcome limited oral language ability (Gullberg, 1998), to support L2 proficiency (Gullberg & McCafferty, 2008) and can become a form of language in a new language learning context (Kendon, 2004). Gestures can express meaning that cannot be expressed verbally in L2 (Gregersen et al., 2009; Tellier, 2005) and can convey meaning in addition to language in an L2 context (McCafferty & Ahmed, 2000). Findings from the current study affirm these claims from existing literature and identify the role of ITG in communicating meaning in L2 learning contexts.

This theme also identified that students could use ITG without a word to supply narrative emphasis. In several instances reported in the previous section ITG was only used for a particular aspect of the story or to attach stress, emphasis or intensity to a single word in the story. This finding connects with claims that gestures occur naturally with speech, and that beat gestures in particular, can provide emphasis in communication (McNeill, 1992). The current findings now extend this to the specific circumstances of the research, ITG, primary school context, and students’ formal study of Japanese as a second language.

Using ITG was also found to be associated with exposure of acquisition gaps in language learning. Identifying specific aspects of language that individual students are having difficulty with can provide teachers their ‘point of readiness’ and enable targeted support for students.

The second theme from this cluster of findings, referred to various kinds of mismatch of ITG and word, and this too indicates students’ language knowledge, levels and their individual ‘point of readiness’. A variety of existing literature supports these findings. Numerous studies in a mathematics learning context have identified that gestures reveal students’ knowledge and that meaning is expressed in gesture before it appears in speech (Alibali & Goldin-Meadow, 1993). In mathematics learning contexts students’
gestures convey knowledge that is not present in their speech (Broaders et al., 2007; Garber et al., 1998) and also in science learning contexts (Davis, 2016).

Gestures contain information not present in speech and can occur when the learner is “on the verge” of making progress in or is ready to learn a task (Goldin-Meadow & Wagner, 2005). Learners’ gestures can predict future learning of a task which demonstrates the role of gesture in identifying students’ “transitional state of learning” (Wagner Cook et al., 2008). When students’ gestures and speech do not match, research has shown that students would benefit from additional teaching support (Breckinridge Church & Goldin-Meadow, 1986). Children’s gestures contain information absent from their speech (Kelly et al., 2002) and can also reveal a speaker’s thoughts not present in speech (Goldin-Meadow & Alibali, 2013).

In a second language learning context, students’ learning French used gestures to demonstrate their knowledge and also provided an insight into the way they processed the language (van Compernolle & Williams, 2011). Findings from the current study add support to the existing literature and supplement the evidence from second language learning contexts.

These findings provide valuable information for the teacher of Japanese and may be relevant for other language teachers using ITG. The findings highlight that using ITG can help achieve policy goals by increasing acquisition outcomes. Further research is needed to test these findings with a variety of other languages in a variety of teaching contexts with a variety of systems of ITG.

6.5 Chapter Summary

This chapter has reported qualitative data and presented two clusters of findings that were identified when analysing the transcription data from students’ Japanese Story Retells. The first cluster of findings, Viewing ITG, isolated seven themes of evidence to address research question 2 (What are the features of students’ oral language when ITG has been incorporated into learning Japanese?) The data show that the viewing of ITG information led to an increase in students’ oral language, including an increase in content, use of verbs and more extensive and accurate use of Japanese particles. The viewing of ITG supported the structuring of utterances and encouraged students’ self-correction. Students’ fluency was improved both directly and as a consequence of
improvements in other areas of learning. Overall, viewing ITG was found to serve as a powerful scaffold to support and extend students’ Japanese oral output.

The second cluster of findings, Using ITG, isolated two themes of evidence to address research question 3 (What patterns of gesture use emerge when students tell stories in Japanese?) The data identified a variety of ways that students used ITG without a word or produced ITG-word mismatches. Students’ use of ITG provided an insight into their process of learning Japanese by visually identifying the meaning students were communicating and identifying their language of need and individual point of readiness. Overall, this theme identified that students were using ITG productively and creatively to support and deepen their language in a number of ways and that teacher observation of students’ use of ITG would be very informative in a diagnostic and pedagogically strategic manner.

The next chapter will engage further in the discussion of the themes that were introduced during these two findings chapters. The discussion will connect the findings from this study with other relevant literature in the field and show where findings support or conflict with existing literature and where the findings add new knowledge. Implications of the findings will also be discussed.
Chapter 7. THE IMPACT OF VIEWING AND USING ITG: DISCUSSION

The research findings presented in the previous two chapters will now be discussed in themes in relation to each research question. These themes respond to the literature review, showing where these current research findings accord with existing literature, disagree or add new knowledge to the field. The implications for classroom practice and pedagogy will also be discussed.

Research Question 1. What impact does the use of Intentional Teaching Gestures (ITG) in Japanese as additional language classes have on students’ oral language output?

7.1. Quantity of output

The quantitative data on students’ oral output when Storytelling (involving the telling of an original story), showed non-significant differences between the ITG and non-ITG approaches on the quantity of words that students could produce (Figure 16 in Chapter 5, Term 1 and Figure 18, Term 2) and the average length of utterances that students could produce (Figure 17, Term 1 and Figure 19, Term 2). The data shows non-significant differences between approaches at both stage one Storytelling and stage three Storytelling showing that the impact of ITG on Storytelling did not differ between these two time periods. Overall, there was little confirmation of any impact of ITG on students’ Storytelling in Japanese.

When students did Story Re-tell (involving the re-tell of a known story), there were non-significant but noticeable differences in the quantity of words that students could produce in the ITG approach compared with the non-ITG approach in Term 1 (Figure 16 in Chapter 5) and non-significant differences in Term 2 (Figure 18). There were significant differences between the two approaches for the length of utterances in Term 1 (Figure 17) but not in Term 2 (Figure 19). These findings suggest some level of impact of ITG on students’ oral output when doing Story Re-tell.

There were statistically significant increases in the number of words produced by all students in all year levels when viewing ITG while doing Story Re-tell compared with Story Re-tell without viewing ITG (Figure 24, Term 1 and Figure 26, Term 2). The viewing of ITG was found to have the greatest impact on students’ oral output with
students able to produce an average of 62 more words in Term 1 (Table 30) and 79 more words in Term 2 (Table 36). These findings show that viewing ITG enabled a greater quantity of oral output to be produced by the learners and reveal a statistically significant and educationally important impact of viewing ITG on students’ oral output. The length of utterances did not vary according to the Term 1 teaching approach (Figure 25) however, in Term 2 showed significantly higher average length of utterances produced when viewing ITG (Figure 27).

These findings show that the impact of ITG on students’ output differed between Storytelling and Story Re-tell with the greater impact on the quantity of students’ output when students viewed ITG during Story Re-tell. This highlights two important points, first that the type of task is important when investigating the impact of ITG and second that viewing ITG played an important role in students’ Japanese language output. Each of these, Type of task and Viewing ITG, will now be discussed in turn below.

7.1.1. Type of task

Storytelling and Story Re-tell are two conventional or even universal tasks in Australian primary school pedagogy and provide different perspectives from which to examine students’ oral output. Story Re-tell showed a greater impact of ITG on students’ oral output compared with Storytelling, suggesting that task type is influential in the impact of ITG.

Storytelling requires students to relate an original story in Japanese to the researcher. There was little confirmation that the ITG or non-ITG approach was associated with students’ oral output in this. Even when comparing students’ output in a demonstrable way in the stage one Storytelling and stage three Storytelling iterations, results show non-significant differences in the quantity of output produced between the two teaching approaches. It appears that because Storytelling requires students to create their own stories, independent from the conditions in which they learn Japanese with ITG in the classroom, the distance between the originality required for Storytelling and the more “scripted” nature of Story Re-tell precludes any transfer of ITG related learning.

Story Re-tell required students to re-tell a story they were introduced to at the beginning of the school term. There were mixed findings, showing some impact of ITG on students’ performance during the Story Re-tell. Re-telling a known story emulated the context that students were in when they learned the story in class while viewing and using ITG. The data strongly suggest that because Story Re-tell evoked the setting and
conditions during which students first learned with ITG, that this task activated a greater recall of language due to the similarity and contextual familiarity of the replication.

Previous literature supports this link between language retrieval and similarity of original acquisition context exemplified by Tulving and Thomson’s ‘Encoding Specificity Principle’ (1973). This principle affirms that the context in which the language aspect or feature was first learned can be used to access the mental representation of that language and support its retrieval. This argument by Tulving and Thompson which stresses the importance of the retrieval environment matching the encoding environment aligns closely with the finding in the current study. This is further supported by Craik and Tulving’s ‘Depth of Processing Principle’ (1975) which explains that the durability of the target language feature acquired depends on the depth of semantic involvement when this feature is initially processed. Language processing can be strengthened through the use of extra-linguistic cues (Long, 1989; Omaggio, 1986; Wong-Fillmore, 1985) such as by using pictures, demonstrations and gestures all of which seem to correspond to the Japanese learning context and ITG use examined in the current study. The findings from my research add further knowledge and give support to these principles, the Encoding Specificity Principle and Depth of Processing Principle, by showing that ITG use in second language Japanese classrooms aid later retrieval of Japanese when that context is replicated.

The current study has shown that the alignment between the encoding and the retrieval environments influences students’ production of Japanese. There are numerous implications of this for the language classroom, suggesting that teachers can support students’ recall of items and features of classroom-acquired Japanese by generating similarities between the initial encoding environment and later recall situations. This can be done by using the same type of task that the students first learned the new language in, such as in Story Re-tell within this study. If language teachers carefully plan the encoding environment in language classrooms, and include retrieval cues from that environment with students, they will be more successful at retrieving the language they need. Empowering students with this knowledge would also be beneficial as it encourages metalinguistic and meta contextual awareness.

These findings have added to the body of knowledge about language encoding showing experimentally that ITG had an impact on students’ language at the time of encoding and that when this condition was replicated through Story Re-tell was able to support
language retrieval and students’ oral output. The current study further identifies the impact of ITG on retrieving language with primary school students within a natural school environment and locates the acquired features in the context of stories as well as setting of acquisition. Story tasks are often used in second language classrooms so the ecological validity of the current study means that findings are more likely to be transferable for such tasks within other language classrooms.

7.1.2. Viewing ITG

The data presented in the quantitative data chapter revealed a significant increase in the quantity of oral language produced by all students in all year levels when doing Story Re-tell while viewing ITG (Figure 24 in Chapter 5, Term 1 and Figure 26, Term 2). This finding identifies the impact of viewing ITG on increasing students’ oral output. The viewing of ITG supported students to recall and retrieve the language they needed in Story Re-tell and increased the overall quantity of Japanese that they could produce.

The importance of the retrieval environment matching the encoding environment to support language retrieval was made earlier (Tulving & Thompson, 1973) showing that replicating the Story Re-tell task that students first learned the story in supported students’ later production of the language. Additionally, the viewing of ITG at the time of language retrieval, when the language had been initially encoded with ITG, contributed to students’ retrieval and production of language.

These findings support previous research on ‘dual encoding’ which has identified benefits from encoding through both images and words (Clark & Paivio, 1991; Paivio & Csapo, 1973) and more generally when learning through two modalities (Mayer & Sims, 1994); with experimental research highlighting that learning through two modalities strengthens the learning of lists of words (Goolkasian & Foos, 2005). Gesture encoding has been shown to strengthen language recall (Wagner Cook et al., 2010) and support spatial memory, activating spatial memory to support recall (Morsella & Krauss, 2004). Gestures have been connected with both the encoding and decoding processes and impact on language recall (Breckinridge Church et al., 2004). The current study has now identified ITG with L2 as dual encoding and impacting on language recall. Findings about the role of viewing ITG on increasing second language recall and overall oral output can now be added to this collection of research.
Findings also connect with existing literature about the observation of actions and gestures. It has been claimed that the observation of actions facilitate memory for actions (Cohen, 1981; Cohen et al., 1987), strengthen the visual imaging system (Engelkamp et al., 1989) and support recall (Kormi-Nouri, 2000; Mulligan & Hornstein, 2003). Observing gestures in an L1 context is also linked to language retrieval benefits. When gestures were presented with a word, the gesture would later be used to retrieve that word (Woodall & Folger, 1981) and learners could produce a greater quantity of language and recall more of a story when the language had been presented with gestures (Riseborough, 1981).

In an L2 context, when gestures were incorporated, more ESL words were recalled (Sueyoshi & Hardison, 2005), more L2 Japanese words were recalled (Kelly et al., 2009), more words in an artificial language were recalled (Macedonia & Knösche, 2011), more L2 French expressions were recalled (Quinn-Allen, 1995) and more of a L2 French story was recalled (Porter, 2016). These findings all identify the impact of viewing gestures of participants engaged in L2 learning and the subsequent increases in L2 language recall.

The current study contributes to this body of knowledge about language recall, adding that the viewing of ITG has an impact on students’ recall and retrieval of language. The study makes a contribution with a Japanese focus, with young primary school learners and with Intentional Teaching Gestures. The Story Re-tell while viewing ITG task identified that as well as the retrieval environment matching the encoding environment with the same type of task, that the viewing of ITG at both the time of encoding and then for retrieval was particularly valuable and in this way existing literature and the current study align strongly. The current study has identified that viewing ITG at the time of language retrieval further supports students’ retrieval of language and leads to a significant increase in students’ Japanese oral output.

From my perspective as an experienced teacher of Japanese I can identify several practical implications of this finding for the Australian Japanese language classroom. Knowing that students’ viewing of ITG can support recall and foster an increase in oral output during Story Re-tell, teachers may choose to use ITG in the classroom for this purpose. Teachers may use ITG either with individual students or with the whole class to support retrieval of items of language that they learned with ITG and that this
increase their productive use of the language would contribute a significant benefit to overall acquisition and bolster student motivation.

The viewing of ITG has served as a scaffold to support students’ developing Japanese oral language. The next theme will explore this concept further.

7.1.3. Scaffolding

The role of viewing ITG as a scaffold for students’ developing Japanese oral language has been identified in this study. Scaffolding essentially involves the supply of comprehension inducing supports to allow students to identify the L2 language items (such as vocab or syntax) that correspond to chunks of meaning. The viewing of ITG provided such a scaffold for students’ oral language while they were speaking Japanese and supported students to produce language that was beyond the level that they could produce independently. The viewing of ITG therefore supplied a silent scaffold without interrupting their language, requiring additional teacher input or a switch to English. Of particular importance is that the scaffold was provided at the time of need for students. The viewing of ITG throughout the Story Re-tell meant that whenever a student couldn’t recall a particular part of the story, a word or phrase from the story, a grammatical structure, an aspect of Japanese word order or even which particle to use, the viewing of ITG served as a reminder of the language and a tool for recall. This therefore operates as a supplementary learning resource and can minimise the amount of English usage in class.

From the data it is clear that viewing of ITG played a critical role for students’ oral language when doing Story Re-tell and contributed scaffolds to their overall increased oral output. An example of the scaffolded support of one student’s oral language in practice is shown within the following diagram.
Figure 36 identifies the varying levels of oral language that could be produced by a Year 2 student. The first stage, shown at the bottom of the diagram, describes the student Story Re-tell with the textless picture book, demonstrating the oral language that the student could produce unaided. The second stage shows what the student was able to produce when doing Story Re-tell with the textless picture book while viewing ITG, demonstrating the level of linguistic performance the student could produce with scaffolded support from the viewing of ITG. The final stage shows the original text from the story that is beyond the current competency of the student. This example highlights the difference in the quality of the language generated by the student in each Story Re-tell task typical of the difference in students’ oral language between the two modes: Story Re-tell and Story Re-tell while viewing ITG.

Students’ Story Re-tell while viewing ITG transcriptions showed a larger degree of accuracy of utterances matching the story text. Viewing ITG enabled students to create utterances that they could not produce unaided when doing Story Re-tell without the viewing of ITG. This level of supported scaffolding enabled a greater overall quantity as well as a higher quality of language to be produced, with more grammatically correct utterances and a more detailed story told. It is speculated that the viewing of ITG provided visual cues for students which helped them to retrieve words in Japanese and bring to mind content from the stories. The visual cues also identified the required Japanese word order and therefore supported students’ structuring of their utterances.
Viewing ITG also enabled students to produce longer utterances since the visual cues prompted production of more words which led to students providing more detailed information or fully completing more grammatically correct utterances.

It might be argued that viewing ITG created a stimulus-response language learning situation. The stimulus-response approach to learning languages requires students to regurgitate memorised chunks of language without actually understanding what they are saying. The transcription evidence however, demonstrates that students created utterances that were not identical to the original story strongly suggesting that students were not merely regurgitating chunks of memorised language but were engaging in original target language production aided by the support cues from viewing ITG. The transcriptions also show that the viewing of ITG would kickstart a student’s language use allowing them to make an initial utterance which provided a kind of platform from which they created their own original utterances. A word or phrase reminder supplemented by visual cues then generating original expression all suggest language growth rather than mimicry or stimulus response. The viewing of ITG can be seen from this evidence as providing scaffolded support moving students further along the continuum of oral output production.

When students from the non-ITG approach experienced language difficulties such as being “stuck on a word”, they would just pause and then have to move on with the rest of the story saying as much as they could independently. In a classroom situation, the language teacher may either allow the student to say what they could or may interrupt the student and supply the words needed. The unfortunate pedagogical implication is that students’ precise need, whether a word or a grammatical item, is either ignored or interrupted, both negative responses, interfering with a student’s oral fluency development. By contrast, the ITG approach allows students to use the viewed ITG as a supplemental cue to retrieve the language they need to proceed with their account of the story. Providing the viewing of ITG for students is therefore a productive and stimulating way to respond to students’ language needs at the precise time of need, in a less intrusive way, without restricting fluent expression. In these ways provision of ITG can act as a silent scaffold and the data from this research show a powerful impact in these Japanese second language classrooms.

Knowing that ITG provided such a powerful scaffold when primary school students viewed ITG during Story Re-tell in this study, these findings may suggest to the teacher
of Japanese that performing ITG for students to view could play an important role in supporting and extending students’ oral language. These findings show that it would be beneficial to continue to use ITG for Story Re-tell in this context and that it would be worth determining if viewing ITG during other oral language tasks would also contribute to increased oral output by students.

The Soviet psychologist Lev Vygotsky, founder of major principles and theory in cultural-historical psychology, is most closely associated with the developmental psychological principle of scaffolding and specifically in educational settings, the Zone of Proximal Development (Vygotsky, 1978a). He introduced the term scaffolding for the first time to metaphorically demonstrate the support given to children’s developing language and connected the term scaffolding with the Zone of Proximal Development to account for how children were supported in collaboration with others in their language growth to reach a stage of performance beyond that which their underlying competence could produce independently. Scaffolding has been acknowledged by many theorists since (Bruner, 1983; Rogoff, 1990) and is well regarded and retained as a current approach to support and extend developing language.

Connecting with scaffolding in a second language context is Krashen’s Input Hypothesis (Krashen & Terrell, 1983). This is a second language specific theory which introduced the notion that new language should be presented to learners at a stage above the level that they can produce on their own. This is known as i+1, indicating that input should be provided to learners one stage higher than the current stage of their language ability. This subsequently provides the new competence baseline from which additional scaffolding can afford further development. This theory connects closely with scaffolding and the Zone of Proximal Development because both theories take the learners’ current stage of language into consideration and hypothesise that performance can be extended or expanded by provision of scaffolds. The distinction is that the Zone of Proximal Development involves collaboration and co-construction of one’s ability via interaction, whereas the Input Hypothesis focuses on the level of input provided to learners without shared interaction and collaboration.

In keeping with this process, McCafferty (2002) identified the use of gesture as a scaffold for second language learning and explicitly mentions the role of gesture in creating a Zone of Proximal Development. McCafferty’s work investigated the use of naturally occurring gestures, or intentionally choosing to use gestures with second
language learners but does not refer to a consistent system of design of gestures specifically conceived for teachers. Some systematic gesture using existing methodologies precede McCafferty; The Magic Teacher (Taeschner, 1992), while others such as AIM (Maxwell, 2010) or ACTLAN (Gomura, 2008), are later. The current study provides further evidence to support the use of gesture as a scaffold in a second language learning context and highlights the specific nature of intentional teaching gestures to do this.

The discussion now turns to the themes that arose from the findings addressing research question two with a focus on the features of students’ oral language.

Research Question 2. What are the features of students’ oral language when ITG has been incorporated into learning Japanese?

7.2. Viewing ITG

7.2.1. Increase in output

The data presented in Chapters 5 and 6 revealed that the viewing of ITG played a critical role in the increase in oral output that students could produce when doing Story Re-tell. The greatest comparison was between individual students’ output when doing Story Re-tell and then doing Story Re-tell while viewing ITG. The quantifiable increases in students’ oral language were identified with quantitative data (presented in Chapter 5) as well as with qualitative data when comparing the transcriptions of students’ output when doing Story Re-tell and the extended output that was produced when doing Story Re-tell while viewing ITG (Table 50 in Chapter 6).

7.2.2. Content

One dominant feature of students’ extended output was a noticeable increase in the content that could be told (Table 51 in Chapter 6). Students were able to include more content in their Story Re-tell when viewing ITG and were more likely to provide a clear story line with rich description. The viewing of ITG while doing Story Re-tell provided a reminder of the story content, facilitated the retrieval of the language to express that content in Japanese and enabled students to provide a greater level of detail in their stories.

These findings connect with previous L1 research also using a story context that identified an increase in the quantity of language that could be recalled and an increase in story content when the story had been listened to accompanied by gestures.
(Riseborough, 1981). In other research, viewing gestures led to better recall of a story and increased the amount of content remembered accurately (Galati & Samuel, 2011) and a greater level of content was also identified by Nicoladis, Pika, Yin and Marentette (2007) who found that speakers could tell more scenes from a story when the story included gestures than when it did not. In an L2 French learning context, learners output increased with more story content told when gestures were observed with the story (Porter, 2016). Despite the different conditions and the different types of gestures used in each of the studies, the findings connect strongly with the current research that has similarly identified an increase in output and an increase in content told in a story context but which extends these other research studies into an L2 Japanese classroom setting with explicit use of ITG.

7.2.3. Verbs

Along with increased content the research has found an increased use of verbs by students. The quantity of different verbs used and the frequency of their use was much greater in the Story Re-tell while viewing ITG task compared with the Story Re-tell without viewing ITG (Table 52 in Chapter 6). By using more verbs, students’ stories provided more information and this extra detail made them more satisfactory as an account of the original stimulus story.

Previous research has also found that adding gestures to speech resulted in an increase in learners’ use of verbs. Participants could recall more verbs from a story in their first language when presented with gestures (Riseborough, 1981), and in a second language study found that participants who had learned a list of Japanese verbs with gestures retained their memory of these verbs better than those who had learned without gestures (Kelly et al., 2009). Additionally, students who themselves gestured retained the verb knowledge longer than those who did not. This finding demonstrates that not only did the viewing of gestures support participants’ learning of Japanese verbs, but also that their own use of gestures further supported their learning of verbs representing a kind of generative benefit in pedagogy. Results from the current study add further support to these existing claims that viewing gestures impact on speakers’ use of verbs.

The next section shows that the viewing of ITG also led to an increase in students’ use of Japanese particles.
7.2.4. **Particles**

When comparing the two Story Re-tell tasks, it is evident that the viewing of ITG prompted students’ use of Japanese particles. Students used a greater range of particles and used them more frequently when viewing ITG (Table 53 in Chapter 6). This greater use of particles supported students’ production of more complete and grammatically correct utterances with all the attendant benefits arising from the richer output this involves.

Students’ increased use of particles is a very important finding. Particle use by second language learners of Japanese is a renowned area of difficulty (Victorian State Government, 2015). Particles are often not identified by second language learners when listening to Japanese and are often not used, or are used incorrectly, when second language learners are speaking Japanese. An increase in learners’ use of particles has demonstrated that the viewing of ITG when doing Story Re-tell has made the particles a salient feature of the language and has drawn attention to them through the use of gesture. The resulting increased use of particles by students has shown that particles have not only been noticed but also that this knowledge has been able to be applied in students’ own speech. The impact of gesture on particle usage has not been identified in previous literature and so this new finding is informative to teachers of Japanese and can impact on classroom practice and pedagogy.

Both the increased use of verbs and particles led to improving the structuring of utterances by students overall.

7.2.5. **Structuring of utterances**

The comparison of utterances that students could produce in Story Re-tell and in Story Re-tell while viewing ITG showed that more sophisticated structures could be produced by students when viewing ITG. The structuring of utterances was identified within words to utterances (Table 54 in Chapter 6), utterance completion (Table 55), Japanese word order (Table 56), and enabling extended utterances (Table 57). The viewing of ITG supported the structuring of utterances by providing cues to students via ITG. Students would literally see the word they needed to use when viewing the ITG linked to that word and then orally produce the word themselves. Doing so resulted in students being able to increase their language from the production of separate words in Story Re-tell to producing complete and linked utterances. Utterances that may have been
incomplete in Story Re-tell were then able to be completed when doing Story Re-tell while viewing ITG. Students were also more likely to be able to create extended utterances which provided richer content and more detailed story description. Throughout this process, students were highly aware of Japanese word order while they were cued with ITG for the correct word in the correct position in the utterance.

This identifies the role of viewing ITG as a powerful scaffold for students’ language, supporting them to produce utterances, structured correctly, that they were unable to produce independently. These findings demonstrate that students’ metalinguistic awareness of Japanese was increased as a result of viewing ITG.

7.2.6. Self-correction

Students’ self-correction while viewing ITG further showed that the viewing of ITG fostered metalinguistic awareness. The transcriptions of students’ Japanese stories and in particular, the viewing of the video recordings of these oral stories, showed that students often started to say something and then self-corrected to adopt a more grammatically correct model as a result of viewing ITG. Students would visibly see that their language did not match the ITG being viewed so would self-correct to match their oral language with the ITG. This was identified as self-correction from English to Japanese (Table 58 in Chapter 6), self-correction from an incorrect to a correct word (Table 59), self-correction to add extra information (Table 60), self-correction of a particle (Table 61) and the self-correction of a verb tense (Table 62). Self-correction highlighted the critical role of cueing students’ oral language through the use of ITG and the multiple forms of self-correction were also indicative of a creative engagement with the resources of Japanese (lexical items and grammar; such as words, particles and syntax features).

7.2.7. Metalinguistic awareness

The viewing of ITG whilst students did Story Re-tell led to their increased awareness of how Japanese works as a language system. This metalinguistic awareness was identified in students’ structuring of utterances, their awareness of Japanese word order, their use of particles, their use of verbs and verb tenses and the self-correcting of their language. Such phenomena are usually difficult to see and therefore claim, however, the design of the current study isolated the variable of ITG to be able to draw a comparison between students’ Story Re-tells with and without viewing ITG. This created the unique
opportunity to compare and contrast the types of language that students could produce in each context. It has now been identified that ITG plays an important role in contributing to learners’ awareness of the structure of L2 as a linguistic system and increase students’ metalinguistic awareness when viewing ITG during Story Re-tell.

Students’ awareness of Japanese as a language system and the role that viewing ITG plays in supporting and increasing their awareness of this system during Story Re-tell is significant for both language teachers and language learners. Language teachers can maximise the benefits to students by using ITG as a support for students to enable them to literally see the structure of the L2 when viewing ITG during Story Re-tell and support them to produce oral language at a higher level. Metalinguistic awareness is not known to have been identified within any previous research into the study of gestures with second language learning before, so the current study now contributes this to the field.

7.2.8. Fluency

Students’ fluency also increased when viewing ITG (Table 63 in Chapter 6). Fluency was identified by rhythm, repetition, patterns in utterances and sound-effect words. Each of these aspects of language added to the fluency of telling a story in Japanese which was increased as a result of viewing ITG.

The findings discussed from Research Question two showed each of the themes that arose from students’ viewing of ITG. The discussion now turns to the themes that arose from the findings addressing research question three which focuses on students’ use of ITG.

Research Question 3. What patterns of gesture use emerge when students tell stories in Japanese?

7.3. Using ITG

7.3.1. Students’ use of ITG

The quantitative data identified that very few students actually used ITG when Storytelling. In the stage one Storytelling, only between 0 – 18% of students used ITG in their stories after learning Japanese in the ITG approach (Table 41 in Chapter 5). In the stage three Storytelling, students’ use of ITG was very similar with between 0 – 20% of students using ITG (Table 41).
In Story Re-tell, between 21 – 58% of students used ITG (Table 45 in Chapter 5), showing that a much larger number of students used ITG when doing Story Re-tell than when Storytelling. Earlier in the discussion it was identified that if the type of task matches the language encoding environment with the language retrieval environment, more language will be able to be produced by students. Story Re-tell matched the encoding environment when students first learned the story with the retrieval environment by asking students to tell that story. For those students in the ITG approach, they did so with ITG and results showed that this increased level of input at the time of encoding supported students’ retrieval of the language better than those who had learned the story without ITG.

The Story Re-tell while viewing ITG task reflected the greatest use of ITG by students in all Japanese stories with between 44 – 86% of students using ITG (Table 45 in Chapter 5). This data shows that there was not only a large difference in students’ use of ITG when comparing Storytelling with Story Re-tell but also that there was an even greater difference when comparing the two Story Re-tell tasks. Every student in the study was able to produce significantly more Japanese when doing Story Re-tell while viewing ITG. This tells us that adding the viewing of ITG at the time of language retrieval further supports students’ production of Japanese when they had learned the story with ITG. Matching the viewing of ITG at the time of language encoding and language retrieval further supported the quantity of oral output that students could produce.

The Story Re-tell while viewing ITG task showed the greatest use of ITG by students whilst also showing the greatest quantity of language that was produced by students. This finding identifies that as students’ use of ITG increased, students’ oral output also increased. These parallel increases suggest an association between the two variables which could be investigated in further research to understand this association in more detail. The results of the present research indicate that if students use ITG as well as view ITG, the quantity of oral language that they can produce will be enhanced.

It is acknowledged that the Story Re-tell while viewing ITG task may elicit copied use of ITG by students. However, regardless of whether students’ ITG use was self-initiated or copied, it still resulted in their increased oral language output. Whether the viewing of ITG stimulated students’ own ITG use or elicited copied use of ITG, the viewing of
ITG did not provide students with any oral language but still elicited a much greater increase in oral language from students.

Previous research identified that when children were asked to use gestures, the quantity of gestures they used increased and the quantity of language that they produced also increased (Sauer LeBarton, 2010). Children who were told to gesture recalled more information than children who were not told to gesture (Stevanoni & Salmon, 2005) and speakers could provide more detailed descriptions when using gestures (Rauscher et al., 1996). Students learned mathematical equivalence better with teachers’ gestures and found that when teachers gestured, students were more likely to use gestures themselves and this then led to greater learning (Wagner Cook & Goldin-Meadow, 2006). Explicitly asking students to gesture when learning a new mathematical concept helped them learn that concept (Wagner Cook et al., 2008) and retain their learning (Alibali & Goldin-Meadow, 1993; Church et al., 2004; Valenzeno et al., 2003).

Findings from the current study give further support to the claims within existing research and identify the impact of ITG use on second language output. Knowing that students’ oral output increases when they use ITG can be powerful knowledge for language teachers. In the language classroom, teachers can explicitly ask students to use ITG to support their oral language production.

7.3.2. Carry-over use of ITG

Students’ carry-over use of ITG from learning with ITG in Term 1 into use in the non-ITG approach in Term 2 is worth noting as it identifies an ongoing impact of ITG. Six percent of students used ITG in the non-ITG approach in stage one Storytelling (Table 42 in Chapter 5), reflecting a slight carry over effect of the use of ITG into the next school term. Two percent of students used ITG in the non-ITG approach in stage three Storytelling (Table 42 in Chapter 5), showing a very slight carry-over use of ITG into the next school term but this time after a long period of time, 18 weeks since they had learned with ITG. This shows that ITG did influence the language of 2% of students even after a short exposure (five weeks) and even after a long period of not seeing ITG used in class (18 weeks). Three percent of students used ITG when doing Story Re-tell at the second stage of data collection in the non-ITG approach (Table 46 in Chapter 5). This shows a pattern of decreasing carry-over use of ITG by students over time; 6% of students at stage one Storytelling, 3% of students at stage two Story Re-tell and 2% of
students at stage three Storytelling. This tells us that the longer it was since students learned Japanese with ITG, the less likely they were to continue to use ITG themselves.

The data identifies an ongoing impact of ITG for a few students. Although the carry-over use was minimal by students overall, it does suggest that the use of ITG continued to play an important role for a few students when speaking Japanese, even long after they had learned with ITG. This suggests that ITG may play a different role for different students.

Now that students’ use of ITG has been identified, the discussion turns to the types of ITG that were used by those students.

7.3.3. Categories of ITG used

ACTLAN gestures were used in the current study so the categories of ACTLAN gestures that were used by students were investigated. When Storytelling at both stages of data collection, there was little use of ITG by students and mixed use of gesture categories (Figure 29, Storytelling stage one and Figure 31, Storytelling stage three, Chapter 5). When doing Story Re-tell, a very strong pattern of gesture categories used by students was evident (Figure 33). Three categories of gestures were used the most; V (verbs), G (‘glue’/ particles) and C (circumstances), and three categories were used the least; P (participants), T (tenses of verbs) and O (objects). The quantities of each category used by students varied between year levels but remained a very strong pattern of the same three categories used the most and least. The same very strong pattern of the same three categories being used the most; V, G and C, and the same three categories being used the least; P, T and O, was also evident from the Story Re-tell while viewing ITG data (Figure 35).

Previous research has identified that iconic gestures from McNeill’s taxonomy are the most helpful to connect meaning with language (McNeill, 1992). It has also been claimed that iconic gestures are the most useful because they ground meaning with language via physical representations (Barsalou, 2008; Glenberg & Kaschak, 2003). Iconic gestures have also been found to support the retrieval of concepts (Hadar & Butterworth, 1997; Krauss & Hadar, 1999). These studies provide evidence that the use of iconic gestures are beneficial to language learning. As identified earlier, ACTLAN gestures are largely comprised of iconic gestures so it may be suggested that the benefits identified in previous research for iconic gestures are associated with the
benefits identified from ITG with ACTLAN. The current study identified that the viewing of ITG overall did increase students’ oral output when doing Story Re-tell, however, because most of the ACTLAN gesture categories included iconic gestures including the gesture categories that were used most and least, iconic gestures as being the distinguishing type of gestures that supported students’ language cannot be claimed.

Congruent co-speech gestures, gestures which consistently match a gesture with a word and share the same meaning, are particularly helpful for supporting the learning of second language learners (Kelly et al., 2009). These gestures were found to support word learning and the retention of that learning over time. ACTLAN gestures also consistently match a gesture with a word and share the same meaning. It could be suggested that the benefits identified from congruent co-speech gestures from previous research are also true for ACTLAN ITG in the current study.

Second language learners have been found to use more gestures when speaking L2 than L1 and use more rhythmic gestures to support their L2 (Gullberg, 1998; Quinn-Allen, 2000). ACTLAN gestures also match gestures with the rhythm of the words. Such a match of gesture to word emphasises the rhythm of Japanese. Rhythmic gestures cannot be compared with other gestures separately in ACTLAN due to a combination of gesture categories being identified. However, the role of gestures and rhythm was highlighted in the features of students’ language with one theme identifying that students’ fluency increased with ITG and one aspect noticed was the rhythm of students’ language.

Although gesture use within a second language context has already been a focus for research, a distinction now needs to be made between naturally occurring gestures or explicitly choosing to use gestures and a consistent use of intentional teaching gestures as a second language teaching methodology. The current study investigating ITG in a second language learning context now paves the way for future research into ITG. In doing so, it is important to consider the type of tasks participants might engage in when undertaking future research as the type of task may elicit a restricted view of the types of gestures that participants use or the types of gestures that influence their language. The impact of viewing ITG on students’ language also needs to be considered. It cannot be assumed that only the gestures that students produce are the most valuable gestures to their language learning. Although some findings about ITG may be associated with findings about naturally occurring gestures, the difference in the types of gestures, the
purpose for the gestures and the context in which they occur needs to be identified clearly.

The current study adds to the body of knowledge about types of gestures with a focus on ITG rather than naturally occurring gestures. This is the first study that has investigated the use of ITG with ACTLAN gestures for Japanese. Findings from this study set the scene for ITG in second language classroom contexts to be a focus of research. Knowledge about students’ use of ACTLAN gestures can inform teaching practice and pedagogy. Findings provide information for teachers about student preferences for ITG categories and suggest that some categories of ITG support students’ language more than others. Language teachers may choose to emphasise those categories of gestures that they know support students the most in their oral language output. Gesture categories used frequently by students may be emphasised in class to encourage further use. Similarly, additional time may be spent in language classrooms emphasising those gestures that students did not use as frequently and students could be explicitly encouraged to use those gestures. An awareness that there are individual differences in ITG use overall by students and also for ITG categories can support teachers in their approach to the teaching of and use of ITG.

The discussion now turns to focus on the circumstances in which ITG was used by students commencing with a focus on ITG for language recall and retrieval.

7.3.4. Students’ use of ITG for language recall and retrieval

The data presented identified that students’ use of ITG supported their recall and retrieval of Japanese. Students used ITG without a word which preceded the production of a word in Japanese (Tables 70 to 73 in Chapter 6). This use of ITG illustrates the role of ITG in recalling and retrieving language. Such a use of ITG was evident for a word, a group of words and Japanese particles. Interestingly, ITG was used when needed for language recall and retrieval and dropped off when it was no longer needed. An association between students’ use of ITG and their increased oral output also suggests that using ITG supported their recall and retrieval of Japanese. These findings identify the cognitive function of ITG for language production.

Findings from the current study support existing literature, most notably Krauss’s ‘Lexical Access Theory’ (1998) which identifies the role of gestures in supporting speakers to retrieve language. Krauss theorised that the use of gestures by speakers help
them search for the words they need when speaking. Similarly, the ‘Lexical Retrieval Hypothesis’ (Rauscher et al., 1996) identifies the role of gestures as helping speakers retrieve language needed during speech production. Supporting these theories, experimental evidence has identified that when speakers gesture, they recall more words in L1 (Frick-Horbury & Guttentag, 1998; Streek, 1993; Tellier, 2005), L2 English (Sueyoshi & Hardison, 2005; Tellier, 2008a), and L2 Japanese (Kelly et al., 2009). Speakers also recall more details (Stevanoni & Salmon, 2005) and provide richer story descriptions (Rauscher et al., 1996) when gestures are used. Conversely, when preventing gestures, speakers have more difficulty in retrieving words (Frick-Horbury & Guttentag, 1998).

Findings from the current study support the existing literature, identifying that viewing ITG supported Japanese language recall and retrieval when doing Story Re-tell in a second language learning context, thus adding further L2 evidence to this expanding collection of research studies. The use of ITG as a second language teaching methodology with a consistent use of gestures is emphasised in the current findings. Students’ language recall and retrieval within a story context, rather than of a list of words, also adds to previous findings for L2. Findings would suggest that students should view ITG and be encouraged to use ITG to support the retrieval of L2 and extend their oral output when doing Story Re-tell. This information is valuable to both language teachers and language learners.

7.3.5. Students’ use of ITG without a word

Students’ use of ITG without a word was evident in a number of ways; for expressing meaning (Tables 65 and 66 in Chapter 6), providing additional information (Tables 67, 68 and 69), preceding the production of a word (Tables 70 to 73), giving emphasis (Table 74), and highlighting difficulty (Table 75). Students’ use of ITG without a word showed that students knew where to say the word in the utterance following the conventions of Japanese word order, even when they did not know or recall the word. Such use of ITG reveals when students need a word and are ready to learn it, a finding that in a classroom context allows language teachers to provide words that students need at the precise time of need increasing the prospects that the learned word is more likely to be retained.
When students’ oral production is not at the same level as their receptive understanding, the use of ITG can provide a way for students to signal their understanding and communicate meaning and knowledge. This use of ITG demonstrates students’ “point of readiness”, providing an insight into their language skills and areas of need, which as stated above, is knowledge that can be used by teachers to inform future teaching. This is a “visible readiness” signal that a student is poised to acquire new language and needs a new word in their repertoire. Another way to describe this is that students’ ITG use can ‘show’ teachers the ‘next step’ of what is needed and signals to the informed professional teacher the key moment for selecting appropriate scaffolding. This identifies the importance of language teachers attending to students’ gestures as well as what they say orally in order to have a more complete picture of each student’s language ability and to inform teaching pedagogy.

These findings connect with previous research identifying that gestures can be used to express thoughts and communicate meaning that are not communicated with speech or cannot be communicated in speech (Goldin-Meadow & Singer, 2003). Children in this study have demonstrated their implicit knowledge through gesture which was not demonstrated through their verbal language (see also Broaders et al., 2007) therefore providing supplementary information about their language ability level that is a diagnostic and predictive signal teachers could use for future teaching strategies. The current study supports these related findings in (Broaders et al., 2007) as to how students express meaning and demonstrate additional information through ITG in a second language learning context. Rather than solely relying on speech, students could express their knowledge with ITG thereby extending the modes and number of communicative channels shared with the teacher and reducing the need to revert to English.

7.3.6. Mismatch of ITG and word

Students’ mismatch of ITG and a word identifies students’ uncertainty, errors, and areas of difficulty in Japanese. It also identifies a gap in students’ knowledge of the second language. The data presented identified that a mismatch occurred with words with different meanings (Tables 76 and 77 in Chapter 6), words which shared the same ITG (Table 78), particles (Table 79), verb tenses (Table 80) and words preceding a correct use of a word (Table 81).
When there is a mismatch of ITG and a word, a listener would wonder if the meaning observed through ITG or verbalised was the one intended by the speaker. Interestingly, transcription evidence identified that when a mismatch occurred, the intended meaning was often expressed through ITG first and then later verbalised. Student’s use of ITG supported the retrieval of the word of need supporting its subsequent oral production. This tells us that meaning is often first learned through the observation of ITG and is a predictor of later oral production. This is an important finding as it identifies the cognitive function of students’ use of ITG when processing language and producing output.

Previous literature has also identified that meaning is expressed in gesture before speech. Studies of infant first language acquisition show that meaning is expressed in gesture before speech (Goodwyn et al., 2000) and that early use of gesture relates to later oral production (Ozcaliskan & Goldin-Meadow, 2010). Gesture anticipates verbal production (Calbris, 2011) so can be a predictor of soon-to-emerge speech (Iverson & Goldin-Meadow, 2005; Ozcaliskan & Goldin-Meadow, 2005a; Thal & Tobias, 1992). Bilingual children’s early language development also reveals that gestures indicate soon-to-emerge speech (Mayberry & Nicoladis, 2000). Findings from the current study show that ITG plays a similar role in instructed second language settings to naturally occurring gestures of L1.

Students’ mismatch of ITG and a word can reveal their difficulties when producing target language speech. Previous research identified that when students have difficulty producing the second language they often use gestures to compensate for these linguistic difficulties (Breckinridge Church et al., 2004; Gullberg, 1998, 2006a; Kelly et al., 2008). In this way gestures signal the communicative struggle between intention and mastery of target language resources by learners when communicating (Goldin-Meadow & Singer, 2003; Gullberg, 1998) and also signal metalinguistic difficulties (Gullberg, 1999). Data from transcriptions from the present study show that ITG was retained whilst students’ confusion or difficulties remained and also whilst students were learning and rehearsing target language expressions. Students’ ITG use dropped off when the language of need was recalled or mastered. This “as-needed” use of ITG identifies that ITG was used as an internal or self-directed scaffold by the students and was then discarded when it was no longer needed.
Students’ own use of ITG also communicates meaning and knowledge (Tables 61 and 62 in Chapter 5) and a mismatch of ITG and speech indicates students’ developing knowledge and gaps in knowledge. Similarly, in a first language learning context, infants’ use of gestures strongly “reflected their learning state” and provided a way for the children to express their knowledge particularly when their oral language was limited (Capone, 2007). These same conclusions were drawn from the current study identifying that students’ use of ITG was an indicator of their current stage of language knowledge and showed their receptive and productive capabilities and gaps.

In a mathematics learning context, a mismatch between gesture and speech was also found to be an indicator of students’ developing content knowledge (Breckinridge Church & Goldin-Meadow, 1986) and the observation of children’s use of gesture with speech provides an insight into their knowledge (Alibali & Goldin-Meadow, 1993). Mismatches of gestures and speech identified when students were ready to learn a task (Goldin-Meadow & Singer, 2003) with teachers being perceptive to the gestures and providing differentiated instruction to these students. These findings reinforce that students’ use of gesture supply diverse kinds of information to teachers in the ongoing process of building language skills. Findings from the current study agree with the existing literature from a mathematics learning context and identify the role of ITG and speech mismatch to inform teachers about students’ knowledge in a second language learning context.

7.3.7. Metalinguistic knowledge

As was observed in passing in the previous section use of ITG by students also demonstrates metalinguistic knowledge. Previously, it was identified that the viewing of ITG strengthens students’ metalinguistic awareness when learning Japanese, whereas the evidence of students’ use of ITG demonstrates their metalinguistic knowledge. Students’ use of ITG demonstrates their knowledge of how Japanese works as a language system by showing their knowledge of structuring utterances and Japanese word order, even when produced without speech. One example of this is when ITG is used within an utterance without a word showing that students wanted to use that word and knew where in the utterance to use it, but didn’t know or couldn’t recall the word (Tables 66 to 69 in Chapter 6).
7.3.8. Point of readiness

Students’ use of ITG identifies their individual “point of readiness”, indicating their stage of language learning, their strengths and aspects of language in need of support. Students’ use of ITG provides an insight into the cognitive process of learning L2 and is a window into their current L2 knowledge. Point of readiness has been identified within many of the themes from ‘using ITG’ culminating in this overall discussion.

Knowing that students’ point of readiness can be understood through observation of their use of ITG, is an important finding for teachers of languages. Importantly, the observation of students’ use of ITG, provides opportunities for teachers or more able language users to support students at the time of need which is particularly critical to second language learning. These observations provide information about students’ L2 learning processes and their current knowledge and identify areas of need for future teaching to further support these students.

The current study has identified students’ point of readiness in L2 learning by observing students’ ITG use. These findings align with previous research that identified a diagnostic value in the gestures that children produce when learning mathematics (Goldin-Meadow, 2004) and showed their point of readiness also connecting with claims that gesture use reflects learners’ L1 ‘learning state’ (Capone, 2007). In a second language learning context, students’ use of gesture was also identified as demonstrating what the students’ knew in French and provided insight into their thinking processes (van Compernolle & Williams, 2011). Language learners’ point of readiness can also be connected with the notion of “interlanguage” (Selinker, 1972). The current study has identified that the observation of students’ use of ITG and language provides an insight into their L2 interlanguage, showing the stage of language ability they are currently in and highlighting the aspects of language ability and processes they are yet to acquire and that are in immediate proximity. These findings support claims that learners’ gestures in second language contexts play a role in creating Zones of Proximal Development (McCafferty, 2000) and students’ language acquisition processes and effectiveness can be more fully realised by including gestures as well as listening to speech to inform teacher judgement about progress, problems and potential. The current study confirms the use of intentional teaching gestures by students in a second language learning context. It is now suggested that observations of students’ ITG use be
employed explicitly and systematically to supply information to language teachers to inform their teaching and can stand as a proxy for other kinds of diagnosis of language.

7.4. Viewing and Using ITG: A Summary

The findings presented from the study have highlighted various roles of viewing ITG and using ITG as two categories of factors that contributed to students’ increased Japanese oral language output in Story Re-tell.

The viewing of ITG enabled an increase in students’ oral output in Japanese when doing Story Re-tell and was shown to include more content, with a greater use of verbs and the crucially important grammatical function of particles in Japanese. An increase in fluency was also evident. Metalinguistic awareness was also identified through the increased complexity of utterance structures that students could produce and their ability to become aware of Japanese word order and self-correct when viewing ITG.

The role of viewing ITG as a scaffold to support and extend students’ developing Japanese has been found to contribute to students’ overall increased oral language output in Story Re-tell.

Students’ use of ITG when doing Story Re-tell supported their recall and retrieval of language and supported their production of Japanese and their fluency within it. ITG was used by students to communicate meaning not expressed in speech and when processing language and planning for speech production. Students’ use of ITG demonstrates their levels of target language knowledge, including metalinguistic knowledge, contributes to the understanding of individual students’ point of readiness and can act as a signalling system to teachers which can be used to inform strategies and methods they employ in their professional practice.

Benefits to students’ oral output in Story Re-tell were identified from viewing ITG and using ITG separately and could confidently be assumed to give the greatest benefits when combined. If the benefits are combined, it is reasonable to expect increased levels of oral language output by students. The following figure distils the overall findings from the study identifying the role that viewing ITG and using ITG play and the factors that are evident within each category in scaffolding towards increased Japanese oral language output in Story Re-tell.
The next chapter provides a conclusion to the thesis. It describes my personal motivation for carrying out the study and briefly outlines what I did, what I found out and the limitations of the study. Priority questions for future research are identified. The main contributions of new knowledge from the study to the field are outlined and finally, the pedagogical, theoretical and policy implications of the research are discussed.
Chapter 8. IN CONCLUSION

8.1. Motivation for the study

Throughout many years of teaching Japanese, I intuitively used gestures and body language to make Japanese comprehensible for primary school students and avoid the use of English. In recent years, I became aware of second language teaching approaches that incorporated a system of gestures which I refer to as Intentional Teaching Gestures (ITG). I found that there were many language teachers and programs that used ITG and that many teachers were convinced of their value. Teacher lore says that ITG increases students’ L2 proficiency however, I could not find any reports of any studies that investigated whether or not gestures, and particularly ITG, actually resulted in increased oral language output. I wanted to investigate this issue and provide evidence-based data in an educational setting designed to address the question.

Three research questions guided the study:

1. What impact does the use of Intentional Teaching Gestures (ITG) in Japanese as additional language classes have on students’ oral language output?
2. What are the features of students’ oral language when ITG has been incorporated into learning Japanese?
3. What patterns of gesture use emerge when students tell stories in Japanese?

8.2. Overview of the study

The research I conducted was a controlled study with ten primary school classes in a private girls’ school to empirically determine if oral language output was improved when ITG was used. Students’ oral telling of stories in Japanese was used as a measure of oral language output. The research contrasted the oral output of students within an ‘ITG’ approach with that of students learning Japanese in a ‘non-ITG’ approach. The study collected both quantitative and qualitative data to address the research questions. Quantitative data informed the question of how much language ITG students produced and the quantity of ITG used, whilst qualitative data provided evidence of the features of students’ language and patterns of ITG use.

Overall, I found that there was no difference in the quantity of language that students produced when comparing the ITG and non-ITG approaches for Storytelling and only a
slight difference between approaches for Story Re-tell in one school term, but not in the other. ITG did however have a positive impact on both the quantity and quality of students’ oral language when doing Story Re-tell whilst viewing ITG. When students viewed ITG they produced a much greater quantity of words than when they did Story Re-tell without ITG. When students viewed ITG they also included more content in their stories, used more verbs and particles, produced more sophisticated structuring of utterances, could self-correct their language and generally spoke with greater fluency. When students used ITG themselves, it supported their production of Japanese, they were better at recalling language, they could communicate more meaning and fluency increased. Observation of students’ use of ITG gave clear insights into their current level of knowledge and any difficulties they were experiencing.

Findings from the study have confirmed and expanded on existing knowledge as well as contributed new knowledge to the field of ITG in educational settings.

8.3. Knowledge added to the field

A number of findings from the study about viewing ITG have confirmed and expanded the stock of existing knowledge. Specifically, the study identified that the viewing of ITG supported students’ Japanese recall and retrieval when doing Story Re-tell. Although the types of gestures, the languages and the study designs each differ, these findings confirm previous claims that observing gestures support recall in L1 (Riseborough, 1981; Woodall & Folger, 1981) and in L2 (Kelly et al., 2009; Macedonia & Knösche, 2011; Porter, 2016; Quinn-Allen, 1995; Sueyoshi & Hardison, 2005). This finding is practically important to teachers of Languages because it provides evidence to support their decisions to use ITG as a strategy to support students’ language recall.

Another important finding from the study was that students’ viewing of ITG during Story Re-tell scaffolded their oral language production which extended the quantity of their oral language output. This finding aligns with McCafferty’s claim of the role of gesture in supporting Zones of Proximal Development in L2 (McCafferty, 2002). This finding is also of practical importance to teachers of Languages because it identifies that viewing ITG cues students’ language production. This would suggest that teachers use ITG as a cueing system to expand the quantity of language that students produce.
More specifically, it was found that the viewing of ITG led to an increase in content in students’ accounts during Story Re-tell. This result supports previous literature about learning with gestures leading to an increase in content in L1 (Galati & Samuel, 2011; Nicoladis et al., 2007; Riseborough, 1981) and L2 (Porter, 2016). The viewing of ITG also led to an increase in the quantity of verbs used by students during Story Re-tell. This finding also aligns positively with previous literature about the use of gesture leading to an increase in the use of verbs in L1 (Riseborough, 1981) and L2 (Kelly et al., 2009).

There are also a number of findings from the study about using ITG that have confirmed and expanded on existing knowledge. Specifically, the results show that when students used ITG, the quantity of Japanese they produced increased. This confirms previous research studies which addressed students’ own gesture use finding that this leads to an increase in language in L1 (Rauscher et al., 1996; Sauer LeBarton, 2010; Stevanoni & Salmon, 2005). Findings from this study therefore expand the existing stock of knowledge through having identified an association between ITG use and increased oral output with ITG in an L2 learning context. Language teachers may therefore wish to encourage students to use ITG knowing that there is an association between ITG use and increases in output.

Students own use of ITG also supported their recall and retrieval of Japanese. This specific result could be due to the cognitive role of ITG in language production. This finding connects with the Lexical Retrieval Hypothesis (Rauscher et al., 1996) and Lexical Access Theory (Krauss, 1998) each of which identify the role of gesture in the retrieval of language in L1. Previous experimental evidence also support the claim that the use of gesture increases recall in L1 (Frick-Horbury & Guttentag, 1998; Streek, 1993; Tellier, 2005) and in L2 (Kelly, McDevitt, & Esch, 2009; Quinn-Allen, 1995; Sueyoshi & Hardison, 2005; Tellier, 2008a). The current study now identifies the use of ITG for L2 recall and retrieval in a classroom context and has implications for classroom practice.

Students’ use of ITG during Story Re-tell often preceded their oral production of a word and meaning was often expressed in ITG before being expressed orally. This aspect of sequencing order of expression is related to the cognitive role of ITG for language production. This finding supports findings from L1 acquisition research that gestures precede speech (Calbris, 2011; Goodwyn et al., 2000; Iverson & Goldin-Meadow,
2005), including a study of bilingual children developing two languages simultaneously (Mayberry & Nicoladis, 2000). Current findings identify that ITG precedes speech and that ITG can represent meaning before that meaning is expressed in speech for primary school-aged L2 learners of Japanese doing Story Re-tell in a school context. This information adds to current theoretical understandings of the cognitive role of ITG.

The findings from the study also identified that students’ use of ITG can signal their L2 difficulties which adds to previous research (Goldin-Meadow & Singer, 2003; Gullberg, 1998) and expands this by identifying that ITG was used whilst students had confusion or difficulties with the language and decreased in use when the language of need was recalled. This provides useful diagnostic information for teachers to tailor their teaching to specific student needs.

The present research has also demonstrated that the type of task influences students’ oral output. Storytelling showed non-significant differences between the ITG and non-ITG approaches whereas Story Re-tell showed mixed findings with some level of difference between approaches identified.

There was a significant impact of viewing ITG on the quantity of students’ oral language output during Story Re-tell. Viewing ITG also impacted on the quality of students’ oral output identified by content, use of verbs and particles, structuring of utterances, self-correction and fluency. Students’ metalinguistic awareness, evidenced by the structuring of utterances, including an awareness of grammatical structure, Japanese word order and verb tenses, use of Japanese particles, self-correction, and fluency also showed effects of ITG viewing.

Students used more ITG themselves when doing Story Re-tell tasks than when Storytelling and especially when viewing ITG during Story Re-tell. Students’ use of ITG increased whilst there was a statistically significant increase in the oral language that they produced. Some carry-over use of ITG by students from the ITG approach into the non-ITG approach was also noticed, and although very small, it suggests that ITG might have had a lasting impact for a few students. When analysing the ITG that students used when doing Story Re-tell, it was found that some ACTLAN categories of ITG were used more (categories V, G, C), than others (P, O, T).
Students’ use of ITG offers insights into the characteristic types of ITG usage. Two main types were identified; first, “ITG without a word” and second, “a mismatch of ITG and word”. The first of these “ITG without a word” was typically used to express meaning, provide additional information, give emphasis, and highlight difficulty. By contrast, “a mismatch of ITG and word”, showed students’ current level of knowledge and points of difficulty. In this way we can see that students’ use of ITG identifies their individual point of readiness to learn and deepen their expressive abilities in Japanese and can be used as a diagnostic tool for teachers.

8.4. Limitations

The study was limited to ten classes within one school and is therefore context specific. The findings cannot be assumed to transfer to all other schools, although findings may be informative for teachers working in similar contexts. The school was a private girls’ school, so only included students with the particular demographic characteristics and did not include male students. The study did not collect data about students’ ages or linguistic backgrounds, and these may be considered as factors or variables for future research.

The study was also limited to Japanese as an additional language with the use of ITG investigated using ACTLAN gestures. Other kinds of ITG and other languages need to be investigated to check whether results are similar or different in these cases.

The study relied on oral telling of stories, Storytelling and Story Re-tell, as the measure of oral output. Investigating the role of ITG within other types of oral language tasks would add to the body of knowledge about the impact of ITG on students’ second language output. Viewing ITG only occurred during Story Re-tell. It would now be worth including viewing ITG in other language tasks to determine the impact of ITG more broadly. The timeframe of the study is also a limitation. The ITG approach only lasted for five weeks. A longer period of exposure to ITG may yield different results.

Each of these limitations raise further questions for future exploration.

8.5. Further research

The study was conducted in one school where I achieved a high level of engagement and commitment by the teacher of Japanese. The question naturally arises about how applicable the results are to other second language learning contexts. Additional
research building on this study but examining other contexts such as public education and co-educational settings with different demographic characteristics, location, and different age groups would also add further nuance to the essential question motivating the research. Target language proficiency is also a factor to consider in future research, perhaps by contrasting early or low proficiency learners with more advanced learners. The cognitive role of ITG for language production could be expanded on for future research. Different program types such as content based, immersion (full or partial) or traditional foreign language teaching methods could be contrasted in a productive examination of whether ITG effects might reflect the cognitive focus of instructional activity. There is also merit in future research examining the impact of ITG on a broader range of languages, including non-character based languages.

Longevity and duration factors might be worth examining. Specifically, research building on from the current study could consider delayed testing to see if the effect of viewing ITG in Story Re-tell is maintained over time. It would also be worthwhile to investigate a broader range of tasks beyond Storytelling and Story Re-tell as well as the impact of viewing ITG on other types of tasks beyond Story Re-tell. It is also recognised that because each teaching approach only lasted for five teaching weeks, a longer exposure to ITG may produce different results so this is a factor worth considering for further research.

Different study designs would also contribute further to this area of research. Finally, it may be interesting to consider the interaction between learners themselves or between the teacher and learners, or learners’ use of the target language outside the classroom and speaking without the support of ITG.

These suggestions identify multiple opportunities for further research. If these findings are in fact generalisable, then the implications for second language teaching practice and pedagogy and perhaps andragogy or adult education methods and principles, appear promising.

There are numerous pedagogical, theoretical and policy implications of this research which have been identified throughout the thesis and are reiterated in the next section.
8.6. Pedagogical implications

The findings from this study contribute practical knowledge and provide recommendations for teaching contexts within which the study was carried out and could also be proposed for broadly comparable second language teaching activities using ITG.

These pedagogical implications relate to both teachers and students. Particularly pertinent was that the viewing of ITG increases the overall quantity and quality of students’ oral language output when doing Story Re-tell. As a result, teachers would be recommended to use ITG in L2 classes to support and extend students’ oral output and to guide students’ language.

Because viewing ITG seems to enable students to “see” the structure of Japanese and therefore supports students’ metalinguistic awareness, teachers could particularly employ ITG to increase and deepen students’ overall sense of inherent structure of Japanese and to view the teacher’s ITG for insights, cues and pointers to how Japanese operates grammatically and in macro features more generally. Students’ knowledge of the benefits of viewing ITG could encourage their in-class focus on teachers’ ITG and use the viewing of ITG as a supplemental language cue and support.

There are also a number of pedagogical implications deriving from the evidence of students’ own use of ITG. It was found that students’ oral language production when doing Story Re-tell is supported when they deploy ITG as an adjunct expressive tool. This would suggest that teachers should encourage students to use ITG themselves and in this way expand their communicative resources.

The finding that students’ use of ITG supports their recall and retrieval of language when doing Story Re-tell suggests that teachers should encourage students to adopt ITG as a recall and retrieval resource. In this way students might develop more confidence in expanding their expressive capability. Students’ use of ITG can also support them in communicating meaning when they are struggling verbally and this could empower them with an additional mode of communication. A classroom practice suggested by these findings is that teachers could negotiate the communicative means to be deployed in classrooms and by involving students in this shared knowledge could foster a greater sense of the learning task involved.
A final practical implication refers to the diagnostic contribution of ITG. Teachers can use knowledge they gain from observing students’ use of ITG to identify what students know and what they are having difficulty with and in this way inform future teaching strategies, points of intervention needed for individuals with particular difficulties as well as more general classroom practices intended for the entire cohort of learners.

8.7. Theoretical implications

No claims are made for theory beyond classroom application, but evidence from this study contributes to the theoretical question about the role of ITG in second language learning and connects with socio-cultural and cognitive approaches to language acquisition and specifically contributes theory in relation to the impact of ITG on Story Re-tell. Viewing and using ITG have been demonstrated to each play a role in supporting and increasing students’ oral language output when doing this critically important educational activity of Story Re-tell.

The findings from the study have also contributed to second language acquisition theory in relation to students’ use of ITG so that the study can offer clear evidence of use of ITG as a component supportive of overall language production, L2 recall and the retrieval of language. An expanded L2 communication construct is implied by this finding suggesting that SLA theory should not be limited to verbal production but to also include other productive and receptive modalities.

The two usage types, “ITG without a word” and “mismatch”, also have a theory element. Findings identified that meaning is expressed by students in ITG before speech when ITG appears without a word. When there is an ITG and word mismatch, the meaning intended by speakers appears in ITG. In this patterned way a cognitive role of ITG in L2 oral production is identified.

Students’ use of ITG has also been identified as revealing their “point of readiness” for additional Japanese learning. Students use of ITG, and mismatch of ITG and word, provides a more complete picture of their L2 knowledge, including metalinguistic knowledge, and provides an insight into their language skills and difficulties. In this way, ITG provides an insight into the cognitive process of L2 learning. It also identifies the diagnostic value of students’ use of ITG which makes available to teachers a source of theoretical insight into acquisitionsal processes and expressive patterns and therefore
can stimulate them to achieve a more holistic theoretical representation of language growth in classroom settings and attendant pedagogical ideas and techniques.

Theoretical accounts of gesture need to clearly distinguish between ITG and other types of gestures. A distinction needs to be made between naturally occurring gestures or explicitly choosing to use gestures and a consistent use of intentional teaching gestures as a second language teaching methodology. There are differences in types of gestures, the purpose of gestures and the contexts within which they occur naturally or are deployed strategically. ITG uses gestures that have been designed by a method developer. One ITG is used with each word and the form of the gestures remain consistent so that the purpose of ITG is purely pedagogical and in the case of the present study, is used specifically as a second language classroom tool. It is not expected that ITG will be used outside the classroom in authentic language communication situations though the extent of any such use could be an interesting topic for further investigation. The context for ITG in the current study and in the general design of the ITG surveyed in this thesis is strictly classroom-based for improvements in second language learning. In this respect then, emerging knowledge of ITG contributes to SLA theory, L2 teaching methodology and has pedagogical value in classroom second language learning contexts.

8.8. Policy implications

This thesis responds to a considerable need for vastly improved outcomes from the large public investments in school second language programs after decades of government promotion in such programs (Lo Bianco & Slaughter, 2016). A great deal of political attention has, and still is, focussed on Australia’s engagement with Asia (ACARA, 2011), Asian languages (Commonwealth of Australia, 2012) and in particular, the need for proficiency in Asian languages (Department of Education, Employment and Workplace Relations, 2010) has repeatedly been identified as an expansion of the nation’s essential skills and capabilities. Despite this, there is regular crisis reporting of the unsatisfactory outcomes from many, perhaps the majority, of second language programs (Lo Bianco & Slaughter, 2016; Scarino et al., 2011). Future policy development and program design should be informed in a systematic and careful way with evidence and variables of what contributes to students’ second language proficiency.
The State of Victoria’s Vision of Languages Education (Department of Education and Early Childhood Development, 2013) is the current guiding policy remit and explicitly aims to address the decline in student participation. This document has set the ambitious aim for all Victorian students to become proficient in a language in addition to English (Department of Education and Early Childhood Development, 2012a) specifically stating that students should “be on track to be fluent in an additional language…” (Department of Education and Early Childhood Development, 2013, p. 3). The study of a second language is also a mandated component of the Australian National Curriculum (ACARA, 2011) and the Victorian state curriculum (Victorian Curriculum and Assessment Authority, 2015). All these policy and curriculum prescriptions strongly suggest a move from the historical focus on the provision of programs to the design of programs and methods of teaching that can foster proficiency in these programs. The most recent Victorian Government recommendation is that language programs aim directly at developing second language proficiency (Victorian Government Department of Education and Training, 2014), to consolidate this increasingly strong need for research that focuses on students’ proficiency and which connects directly with classroom practice. It is in the spirit and context of these policy declarations and the increasing pressure they impose on schools to deliver enhanced L2 proficiency that this study was undertaken. ITG contributes practically towards achieving greater levels of students’ oral language proficiency in the way identified in the research such as when doing Story Re-tell, a universal component of contemporary L2 teaching in Australia.

8.9. A final word

With a large number of second language programs across the world using ITG, involving an even greater number of students, it is critical that the impact of ITG on students’ language be investigated. The various contexts in which ITG impact on second language learning need to be identified so informed teaching and learning programs can be developed sensitive to whether and how contextual variables influence the findings and patterns of results.

This study investigated the impact of ITG on students’ oral language through the telling of stories from ten classes in one private school in Melbourne, Australia. Although findings are not generalisable, the results may have relevance to similar second language teaching and learning contexts. This thesis advances understandings about the impact of ITG which aims to contribute to broader theoretical and methodological
developments in the fields of second language acquisition and gesture research. In the specific context within which the study was conducted a range of theoretical and practical consequences have been demonstrated that reveal a productive role for ITG within a well-conceived Japanese as a second language pedagogy.
REFERENCES


ACARA. (2011). The shape of the Australian curriculum: Languages. Australian Curriculum, Assessment and Reporting Authority. ACARA.


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APPENDICES

Appendix 1: ACTLAN gestures

A sample of illustrations of ACTLAN gestures have been reproduced in this thesis with kind permission from Chizuko Gomura (2018), the developer of the ACTLAN methodology. The illustrations are from the ACTLAN Handbook (ACTLAN, 2010).

ACTLAN Category O gestures (Objects)

Omusubi (rice ball)  Banana (banana)

ACTLAN Category P gestures (Participants)

Sensei (teacher)
ACTLAN Category G gestures (‘Glue’, particles)

‘Wa’ (identifying a topic)   ‘O’ (identifying the object that is the focus of an action)

ACTLAN Category C gestures (Circumstances; including days and adjectives)

‘Ka’ (fire)   ‘Yoobi’ (day)

Oishii (delicious)   Kanashii (sad)
ACTLAN Category V gestures (Verbs)

Tabemasu (eat)         ‘Kikimasu’ (listen)

ACTLAN Category T gestures (Tenses of verbs)

‘mashita’ (past tense)     ‘mashoo’ (future tense)
Appendix 2: Transcription Sheet

Student code: 
Story number: baseline 1 2 3 4 5 6
Teaching approach: ‘non-ITG’ ‘ITG’
Date: 

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<tr>
<th>Language Output</th>
<th>Number of words</th>
<th>Comments</th>
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<tr>
<th>Total number of words:</th>
<th>ITG/ word ratio:</th>
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<tr>
<td></td>
<td>Number of each type of ITG (key below):</td>
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Key- Type of ITG: O objects, P participants, G glue (particles), C circumstances, V verbs (processing), T tense
Appendix 3: Term 1 Story script

はらべこ あおむし

This is the script that was used by the teacher of Japanese when telling the story to and with the classes during the first two weeks of Term 1. The script is a modified version of The Very Hungry Caterpillar story (Carle, 1979).

はらべこ あおむし

はっぱ の うえ に ちいさい たまご です。おつきさま は たまご を みました。
おひさま が でてきました。日曜日 です。たまご から あおむし は でてきました。
あおむし は へこへこ です。あおむし は たべもの を さがしました。

月曜日、りんご を ひとつ たべました。まだ まだ へこへこ です。
火曜日、なし を ふつつ たべました。まだ まだ へこへこ です。
水曜日、すもも を みっつ たべました。まだ まだ へこへこ です。
木曜日、いちご を よっつ たべました。まだ まだ へこへこ です。
金曜日、オレンジ を いつつ たべました。まだ まだ へこへこ です。
土曜日、チョコレートケーキ と アイスクリーム と ピクルズ と チーズ と サラミ
とぺろぺろキャンディー と さくらんぼパイ と ソーセージ と カップケーキ と すいか
を たべました。

あおむし は おなか が いたい です。日曜日 です。
あおむし は はっぱ を たべました。おいしい はっぱ でした。
おなか は げんき です。あおむし は べこべこ じゃない です。
あおむし は 大さい です。ふとい です。
あおむし は さなぎ に ねむりました。さなぎ から でてきました。
あおむし は きれいな ちょうちょ です。
Appendix 4: Term 2 Story script

おむすびころりん

This is the script that was used by the teacher of Japanese when telling the story to and with the classes during the first two weeks of Term 2. The script is a modified version of The Rolling Rice Ball story (Yoda, 1969).

おむすび ころりん

むかしむかしのはなしです。おじいさんはおおきいやまにいきました。
よいしょよいしょああつかった。おいしいおむすびをたべましょう。いただきます。
でも、おいしいおむすびはころころころりんあなのかにはいりまた。
ころころころりんすっとととん、おむすびころりんすっとととん。
おじいさんはかないのでです。ちいさいねずみはあなのかとにいます。
おなかはとてもべっこべこです。チューチューチュべっこべこです。
みてみてあれはおむすびです。おいしいおむすびをたべましょう。
いただきます。むくもぐむしゃむしゃああおいしい。
おじいさんはあなをみました。でも。。。あああああ！
おじいさんはころころあなのかにはいりました。
チューチューチュ、おじいさんはこんにちは。いっしょにおむすびをたべましょう。
もぐもぐむしゃむしゃああおいしい。おじいさんはいっしょにおどりましょう。
たのしいです。おじいさんおむすびありがとう。
ねずみはおじいさんにおかねをあげました。
ころころころりんすっとととん、おむすびころりんすっとととん。
Appendix 5: University of Melbourne Ethics Approval

22 January 2014

Prof. Joseph Lo Bianco
Melbourne Graduate School of Education
The University of Melbourne

Dear Prof. Lo Bianco,

I am pleased to advise that the Melbourne Graduate School of Education Human Ethics Advisory Group (HSSIE HEAG) has approved the following Minimal Risk application:

Project Title: Language Output Through Use of Intentional Teaching Gestures.
Researchers: Joseph Lo Bianco, Naomi Wilks-Smith and Heather Fahring.
Ethics ID: 1344654
HSSIE HEAG ID: 234/13

The project has been approved for the period 22 January 2014 to 31 December 2014.

It is your responsibility to ensure that all people associated with the 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 your approval. Failure to abide by these conditions may result in suspension or discontinuation of approval and/or disciplinary action.

(a) Limit of Approval: Approval is limited strictly to the research as submitted in your Project application.

(b) Amendments to Project: Any subsequent variations or modifications you may wish to make to the Project must be notified formally to the Human Ethics Advisory Group for further consideration and approval before the revised Project can commence. If the Human Ethics Advisory Group considers that the proposed amendments are significant, you may be required to submit a new application for approval of the revised Project.

(c) Incidents or adverse effects: Researchers must report immediately to the Advisory Group and the relevant Sub-Committee anything which might affect the ethical acceptability of the protocol including adverse effects on participants or unforeseen events that might affect continued ethical acceptability of the Protocol. Failure to do so may result in suspension or cancellation of approval.

(d) Monitoring: All projects are subject to monitoring at any time by the Human Research Ethics Committee.

(e) Annual Reports: Please be aware that the Human Research Ethics Committee requires that researchers submit an annual report on each of their projects at the end of the year, or at the conclusion of a project if it continues for less than this time. Failure to submit an annual report will mean that ethics approval will cease.

(f) Auditing: All projects may be subject to audit by members of the Sub-Committee.

Please quote the ethics registration number and the name of the Project in any future correspondences:

On behalf of the Ethics Committee I wish you well in your research.

Yours sincerely,

Dr Joanne Scott
Chairperson, Melbourne Graduate School of Education Human Ethics Advisory Group
Phone: 83448564, Email: joanne.scott@unimelb.edu.au

cc: Naomi Wilks-Smith, Heather Fahring and Human Research Ethics Committee, Melbourne Research Office.

Melbourne Education Research Institute (MERI)
Melbourne Graduate School of Education
Level 3 | 100 Leicester Street | The University of Melbourne Victoria 3010 | Australia
T: +61 3 8344 6215 F: +61 3 8344 6212 W: www.education.unimelb.edu.au/research
Appendix 6: School Ethics Approval

Ethics approval was granted from the Independent Girls’ School that participated in the study. To provide confidentiality for the school, the name of the school and school crest have been hidden at the top of this approval letter. The Head of Junior School and College Principal names and signatures have also been hidden.
Appendix 7: Plain Language Statement
Appendix 8: Consent Form

MELBOURNE GRADUATE SCHOOL OF EDUCATION

Consent form for parent or guardian of student participating in a research project

Second Language Output through Use of Intentional Teaching Gestures

Name of participant (child):

Name of Investigator(s): Natasha Wills-Smith (PhD Candidate), Professor Joseph Lo Bianco (Senior Supervisor),
Professor Heather Fleming (Second Supervisor)

1. I consent for my child to participate in this project, the details of which have been explained to me, and
I have been provided with a written plain language statement to keep.

2. I understand that after I sign and return this consent form it will be retained by the researcher.

3. I understand that my child’s participation will involve video recorded story telling in Japanese and I
agree that the researcher may use the results as described in the plain language statement.

4. I acknowledge that:

(a) the possible effects of participating in the video recorded story telling have been explained to my
satisfaction;

(b) I have been informed that I am free to withdraw from the project at any time without explanation or
prejudice and to withdraw any unprocessed data I have provided;

(c) the project is for the purpose of research;

(d) I have been informed that the confidentiality of the information I provide will be safeguarded subject
to any legal requirements;

(e) I have been informed that the video recordings will be securely stored at The University of
Melbourne and only be used by the researcher and be used in various data for the purposes of
research and publications;

(f) participants’ names will not be used in any publications arising from the research;

(g) I have been informed that a copy of the research findings can be made available upon request after
completion of the PhD thesis.

[Consent for my child to be video recorded story telling in Japanese] [ ] yes [ ] no
(please tick)

Parent or guardian’s signature:

Date:

Melbourne Graduate School of Education

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Author/s: Wilks-Smith, Naomi

Title: Learning with Intentional Teaching Gestures: Japanese foreign language output in the primary years

Date: 2019

Persistent Link: http://hdl.handle.net/11343/225033

File Description: Learning with Intentional Teaching Gestures: Japanese foreign language output in the primary years

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