Food Knowledge – what is it and where does it come from;
A study of Culinary Management students at William Angliss Institute.

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Abstract.

Food knowledge is a term that is not clearly defined in the literature, but an individual’s level of food knowledge can have a far reaching impact throughout an individual’s life. Governments provide information as to what to eat to help maintain good physical health. We hear through the media that certain foods are ‘good’ and certain foods are ‘bad’. What are these foods ‘good’ for? Should we be concerned with other ‘health’ issues such as environmental health, mental health, social health, and economic health? What we eat, how we eat it, and where it comes from are issues that influence a multitude of ‘health’ issues. Food knowledge allows individuals to make good food choices on, not only what to eat, but how to eat it and where to source it from.

This study examined the level of food knowledge of students studying a Bachelor of Culinary Management at a leading hospitality Institute in Melbourne, Australia. This study asked the question of where students’ food knowledge may come from. By investigating the answers to these questions it is hoped that food education may be improved to ensure that hospitality industry professionals have an appropriate level of food knowledge to tackle the challenges presented to them by ever-changing cultural norms. The number of participants in this study was small, and hence this study provides a very limited view of a perceived wider social phenomenon. However, it may provide insights that are helpful to other institutions that offer similar programs. The research focused on two key research questions. The first question involved investigation of what students’ depth of food knowledge was, and the second investigated where their food knowledge came from.

The study revealed that the level of food knowledge of this cohort was relatively poor and not appropriate for an individual who has chosen a career in a food related industry. It was also found that the major source of food knowledge was the family, which was consistent with the relevant literature. It was concluded in this study that curriculum in the specific degree studied needed to be altered at a foundation level to help rectify some students’ shortcomings in relation to food knowledge.
Declaration.

This is to certify that

- *the thesis comprises only my original work towards the masters except where indicated in the Preface,*
- *due acknowledgement has been made in the text to all other material used,*
- *the thesis is 18479 words in length, exclusive of tables, maps, bibliographies and appendices.*
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Introduction.

“What and how we eat—and how much of the various food components make their way into our stomachs—is considered one of the most important determinants of our health status and, indirectly, of our life span” writes Santich (2005, p. 152). This follows in the vein of Brillat-Savarin’s (1994) estimate that the decisions an individual makes about food sometimes are a reflection of their broader principles. For example; a decision to purchase organic food may indicate a greater sensitivity to issues related to the environment and social equality. Our relationship with food is not just about enjoyment but one of survival (Petrini, 2001; Wahlqvist, 2002; Webber, 2009), and should remain strong throughout our lives in order to reap the benefits. However the strength of this relationship is weakening, and arguably may be non-existent in some instances (Pollan, 2008; Webber, 2009). This evolving relationship is an issue that is impacting upon communities across the world (Beardsworth & Keil, 2000). It is manifesting itself in a multitude of ways, which include escalating rates of cardiovascular disease, Type 2 diabetes, obesity related illnesses, ecological damage through the use of chemical fertilisers and pesticides (Babajafari, 2011; Lang & Rayner, 2012; Pollan, 2007, 2008; Schlosser, 2005). The impacts are not only felt at a global and societal level, they have the potential to directly affect the quality of the hospitality industry. If individuals who have chosen to pursue a career in the hospitality industry possess a weak level of food knowledge, due to the strength of their relationship they have with food, this may compromise their ability to provide the level of service, skill, and knowledge required by today’s modern industry standards. The hospitality industry and educational institutions that specialise in providing training and education for the hospitality industry may be required to rectify this deficiency and devote resources to programs that previously they have not needed to run.

This study was motivated by a perceived lack of food knowledge amongst previous students of the Bachelor of Culinary Management at William Angliss Institute. William Angliss Institute, based in Melbourne, was established in 1940 as Australia's first trade college dedicated to the food industry. The ‘William Angliss Food Trades School’ and brand subsequently gained national recognition. The Institute has consistently built on its strong foundations, expanding into hospitality, food and beverage service, cookery, resort management, tourism and events. During the mid-1970s, the school became known as William Angliss Institute of Technical and Further Education (TAFE).

Today, the Institute is a dedicated education and training provider and government recognised Centre of Excellence for the hospitality, tourism and foods industries, delivering a range of courses including degrees, diplomas, graduate certificates, apprenticeships and short courses. Enrolments across all offered courses each year are over 15,000 students, 1,100 of whom are international students from over 50 countries. In 2007 the Institute was approved to deliver Higher Education Programs. These Culinary Management students are preparing themselves to take a leading role within the hospitality industry, and in essence become food industry custodians; those professionals that play an active role in maintaining and expanding the cultural food identity of the cities they work in. Arguably, through their passionate professional behaviour they will engage with their local communities and provide a conduit to share food experiences. This engagement may well be
the mechanism that encourages and allows people to re-connect and strengthen their relationship with food. This study will help determine whether these students are in a position to do this already, and if not, help to better enable educators to devise curriculum that will help students to do so.

Understanding where food knowledge comes from will allow policy makers and society to target areas that need further support to ensure that food knowledge is something that is being ‘taught’ at home and at school, and is something that children recognise as beneficial and worth pursuing. The literature suggests that the issues surrounding the consumption of the modern Western diet are on a global scale and continued consumption is unsustainable (Pollan, 2008; Roberts, 2009; Webber, 2009). In order to change behaviour, education is required and this study will help provide information to assist in the development of strategies to improve food knowledge and allow people to make better informed decisions, particularly among students undertaking degrees in hospitality and culinary management.

The importance of this research is to provide a ‘snapshot’ as to the state and origins of food knowledge within a specific demographic which is the students within the Bachelor degree program at William Angliss Institute. These students have decided to study Hospitality and hopefully, to go on to develop leadership and management roles within the hospitality industry. Their interest in hospitality and a potential career in the hospitality industry indicates a desire to study in this discipline. Hence it could be expected that their level of food knowledge would be high, as they have a demonstrated personal interest in food and beverage. These students will enter into an industry where a depth of food knowledge will be required for success. The cohorts of students in this program, encountered in previous years, have not consistently demonstrated a level of food knowledge that would be considered appropriate, or advantageous in the hospitality industry. This lack of food knowledge has raised the questions of ‘what’ their knowledge is, and ‘where’ it comes from. These questions are the foundation of this research and give rise to the questions put forward in the data collection process. The study will explore students’ own perception of where this knowledge came from. The analysis will highlight the issues that William Angliss Institute, and possibly, similar institutions face when designing curriculum to enable these students to fulfil their roles as leaders in the hospitality industry.

The study will also attempt to determine for students studying the culinary management degree where this food knowledge may come from and how it is accessed, as a way of ascertaining where in an individual’s life a disconnect with food may be occurring. The study may have relevance for other institutions that offer similar programs, and for schools that are preparing students for careers in hospitality through offering VET in schools programs. This may provide, from an educational perspective, clues as to where and what type of food knowledge and food literacy programs may be most effective when targeting future professionals in this industry. This type of study has not been carried out before at William Angliss Institute and no other published research that addresses this topic in Australia has been identified. This study may primarily help educational institutions like William Angliss Institute and those that specialise in hospitality training and education to better understand their student cohorts with regard to food knowledge. A secondary beneficiary of this study may be the hospitality industry that will gain an insight into the level of food knowledge that some of their
younger employees entering the industry with hospitality career paths in mind, may have. This may help in their recruitment and training procedures and help to develop tools to identify suitable candidates for their establishments.

The first chapter of this thesis is the literature review. This chapter explores the relevant literature that relates to the notion of “what is food knowledge?”, “where does it come from?”, and “why it is important?” The key research question for this study is born out of the literature and it presented at the end of the literature review.

The next chapter gives an overview of the methods employed in this study. It explains why a questionnaire was chosen as the tool for gathering data for this study and how this questionnaire was designed as well as a review of the participants involved in this study. This chapter also contains discussion of the method of analysis chosen for the data in this study.

The findings are then presented in both written and graphical form. The progression of the findings follows the same order as the questions in the questionnaire. This section also attempts to unpack the data and present it in a manner that allows investigation of the primary research questions. It does not simple present the raw data, but rather attempts to find relationships within the data that, again, may help explore the primary research questions.

Following this is the chapter that focuses on the discussion of the previously presented results. This chapter builds on the evidence presented in the results and tries to find meaning in the data as it relates to the primary research questions. This chapter looks to discuss the relationships between the data presented and the literature reviewed earlier in this thesis.

The final chapter is the conclusion, where the key elements of the findings and the discussion are brought together and ideas are put forward based on the earlier discussion. These ideas relate to what might by an appropriate course of action and thought as a result of this study.
Literature review.

An individual’s level of food knowledge can be an indicator of their relationship with food. This food knowledge may vary from individual to individual for various reasons, family history, schooling, personal interest, or a combination of these reasons. Exploration of the literature is necessary to determine what is defined as ‘food knowledge’ and to ascertain the possible origins of such knowledge. The definition of food knowledge is unfortunately not clearly or easily defined. The definition to be used in this thesis will draw upon relevant literature, but also provide an alternative that represents the intentions of this study. The literature reviewed for this study is international in its scope, in an attempt to provide a broader view of the relevant issues; however, much of it focuses on western cultures, predominately the United States of America (USA) context.

What is ‘Food Knowledge’?

‘Food Knowledge’ has diminished to the point where, as Jaffe and Gertler (2006, p. 54) state “consumers are now superficially familiar with many more kinds of foods, but knowledgeable about very few”. The importance of food is being marginalised and knowledge of food is being ‘dumbed down’, and due to this there are a number of sectors of the community calling for improved food education. Food education, as Kimura (2011, p. 466) claims “is commonly understood to be something that provides knowledge about the ills of modern food systems and prompts citizens to look for more sustainable options”. According to Kwik (2008), food knowledge is a concept related to tradition and involves the transition from generation to generation of knowledge and skills related to food.

Food knowledge as a term appears infrequently in the literature, but is represented by different terminology that has a similar meaning. We find the terms ‘food literacy’, ‘nutrition/health literacy’, ‘kitchen literacy’, and ‘foodways’ used throughout the literature to represent the ideas and concepts in the opening statement above. Food Knowledge may, therefore, be seen as an overarching concept that contains elements of food literacy, nutrition/health literacy, kitchen literacy, and foodways.

Looking firstly at the term ‘food literacy’ we find the idea expressed by Bellotti (2010, p. 33)

“Food Literacy is a multi-faceted concept that comprises three integrated components:
1. Food, nutrition and health.
2. Agriculture, environment and ecology.
3. Social development and equity.”

This view demonstrates that food literacy does not concern itself solely with the basic concept of ‘what to eat’, but informs the ideas of providence of food and the implications this may have on other domains. Bellotti goes on to point out that “Improving the general level of food literacy in society will have benefits within domains, but the real challenge is to successfully integrate across domains to realise new synergies in environment, agriculture, food, health, and community development.” (Bellotti, 2010, p. 33). The concept of extended
interpretation is continued by Smith (2009, p. 54), who argues that “(f)ood has become an abstract idea and over time the general public has lost consciousness of the connection between food and the land and nature. The ideologies of individualism, industrialization and corporate capitalism prevail with food as a commodity that is taken for granted.” According to Smith (2009), food literacy is a concept advocating a connectedness of life and food is connected to everything we do. How we interact with our food has an impact on the environment, on society, on our political system, on our financial system, and how we interact with other individuals. This concept explores the socio-cultural-spiritual significance and enjoyment of sharing food and eating together.

Block et al. (2011) view food literacy as a component of a larger concept of food well-being. They argue that society’s limited outlook on food, being one of “food = nutrients = health” (L. G. Block et al., 2011, p. 5) has been the major factor in the rise of diet related chronic diseases and the disconnect that now exists between people and their food. They suggest that people should view food from a perspective of ‘well-being’, and to help initiate this they have constructed a framework to help people re-connect with their food (see Figure 1 below). Block et al. also define food well-being as

“a positive psychological, physical, emotional, and social relationship with food at both the individual and societal levels. As such, FWB (Food Well-Being) is necessarily influenced by the cultural, environmental, and legal factors that govern people’s food attitudes and behaviors” (2011, p. 6).

Their framework

“employs a richer definition of food, one that has stronger connections to other academic fields, such as anthropology, and to current societal trends, such as the Slow Food Movement and the rise in popularity of culinary arts” (2011, p. 6).
This framework (Figure 1) incorporates elements of cultural heritage and sets out the importance of food within the family unit, highlighting the consideration that food knowledge is learnt via family and cultural socialisation, and should not be left to food marketing and advertising. This framework looks at Food Well-Being as an amalgam of food literacy, food marketing, food availability, food policy, and food socialisation; all these aspects represent how and when food is connected with our lives. It is a holistic perspective more in line with Santich’s (2007) view of gastronomy, that of being a multi-disciplinary field of study.

Nutrition literacy and health literacy are closely aligned. As Silk et al. (2008, p. 4) explain

“(n)utrition literacy can be defined similarly to health literacy as the degree to which individuals can obtain, process, and understand the basic health (nutrition) information and services they need to make appropriate health (nutrition) decisions”.

This definition is very similar to the one put forward by Neilsen-Bolhman (2004, p. 5) which states that

“Health literacy is defined as the degree to which individuals have the capacity to obtain, process, and understand basic information and services needed to make appropriate decisions regarding their health. Health literacy also includes writing, listening, speaking, arithmetic, and conceptual knowledge.”
Dickson-Spillmann and Siegrist (2011) choose to further define nutrition literacy by highlighting the difference between declarative knowledge and procedural knowledge. They claim that all research into nutrition literacy has only ever dealt with declarative knowledge amongst general populations. Levels of procedural knowledge have only ever been studied amongst ‘subgroups’, for example patients suffering from cardio-vascular disease. This distinction between declarative and procedural knowledge is important, as individuals may know what is good for them, as far as nutrition is concerned, but they may have little understanding as to how to incorporate this information into their daily lives. Knowing how to do something could be as equally important as knowing what to do.

Vileisis (2008) uses the notion of kitchen literacy in describing the history of the American kitchen where she explains that through numerous historical events and social change Americans were disconnected from where their food came from, how it was produced, and how to prepare raw ingredients. The need for time spent in the kitchen was diminishing and hence skills and knowledge that related to this aspect of life were also diminishing. These ideas are further supported by Pollan (2007, 2008) and Schlosser (2005) who also explore this theme of a disconnection between people and their food and the loss of knowledge and skills related to food. They also highlight the notion that food is tightly entwined with culture and hence problems with our food are directly related to problems elsewhere in our culture, whether social, environmental, economic, or political. This entwinement has brought rise to the term ‘foodways’ which, according to De La Pena and Lawrance (2011, p. 2) is “everything about eating, including what we consume, how we acquire it, who prepares it, and who is at the table”. De La Pena and Lawrance (2011) further argue that the subject of foodways has been brought to prominence through the proliferation of food related media, including books, magazine articles, and TV programs. This proliferation has developed an advanced awareness amongst the population. They suggest that people are aware of the interplay of food and various issues but are unaware of how, or unwilling to change their dietary patterns. Development of food literacy/food knowledge would enable people to re-connect with their food and provide them with an avenue to impact upon the various issues of concern that they see as linked to the production, preparation, and consumption of their food.

Where does food knowledge come from?

Chan et al (2009, p.475) state that “(H)ealthy eating habits are more likely to take a foothold in adults if they are established at an early age”. Lessard, Greenberger and Chen (2010, p. 74). argue that “(p)a rents play a major role in influencing adolescents’ eating habits and dietary intake, for better and worse, both through the models they provide and their direct influence attempts.” Parental modelling is a major influence on a child’s socialisation towards developing behaviour surrounding food and nutrition (Hays, Power and Olvera, 2001). Parents also provide skills and knowledge that a child is able to utilise in developing eating patterns and behaviours.
Socialisation is a broad term for the whole process by which an individual develops, through transaction with other people, his/her specific patterns of socially relevant behaviours and experience (Kimura, 2011). Socialisation research focuses on influences affecting children's development, but research on consumer socialisation necessarily involves analysis of children's influence on intra-family patterns. Moreover, what kinds of consumer behaviours are "transmitted" across generations (Flint et al., 2011)? For any socialisation attempt to have lasting effect, it is necessary that the child internalises its content, values, attitudes, norms, and behaviour. However, parents cannot always expect their values and standards to be adopted without contest, and parental socialisation attempts may sometimes be ignored or met with rejection or outright opposition (Grønhøj & Thøgersen, 2009). But research still suggests that parents are the primary source of early socialisation. Peer groups and schools also play a large role in future socialisation. Foxman et al. (1989) have stated that the family should be viewed as a dynamic social group in which parents and children both teach and learn. To this end they suggest that a number of elements need to be in place within the family unit for intergenerational influence to occur. These include:

- family structure;
- the child's individual characteristics; and
- the nature of the product being decided upon (Foxman et al., 1989).

They explain that within the family structure two patterns of communication can occur: socio-orientated and concept-orientated. Socio-orientated communication pressures the child to avoid confrontation, conform and avoid risk of offending, whereas concept-orientated communication encourages the child to develop their own ideas. Research shows that children living in a concept-orientated environment are more likely to influence their parent's decision making. Grossbart et al. (2002) have a similar idea with their concept of 'warm' and 'cool' parenting styles. Warmer parents are more likely than cooler parents to: view children's and adults' roles as complementary; try to enrich the child's environment with educational activities; have supportive and affirmative interactions with their children; expect mature behaviour; and parent with a balance that changes over time.

Food is an important aspect of socialisation, as expressed in the literature (Beardsworth & Keil, 2000; Fischler, 1980), and as such is open to ideas of reverse socialisation which generally refers to the ways in which younger people influence and alter their elders' views and behaviours. It is most likely to occur when children possess new or recently accepted views, knowledge, skills, or behaviours that parents have not acquired (Flynt & Brozo, 2009). A major study by Grossbart et al. (2002) explored children's influence on parents and the use of technology primarily the internet. It demonstrated that reverse socialisation does exist and this phenomenon was further highlighted in studies by Ayadi (2008) and Vaske and Kobrin (2001) on issues of obesity and the environment, respectively.

The relationship between parents and the socialisation of children's behaviours towards food is one that needs to be investigated as it is one of the major sources of food knowledge that an individual is exposed to and can
have a profound impact. Meal times are, as stated by Ochs and Shohet (2006, p. 36) occasions that “facilitate the social construction of knowledge and moral perspectives through communicative practices that characterize these occasions”. Meal times are when a large proportion of a child’s cultural socialisation occurs. As modern lifestyles become more hectic the traditional cultural norms of the table begin to disappear. The family unit sharing a meal together is a tradition prominent throughout many cultures, but Ochs and Shohet (2006) argue that, in many western contexts, we are no longer seeing the family unit sharing a meal. Children are eating at different times from their parents, as both parents may be working and arrive home at different times. When families do eat together children wish to leave the table on completion of their meal, the desire to linger at the table and converse does not exist. According to Neumark-Sztainer et al (2003) family meals play an important role in the development of a child’s eating habits and they suggest that the frequency of family meals strengthens the behavioural change. This view of family influence is also found in other studies (Cooke, 2007; Snoek, van Strien, Janssens, & Engels, 2009).

Pfeifer (2009) highlights the role culture has to play in the food choices we make, it tells us what we can eat, when we eat, and why we eat. Culture may refer to a national culture or to a family culture. Family influence on eating habits and food knowledge is culturally specific. A study conducted by Ochs, Pontecorvo and Fasulo (1996) highlighted cultural differences by stating that in American households, mealtime was a negotiated exercise where children were bribed with the threat of no dessert in order to make them eat their entire meal, whereas in Italian households eating was taught as something that one derives pleasure from and all foods are pleasurable. Italian parents spoke of the dishes they served and recounted childhood memories of the dish. This connected the food to family culture and family relationships. Children were allowed to have ‘personal’ tastes. Food was not used as a carrot or stick, as was seen in the American model. American children saw food as ‘good’ and ‘bad’ cementing a relationship with food that involved foods that ‘must’ be eaten to enable one to eat the foods they ‘wanted’ to eat. This cultural connection to food relationships/practices and food knowledge gives us an insight into the significance of the cultural background dominant in a family. The cultural diversity within Australian family homes would suggest that the level and range of food knowledge of students would be a reflection of this cultural diversity. Those children growing up in a family that was dominated by a culture that viewed food in a similar way to the Italian model would more than likely have a greater respect and understanding of food than those growing up in a family dominated by the cultural model similar to the American family.

The student cohort of this study are in a transitional stage of their lives, as Lahelma (2003) states “(c)oncrete steps towards adulthood are marked by transitions from secondary to vocational or higher education, work and earning money, partnership and family, and leaving the parental home”. Mortimer et al (2008) suggest, “(c)ontemporary youth typically experience considerable floundering and uncertainty in their transition from school to work”. This transition period is where we find a number of the students, dealing with the uncertainty of possibly leaving the home and entering into the ‘adult’ world where there are new challenges and new expectations and responsibilities. Many of the students in this study are international
students, and this means they have to deal with more profound challenges compared to domestic students. “Leaving the social comfort of home country for study in a foreign country, language and culture can be a harrowing experience, especially for younger international students” (Hellsten & Prescott, 2004, p. 347). The challenges students face in a foreign country dealing with language and cultural issues can increase anxiety levels. “Adjusting to a new educational environment, with practices and values often different from those in which they spent their formative years, poses a significant challenge to international students” (Ransom, Larcombe, & Baik, 2005). The literature (Chalmers & Volet, 1997; Ransom et al., 2005) states that language barriers tends to be the major reason why international students find it difficult to engage in class or after class.

There are school and community garden programs such as the Stephanie Alexander Kitchen Garden (SAKG) program in Australia and similar programs overseas that attempt to help students gain knowledge of and experience working with food which may help students who have not come from families where this knowledge was available (Kilgour, 2010; Moreton, 2010; Orr & Kumar, 2010; Price, 2007). The SAKG program involves students between Grades 3 and 6 in the setup and maintenance of an organic vegetable garden. The students harvest and then use the produce to prepare and eat a communal meal. The program is fully integrated into the curriculum and is currently in 130 schools nationwide. Government funding is available to allow the program to be implemented in another 60 schools. This program is of most benefit to students of greatest disadvantage thereby addressing health inequities in a way that is difficult to achieve in health promotion programs (K. Block et al., 2012). The strong additional benefits of the Kitchen Garden Program to the school community have been clearly demonstrated in terms of child engagement in learning, increased child willingness to try new foods, improved child knowledge, confidence and skills in relation to cooking and gardening, improved school social environment, and increased school community connections (K. Block et al., 2012).

The need for these types of programs can be interpreted as a result of the breakdown of family culture as a conduit for food knowledge. This inability of some family cultures to provide meaningful and appropriate food knowledge has meant that there is pressure on other segments of the community (in this instance primary schools) to fill the void and provide the necessary food related education. As Cutter-McKenzie states (2009) the research demonstrates a vast array of benefits derived from a kitchen garden program, from health and well-being, to academic performance. The existence of these programs and their ability to act as a ‘safety net’ when it comes to food education would suggest that students who have attended a primary school that has a kitchen garden program would have a greater sense of food knowledge than those who attended a school that did not have such programs.

Media, in all its forms, play an important role in the food ‘education’ of individuals (Silk et al., 2008). Television (TV) is becoming more and more a principal source of food knowledge in some households. According to de Solier (2005) we are currently seeing an explosion of cooking related TV programmes throughout primetime
viewing. These cooking related shows are categorised as “edutainment” (de Solier, 2005). De Solier (2005) also suggests that this current crop of cooking shows is more about the entertainment component rather than the education component, and that people may not, in fact, learn anything from viewing these shows.

Arguably, however, whether they learn something or not is not the issue, rather that food and cooking are becoming more prominent within people’s minds, and this may be enough to initiate a journey of discovery amongst some individuals. A study by Clifford et al (2009) concluded that exposure to cooking shows on TV changed college students’ behaviour towards food and in turn their diet. This saturation of cooking related media during the prime viewing hours is a response to the interest the public has with food and cooking. Children, through exposure to TV during primetime, may develop a ‘love’ for food that may have not arisen had it not being for the input of TV. An individual’s own personal interest may give rise to an increase in their own level of food knowledge. An interest in food that is borne out of an individual’s own desire, and not from family socialisation or intervention from a school program, may lead an individual to pursue this interest.

Access to food related information in a number of modern Western societies is simple and is provided in a number of different formats ranging from websites, blogs, books, journal articles, TV, DVD, radio, festivals, and cooking classes. When an individual has ease of access it enables them to pursue an interest they may have in food.

The concept of food knowledge that is to be used for this study has been derived from a review of related literature (Bellotti, 2010; L. G. Block et al., 2011; De La Pena & Lawrance, 2011; Kimura, 2011; Kwik, 2008; Silk et al., 2008) and from the researcher’s 25 years of experience in both professional practice and education within the hospitality and foods industry. Food knowledge can be defined as follows:

The knowledge/skills that relate to the production, preparation, and consumption of food. It is that knowledge that allows individuals to make positive and informed decisions as to what they eat on a daily basis. This knowledge involves ideas of seasonality of food, appropriate preparation methods of food, and the positive ‘health’ aspects of different types/varieties of foods. The use of the word health relates to physical health, mental health, environmental health, social health, and economic health. This knowledge is culturally influenced and is built upon tradition and social evolution.

**Why is Food Knowledge important?**

In Australia, as in many modern Western cultures, we are seeing a significant rise in preventable chronic diseases such as heart disease, Type 2 diabetes (formerly known as Adult Onset diabetes), obesity, and cancer. According to the National Health Survey (Australian Bureau of Statistics, 2008) over one quarter of Australian children aged between 5 and 17 years of age was classified as overweight or obese. The proportion of adults
classified as overweight and/or obese was even higher (62%). This survey also showed that only 4% of adults aged 18 to 34 consumed the recommended daily intake of fruit and vegetables. Interestingly, the survey also showed that 98% of children under the age of 5 years received the recommended daily intake of fruit and vegetables, but the percentage dropped dramatically as the children aged, to the point that when they reached the age of 15, only 15% were getting their recommended daily intake of fruit and vegetables. A study conducted by Byrd-Bredbenner (2004) concluded that the level of food knowledge amongst college/university students was low, to the point that they would not be able to act upon dietary recommendations given to them by nutritional professionals. Diseases related to poor diet and obesity, and other chronic diseases are becoming more prevalent in young people and children and in a large number of cases, can be directly linked to diet.

The link between diet and certain chronic diseases was first learned in the early decades of the twentieth century (Pollan, 2008) when doctors working with African communities theorized a link between certain chronic diseases and the diet of Western civilization. This link was further highlighted by the work of Weston A. Price did in the 1930s with many native peoples ranging from the Eskimos to the Masai people of Africa (Pollan 2008). These communities survived on diets that would seem to be very limited. Price found that these native people had little or no tooth decay and that their food was more nutrient dense than that of the West (Pollan, 2008).

According to Pollan (2008) Western culture has evolved to rely on processed food delivered via industrial agriculture. He also suggests that industrial agriculture was a result of policy decisions of the US government after the second World War, to ensure that there was enough affordable food for everyone (Pollan, 2008). This focus on affordability and quantity has seen the rise of relatively cheap, processed, unhealthy foods. Meals containing highly processed foods are in some cases cheaper than meals containing unprocessed whole foods. Numerous studies have highlighted the correlation between obesity and socio-economic status (Abdulai, 2010; Miura, Giskes, & Turrell, 2012; Vinkeles Melchers, Gomez, & Colagiuri, 2009; Wake, Hardy, Canterford, Sawyer, & Carlin, 2007; Wang & Zhang, 2006). These studies have shown that with limited resources available to them, families of low socio-economic status will choose the most affordable option to feed themselves. This cheap option is usually the least healthy option as it is predominantly highly processed and contains large amounts of fat, sugar, and/or salt.

The result of the abundance of cheap food has led to a slight apathy towards food. This apathy stems from industrialized agriculture. When food is readily available 24 hours of the day, the relationship that an individual has with their food changes. The price they pay, in terms of time and money, changes. According to Pollan (2008) certain types of processed foods become cheap and instantaneous. No longer does an individual need to devote time to sourcing ingredients and preparing those ingredients; the interaction one has with food becomes less of a priority and more one of convenience. This dietary view is eschewed to the point where food is seen as primarily fuel for the body and respect for the cultural significance of food is lost.
The result of this disconnect between food and how it is produced resulted in the proliferation of problems affecting our health, the environment, our social health, and our financial health. The Western diet does not only affect our personal health but also that of the planet. According to Pollan (2008), after cars, the food system uses more fossil fuel than any other sector of the economy — 19%; and produces approximately 37% of the world’s greenhouse gas emissions. He reports that today’s industrial agricultural system uses 10 calories of fossil fuels to produce one calorie of food compared to agriculture in the 1940s which used only 2.3 calories of fossil fuels to produce the same calorie of food. What we eat and how it is produced have a large impact on the environment both locally and globally. It now makes economic sense to catch Alaskan salmon, ship it to China to be processed and then send it back to California to be sold (Hess & Trexler, 2011).

The food system that supplies the demands of the Western diet with food of ‘convenience’ is a system that could be seen as one that relies on deception. The food appears to be ‘cheap’ as far as the consumer is concerned, but the true cost of the production is never disclosed to the public. The cost to the environment from the herbicides and pesticides that are used in industrial agriculture is not widely reported. The animal welfare ‘costs’ associated with intensive farming practices of chicken, pigs, and cattle are not widely reported. The social cost of the reduction in the numbers of independent grocers, butchers, and bakers, unable to compete with the large multi-national supermarket chains, is not widely reported. These are costs that we ‘pay’ but which are, at times, not connected to the food system, and to a certain extent, kept hidden. The concept of ‘hidden’ costs is one that infiltrates deeper into society than we might think. Nestle (2007) argues that the food industry, with its almost unlimited budget, is able to influence government policy within the US Government via lobbyist’ and campaign contributions. This enables the food industry to have a certain amount of influence over the legislation that governs their operations.

The food industry is also able to exert influence over the academic world via its sponsorship of particular journals and organizations. Nestle provides numerous examples of food companies’ sponsorship of academic organizations and their associated journals. A prime example she uses is that of the American Journal of Clinical Nutrition (Nestle, 2007), which lists no fewer than 28 food companies as its sponsors. These include companies such as Coca-Cola, Nestle/Carnation, Proctor and Gamble, Roche Vitamins, Slim Fast foods, and the Sugar Association. These companies all have a vested interest in the type of information that is published in the journal as it can have a direct impact on the sales of their products. This influence could also be construed as influencing the results of research, as Nestle (2007) states that a 1996 survey found that 30% of University faculty members accepted funding from industry. This may be an overly cynical view, and is not one that I am advocating, but it does raise the question, in some people’s minds, of the credibility of nutritional research. The influence of the industrialized food industry is a result of the monetary power it holds, which is in turn, supported by the cultural adoption of the modern Western diet. The industrialized food industry thrives on communities’ demand for its ‘cheap’, convenient products. Society’s disconnect with food is enabled and
perpetuated by the industrialized food industry. If this disconnect is continued, then the ‘ills’ of this disconnect, that are spelt out in the literature, will continue.

The issues related to the consumption of the modern Western diet do not only apply to the United States of America (USA). With the spread of American culture throughout the world the issues of the modern Western diet have begun to proliferate in cultures previously unaffected by these problems. To this point Matejowsky (2009, p. 30) states that

“their (the issues surrounding the consumption of the modern Western diet) rise serves as a troubling indicator of the looming “globesity” that threatens to overwhelm existing health care systems worldwide, place additional strains on already stressed government coffers, and diminish the overall quality of life for communities across the socioeconomic spectrum in both developed and less developed societies”.

The literature (Matejowsky, 2009; Nestle, 2007; Pollan, 2008) highlights some of the issues associated with the consumption of the modern Western diet, and how pervasive they are. If individuals are unaware of the issues at play when they make daily food choices then they are unable to make informed decision that can impact upon what we eat and how it is produced. If people were aware of the different production methods of an industrial food system and an organic food system then choosing sustainable (in all its forms; environmental, cultural, and economic) products would be a far easier task. The awareness of what our food is and how it is produced is a basic principle of food knowledge as suggested by the related literature (Bellotti, 2010; L. G. Block et al., 2011; De La Pena & Lawrance, 2011; Kimura, 2011; Kwik, 2008; Silk et al., 2008). In an attempt to correct the ills associated with the consumption of the modern Western diet it is necessary to gauge the level of food knowledge of its consumers. Understanding the level of food knowledge of its consumers will provide insight into possibly why they continue to purchase items that are produced unsustainably. Is it a lack of knowledge? Or is it something else?

**Research questions**

The review of the relevant literature has brought to light the key questions for this research in relation to food knowledge and the level of this knowledge amongst the cohort of Bachelor of Culinary Management students at William Angliss Institute.

The key questions are:-

- What is the level of food knowledge amongst the cohort in the Bachelor of Culinary Management degree, and is there a relationship between students’ perceived level of food knowledge and their actual level of food knowledge?
- What are the possible origins of this food knowledge?
Methods

The first part of the methods section outlines the research method that was used, which was a questionnaire. It explains why this was thought to be the most appropriate method for this project. The second section provides information about respondents. The third section explains the types of questions that were asked and how these helped to address the two key research questions.

This research was conducted at William Angliss Institute, located in Melbourne; Australia. In drawing from Cohen and Manion (2007), the research design is primarily governed by what ‘fits the purpose’, and this framed the methods. This enabled the design to be flexible enough to allow the research to work within the confines of what was practical and what was necessary. The research questions involved investigation of what students’ depth of food knowledge was, and where their food knowledge came from. These two questions of ‘what’ and ‘where’ are very different in nature to a question of ‘why?’ Hence they allowed a data collection approach that is quantitative.

A questionnaire was chosen as the best instrument with which to gather the necessary data. Cohen and Manion (2007) argue the questionnaire, as an instrument for data collection, is attractive as it provides structure, ease of administration and ease of analysis. However there are limitations regarding the limited and, sometimes, unsophisticated nature of the data collected via this means. The questionnaire, however, was chosen as it would enable data collection that focused on the two important questions of ‘what’ and ‘where’, and would enable, to a lesser extent, some investigation of ‘why’? The questionnaire is in Appendix 1.

The questionnaire was designed to contain primarily closed questions, to provide structure for the respondents. This would allow respondents to provide the appropriate and necessary data required, but focusing and containing their responses to ensure that the time proposed for the completion of the questionnaire was optimised. The closed questions were either dichotomous or based on a five point scale. The use of dichotomous questions was chosen to limit the number of respondents who were, as Cohen and Manion (2007) put it, “fence sitters”. The concepts contained in the questions may be foreign or new to respondents and thus they may be unsure as to what answer was expected of them. This being the case it was decided to limit respondents’ options with these questions and ‘encourage’ them to give a response either way. The use of the dichotomous questions was kept to specific topics to ensure respondents were not confused and would alleviate ‘guesstimates’. The scale questions were designed to each measure a specific thing but provide an element of unidimensionality by providing a choice of alternative responses, in keeping with the principles of Likert (Cohen & Manion, 2007). Cohen and Manion (2007) suggests that scale questions are effective at gauging perception, attitudes, and opinions, hence their use in this questionnaire. The types of questions asked in the questionnaire and the reasons for those questions are discussed later in the methods section.

In discussing the limitations of both dichotomous and scale questions, Cohen and Manion (2007) suggest the use of some ‘tailored’ open questions to allow respondents to express their own individual ideas. This is the reason for the inclusion of an open question (question 22 see Appendix 1) in the questionnaire; it was
designed to allow respondents the opportunity to provide more individual and detailed information regarding which individual had the greatest impact on their food knowledge and why.

The questionnaire was limited to 34 questions to ensure that it could be completed within a 10 minute period. Consideration was given to ensure the questions were not loaded and that terminology and vocabulary used minimised ambiguity. Early questions were designed to be non-threatening and to set the ‘tone’ of the content. The questionnaire was divided into two distinct sections. The first section involved questions that focused on the concept of food knowledge, what the level of this knowledge was and respondents’ perceived origin of the knowledge. The second section focused on demographic details.

Cohen and Manion (2007) suggests that for a quantitative study that a minimum of 30 respondents is acceptable. The questionnaire was distributed to 123 eligible respondents at the beginning of relevant classes during the second week of semester 1 in 2012 (20/02/2012 – 24/02/2012). Some 67 respondents completed the anonymous survey which represents a response rate of 52% of eligible respondents. The respondents were all from the Bachelor of Culinary Management program, some eligible respondents were current students of the researcher, but as the questionnaire was completely voluntary and anonymous it is impossible to determine how many respondents were students of the researcher. Data collection was conducted over one week, at the beginning of semester, in an attempt to allow the maximum number of respondents the opportunity to participate. It was decided that historically students were more likely to attend classes at the beginning of the semester than towards the end of it. Respondents were informed of the anonymous and voluntary nature of the questionnaire through an approved Plain Language Statement and a verbal presentation conducted by the researcher.

The questionnaire was made available to those respondents who voluntarily chose to complete it. Respondents were informed that on completion of the questionnaire they were to place it into a provided sealed envelope and place it at the front of the class for collection. The researcher was not present in the room whilst this process took place, to ensure anonymity of the respondents and to ensure that those who did not want to participate felt free not to do so. Human Research Ethics approval for this research was sought and granted by the relevant committees at both the University of Melbourne and William Angliss Institute.

**Participants.**

Students studying in the Bachelor of Culinary Management were chosen as potential candidates for a number of reasons. They were the direct cohort that the researcher engaged with in subjects taught in the Bachelor of Culinary Management at William Angliss Institute. This research was undertaken to provide insights into students’ level of food knowledge in this degree, and it provides the basis for further research within the Institute that explores the level of food knowledge of students in other, but still related, programs. It was hypothesised that these students were more likely to have a ‘greater’ food knowledge than their counterparts studying the Bachelor of Tourism and Hospitality at William Angliss Institute, as the Bachelor of Culinary Management is more food and beverage focused and hence likely to attract an individual who has an interest
in food and beverage. This interest may have manifested itself in encouraging the individual to explore food and beverage, broadening and deepening their knowledge of food prior to them commencing their studies at William Angliss Institute. This would provide a baseline for further investigation of the level of food knowledge of students in the Bachelor of Culinary Management and in determining whether future curricular interventions affect the level of students’ food knowledge. It also provides a baseline in comparing these students’ level of food knowledge with students studying other degrees in tourism and hospitality management at William Angliss. Future research could be conducted on the comparison of the level of food knowledge of those individuals pursuing a food related career by enrolling in and undertaking a food and beverage related course, those undertaking related courses in the hospitality and tourism industries, and those pursuing a career in an industry unrelated to food and beverage.

Table 1 presents the demographic characteristics of respondents in the survey. A total of 67 respondents elected to complete the voluntary questionnaire; this represents 52% of eligible respondents. This sample is representative of the entire eligible cohort from an age and country of origin perspective in all respects except for gender. In relation to gender this sample is slightly skewed towards female respondents in comparison to the entire eligible cohort. The sample consisted of 25 male students and 41 female students. One individual indicated affirmative to both being male and female, on this basis they were excluded from any analysis that was based on the sex of the respondents. Seventy five per cent of respondents in this cohort were aged 21 or under. One respondent elected not to reveal their age and on this basis they were excluded from analysis based on the age of the respondents. Country of birth results revealed that 27 respondents were born in Australia, whilst 39 respondents were born outside of Australia, with one respondent not indicating their country of birth and for this reason they were excluded from analysis based on country of birth. The internationally born students came from a diverse range of countries giving the cohort a global feel. Students came from South America (Brazil and Colombia), Europe (England, Germany, France, and Bosnia Herzegovina), North America (Canada), Central Asia (China, Hong Kong, Nepal, India, and Sri Lanka) and South East Asia (Vietnam, Thailand, Philippines, Singapore, Indonesia, and Malaysia). Of the students born outside of Australia, 29 were born in Asian countries and 10 were born in non-Asian countries.
Cohort Description:

Eligible Respondents

<table>
<thead>
<tr>
<th>Total</th>
<th>128</th>
</tr>
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<tbody>
<tr>
<td>Female</td>
<td>64</td>
</tr>
<tr>
<td>Male</td>
<td>64</td>
</tr>
<tr>
<td>Average Age</td>
<td>23 years</td>
</tr>
<tr>
<td>Born in Australia</td>
<td>40</td>
</tr>
<tr>
<td>Born overseas</td>
<td>88</td>
</tr>
</tbody>
</table>

<table>
<thead>
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<th>Respondent characteristic</th>
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<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>41</td>
<td>62</td>
</tr>
<tr>
<td>Male</td>
<td>25</td>
<td>38</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-20</td>
<td>44</td>
<td>67</td>
</tr>
<tr>
<td>21-25</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>26-38</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>Born in Australia</td>
<td>27</td>
<td>41</td>
</tr>
<tr>
<td>Born overseas</td>
<td>39</td>
<td>59</td>
</tr>
<tr>
<td>in an Asian country</td>
<td>29</td>
<td>44</td>
</tr>
<tr>
<td>in non Asian countries</td>
<td>10</td>
<td>15</td>
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<td>Primary school attended</td>
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<td></td>
</tr>
<tr>
<td>Government</td>
<td>31</td>
<td>47.0</td>
</tr>
<tr>
<td>Catholic</td>
<td>20</td>
<td>30.3</td>
</tr>
<tr>
<td>Independent</td>
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<td>22.7</td>
</tr>
<tr>
<td>Secondary school attended</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td>26</td>
<td>39.4</td>
</tr>
<tr>
<td>Catholic</td>
<td>22</td>
<td>33.3</td>
</tr>
<tr>
<td>Independent</td>
<td>18</td>
<td>27.3</td>
</tr>
</tbody>
</table>

Table 1: Respondent characteristics
The questionnaire also asked students what type of school they attended. One student elected not to indicate the type of primary school they mainly attended, and two students elected not to indicate what type of secondary school they mainly attended. Government schools appear to be attended more at both primary and secondary levels, with 31 students attending a government primary school and 26 attending a government secondary school (see Figure 2).

![Figure 2: School attended.](image)

The questionnaire investigated the number of siblings respondents had (see Figure 3). Nine students indicated they had no siblings, but 3 of these also indicated that they were not the eldest child in their family. This seems to be a contradiction and for this reason these 3 students were excluded from any analysis based on relationships between sibling/family make up and food knowledge. Of those that indicated they had siblings 23 were the eldest sibling in their family.

![Figure 3: Breakdown of Siblings.](image)

**Questionnaire**

Respondents were given a limited definition of food knowledge and this was provided in the Plain Language Statement (see Appendix 2: Plain Language Statement.). It explained to them that food knowledge is: ‘the knowledge that relates to seasonality, nutritional value and cookery techniques of food’. This definition was derived from the literature. This definition was given to students to provide an indication of what food knowledge related to. It provided respondents with a focal point for the questions being asked, but the limited nature of the definition was designed in an effort to allow respondents to reflect on their own ideas of food knowledge.
knowledge as they responded to the questionnaire, whilst still providing a basis for comparing students’ responses.

The first key research question on students’ perceived and actual level of food knowledge was elaborated through specific questions which were designed to gather information about the participants’ perception of their food knowledge, and through testing their actual food knowledge by asking questions about their declarative knowledge. This allowed a comparison between students’ perceived and actual level of food knowledge. Understanding students’ perceptions of their level of food knowledge is fundamental. Students’ food knowledge can be influenced by their perception of that knowledge. Students who perceive their level of food knowledge to be of a high standard may be less inclined to improve that level regardless of what, in reality, that level is. Alternatively, a student who perceives their level of food knowledge to be low may be more motivated to improve that level, again, regardless of what in actuality it is. In an education setting, students’ perceptions of what they know can influence how they interact with the curriculum and the classroom (Biggs & Tang, 2011). Their perception may be influenced by their age, sex, family culture, or work/life experience and this is why questions investigated students’ backgrounds.

The first group of questions (questions 1-4, see Appendix 1) were designed to focus on the perceptions of the participants’ level of food knowledge. Participants were asked, for example; to reflect on the extent of their current food knowledge by using a Likert scale that asked them to rate the strength or weakness of their food knowledge. Participants were also asked if they perceived their level of food knowledge to be greater than their peers, both those studying and not studying hospitality. Questions asked students about their level of confidence in their food knowledge, and the depth of their food knowledge. By gathering information on their perceptions of their level of food knowledge it was hoped that this would help define the importance that participants placed on food knowledge. If they perceived their level of food knowledge to be ‘high’ but in fact it was demonstrated to be low then this may indicate that the breadth of food knowledge is an issue as well as the depth of food knowledge. In other words, they (the participants) think they know enough therefore the need to further their breadth and depth of food knowledge is not recognised or is ignored.

The second group of questions (questions 5 – 8, see Appendix 1) were designed to gauge the level of actual food knowledge participants possessed. The questions asked for specifically, different fields of knowledge. Question 5 was designed to elicit knowledge relating to cultural factors and anthropology as it relates to cuisine. It asked students to identify the national cuisine a particular dish was associated with. Question 6 was designed to elicit knowledge and understanding from a technical standpoint as it relates to cooking methodology and ingredient identification. Respondents needed to be able to identify the ingredient and hence its particular characteristics to be able to suggest an appropriate cooking method. Question 7 was designed to elicit knowledge of basic recipe retention. The use of the white bread recipe was chosen for it historical and cultural relevance. Bread is a staple throughout many cultures and has a universal relevance as a recognisable product. The students participating in this study are all currently living in Australia and are
exposed to Australian commodities. Question 8 was designed to elicit knowledge relating to agriculture and geography. Asking respondents to reflect on seasonal produce would help identify whether respondents were aware of their surroundings, such as what season we were in and how this was demonstrated through the fruits and vegetables that were available and more importantly what was happening with the flora in the parks and gardens that surround them and whether they connected this with the availability of certain produce.

The third group of questions (questions 9-12, see Appendix 1) were designed to gather information from a different perspective, but to help shine light on the issue of perceptions of food knowledge; for example, participants were asked whether they perceived that William Angliss Institute was contributing to an increase in their level of food knowledge. Asking participants to reflect on their food knowledge since beginning their studies at William Angliss Institute would focus their thoughts on their present food knowledge and how this food knowledge permeates through their present daily lives; and if this food knowledge is something that they are open to expanding since they have chosen a Hospitality and Foods focused Institute as the place to further their education.

The purpose of the second research question was to provide an indication as to the origins of an individual’s food knowledge. The origin of food knowledge may indicate a possible cultural influence and provide an insight into the relationship a student has with food and food knowledge. If food knowledge is derived primarily from the family unit and is abundant, and given what the research says about the importance of culture and family, it is possible to assume that the relationship the student has with food has existed for an extended period of time and has been a central theme within the family home. If food knowledge has developed via sources external to the family home then it may be that this knowledge may not have been reinforced or expanded on within the family home. This may indicate a wider social issue; that being a change in the role that the family plays in the social education of children with regard to food. This manifests itself with the child seeking information on food outside of the family home.

The second key question on the possible origins of food knowledge was informed by specific questions that were designed to gather information on the source of the participants’ food knowledge. These questions would help the researcher to understand the pathways participants take to gather their food knowledge. This understanding would help to provide a context of this food knowledge; was the knowledge informally passed down through the family, or was it more structured in its delivery via multimedia? Better understanding of the origin and method chosen by participants to access food knowledge would enable curriculum to be designed to better fit the needs of the learners.

Questions 13 – 14 (see Appendix 1) were designed to allow participants to reflect on their life prior to commencing their Hospitality studies; for example participants were asked to indicate their source/s of food knowledge prior to commencing their studies at William Angliss Institute. The possible selections for this question were; family, school, media, work, friends, and other. Participants were able to select as many of
these selections as they felt was appropriate. This reflection was to encourage participants to engage with a
topic they may have never put much thought to, i.e. “What do I know and where did I learn it, and did I
perceive it as learning?” This was an idea thought to be worth investigating, as through anecdotal evidence it
had been found that previous students attending William Angliss Institute had identified their family life as the
major source of their food knowledge and food interests. This connection between food knowledge and family
is consistent with the literature (Chan, Prendergast, Grønhøj, & Bech-Larsen, 2009; Cooke, 2007; Hays et al.,
2001; Lessard et al., 2010; Neumark-Sztainer et al., 2003; Pfeifer, 2009; Snoek et al., 2009). The participant’s
eyearly memories of spending time in the kitchen with family members had been a consistent theme when it
came to identifying sources of culinary/hospitality passion.

Participants were asked in questions 15 to 23 about their daily interaction with food. These questions asked if
participants cooked at home and how often and for how long. They were also asked if they accessed food
related media, and how often and for how long. Participants were also asked about where their food skills
came from, and whether an involvement in food and food knowledge was something that was instilled in them
through their family life as a young child. These questions were designed to determine whether an interest in
food manifested itself in the daily lives of participants and to what levels. Participants may have had an
interest in food and this interest may have led them to choose a career path in food related industries, but was
the interest just fleeting or was it more deeply rooted and evident in their daily lives? Participants may have a
recollection of when and where they gathered their current food knowledge, but was it an ever developing
repertoire or was it something that had been gathered in early childhood and now as young adults, less of a
priority and therefore not to be built on?

Participants were asked about their hospitality industry work experience; question 24 was a four part
question. This question asked if participants had worked the hospitality industry, if so for how long, and what
this work entailed, and whether it directly related to food preparation or just the service of food. These
questions were designed to gauge the level of hospitality industry experience of the cohort. It was thought
that those individuals who had an interest in hospitality would more than likely have spent some time in the
industry to garner an understanding of a possible career that may be available within the industry. These
questions would help determine if this work experience had enabled the individuals to build on their level of
food knowledge.

Basic demographic information was gathered via questions 25 to 30. Questions 31 to 33 asked participants
about their schooling at both primary and secondary level and if any of this time was spent studying food
related subjects. If participants had studied a food related subject at school they were asked to briefly describe
the nature of the content, if they could remember. These questions were designed to build on this reflection
and help to define it more precisely, by identifying the perceived origin of food knowledge amongst the
participants.
Analysis of data.

Given that the purpose of this non parametric data was to capture a ‘snapshot’ of a particular cohort, a descriptive statistical model was chosen rather than an inferential model. Descriptive statistics would best suit the reporting nature of the data, as Cohen and Manion (2007, p. 504) state descriptive statistics “simply report what has been found.” Microsoft Excel was used for analysis of results, as it provided the necessary tools that the researcher deemed necessary to enable investigation of the research questions. Responses to the Likert scale based questions were translated into Excel utilising the numerical value of ‘1’ for each response. Statistics that related to correlation were viewed as the most appropriate for investigating the first major research question;

➢ What is the level of food knowledge amongst the cohort in the Bachelor of Culinary Management degree, and is there a relationship between the perceived level of food knowledge of students and their actual level of food knowledge?

Raw numerical values and percentages were deemed as appropriate for investigating the second major research question;

➢ What are the possible perceived origins of this food knowledge?

Several questions asked students to identify ingredients, recipes and foods that were in season. This data was transformed into numerical data by identifying the number of students who were able to answer these questions correctly. Students did not have to identify all fruits and vegetables that were in season in order to answer this particular question correctly; only one. Students also did not have to have identical responses to questions that asked about appropriate recipes and ingredients, but it could be determined whether students had adequate knowledge by the way they responded to the question. The open-ended question that students were asked about influences on them regarding their food knowledge was matched to their earlier responses to closed questions, and used to extend and develop insights about students’ responses.
Findings

Overall the results suggest that this cohort of students has a poor level of food knowledge with a small number of students demonstrating a comprehensive level of food knowledge via the questionnaire. The results reiterate what previous studies have found, that the family tends to be the major influence on developing an individual’s food knowledge. This section will present in detail the results of this study and begin to illustrate the characteristics of this cohort. Results from the questionnaire with regards to students’ perception of their food knowledge will be presented, as well as their actual food knowledge. The influence of William Angliss Institute of TAFE will be presented, along with the possible origins of this food knowledge.

Perception of Knowledge

Perception of knowledge relates to the confidence students have in the food knowledge they possess. It is not related to the depth or breadth of food knowledge they actually possess, but to how confident they are in the accuracy of the food knowledge they possess. This cohort of respondents is almost evenly split (see Figure 4) between those who believe that their knowledge is strong/very strong (49%) AND those who believe it is weak or very weak (51%). Figure 5 shows that only just over half (54%) are confident/very confident in their assessment of their own knowledge. The remainder (46%) are lacking in confidence in their own judgement of their food knowledge.

Figure 4: Perception of food knowledge
Figure 5: Confidence of food knowledge

Figure 6 demonstrates students’ perceptions of the extent to which their food knowledge is greater or less than their peers who are studying hospitality and those that are not studying hospitality. One student did not respond to the question on perception of their knowledge compared to their peers who are studying hospitality; for this reason they are excluded from further analysis in relation to peer perception. Figure 6 shows the number of responses within each category, and the overall percentage within each category. This is the case for all figures that follow.

Figure 6: Perception of knowledge compared to peers who ARE and who are NOT studying hospitality.

Actual Knowledge

Figure 7 shows the number of correct responses to the food knowledge questions given by the students. Some 16 students (24%) were unable to answer any questions correctly, whilst 7 (10%) students were able to answer all 4 correctly.
Figure 7: Number of correct responses by total.

Figure 8 shows the results for each individual food knowledge question. Students found the question related to listing the ingredients in a basic white bread recipe to be the most achievable question to answer correctly with 42 students (63%) giving a correct answer. Students found the question related to national cuisine and dish identification the most difficult with only 12 correct responses to “Which national cuisine do you associate ‘Chermoula’ with?” (question 5 on questionnaire).

Looking at the results of these four food related questions and breaking those results by gender, country of birth, and work experience reveals the following results. In the four figures that follow, respondents are grouped by the number of food knowledge questions they answered correctly. Male respondents seemed to have a relatively even spread of results, with 20% of their cohort correctly answering all four food knowledge questions, as well as 20% answering both two and one questions correctly (see Figure 9). Female students had
a greater representation in the group that answered two food knowledge questions correctly with a third (34%) of this cohort in this category.

When using culture as a differentiator of food knowledge the cohort was separated into two distinct groups even though all students were currently living in Australia and being exposed to Australian culture and food. Students were grouped according to country of origin as this was thought to have had the greatest influence on the development of food knowledge. Group one was students from an Asian cultural background, group two contained students from a Western cultural background. Three students from Colombia and one student from Brazil were included in the Western cultural group. It is recognised that there are differences in European food culture and South American food culture, but as the students from these South American countries were a small part of the cohort it was deemed appropriate for this study to include them in the Western culture group because the similarities between their food cultures and Western food cultures are greater than those with Asian cultures. Cultural background shows that 41% (see Figure 10) of students with a Western cultural background answered only two food knowledge questions correctly. Figure 10 also shows that the Asian cultural background students seem to be more evenly spread with regard to their level of food knowledge. However, they do have a large number of students who were unable to answer any of the food knowledge questions correctly, but this may have been due to language or literacy issues, and possibly due to the fact that these food knowledge questions were not focused on Asian cuisine or ideas of cookery native to Asian cuisines. Of the 10 Asian students who were unable to answer any questions correctly, seven were female. The Western cultural background students are highly represented in the ‘2 correct’ category and have very few students who were able to answer all four questions correctly. There were two students in this group that got all four questions correct. Of the students in this group that were unable to answer any questions correctly, 67% (4 of 6) were male.

As for previous work experience, the results demonstrated that previous work experience in the hospitality industry has a direct influence on a student’s ability to answer the food knowledge related questions correctly (see Figure 11), and therefore a direct impact on the student’s level of food knowledge.
Note: 4 = 4 food knowledge questions answered correctly; 3 = 3 food knowledge questions answered correctly; 2 = 2 food knowledge questions answered correctly; 1 = 1 food knowledge question answered correctly; 0 = 0 food knowledge questions answered correctly

Figure 10: Number of correct food related questions by country of origin

Figure 11: Number of correct food related question by work experience.

Is there a correlation between a student’s perception of their food knowledge and the actual level of their food knowledge? There were only 3 students who indicated that they believed their level of food knowledge to be ‘very strong’; two of these were ‘very confident’ of their food knowledge whilst the remaining one, was ‘confident’. As for their actual food knowledge, only one of these three students was able to answer all four food related questions correctly, with the remaining two answering three and two correctly, respectively. This is too small a sample to draw any meaningful conclusions, but may indicate that a student’s perception of their food knowledge is not an accurate indication of their actual level of food knowledge.

**William Angliss Institute’s Influence.**

Sixty three students (94%) believed that William Angliss Institute (WAI) was contributing to an increase in their food knowledge; only one student indicated that it was not. Three students chose not to respond to this question. Interestingly, two of these students indicated in another related question that since commencing their studies at WAI their food knowledge had not increased at all. Figure 12 shows the extent to which students believed that WAI had helped to expand their level of food knowledge.
Figure 12: Since commencing your studies at William Angliss Institute, to what extent has your food knowledge expanded?

Thirty eight students (57%) indicated that their dining habits (‘dining habits’ relate to the variety of the restaurant types in which you choose to eat) had changed since commencing their studies at WAI. Twenty six students indicated that their dining habits had not changed since commencing their studies at WAI. Three students did not respond to this question. Figure 13 shows the extent to which the 38 students who responded ‘yes’ to a question about whether their dining habits to had changed since commencing their studies at WAI.

Figure 13: To what extent have your dining habits changed since commencing your studies at WAI.

Forty eight students (72%) indicated that their dining expectations had changed since commencing their studies at WAI; with 17 indicating that their expectations had not changed. Two students declined to respond to this question. Figure 14 shows the extent to which the 48 students who responded ‘yes’ to the perception that their dining expectation had changed since commencing at WAI had occurred.
To what extent have your dining expectations changed since commencing your studies at WAI.

Sources of Food Knowledge

Figure 15 shows that 56 of respondents indicated that their family was the most important source of food knowledge prior to commencing their studies at WAI. This question was not limited to one response. Students could nominate as many sources as they liked. Family was the most popular source, followed by media, then school, then friends, then work. Respondents were given the option of providing ‘other’ possible origins of their food knowledge, with only 1% of respondents indicating this as a possible source. The ‘other’ possible source of food knowledge was indicated as “travel”, possibly alluding to experiential learning via travel to different countries.

Figure 15: Before commencing their studies at William Angliss Institute what was the most important source of food knowledge? – Numbers of students.

When asked to write further comments on the person who influenced their food knowledge the most, the responses were predominately about family members. Following are a sample of the responses.
“My mother, she taught me to cook & started my interest in cooking from and at home taught me a love of home cooked meals.”

“Grandmother, growing up made me fall in love with food, mother; learnt basics off her and cooking healthy meals”

“My mother; she constantly involved me in the process of cooking at home and allowed me to explore my fascination”

“Mother; she used to explain each and every ingredient before adding it to the dish, she also explained why she added it.”

“My mum, she taught me about my culture and family through her stories of when she was in her home country, the dishes she cooks and how to cook”

“My mother as she always got us involved in cooking so we had skills to move out. My Grandma always eats and cooks with family and women always prepared food so when we had Christmas all us girls had to help”

“Dad, he is picky about the food he eats”

“My Dad, he cooks regularly”

The data indicated that media was the second most important source of food knowledge and this was an area that this research was designed to investigate. Media was identified as an important and influential source of food knowledge for this cohort. There were a number of questions contained in the questionnaire that pertained to the respondent’s interaction with media, in its various forms, as a source of food knowledge. Respondents were asked if they watched food related programs on TV; similar questions were asked relating to other forms of media, being books, magazines, websites, blogs, cookbooks, and newspapers. When asked if they watched food related television (TV) programs, 57 (85%) of students indicated ‘Yes’. In the related question of whether students obtained food knowledge from other forms of media (newspapers, magazine, cookbooks, and websites) and 56 (84%) indicated that they did. As for how long per week they engaged in these activities, the most popular response for both activities was between 30 minutes and 1 hour. Figure 16 and Figure 17 show this breakdown in more detail.
Respondents were, initially, asked to indicate if they cooked at home or not; 91% of respondents indicated that they did cook at home, a comprehensive indication that this cohort still accessed their food knowledge and that it was still relevant to their lives and their lifestyles. The next phase was to determine how long had they been cooking for and how often per week they cooked. When asked at what age they started to cook, the median age was 12, the youngest age was 3 and the oldest was 22, with 75% of respondents starting to cook at 15 years of age or less. On average respondents spent 3.6 days per week cooking at home, with 53% spending between 30 minutes and 1 hour when they did. Some 30% of respondents spent between 1 and 2 hours cooking when they cooked at home, 13% spending less than 30 minutes, and 4% spending more than 2 hours cooking when they cooked at home. These figures are encouraging as they indicate that 83% of respondents spent between 30 minutes and 2 hours cooking at home on the days that they did cook at home. This time frame spent cooking may indicate a commitment to preparing meals from fresh ingredients and not a reliance upon convenience products. Utilisation of convenience products may be seen in the students that spent 30 minutes or less when cooking at home, as the ability to prepare a meal in under 30 minutes without a heavy reliance on convenience products is minimal. This is not to say that a complete meal cannot be prepared in under 30 minutes utilising fresh seasonal produce and minimal input of convenience products, but it does require a level of skill and understanding that is not evident in this cohort when the data on the level of food knowledge possessed by this cohort is analysed.
Figure 18 shows the results in more detail.

![Bar chart showing time spent cooking at home.](image1.png)

**Figure 18**: Time spent cooking when cooking at home.

Trying to determine where and when this confidence and skill to cook at home originated, respondents were asked to indicate who they believed taught them how to cook. The options provided were mother/female guardian, father/male guardian, extended family, school, or friends. Respondents were asked to indicate as many sources of their skills as they deemed appropriate, they were not limited to one choice. Looking at the results of this question in conjunction with other questions relating to origins of food knowledge it would be expected that family members would play a major role in the development of cookery skills, and the results did reflect this. About 81% of all responses to this question were towards family-related members, of these responses 65% indicated the mother/female guardian as the source of their cooking skills, with 18% being for the father/male guardian, and 17% for extended family members.

Figure 19 shows the breakdown in more detail. Seven students indicated other sources, some of these being ‘maids’, ‘cookbooks’, ‘myself’, ‘work’, and ‘TV’.

![Bar chart showing who taught you to cook.](image2.png)

**Figure 19**: Who taught you to cook.
Results on the food habits of the student’s childhood demonstrated that for a large number of students food habits were an important part of their family life. Whilst growing up 54 (82%) students were involved in the preparation of meals on a regular basis (see Figure 20). Dining as a family unit was an important part of family life for 60 (91%) students (see Figure 20). Interestingly when asked if they believe their mother/female guardian or father/male guardian could be described as a ‘good’ cook, 57 (86%) students said their mother/female guardian was, but only 30 (45%) students said their father/male guardian was (see Figure 20). The question did not ask for details as to who prepared the majority of the meals at home whilst they were growing up. This was not seen as relevant, as quantity does not always equate to quality. An individual does not always need to prepare a multitude of meals to demonstrate that they are a good cook.

Students were asked about their family history with regard to dining habits and preparation of meals. The two specific questions that focused on this were:

- While you were growing up, were you involved in the preparation of meals on a regular basis?
- While you were growing up, was dining together important to your family?
- Would you say that your mother/female guardian was/is a good cook?
- Would you say that your father/male guardian was/is a good cook?

These questions in relation to the actual level of food knowledge displayed by the students garnered some interesting results. Students had indicated that their family was a major source of food knowledge (see Figure 15). Forty nine students answered ‘yes’ to both these family related questions. Only one student answered ‘no’ to both these family related questions. Error! Reference source not found. shows the number of correct food related answers these ‘yes’ students gave and also the number of correct answers by the entire cohort.

Converting these raw numbers in to percentages shows there are some similarities between these groups. Twenty four per cent of both groups answered zero food related questions correctly. Ten per cent of the entire cohort answered four food related questions correctly, whereas only 8% of those students who indicated ‘yes’ to both family related questions got all four food related questions correct. Interestingly the one student who...
answered 'no' to both family related question was unable to answer any of the food related questions correctly. These are very small cohorts, but they may indicate that there is a relationship between a student’s family food culture and the extent of their food knowledge.

**Hospitality Industry experience.**

Hospitality industry experience may be an indicator of increased food knowledge. It is assumed that if an individual is working in an environment where they are surrounded by food they may increase their food related knowledge through greater exposure to food and the way it is prepared. Fifty three students (79%) have had experience in the hospitality industry (see Figure 22). Of those that have industry experience 38 (71%) have worked in an area that involves the preparation of food, and 46 (87%) have worked with the service of food (see Figure 22). This industry experience has been for different lengths of time, 21 (40%) have worked for more than 2 years, 13 students between 1 to 2 years, 10 students between 6 months to a year, and 9 students for less than 6 months (see Figure 23). This may demonstrate a desire to be around food and develop a greater understanding of food and how it is served; thus impacting their level of food knowledge. Knowledge obtained via industry work experience may or may not be useful in their daily lives as it may be very context specific and may provide very little opportunity to be adapted to daily life. This is evidenced in the results of this study that relate to the actual level of food knowledge possessed by this cohort. Those results showed that this cohort did not possess a high level of food knowledge.
Having indicated possible sources of their food knowledge respondents were then asked to indicate which of these sources they perceived to be the most important, they were only permitted to select one possible source. The most highly selected option was family, with 44% of respondents indicating this as the most important. This result was to be expected to some degree as the majority of meal times in most circumstances are spent with a person’s family. The surprising element is that only 44% of respondents indicated this as their most important source of food knowledge. The other responses were represented along similar lines to the previous question, with 20% indicating media as the most important, 15% indicating work, 14% indicating school, and 7% indicating friends (see Figure 24). When asked to decide whether their family or their own personal interest had the most impact on their food knowledge, 57% of respondents indicated that their own personal interest had the most impact on their food knowledge. This may indicate that their food knowledge was developed and nurtured by their family upbringing, but they now view their own independent
thought as the guiding force behind the further development of their food knowledge. This further development is enhanced via their work within the hospitality industry.

![Bar chart showing sources of food knowledge.]

Figure 24: Most important source of food knowledge %
Discussion.

These results paint a picture of a diverse student cohort in this study. This cohort consists of students both from Australia and 14 other countries; they range in age from 18 to 33, with the majority (67%) aged between 18 and 20 years of age. They have been educated in government, Catholic, and independent schools, both at a primary and secondary level. They have a diverse range of influences when it comes to food knowledge. This cohort was influenced primarily by their family and the media they access. This interrelation between an individual and the sources of their food knowledge is at the very root of food knowledge acquisition for this cohort and therefore has implications for food knowledge development at higher levels of education.

In order to find answers to the first research question it is important to look at the actual level of food knowledge displayed by this cohort of students. The questions that relate to ascertaining the extent of students’ food knowledge, were limited to four specific questions that were designed to elicit specific types of knowledge, those relating to culture and anthropology as it relates to cuisine; knowledge and understanding from a technical stand point as it relates to cooking methodology and ingredient identification; knowledge of basic recipe retention; knowledge relating to agriculture and geography. Only 12 respondents were able to answer the cultural and anthropological focused question correctly. This question was related to specific cuisines (Moroccan, Algerian and Tunisian), if the respondent was only familiar with their own culture this question would pose some difficulties. This was demonstrated in the results with a significant lack of correct answers, leading to the conclusion that the respondents in this cohort lack a breadth of food knowledge and that their food knowledge may only relate to their own specific cultural background. This may be a problem for graduates from a Bachelor of Culinary Management as they may be entering an industry that is arguably, international and offers a product range that encompasses various cultures and cuisines. In order to expand their career opportunities, an understanding of various cuisine and dining contexts would be advantageous.

Results relating to the second of these declarative questions show that 28 respondents were able to correctly identify Ox cheek and suggest a suitable cooking method for this particular cut of meat. Ox cheek by its very nature is an extremely tough cut of meat, as it is a muscle that is in constant use by the animal as it chews and therefore is highly developed. This highly developed muscle requires a long and slow process of cooking such as braising or stewing. These cooking methods will break down the well-developed muscle via the process of hydrolysis, where prolonged cooking in a mixture of water and acid breakdown the protein, during this process as the internal temperature of the meat reaches 70°C, tough connective tissue and collagen will be transformed into soft gelatine (McGee, 2004). In order to answer this question correctly, respondents needed to demonstrate a specific level of ingredient identification and a specific understanding of cooking technique. This was a test of knowledge complexity as it involves an ingredient that is not readily used or available in many cultures, and requires a holistic understanding of the animal and how the animal lives.

Forty two respondents answered the third knowledge related question correctly. This question asked respondents to list ingredients to be found in a basic white bread recipe, quantities were not required. The
question was designed to elicit specific information relating to recipe memorisation. The key ingredients that are required are white flour, water, yeast and salt. If respondents listed extra ingredients such as sugar, herbs or spices, and oil they were not penalised. This question received the most correct responses demonstrating that a large number of the respondents had either made bread before or had seen a bread recipe, or at least a list of ingredients required to make a basic white bread.

The final question assessing food knowledge was related to the respondent’s knowledge of seasonal produce. The survey was conducted in the middle of spring in the southern hemisphere (late November/early December). Twenty seven respondents were able to correctly identify a vegetable and a fruit that were in season. The purpose of this question was to attempt to ascertain the level of interaction a respondent had with the ingredients they use in their cooking; and to gauge their awareness of their surroundings, what they saw growing in gardens and parks. Seasonal produce is more abundant and available than non-seasonal produce. This availability translates into a product that is cheaper, as it is plentiful and has minimal transportation cost associated to it, as it is most likely grown locally. Seasonal produce is more nutritious, flavoursome and at its textural peak, compared to when it is not in season and has been artificially stimulated to be available. If respondents have a basic understanding of the principles that apply to seasonal produce then their purchasing decisions would be greatly influenced by what is in season, their selection would be based on ‘what is good?’ compared to ‘what do I feel like and what is available in the supermarket?’ Seasonal produce is, in a lot of circumstances, related to what the general populous wants rather than what is in season. With modern farming techniques and global transportation networks, supermarkets are able to access produce regardless of whether it is in season locally or not.

Understanding of seasons also establishes a sense of place, as the produce in season is a direct reflection of the climate, geography and agricultural practices of a given locale. Recognising what produce is in season and choosing to use it creates a deeper connection with an individual’s surrounding environment and culture. What happens outside one’s window has a direct correlation with what is available to eat, this deeper connection and understanding of food plays a significant part in the development of an individual’s level of food knowledge. This deeper understanding elevates food above a simplistic notion of ‘fuel for the body’, to an organism that is reliant upon a number of interconnected factors, both human and environmental in order for it to be available. Seasonal understanding translates into a greater understanding and appreciation of the concept of the food chain and how food is produced.

A demonstration of a deeper understanding of food can be seen by looking at the second question about Ox check and third question about listing ingredients found in a basic loaf of white bread in isolation. Answering the recipe related question correctly in conjunction with answering the question related to Ox cheeks would suggest the student has a deeper level of conceptual knowledge, as together, they both require an understanding of not only ingredients, but cooking technique and the concepts involved with the particular technique, which enables them to apply these concepts to a completely different set of ingredients.
This analysis begins to answer the question of what is the level of food knowledge possessed by the students studying the Bachelor of Culinary Management at William Angliss Institute. The data shows that only seven students answered all questions related to food knowledge correctly, and 75% were able to correctly answer two or fewer questions correctly. This would suggest that the level of food knowledge possessed by the students is poor, and could hinder an individual’s ability to progress their career in the hospitality and foods industry; as a certain level of food knowledge may be a pre-requisite for certain jobs that have a food focus; this requires further investigation of student career and employment outcomes.

This study utilised a small cohort and within a specific context, but results in this study have demonstrated that the students within this cohort have a limited level of food knowledge, and this study adds, in some small way, to the literature surrounding food literacy and the origins of food knowledge. With respect to Block et al. (2011) Food Well-Being framework, students in this study have demonstrated individualistic tendencies that put them on the food literacy and food socialisation tabs of Food Well-Being framework (Figure 1: Food Well-Being Framework (L. G. Block et al., 2011, p. 6)). These two areas of the framework are concerned with the type of food knowledge and where it might come from, both from an individual and societal perspective. The knowledge this cohort possesses and the level of knowledge does not indicate that they encompass all aspects of Block et al. (2011) Food Well-Being framework. This may suggest that a more holistic approach is required by schools when it comes to food education, that students need to learn more about where their food comes from and the multiple implications involved in the production of their food. They need to be made aware of, as Block et al. (2011) state in their Food Well-Being framework, the food policy issues, the food marketing issues, and food availability issues, both from an individual perspective and a societal perspective. They may also need to broaden their perspective from individualistic to a more societal one when it comes to issues relating to food literacy and food socialisation. In order for this to occur there may need to be an evaluation of curriculum delivered in food related subjects in the formative years of both at primary and secondary levels of schooling. The curriculum may need to incorporate elements of food studies, gastronomy, and the discourse that surrounds food.

Considering this study focused on the cohort of students in the Bachelor of Culinary Management at William Angliss Institute it is important to reflect on what the implications of these results are for William Angliss Institute and for similar programs with students from similar backgrounds in Australian higher education institutions. The current subjects that make up the Bachelor of Culinary Management have a strong management focus, and are subjects that could be found in a number of management degrees. They are taught with a hospitality and culinary industry perspective in mind, but they could be described as generic business management subjects. What gives the Bachelor of Culinary Management its culinary focus are the ‘stream’ subject that focus heavily on the culinary and gastronomic world. Examples of these subjects are; Culture & Cuisine, Food and Beverage Knowledge, Introduction to Culinary Arts, Wine & Food Design, and
Gastronomic Issues and Perspectives. These subjects give the Bachelor of Culinary Management its culinary flavour, if you will. As these subjects are limited in number, they are limited in the scope of issues and concept they can cover, hence it is a matter of academic debate and academic expertise as to what subjects are available and what the content of those subjects is. The results of this study suggest that there may be a need for a subject that has a food knowledge or food literacy focus at a foundation level. The subject would need to broaden and deepen students understanding of food, of where it comes from and the issues surrounding its production, of why we eat the foods we eat, and how we can prepare foods in a respectful and authentic manner. This may ensure that students have an opportunity to develop their food knowledge to a level that is expected by industry of someone who is looking to become a hospitality industry professional and leader. Some of the current subjects offered in the Bachelor of Culinary Management touch on some of the important issues mentioned earlier, but there is not a dedicated foundation subject devoted to food knowledge or food literacy. An elective subject is offered, entitled Food & Nutrition – issues for the 21st century; this subject addresses concepts and ideas associated with where our food comes from and some of the issues surrounding its production. This subject is an elective and therefore may not be chosen by students, and more importantly, it may not be chosen by students who would benefit greatly from doing so. As Kim, Markham and Cangelosi (2002) suggest students tend to choose subjects that they feel they have an aptitude for and stay away from subjects they know little about, or that they do not see as career relevant. This could further explain the need to make a food knowledge subject mandatory, as this study suggests that students currently have a poor level of food knowledge and hence tend to shy away from subjects that are related to food knowledge. William Angliss Institute offers foundation subjects in academic skills, and foundations subjects that introduce the culinary world to students so as they have an understanding of the industry and the world they may develop a career in; but no subject that looks at food knowledge and food literacy and that addresses the knowledge deficiency this study has suggested exists in the current student cohort.

With regards to the second key element of the first research question; “is there a relationship between the perceived level of food knowledge of students and their actual level of food knowledge?” Having established that the level of food knowledge possessed by the students in this study is relatively poor, and that it could be deemed inadequate for an individual who is wishing to make a career in the hospitality and foods industry; the relationship between this actual level of food knowledge and students’ perceptions of this food knowledge needs to be explored. The majority of respondents answered ‘weak’ (49%) or ‘strong’ (45%), when asked about their perceived level of food knowledge, suggesting that they believed their knowledge not to be ‘very weak’ or ‘very strong’, somewhere ‘in the middle’. They may believe that they have some knowledge but not sure if it could be considered strong or weak as they may not have a benchmark to determine the exact level of their knowledge. This may lend weight to the idea that students do not discuss food related issues at any great length to enable them to benchmark themselves against other individuals and give them a good indication as to the exact level of their food related knowledge.
The next question relating to perception of food knowledge asked the respondents how confident they were of their food knowledge. The first question was ‘how much food related knowledge do you think you have?’ The second question asked the respondents ‘how confident are you that what you know is correct?’ Again the results firmly straddled the middle responses of ‘not very confident’ and ‘confident’. This may be further illustration of the uncertainty that the students have towards their level of food knowledge, they are not confident to select ‘very confident’ and conversely not lacking in confidence to select ‘not at all’. When asked about how their perceptions concerning their level of food knowledge compared with their peers that were either studying hospitality or not studying hospitality the results were relatively clear cut. Respondents believed that their level of food knowledge was greater than their peers who were not studying hospitality, on the other hand, 68% of respondents believed that their level of food knowledge was inferior to that of their peers who were studying hospitality. This may further demonstrate a real lack of confidence in their level of food knowledge, as they perceive that they have greater knowledge than a person who is not pursuing a career path that is orientated towards food, but when it comes to benchmarking themselves with their fellow hospitality students they are unsure of what they know. This lack of confidence may not be valid but it is a perception they carry with them, and may have more to do with the type of food knowledge they possess and the ‘currency’ it holds in the hospitality and food centric world of the Bachelor of Culinary Management. They may possess a reasonable level of basic generalised food knowledge that is relevant and enables them to make good food choices for themselves, but their confidence in this knowledge may be affected when a fellow students displays a level of unique and specialised food knowledge. They may feel that because they do not possess this level of specialised knowledge then what they do know is of insignificance.

Students may believe that studying hospitality will improve this level of food knowledge but, again, they are unsure how, and to what degree, but they feel that it is changing and improving, and is influencing their outlook on hospitality and food related issues. This uncertainty may be related to their personal development (adolescence into adulthood), as they may be at a transitional stage where there is uncertainty surrounding their lives. This could be personal identity issues, educational issues, job or career related issues, social or cultural relationship issues. Lahelma (2003) states “(c)oncrete steps towards adulthood are marked by transitions from secondary to vocational or higher education, work and earning money, partnership and family, and leaving the parental home.” Mortimer et al. (2008) go on further to say,“(c)ontemporary youth typically experience considerable floundering and uncertainty in their transition from school to work.” This transition period is where we find a number of the students, dealing with the uncertainty of possibly leaving the home and entering into the ‘adult’ world where there are new challenges and new expectations and responsibilities. They may still be at school but their work responsibilities are changing as they strive to find a balance between work, study and social life. The relationship between a lack of food knowledge and a lack of confidence in the food knowledge they possess is exacerbated as many of the respondents (31) in this study are international students who have left their country of origin and the support networks that that entails. As mentioned by Hellsten and Prescott (2004) leaving home and studying abroad can be an overwhelming experience. They are in a foreign country were they encounter language and cultural challenges which may
heighten the feeling of uncertainty and anxiety that is normally associated with this transitional stage in their personal development. “Adjusting to a new educational environment, with practices and values often different from those in which they spent their formative years, poses a significant challenge to international students” (Ransom et al., 2005, p. 2). The literature does agree that the major factor in limiting Asian student participation in class or after class is a lack of spoken language skills (Chalmers & Volet, 1997; Ransom et al., 2005). Students are unfamiliar with local accents and academic language. The majority of their spoken language skills are derived from social settings. These feelings of uncertainty are something that educational institutions like William Angliss Institute need to be aware of and create learning strategies and provide services that allow students to cope and reach their learning potential. These uncertainties may not be specific food knowledge but may exist in other fields of knowledge possessed by these students.

The investigated literature (Chan et al., 2009; Lessard et al., 2010) surrounding the origins of food knowledge suggests that the family is the fundamental source of food knowledge. The results of this study reflected this, with family being twice as likely to be the origin of food knowledge as media, school, or work. Media was considered a more influential source of food knowledge than both school and work. This may indicate that television is the preferred choice when it comes to accessing food related media content. These TV programs that students are engaging with may illustrate the ideas suggested by De La Pena and Lawrance (2011) that current TV programs and the focus on the concept of ‘foodways’ generates an awareness more so than transferring specific skills or knowledge. These TV programs tend to enhance an interest in food but do not necessarily translate into learnt skills or knowledge, even though research argues that TV can be an effective learning tool when used appropriately (Akhter, 2011; Linebarger & Piotrowski, 2010; Zuga et al., 2007). This may suggest that the current formats of food related TV programs are not the most effective when education is the main goal. The implications of this for institutes like William Angliss Institute that utilise current media in their curriculum may need to be more discerning when attempting to identify appropriate and relevant material for use in class. It has been shown the Generation Y tend to have visual and kinaesthetic learning styles, and the students studying hospitality in a higher education environment tend to be activist learners (Becker, Kehoe, & Tennent, 2007; Goldfinch & Hughes, 2007; Lashley & Barron, 2006). There might be an opportunity for institutes that have the resources to produce their own learning videos that are tailored to the needs of the students and that highlight the educational potential of the medium. Further research would need to be conducted to determine if in fact this was a viable and valid alternative.

Television enables content to be disseminated in a variety of ways that caters for mixed learning styles. Television is a medium that can accommodate visual, auditory, and to some degree kinaesthetic learning styles and has been used as an effective learning tool (Akhter, 2011; Linebarger & Piotrowski, 2010; Zuga et al., 2007). This may have implications when designing curriculum and content delivery for food related subjects. If students choose to, and are more comfortable with, accessing their food related information via television and video then this may require further research to determine the efficacy of video as a learning tool as opposed to other forms of content delivery in food related subjects.
In answering the second key research question about the origin of food knowledge amongst this cohort of students, it could be said that the results show that the origin of food knowledge lies within the family. The family is the foundation of food related knowledge; this knowledge is transferred through family interaction during meal preparation times and through the dining experience. Students have definite and strong memories of how their food knowledge was developed at an early age; these memories predominantly include interactions with their mother/female guardian, but are not limited to her, and may also include their father/male guardian or extended family members. This family orientated food knowledge tends to occur at early childhood and tends to be deep rooted and lasting, but slightly vague and generalised rather than being of a specific nature. Other influences tend to be teachers they have had at school or relationships they have had with friends. The older they become they begin to develop their own ideas on food knowledge and what is important. This knowledge may be more context specific and relevant to them gaining employment, than providing daily benefits to their lives.

These results would suggest that these students were in the perfect environment for the transference of food knowledge, but for reasons not investigated in this study, this transference did not take place to the extent that would be reflected by the level of food knowledge demonstrated by these students. This result may, however, be an indication of the concept suggested by Ochs, Pontecorvo, and Fasulo (1996) that the family culture, with regards to food has a bearing on the type of knowledge that is transferred during family meal times. This is seen in their comparison of an American household and an Italian household. If this is the case, and that more families of students attending William Angliss Institute are becoming ‘Americanised’ in their relationship with food; and as Pfeifer (2009) suggests that family culture plays a significant role in food education, then initiatives that rectify this are of great importance.

Programs that support family culture in food education such as kitchen garden program in schools have been suggested by Cutter-Mckenzie (2009) as having significant benefits for health and education. The results of this study, even though it is a limited cohort and focused on a particular institute, suggests that kitchen garden programs and the benefits derived from them in supporting food education, may be useful in enhancing the food knowledge that is transferred within the family unit. This transference of knowledge may be via reverse socialisation which generally refers to the ways in which younger people influence and alter their elders’ views and behaviours. It is most likely to occur when children possess new or recently accepted views, knowledge, skills, or behaviours that parents have not acquired (Flynt & Brozo, 2009). Further research would be needed to ascertain the existence and the extent of reverse socialisation in relation to food knowledge.

This study was limited in its ability to explore in significant depth or breadth the level of food knowledge amongst students, further research investigating in greater detail the levels of food knowledge amongst students both at William Angliss Institute and similar institutes would be beneficial. This would provide a larger ‘snapshot’ of the level of food knowledge and lend greater statistical significance to the data analysis, hence a
more refined indication of students’ levels food knowledge and understandings of where their food knowledge is derived from. It may also be beneficial to consider designing a study that has a qualitative component, so students’ understandings can be explored in more depth and complexity (Cohen and Manion, 2007). This would allow a richer understanding of students’ approaches to food knowledge, how they built that knowledge, and the key factors that helped shape their knowledge. This could lead to further studies comparing individuals studying in hospitality and individuals not studying hospitality, in an attempt to understand levels of food knowledge in the wider community. The more we understand what food knowledge our children possess and where it comes from the better we can develop strategies to rectify any deficiencies that may exist; and thus prevent the damaging impact of poor food choices.
Conclusion

The purpose of this study was to gain an insight into food knowledge of a small, specific cohort, that being students of the Bachelor of Culinary Management at William Angliss Institute of TAFE. There were two major research questions that drove this study, they being:

- What is the level of food knowledge amongst the cohort in the Bachelor of Culinary Management degree, and is there a relationship between students’ perceived level of food knowledge and their actual level of food knowledge?

- What are the possible origins of this food knowledge?

The cohort consisted of 67 students, from a diverse background, both culturally and demographically. This cohort tended to believe that their food knowledge was not either ‘very strong’ or ‘very weak’, falling somewhere in between. They were relatively confident of the accuracy of the food knowledge they possessed. This perception of food knowledge was not reflected in the actual levels of food knowledge displayed in this study; with only seven students able to answer all four specific food related questions correctly.

This study attempted to determine where these students obtained their food knowledge. The literature explored in this study suggested that food knowledge is primarily obtained from an individual’s family; this also was reflected in the results of this study. The family was the major source of food knowledge indicated by this cohort, media in its various forms, also played a role in developing food knowledge amongst this cohort.

The sample size for this study was small and provides a snapshot of a very specific cohort. The sample was also very specific in its nature, it consisted of students in a specific course at a specific Institute, and hence was a limitation of the study, when attempting to identify levels of food knowledge that are relevant to a wider cohort. Given that, it should be noted that the intent of the research was to specifically look at the identified cohort as this would directly impact upon the researchers immediate teaching practice.

While the sample is small, the findings may be relevant to similar contexts. In particular, the findings may be relevant for other higher education institutions offering programs in culinary management with similar types of students. The data at least suggest that the issue of students’ food knowledge may require investigation in similar types of institutions. The findings highlight the need for further research into the level of food knowledge and the possible origins of this food knowledge of other cohorts in other hospitality educational institutions. By better understanding the food knowledge of our students and where it might come from will enable us to develop programs that are better suited to developing the depth and breadth of food knowledge of graduates who will become the leaders of the hospitality industry. These programs may take the form of specialised food subjects featured early on in their studies, where students who are identified as lacking in necessary food knowledge can engage in foundational material and curriculum designed to minimise any deficiencies. These programs may incorporate elements to encourage students to learn from the great
diversity found within their classroom, where students with different levels and types of food knowledge can share this unique knowledge.

Further research into levels of food knowledge and its origins in the wider community may be needed to help address the rising rates of obesity within Australia. Arguably, poor food knowledge would not be limited to students studying hospitality. Further research may highlight the need for food knowledge specific programs to be implemented throughout at child’s education, at primary levels as well as secondary levels. These are questions that are important and will require investigation.
References


6th ed.


Appendices.

Appendix 1: Questionnaire

Investigation of food knowledge of Bachelor degree students and curriculum implications

As students of the Bachelor degree program at William Angliss Institute you are invited to participate in this research project. This research is being completed as part of Masters degree study at the University of Melbourne Graduate School of Education. The aim of this study is to determine the extent of students ‘food knowledge’ at various year levels of the Bachelor degree program at William Angliss Institute. The project will also determine where this knowledge comes from and what implications this level of knowledge has on the curriculum design of subjects within the Bachelor degree program. This project has been approved by the Human Research Ethics Committee.

Part 1: The following questions are about your food knowledge (food knowledge is the knowledge that relates to seasonality, nutritional value and cookery techniques of food)

<table>
<thead>
<tr>
<th>Please make a response to each question</th>
<th>Very weak</th>
<th>Weak</th>
<th>Strong</th>
<th>Very strong</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What is the extent of your current food knowledge?</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Not at all confident</th>
<th>Not very confident</th>
<th>Confident</th>
<th>Very confident</th>
</tr>
</thead>
</table>
2. How confident are you of all your current food knowledge?

3. Do you perceive that your food knowledge is greater than that of your peers who ARE NOT studying hospitality?

4. Do you perceive that your food knowledge is greater than that of your peers who ARE studying hospitality?

5. Which national cuisine do you associate ‘Chermoula’ with?

6. What method of cookery would you suggest for Ox Cheek? And why?

7. List the ingredients of a basic white bread recipe.
8. Name a vegetable and a fruit that is in season now.

9. Since commencing your studies at William Angliss Institute, to what extent has your food knowledge expanded?

Not at all  |  Somewhat  |  Quite a lot  |  Greatly

10. Do you perceive that your William Angliss Institute studies are contributing to an increase in your food knowledge?

   □ YES  |  □ NO

11a. Have your dining habits changed since starting your William Angliss Institute studies? (Your ‘dining habits’ relate to the variety of the restaurant types in which you choose to eat)

   Not at all  |  Somewhat  |  Quite a lot  |  Greatly

   □ YES  |  □ NO
12a. Have your dining expectations changed since starting your William Angliss Institute studies?  □ YES  □ NO

- Not at all
- Somewhat
- Quite a lot
- Greatly

12b. If yes, to what extent?  □ □ □ □ □

13a. Before you commenced your studies at William Angliss Institute what were the source/s of your food knowledge? (tick as many boxes as apply)

- Family
- School
- Media
- Work
- Friends
- Other (please specify)

13b. Which of your source/s indicated above was the most important (tick ONE box only)

- Family
- School
- Media
- Work
- Friends
- Other (please specify)

14a. Do you watch food related TV shows?  □ YES  □ NO
| 14b. If yes, how many hours a week do you watch food-related TV shows? |
|-----------------------------|-----------------|-----------------|-----------------|-----------------|
| Less than 30 mins.          | 30 mins to 1 hour | 1 to 2 hours    | More than 2 hours |

| 15a. Do you read food related media? For example, newspapers, magazines, cookbooks, websites. |

- Yes [□]  
- No [□]

| 15b. If yes, how many hours a week do you read food related media? |
|-----------------------------|-----------------|-----------------|-----------------|-----------------|
| Less than 30 mins.          | 30 mins to 1 hour | 1 to 2 hours    | More than 2 hours |

| 16a. Do you cook at home? |

- Yes [□]  
- No [□]

| 16b. If yes, what age were you when you first started cooking at home? |  |

| 16c. If yes, on how many days in each week, on average, do you cook/prepare a meal at home? |
|-----------------------------|-----------------|-----------------|-----------------|-----------------|
| Less than 30 mins.          | 30 mins to 1 hour | 1 to 2 hours    | More than 2 hours |

<p>| 16d. If yes, how many hours in each day, on average, would you spend preparing an evening meal at home? |
|-----------------------------|-----------------|-----------------|-----------------|-----------------|
| Less than 30 mins.          | 30 mins to 1 hour | 1 to 2 hours    | More than 2 hours |</p>
<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>17. Who taught you how to cook? (tick as many boxes as apply)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. While you were growing up, were you involved in the preparation of meals on a regular basis?</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>19. While you were growing up, was dining together important to your family?</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>20. Would you say that your mother/female guardian was/is a good cook?</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>21. Would you say that your father/male guardian was/is a good cook?</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>22. Which individual do you believe has had the greatest impact on your current food knowledge? Why?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Influence</th>
<th>Family life</th>
<th>Personal interests</th>
<th>Other (please specify)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
23. What has had the greatest impact in your food knowledge?

Part 2: The following questions are about your background and industry experience

24a. Have you worked in the hospitality industry?
- YES
- NO

If yes, please answer questions 24b to 24d below. If no, please proceed to question 25.

24b. Has your work involved the preparation of food?
- YES
- NO

24c. Has your work involved the service of food?
- YES
- NO

24d. How long have you worked in the hospitality industry?
- Less than 6 month
- Between 6 months and 1 year
- Between 1 and 2 years
- More than 2 years

25. What is your AGE?

26. What is your GENDER (please circle)
- Male
- Female

27. How many siblings do you have?

28. Are you the oldest child in your family?
- YES
- NO

29. What was your country of birth?

30. How many years have you lived in Australia?
31. What kind of Primary school did you (mainly) attend?

- Government
- Catholic
- Independent

32. What kind of Secondary school did you (mainly) attend?

- Government
- Catholic
- Independent

33a. Did you study any food related subjects at school?  

- YES
- NO

If yes, please answer questions 33b to 33d. If no, please proceed to question 34.

33b. At what year levels?  

33c. What was/were the subject title/s  

33d. Please provide a brief description of the subject matter covered

34. What is the Postcode of your home address:

Thank you very much for your valuable contribution to this research
Appendix 2: Plain Language Statement.

Investigation of food knowledge of Bachelor of Culinary Management students and curriculum implications

As students of the Bachelor degree program at William Angliss Institute you are invited to participate in this research project. This research is being completed as part of Masters degree study at the Melbourne Graduate School of Education. The aim of this study is to determine the extent of students ‘food knowledge’ (the knowledge that relates to seasonality, nutritional value and cookery techniques of food) at various year levels of the Bachelor degree program at William Angliss Institute. The project will also determine where this knowledge comes from and what implications this level of knowledge has on the curriculum design of subjects within the Bachelor degree program. This project has been approved by the Human Research Ethics Committee.

The questionnaire will take no longer than 15 minutes to complete. The questionnaire, should you choose to complete it, is anonymous and completely voluntary. You will not be required to provide any information that will identify you. The data collected will be kept securely in the Melbourne Graduate School of Education for five years from the date of publication, before being destroyed.

Once the thesis arising from this research has been completed, a brief summary of the findings will be available to you on application at the William Angliss Institute Higher Education Department. It is also possible that the results will be presented at academic conferences or in an academic publication or journal.

Please be advised that your participation in this study is completely voluntary. Should you wish to withdraw at any stage, or to withdraw any unprocessed data you have supplied, you are free to do so without prejudice. Your decision to participate or not, or to withdraw, will be completely independent of your dealings with the teaching staff of William Angliss Institute, and we would like to assure you that it will have no effect on your ability to progress with your Bachelor degree program.

Should you require any further information, or have any concerns, please do not hesitate to contact either of the researchers on the numbers given below. Should you have any concerns about the conduct of the project, you are welcome to contact the Executive Officer, Human Research Ethics, The University of Melbourne, on ph: 8344 2073, or fax: 9347 6739.

Your voluntary decision to complete this totally anonymous questionnaire will be seen as your consent for the researchers to use the data you have provided for their research purposes.

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