A Study Of Children’s Wear in the Australian Mass Fashion Sector:

Is there synergy between education outcomes and industry needs?

A thesis submitted in fulfillment of the requirements for the degree of

Master of Arts

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DECLARATION

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program; any editorial work, paid or unpaid, carried out by a third party is acknowledged; and, ethics procedures and guidelines have been followed.

Marianne Stephanie Centner

31st January 2013
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SUMMARY

The purpose of this research is to examine whether education outcomes match the Australian mass fashion industry’s needs. This fashion sector is the largest employer of fashion-trained personnel in the country. The research examines the industry’s needs from the perspective of the mass fashion retailers and the sourcing firms that supply them. The study also focuses on the role of computer aided graphic design as a means of communicating design ideas to buyers, as well as garment construction drawings, textile prints and placement prints to suppliers. The discipline crossover that is evident between fashion design, textile design and merchandising is also examined in depth.

The thesis focuses on the Australian generic market, that is, product commissioned by retailers for their own brands, with an emphasis on the mass fashion children’s wear sector. This sector was selected as it captures the current industry in a nutshell, in particular:

1. The sector’s focus on maintaining low retail prices;
2. The sector’s stringent fit and quality control requirements;
3. The sector’s reliance on understanding supply network capabilities to maintain low costs and to be aware of new innovations.

A purposive sampling process was used to select participants for the research as participants were required to have in-depth knowledge of the mass fashion children’s wear sector. Data was gathered through the use of open-ended thematic interviews and duly coded using a qualitative data analysis program, NVivo. Nvivo is designed to facilitate the organization of the data set more efficiently, enabling easier comparisons of answers in each theme.

At first glance, it appeared from preliminary discussions with industry and education that there is a dissonance between industry needs and education outcomes; however, on reflection through the interview process it became apparent that it is not possible for education to meet all of industry’s perceived needs. The more salient point to note is the rapid rate of change in attitudes and practice in the industry over the last thirty years and
especially the last four years. Retailers have transformed from just being sellers of product to now being in control of their own product development and manufacturing. This change has affected the role of industry participants, requiring practitioners to need less hands-on practical garment construction knowledge and more research and sourcing skills. However, on deeper examination, whilst the practical construction skills are no longer used in the workplace, an intimate understanding of these is important when it comes to product development. Considering these changes, this study has found that industry cannot pinpoint all the skills the product designer/developer needs. The literature examining design process and reflective practice generally is informative in its approach and this translates well into mass fashion product development as studied here.

Clearly, a close connection between industry and education is very important, both for undergraduate study and for professional development. The responsibility lies with both parties to make this a success. In summary, this research has uncovered a need to forge a much deeper collaboration between industry and education that could include internships throughout undergraduate study. Further, the retail industry should examine its own training programs, consider shifts in the industry, and take product development more into consideration for future professional development.
# Glossary of Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
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<tbody>
<tr>
<td>ABS</td>
<td>Australian Bureau of Statistics</td>
</tr>
<tr>
<td>Adobe Illustrator and Photoshop</td>
<td>Fashion industry standard graphics software</td>
</tr>
<tr>
<td>APEC</td>
<td>Asia-Pacific Economic Cooperation</td>
</tr>
<tr>
<td>CAD</td>
<td>Computer Aided Design</td>
</tr>
<tr>
<td>CMT</td>
<td>Cut, make and trim</td>
</tr>
<tr>
<td>DIISR</td>
<td>Department of Innovation, Industry, Science and Research, TCF Division</td>
</tr>
<tr>
<td>E-tailer</td>
<td>On-line retailer</td>
</tr>
<tr>
<td>Generic Product</td>
<td>Product designed specifically for a retailer’s own home brand</td>
</tr>
<tr>
<td>Lay plan</td>
<td>A plan of all garment pattern pieces laid out to a specific fabric width and size ratio. This process takes into account any lay constraints and endeavors to maximise utilisation of the fabric</td>
</tr>
<tr>
<td>PC</td>
<td>Productivity Commission - the Australian Government's independent research and advisory body.</td>
</tr>
<tr>
<td>Placement print</td>
<td>A single print on a garment</td>
</tr>
<tr>
<td>Position descriptions of industry personnel</td>
<td>Full description of all personnel involved in new product creation and sourcing on pages 56-61</td>
</tr>
<tr>
<td>Production pack</td>
<td>Includes all the artwork, trim details, fabric qualities and colours, size specification sheets and construction information used as the blue print for a new product design</td>
</tr>
<tr>
<td>Production process</td>
<td>Encompasses the range of activities and manufacturing processes from textile production, printing and embellishing to garment construction</td>
</tr>
<tr>
<td>Retail Firm</td>
<td>See description page 51</td>
</tr>
<tr>
<td>RMIT</td>
<td>Royal Melbourne Institute of Technology University</td>
</tr>
<tr>
<td>RTO</td>
<td>Registered training organisation</td>
</tr>
<tr>
<td><strong>Sourcing Firm</strong></td>
<td>See description page 51</td>
</tr>
<tr>
<td><strong>Specification sheet</strong></td>
<td>A measurement specification sheet is created by a garment technician for the purpose of costing a garment or for manufacturing a garments and consists of a detailed drawing of the garment style, front and back, as well as measurements and construction details</td>
</tr>
<tr>
<td><strong>TAFE</strong></td>
<td>Technical and Further Education</td>
</tr>
<tr>
<td><strong>TFIA</strong></td>
<td>Council of Textile and Fashion Industries of Australia Limited</td>
</tr>
<tr>
<td><strong>VET</strong></td>
<td>Vocational Education and Training</td>
</tr>
<tr>
<td><strong>WGSN</strong></td>
<td><strong>Worth Global Style Network, set up by</strong> Marc and Julian Worth in 1998 to provide information on the latest trends to the fashion industry</td>
</tr>
<tr>
<td><strong>Wholesale firm</strong></td>
<td>See description page 51</td>
</tr>
<tr>
<td><strong>Yardage print</strong></td>
<td>All-over textile print design</td>
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CHAPTER 1: INTRODUCTION

The unpredictable nature and fast pace of change in the fashion industry necessitates the study of the background characteristics of product sourcing firms, the retailers they supply, and both of these sectors’ perceived needs from fashion educators. The Australian fashion industry, much like its American and British counterparts, is divided very clearly into designer fashion and high street or lower priced fashion. Lower priced fashion can be found in varying degrees in Australian department stores, discount stores and chain stores. These retailers and the firms that supply product to them are major employers in the Australian fashion industry. The purpose of this research is to examine the depth of knowledge required by the Australian mass fashion industry of new graduates with minimal work experience on entering the workforce. The research also examines whether there is a discipline crossover between fashion design, textile design and merchandising, and if so, how the Australian mass fashion industry and education sector are managing this crossover. Finally, this research seeks to examine whether the mass fashion sector’s needs are being met and if, indeed, they can be met by undergraduate education. The first chapter sets out the approach and the process that guided this research:

❖ Section 1.1 frames the research and the motivation behind it within the context of my own background and experience.

❖ Section 1.2 provides an explanation of the industry perspective from my own working experience and includes examples from the literature.

❖ Section 1.3 is an overview of the literature background to this research.

❖ Section 1.4 is a short synopsis of the data collection and methodology used to select and interview participants.

❖ Section 1.5 concludes the chapter with a summary of the framework for this thesis.
4.1 **Background and research motivation**

I started this Masters thesis in 2008 and in the four years that I have been working on the research the shift in the industry has been significant. In 2008 when I initially had informal discussions with a fashion industry employment agent I found that, according to this particular agent, positions in the industry were clearly demarcated: a buyer needed certain skills that did not include the specifics of product design and development, but rather, for example, an ability to range and price product to fit within the retailers parameters; a graphic artist only needed to know how to use Adobe Photoshop and Illustrator very well and very fast, but did not need to understand garment design and construction; a product developer needed to understand construction, styling and range development, but not how to draw using a computer graphics package; and as recently as 2008, moving between retail and wholesale or sourcing was relatively difficult in the Australian context. All of this has now changed, with experienced product developers and sales people able to move seamlessly from product sourcing firms to retail firms. In conducting my research, I interviewed graphics trained participants who had moved from a purely graphics role where they worked to a designer’s instruction and brief, into design and product development positions with no formal fashion training. This mobility between workplace roles highlights the change in the industry and the crossover that is taking place between disciplines. Retail firms undertaking their own product development have driven this change in the industry. Retailers now require experienced product developers and designers; however, these firms do not have the training in place to develop the required talent to fill this need.

This research focuses on the Australian generic\(^1\) market, that is, product commissioned by retailers under their own house brands from sourcing firms, as well as the product that the retailers themselves develop for these brands within their own supply networks. In planning this research it was necessary to narrow my focus to one area in the industry. The area selected was children’s wear in the mass fashion market in Australia. The research examines the skills and knowledge needed from the Australian mass fashion industry perspective. It also examines when it is best to inculcate complex production

\(^1\) Product designed specifically for a retailer’s own home brand
process information and whether the skills required to design with an understanding of the available supply network capabilities are necessary. My own experience as a product developer/designer and freelance graphic artist in this particular segment of the industry prompted this choice as I could see needs that were not being addressed in education for this area, such as an understanding of textile print creation and quick and efficient ways to draw in Adobe Illustrator\(^2\). This is confirmed by Downing and Shinn (2011) in the background research to their paper discussing the use of Adobe Illustrator. I was also alerted to the gaps in education and training when I started to receive requests for graphics training tailored to firm’s specific needs. Further, I found that these needs went beyond children’s wear into men and women’s clothing. As a teacher specializing in computer graphics for fashion students in the VET (Vocational Education and Training) sector, I noted that the training package for fashion students was too open to interpretation and did not address current industry needs.

I have worked in the fashion design and development sector for thirty years; in the past twelve years I have been a freelance fashion graphics artist and a graphics teacher, as well as a trainer in industry and further education. The majority of my work experience has been in the lower end of the market and I have always worked with firms that have a close link with department stores and discount retailers. My first position as a trainee designer was working with a range of low cost dresses, engineering print designs and styling to fit into a particularly low price point over a range of sizes. The range was designed under the label “Mintex”, an appropriate amalgamation of the words “minimal” and “textile”. This experience taught me an excellent lesson early on in my career as a designer and that was to be constantly aware of what I could do for a better price within the constraints of the given supply network. My early career was spent in South Africa where, as a junior, I experienced every aspect of production, starting out on the factory floor and working my way up to product development and designing. In Australia, I came into a wholesale fashion industry that was starting to decline. In the twenty years that I have worked in Melbourne, I have witnessed several transformations in the industry: from the industry being under the control of local manufacturers and wholesalers, to the migration of manufacturing offshore and retailers taking over control of purchasing prices

\(^2\) The industry standard computer graphics software
as well as currently managing their own off-shore production networks. The demands placed on product designers/developers by manufacturing offshore are quite different to the demands when manufacturing locally. In particular, communication is paramount to the success of products when manufacturing offshore.

As there is limited detailed literature illustrating the present state of the Australian mass fashion industry, the following description of the operational management of design and product development in children’s wear is based on the interviews for this research and my own experience in Australia.

4.2 Industry perspective

In Australia, either the mass fashion retailers or the sourcing firms that supply these retailers develop new, generic product. Both retailers and sourcing firms manufacture product with offshore suppliers. The sourcing of product is managed in three different ways considering price and flexibility: the first is where a retailer or wholesaler will go directly to the offshore manufacturer; the second is where they will use an agent to source suppliers in the offshore location; and the third way of getting manufactured product is through local sourcing firms. Local sourcing firms will either use offshore sourcing agents or they will work directly with offshore manufacturers (Kisvarda 2013). The mass fashion sector is highly price sensitive and buyers have limited choice in terms of supply networks available to them, sometimes having to use networks with distinctly outdated technology. Children’s wear is markedly more price sensitive than adults clothing. In Australia, children’s wear was one of the first sectors of clothing to utilise global supply networks. The deployment of manufacturing to remote suppliers and the loss of easy access to sample fabrics and sample machinists prompted the children’s wear sector to seek alternative methods of representing new product. As a result, the use of computer generated graphic storyboards with representations of garments, textile prints and embellished details is now commonplace as a selling tool between sourcing firms and retailers in the industry today. Retail buyers also use graphic representations to inform staff internally of new developments.
Designers and product developers can now offer more choice with significantly faster design turnaround than they could when garment samples were manufactured locally. Speed of design turnaround and quantity of product on offer equates to competitive advantage in the mass fashion sector. The added convenience of international web and service sites such as WGSN\(^3\), Style.com and others have further aided in the quick turnaround of new designs. The use of computer-generated storyboards as a sales tool is now widely used in the children’s wear sector. This replaces the need for first sample development before initial sales, cutting down the cost of new product development significantly. The most common feature in children’s design for the mass fashion sector is the inclusion of all-over textile prints, placement prints and embroidery, as well as embellished details.

The expectation that the same person accomplishes styling, textile and placement print designs is very high in the generic product development sector, both from my own experience and according to participants S_03; S_05; R_03; R_06 and R_07 (ref Chapter 3 p. 56). Practitioners are expected to move effortlessly between the discipline of garment design and textile design, as well as have very advanced skills in the use of electronic graphics packages. The use of electronic data delivery has made sending artwork and garment specifications to remote suppliers considerably easier, once again bringing down the cost of new sample development. The added advantage of children’s wear shapes being relatively flat or two-dimensional makes these illustrations easy to understand and visualise as made up garments, and for all these factors, children’s wear was able to spearhead the movement to global sourcing in Australia.

Australia is uniquely placed in respect to working with overseas producers and suppliers, firstly in it’s proximity to Asia and China (the major manufacturing markets) and secondly, through it’s liberal trade policies. Historically, Australia’s approach to trade in the late 1980’s and early 1990’s was well ahead of the World Trade Organisation’s Agreement on Textiles and Clothing. In only twenty years, the reduction of tariffs from a hefty 55% in 1990 (Commonwealth of Australia 1997, p. xxx) to the current 10% flat rate and 5% for developing countries (for apparel only), has had a marked effect on shaping the present

\(^3\) Marc and Julian Worth set up Worth Global Style Network (WGSN) in 1998 to provide information on the latest trends to the fashion industry.
textiles, clothing and footwear industries here (Weller 2012). All schedules are available on the Australian Customs website [http://www.customs.gov.au/tariff](http://www.customs.gov.au/tariff) where document number SCH1W lists developing countries (Australian Customs and Border Protection Services 2012). Australia’s southern hemisphere location also effectively places it a season or six months behind European and North American fashion trends, giving the local apparel industry time to adapt and manufacture garments from these markets (Weller 2012).

In Australia, the practice of copying garments sourced from northern hemisphere markets has diminished the value placed on technical expertise as well as the value-add of new product design. Both Walsh (2009) and Payne (2011) agree that this practice is widespread in the mass fashion industry. The rapid dissemination of trend information through on-line retailing and social media - including fashion Blogs and international web and service sites like WGSN that guide the retailer and designer/product developer to a wide range of ideas - has, in itself, reduced the need for designers/product developers to work creatively; thus we have a myriad of ‘sameness’ as the resources of information gleaned from the internet are the same resources used by the majority of firms. Consumers also have access to most of the same resources and the Australian customer has become notably more informed about design and price in the last two to three years than ever before. Australian discounters are considering these developments and some have adopted the European model of employing design teams and forecasters to develop new product (Payne 2011).

Due to the evolutionary nature of change, it can often be difficult to gauge what skills are required until they are either lost or superseded by new technology. For example, in Australia, a shortage of pattern makers and garment technologists has developed through years of attrition and an aging work force (Commonwealth of Australia 2008, vol 1 p. 43). With the loss of local manufacturing and the focus of new business being more on sales and marketing, the value placed on technical and manufacturing skills has diminished. The creation of new original product now requires extensive understanding of technology and a willingness to explore new production processes or to creatively tailor product to the available supply networks. Designers and production technicians working hand-in-glove have created successful and formidable partnerships in other industries such as the
automotive and building industries (Kisvarda 2013). In the Australian fashion industry, the loss of local manufacturing has meant most manufacturing skills, for example garment layout and cutting, sewing and embellishment, are no longer skills that are necessarily used within the Australian context. However, the knowledge and understanding of technical and manufacturing processes are imperative in the development of new product design. For example, participants R_02 and R_09, both retail buyers, stated respectively:

“... and some of that might also be an understanding of a pattern in terms of a lay plan [cutting plan] and how having an additional piece might also increase the yardage. ... having an understanding of which direction, whether a pattern can lay in the opposite [direction], you know in the weft direction and save space like that” (R_02, 2012).

“In my position it is essential to have a good understanding of garment construction. And from a stylist’s point of view where they are doing more technical, less artistic graphics, I think it is essential for them to have an understanding of garment construction” (R_09, 2012).

Negotiating the exponential adoption of new printing and production techniques can be difficult for designer/product developers in industry. The availability of information is scarce and the only way to keep up with emerging technologies is in the workplace. Often firms learn of new technology only when their supply networks access that technology. Mass fashion in Australia does not have the buying power to drive new technological developments. However, awareness of new developments can shape new product design. An ability to move between creativity and cost and understand how to communicate with technicians is the key factor in navigating new technology. There may be experts within a firm’s supply network that product developers can refer to on matters of construction, print and textiles but, as Kavanagh (2004) states, if we do not have the technical language to know what to ask, how do we ask the right questions? The development of new product requires skill and knowledge to manage the product through the production process. The industry stakeholders interviewed were clear in their expectation that fashion graduates and industry practitioners should be multi-skilled at all levels, from retail finance management through to product development and costing. As
Goworek (2010) found in her investigation into product development processes in the UK mass fashion industry, many roles overlap. This is particularly pertinent for the fashion designer, who is expected to have a working knowledge of all aspects of garment production and sales (Goworek 2010).

I have chosen to focus my research on the skills required when rendering fashion graphics in the industry. Both retail and sourcing firms employ either fashion graphics artists or, as is currently the practice, designers/product developers using computer aided design tools to develop generic product for the large retailers. The ability to graphically represent garments with an accurate rendition of prints and fabrics helps buyers visualise product more effectively.

Most of the experienced participants in this research, who had been in the industry for over 20 years, were first introduced to graphics programs from the mid 1990’s to early 2000’s. Four participants, R_09, R_04, S_01 and S_04, were first introduced to the computer graphics package CorelDRAW. Two participants, R_01; S_03, first became aware of more specialized, industry specific textile packages or garment drawing packages. One of the education participants, E_06, initially became aware of computer aided graphic design in the early 1990s when he worked as a freelance print designer and manufacturer. In my own experience, some firms initially used specialist programs designed for the garment and textile design industries; however, the cost of these programs was prohibitive for many and in the mid 1990’s to early 2000’s the use of off-the-shelf graphics package instead became an integral part of industry practice. These were more cost effective and did not require specialist training, which also meant that the pool of available talent who could use the programs was wider and new staff could be hired without needing training. The use of computer aided design became widespread in the industry and the Adobe suite of programs soon became the industry standard. Graphic artists with graphics training were initially employed in the industry as fashion graphics artists. However, they did not have the skill to design for printing on textiles or to render construction details in garments correctly. Graphics artists therefore began to skill up /up-skill? in textile design and garment styling and at the same time fashion and textiles designers saw the need to skill up /up-skill? in rendering computer graphics.
Today the use of computer graphics packages in fashion and textiles is as integral to designing garments and textiles as word processing and spreadsheet programs are to the office. Computer generated graphics are used to represent the initial design concept in both garments and textiles, through to the detailed specification drawing from which a manufacturer will create a new prototype of a garment. Knowledge of Adobe Illustrator and Adobe Photoshop, considered the standard graphics packages, is a core requirement for graduating fashion and textile students (Downing & Shinn 2011). As one of the participants said in answering my question about the use of computer aided design and when she first came across it in industry:

“Q: When did you first come across graphics CAD in the industry?
A: Straight away, in my trial, my interview for getting the [first]
    job. Pretty much, this is very important! Graphics, definitely!”
    (Participant S_05)

There is an expectation that Australian designer/product developers and buyers should be competent in a wide range of skills. This expectation is also partly due to economies of scale as the market itself is relatively small compared to European, British or North American markets.

4.3 Literature

This research seeks to examine the needs of the mass fashion industry from a design practitioner’s perspective. To this end there is a paucity of literature and research examining the mass fashion industry in Australia. For this thesis I have reviewed, and continually refer to, the literature covering: computer aided graphic design (for example Downing & Shinn 2011); skills deficits and skills loss (for example Commonwealth of Australia 2008, vol 1; Green, Ashton & Ashton 1992; Walsh 2009); the human resource literature on training and employability (for example, Abraham 2008; Cappelli 2008; Cappelli 2012; Hodges & Burchell 2003); the literature examining supply network and supply chain capabilities (for example, Gereffi 2009; Gereffi et al. 2001; Goworek 2010; Webber & Weller 2001); and finally, literature discussing the process of training and knowledge inculcation (for example Schön 1983; Eraut & McKee 2012; Kavanagh 2004;
Schacter 1987). In the process of establishing what literature would best add value to this research, I also examined some of the literature on the social issues informing the choice of fashion as a career (for example Bill 2009). Whilst this research is valuable, I found the way this research addresses education more applicable to education policy, whereas the issues examined in this research are more practical and industry focused. Accordingly, this research seeks to examine the needs of mass fashion and if they are met by education and if, indeed, education can meet these needs in undergraduate courses.

In the literature review I establish the background that has lead to the present state of the industry, framing it within the three Australian Productivity Commission (PC)\(^4\) reviews, commissioned between 1997 and 2008. The focus of the reviews was to examine the Australian industry as it moved from wholesale and local manufacturing to sourcing and procuring fully made-up product from offshore manufacturers. The industry is driven by retail buyer demands for lower prices. Global on-line retailers have further added to the pressures on the Australian market, giving the Australian consumer up-to-the-minute access to overseas product that had previously only been accessible when one physically went to these markets. Australian retailers and sourcing firms have been in the habit of travelling to America, Britain and Europe to purchase samples from retailers and have either “adapted” or “copied” designs for the Australian market. These changing circumstances have forced the Australian fashion industry to re-evaluate this practice (Payne 2011).

In re-assessing this practice it is necessary to evaluate the literature and discussions surrounding skills needs or skills deficits. Once again the literature discussing the Australian textiles, clothing and footwear industries is mainly found within the Productivity Commission reports, and this is discussed in Chapter 2. Outside these reports there is a scarcity of literature examining the design skills needed for fashion and textile design within the mass fashion industry. I have used literature examining other disciplines, such as architecture (Schön 1983). In Gowerek’s (2010) examination of supply

\(^{4}\) The Productivity Commission is the Australian Government’s independent research and advisory body on a range of economic, social and environmental issues affecting the welfare of Australians. Its role, expressed simply, is to help governments make better policies in the longer term interest of the Australian community (Ref: http://www.pc.gov.au/ 19/11/2012).
network capabilities, she includes descriptions of the stakeholders in the fashion supply network to illustrate the importance of their understanding of the fashion supply network’s capabilities. Gowerek’s study is closely aligned to this research and I found many similarities in approach and understanding to my motivation for this research. I found the supply network literature most informative as it highlights the importance of understanding supply network capabilities and working with these to produce garment and textile designs that are both achievable and are best practice for both the producer and the designer/product developer, creating a win-win situation for all stakeholders.

4.4 Data collection and methodology

In Australia there are four major players in the mass fashion retail sector. They are Target, Kmart, Big W and Myer, and these firms also supply the majority of children’s clothing to Australian consumers. As this research focuses on the needs of this market, I have chosen to study these retailers and the sourcing firms that service them. Firms and educational institutions in Melbourne were invited to participate in this research. I recruited firms through my own work network and through RMIT (Royal Melbourne Institute of Technology). I selected participants using a purposive sampling process, that is, participants were selected for the particular knowledge they had pertaining to children’s wear product design development. In total, 22 interviews were conducted. An open-ended thematic interview process was used to gather information: the question schedule was designed after consultation with industry and education stakeholders, it was tested on two participants and then adjusted to accommodate a more free-flowing process.

The number of participants was broken down into the following sectors:

1. Retail firms;

2. Sourcing firms; and

3. Teaching institutions.

Nine participants were interviewed in the retail sector, seven in the sourcing sector and six in the education sector. Existing research into the use of purposive samples suggests that there is a point of data saturation in a homogeneous population. This point is usually reached at about 12 participants (Guest et al. 2006). Indeed, I found that many answers
were similar after only three to four interviews, even across the sectors. For example, I found commonality amongst participants with respect to their experience, the majority of industry participants stating that the bulk of their knowledge was gained through industry exposure and experience. This fact was observed from the participant with the least experience (six months) to the participant with the most experience (25-plus years). Education participants all concurred on many points, from curriculum relevance to industry collaboration. All computer aided graphics teachers/lecturers spoke of teaching students to understand principles so that they were set up as life-long-learners able to adapt seamlessly to new technology.

4.5 Summary

Chapter 1 has provided a short summary of the motives and the approach that have guided this research. I have placed myself, as a practitioner and educator, in the perspective of this research and briefly outlined the reasons for selecting children’s wear as its main focus, highlighting the early adoption of graphic representation of styling as a selling tool in children’s wear. Further, the lack of literature examining the Australian mass fashion industry from a design and education perspective has necessitated the examination of this sector and its’ operational management, considering mass fashion’s importance as a major employer in the Australian fashion industry. To date very little research has been conducted in Australia outside of the Productivity Commission reports, which are examined further in Chapter 2. In terms of education, the literature on design practice and tacit or implicit knowledge has served to clarify when and how information can be inculcated into the novice practitioner or undergraduate; however, this literature does not address the complexity of information required by the fashion industry participant. Chapter 1 has also briefly summarised the methodology of data collection and selection of participants, outlining some of the commonalities between participants. These are further discussed in Chapters 3 and 4, where both background information and results from the interviews are presented.

This research examines the specific requirements of the mass fashion children’s wear sector. This sector is significant in the mass fashion marketplace and children’s wear itself is an excellent indicator of the broader issues challenging this market. The lack of
examination of this sector is evident in the lack of academic literature available on the subject. In the following pages the research answers, within the confines of the Australian mass fashion children’s wear sector, whether in fact there is synergy between education outcomes and industry expectations, and examines the discipline crossover that is evident when designing children’s wear, that is, the crossover between textile and garment design. It also examines the needs of the Australian mass fashion industry with respect to graphic design and seeks to determine if more crossover information needs to be included in undergraduate courses in fashion design, textile design and merchandising. The skills and competencies required to efficiently design for the mass fashion industry are the subject of this research. Computer generated graphic representation is the tool used to communicate new product designs to both buyers and manufacturing supply networks, therefore it is essential to first examine the expertise needed to render computer generated graphic designs. This examination extends beyond the operational use of computer software to the expertise needed to understand the technical parameters of garment and textile design.

Chapter 2 examines, in-depth and widely, the literature pertaining to this research. Due to the paucity of academic literature examining this particular sector (mass fashion plus children’s wear plus design process and skills), it was necessary to look at a wider range of information resources to inform and add value to this research. It was also necessary to provide a greater degree of context around the industry than would typically be expected in a literature review in order to locate, define and justify both the industry itself and the theoretical backgrounds against which the literature was assessed.

In Chapter 3 I discuss the research design and the reasons behind the selection of the participants in this research. Participants were selected for their particular expertise in, and knowledge of, mass fashion children’s wear design and the synergy between education outcomes and industry needs.

In Chapter 4 I provide a discussion of results derived from the interviews. This chapter is divided into three main sections, with sub-sections examining in detail the major themes and insights from the interviews.
The two primary objectives of this thesis are to examine whether there is synergy between industry expectations and education outcomes and whether education addresses the crossover between garment design, textile design and buying. In concluding my study I found that my initial concept about the outcomes of the research were partially correct, but the process of research also highlighted the lack of attention this particular sector has received from academia, as well as the lack of interest from both the industry and governments in understanding its importance in Australia and in examining how the industry and education can move forward together. These issues are discussed in Chapter 5.
CHAPTER 2: LITERATURE REVIEW

In Chapter 1 the background to this research was outlined, highlighting the paucity of literature, in particular pertaining to design process and the discipline crossover in the mass fashion industry in Australia. Accordingly, this chapter examines the extant literature, particularly in relation to current industry needs and education outcomes as well as the needs of the mass fashion industry. The literature examined is wide and draws on disciplines other than fashion as the subject as mass fashion and education – and in particular, design process in mass market fashion - are not well represented in academic literature. The chapter is divided into the following themes:

- A broad introduction to the subject discussing the major themes that shaped the need for this research.
- A brief overview of the history of the Australian Textile, Clothing and Footwear (TCF) industries that has framed the background to present industry needs, in particular, the needs of design and product development in mass fashion.
- An outline of the perceived skills deficiencies and current literature discussing the reasons for this perceived lack of skills.
- An overview of the literature on supply network, which assists to narrow down the topic and focus on the requirements from the designer/product developer within this framework.
- An overview of the literature on perceived industry readiness of graduates and what industry believes its’ immediate needs are with regards to new recruits. Whilst the majority of literature has not examined the fashion industry in particular, it reflects the discussion, both in industry and education, surrounding “employability skills”.
- The chapter concludes with a synopsis of the literature on knowledge and knowing in the context of design and the creation of products. Often the kind of knowledge needed for creating clothing is best gained through emersion and reflection on the practice.
2.1 Introduction

The mass fashion retail sector shapes the Australian retail-clothing environment. In total, the retail clothing sector employs 92,979 people. A further 109,396 people are employed in department stores, where a proportion of these are also in fashion. Wholesalers servicing this sector employ 21,754 people (ABS Report on Retailing and Wholesaling 2006). This illustrates that this sector is a major employer with significant impact on the Australian economy. The major retailers are responsible for over 60% of retail turnover and clothing is a significant percentage of that turnover. The focus of mass fashion retail is on having available what customers want, at a price they are prepared to pay, when they want it. Accordingly, analyses of how to achieve these goals in this sector are well represented in the management, accounting and, especially, supply chain literature (Abecassis-Moedas 2006; Lane & Probert 2006; Lane & Probert 2009; Webber & Weller 2001; Gereffi 2009). However, from a design practitioner perspective, mass fashion is not well represented in the current literature. The implications of designing products to suit the unique constraints of this sector have not been examined in any depth with respect to understanding the technical design constraints of the mass fashion market sector. In reality this area of design and product development relies heavily on an all round understanding of production processes within the given supply network. This is usually unique to a firm’s own network, with company values and culture often influencing the choice of manufacturing supply networks. The designer/product developer who understands the capabilities of this supply chain is able to engineer product and design to fit these criteria. Product designed with the supply network’s capabilities foremost in mind will have a better impact on the bottom line of the final product, including timely delivery as well as building in future supply stability through ongoing relationships.

Just as the best results come out of an agile supply chain (Christopher 2000), so the designer/product developer must embrace the ability to think fast and change according to the needs of their particular supply network. Two papers have echoed this sentiment and both are equally weighted. The first is a study that compares the developed economies of Germany and Britain, with particular emphasis on the sourcing strategies in the clothing industry. Broadly, Lane and Probert (2006) examined the capabilities of the firms they studied, their ability to adapt to their surrounding supply chain, and how they
avail themselves of the different supply networks. They found that, based on a firm’s managerial and employee capabilities, the firm can develop control of its resources. The German firms studied expected high quality from their suppliers and managed this quality by using a predominance of CMT (cut-make-trim) factories, whereas the UK firms were more focused on price and relinquished the total manufacture of garments to third parties.

Lane and Probert’s study centers mainly on what they name *coordinating firms*, or as Weller and Webber (2001) name them, *sourcing firms*. In the background to the British/German study, the authors note the rise of big retailers doing their own sourcing and managing their own branding. These big retailers employ their own design teams (Lane & Probert 2006). The resulting integration of design, manufacturing process, and buying into the retail process has implications for the knowledge required to implement the different skill sets. The transfer of retail skills to the design process and design skills to the retail process becomes an integral part of the success of the product (Abecassis-Moedas 2006). Lane and Probert reiterate that the successful combination of the different skills embodied in a product ensures a firm’s competitive advantage. Additionally, the coordination of both internal and external competencies is a valuable and necessary managerial capability. German firms have a propensity to employ more graduates than British firms, noting that the technical understanding and capabilities of German graduate designers are better integrated than their British counterparts (Lane & Probert 2006). This point has significant implications for the Australian context as well, and the emphasis that both industry and education place on technical capability. One of the major cultural differences between Germany and the UK is the value placed on quality and the technical expertise required to attain quality. Australia and the UK would appear to share a similar cultural perspective in placing more value on the end product and not on the processes required to get the best design results for both the manufacturer and the consumer.

Technical expertise, including garment construction processes and textile manufacturing processes, underpin garment design as there are many skills that make up the final product design. A product developer/designer would need to be aware of the capabilities of the supply network and should be able to communicate with the supply network,
understanding and using the technical language of the supply network. To this end the second paper referred to earlier describes a program run by Loughborough University in the UK that teamed up textile technologists and designers. This program had rewarding results, according to the universities’ Professor Terence Kavanagh (2004). The program placed emphasis on the *discourses and processes* designers and technologists use when communicating with each other. Kavanagh highlights that only when the designer fully understands how to communicate with the technologists will they be able to fully exploit the capabilities of a given technology. Further, poor communication will result in poor collaboration and, in the end, poor products. The collaboration ensures that the participants “know what they want to say and to whom and by what means” (p. 2). Kavanagh reiterates that the use of correct “technical” language is the key to “designers managing technology” and to the success of garment and textile design (Kavanagh 2004, p. ??). The means of communication is particularly important and in fashion product design, increasingly, this means is computer generated graphic representations of both garment styling and textile designs.

Due to the deployment of manufacturing to offshore supply networks, representing new product designs by means of computer generated graphic representations is now an integral part of the design and manufacturing process. Rendering fashion graphic styling requires an intimate understanding of the technical processes that the garment and textile designs require in manufacturing, yet there is no literature examining whether there is an understanding of manufacturing garment processes or textile print and placement print processes in rendering computer graphic representations of garment design. The literature that is available simply examines the operation of graphics programs (Downing & Shinn 2011). A good understanding of these processes and the ‘language’ used - be it written, verbal or graphic - to communicate the new product design to the supply network is paramount to the success of the finished product. The speed and delivery of new designs is vital to securing new orders from the retailers. Storyboards generated using computer graphics packages such as Adobe Illustrator and Photoshop have become *de rigueur* in the current generic product industry (Downing & Shinn 2011). Firms place orders based on computer generated graphic storyboards with representations of garments, textile prints and embellished details; thus, designers and
product developers can now offer more choice with significantly faster design turn around than they could when orders were placed only after a buyer had seen a sample prototype. Garment and textile designs rendered on these computer graphics packages\(^5\) have in fact reduced the need for firms to produce a first sample garment before the initial order is placed. The added convenience of being able to consult and re-use material from existing company databases further enhances the use of computer aided design tools (Abecassis-Moedas 2006). Once again, academic literature on the subject of graphics packages highlights the speed and cost effectiveness of the use of these programs, but not the design skills needed to communicate design concepts to a manufacturer. The practitioner rendering these graphics will need to be skilled in the use of the software packages. The majority of fashion and textile courses in Australia offer fashion graphics courses as a core subject and in the last update of the Vocational Education Training package, dated May 27, 2012, Adobe Illustrator and Photoshop have been singled out as examples of the graphics packages used\(^6\). There is also a plethora of “how to” graphics tutorial books using Adobe Illustrator and Photoshop, for example: *Fashion Designer's Handbook for Adobe Illustrator* (Centner & Vereker 2007 & 2011); *Adobe Illustrator For Fashion Design*, and *Adobe Photoshop For Fashion Design* (Lazar 2008 & 2010); *Creative Fashion Design with Illustrator*, and *Digital Fashion Illustration With Photoshop and Illustrator* (Talon 2006 & 2008); *Rendering Fashion, Fabric & Prints With Adobe Illustrator* (Colussy & Greenberg 2006); and *Fashion Computing: Design Techniques and CAD* (Burke 2005), to name a few. Fashion educators in Britain, America, New Zealand and Australia have written these books in response to a perceived need. Graduates should have an operational understanding of computer aided graphic design packages once they finish a course (Downing & Shinn 2011). None of the literature examines the transition and understanding of designs from paper to finished garments. Graduates also need to have an understanding of how garment drawings are translated into three-dimensional garments, and how textile designs transfer from designs on flat paper to achieve the fluidity and the texture of textiles. For example, a fine, delicate print will not translate effectively onto a heavily textured fabric; it would be better suited to a

\(^5\) Adobe Illustrator and Photoshop, now the fashion industry standard

\(^6\) See appendix 1 – LMTFD4020B: Use electronic fashion design tools
fine weave, flat textured fabric. The tacit nature of knowledge acquired within the fashion industry has not undergone any formal examination as it has in other industries. For example, Wong and Radcliffe (2000) examine tacit and implicit knowledge in an hydraulic cylinder manufacturing plant and highlight the array of knowledge, tacit and implicit, required in the design and manufacturing processes, from an understanding of materials and plant capabilities, to business knowledge and accommodating the special requirements of customers. This is an example of designing one product; fashion, in comparison, has a vast array of materials and technical design requirements.

There is also a paucity of education literature examining the pedagogy of design for the mass fashion markets. Many institutions have partnership projects with industry: for example, RMIT has the Young Essentials Project for merchandising students in conjunction with Target, Sportsgirl, Country Road and Spotlight (participant E_03); RMIT BA Textiles works with industry and industry briefs each year, exposing students to industry partners such as Country Road and Dryen Linen (E_01); and Boxhill Institute has an on-going industry-education partnership with Sussans where students are briefed on a sleepwear project (E_05). Other educational institutions not interviewed for this research also participate in industry partnerships, for example UTS (University of Technology, Sydney), which has an industry partnership with Big W. This project involves students being given a brief to design for Big W stores, work with its buyers and develop a collection, the best of which is manufactured and included in the retailer’s range. To date, however, there have been no independent academic studies following the impact of these projects. The possibility of linking them with mass fashion retailers would make commercial sense for both education institutions and students alike. The mass fashion sector and its subsidiary sourcing and wholesale product development sector are considered the main employers in the TCF industries in Australia. The August 2012 IBISworld report into Australian department stores states that clothing and footwear is the largest product segment in the stores. The department stores themselves are responsible for a total of 89.9% of retail sales in Australia and of that, 38.9% is clothing and footwear (Outlaw 2012). We can also add chain retailers to this group – Country Road, Witchery, Sportsgirl and similar. Department stores employ 109,396 people,

7 Information from face-to-face interviews, see chapter 3 page 55 for description of participants.
including sales, merchandising and warehouse staff, and manufacturing employs 14,263 people (Willianto 2012). According to the Productivity Commission’s 2008 industry report, the number of fashion designers employed had significantly increased in the face of declining manufacturing employment. The report also cites the blurring of lines between manufacturing, design and retail (Commonwealth of Australia 2008, vol 2, p. 144). There are no details about the particular discipline crossover between wholesale and retail activities and design and buyer activities. The crossover between the wholesale and retail fashion industries started to take hold in the early 1990’s, transforming the TCF industry from a largely manufacturing and wholesale industry to the present retail led industry (Webber & Weller 2001). This highlights the crossover of skills needed when developing product. Not only does the buyer/product developer have to be well versed in quantitative business skills, they also need to be creative and have a technical understanding of supply chain capabilities. The need for a buyer to have an in-depth knowledge of product development and construction may well be relative to the size of the market. As noted above, the small scale of the Australian market is a major factor determining the profile and experience of the Australian industry employees.

2.2 Australian industry background

The need to be able to communicate clearly and succinctly with remote suppliers is an integral part of garment manufacturing today. This need is even more important when garments are produced in another country. As Jin (2004) claims, global sourcing is an integral part of competitive strategy for both wholesalers and retailers. Significant cost savings are achieved by producing apparel in lower-wage countries (Jin, 2004). Australia is no different to other developed countries when it comes to manufacturing. Historically, the TCF industries have been the backbone of the manufacturing sector. Manufacturing has been managed either by wholesalers who developed new product and may have had a percentage of in-house manufacturing, or by cut, make and trim (CMT) factories only manufacturing and not designing. Due to the reduction in protection through the lowering of tariffs, Australian manufacturers have long been exposed to stiff competition from off-shore suppliers. These manufacturers have had to work out how to navigate the needs of buyers who are driven by increasingly high demands for lower priced garments,
and the need to remain viable and profitable. This has resulted in the transfer of production capacity to developing economies (Abecassis-Moedas 2006).

What is clear is that mass fashion retailers in Australia have played a major role in re-shaping this industry to its present state. With the relocation of manufacturing to overseas suppliers, the structure of local firms is more aligned with a sourcing company structure, only offering product services such as design, managing the manufacturing supply chain, and distribution. The shrinking of the textile, clothing and footwear manufacturing sector prompted three major government reviews of these industries between 1997 and 2008. In the book Refashioning the Ragtrade, Internationalising Australia’s Textiles, Clothing and Footwear Industries, Webber and Weller (2001) examine the background to the Australian TCF industries and succinctly encapsulate the trajectory of a local manufacturing industry protected by government policy and tariffs to the present state of an industry competing on a world stage:

The TCF industry was in 1970 one of the national firms [industries] making and selling locally....Now it is an industry of globally competing commodity chains. (Webber & Weller 2001, p. viii).

The government reviews examined the impact and possible implications of major policy changes. The first, published in 1997, examined the effect of continued tariff reductions and the abolition and continuation of certain government schemes to help the industry ease into the new era. The review concluded that tariffs would continue to be reduced at the rates set earlier, namely from 34% in 1997 to 25% in 2004, and then down to 17.5% in 2005. In 2012 they were further reduced to 10% for developed economies and 5% for developing economies (Australian Customs and Border Protection Services 2012). The reduction in protection of the local manufacturing industry has allowed wholesalers and retailers to source cheaper product off shore. In an attempt to encourage the manufacturing industry to value-add in Australia, the government introduced a Strategic Investment Plan (SIP), in place between 2000 and 2005. This plan was also intended to encourage joint ventures with overseas suppliers whilst still retaining parts of manufacturing or less labour-intensive work in Australia (Commonwealth of Australia 2008, vol 1).
The second review, in 2003, considered the effects of the government schemes in place and concluded, among other recommendations, that the Strategic Investment Plan (SIP) was costly and could not continue indefinitely. The Productivity Commission\(^8\) (PC) also concluded that whilst the 2000-2005 tariff pause and transitional budgetary support helped some firms improve their competitiveness, it was not in line with Australia’s commitment to the Asia-Pacific Economic Cooperation (APEC) trade liberalisation process (Commonwealth of Australia 2008, vol 2). In a summary of key points in the 2003 review, it was suggested that the government could not influence the adjustment away from labour intensive activities and that it would be preferable if policy was to focus on supporting the adjustment process (PC, 2003).

The turning point to note in the industries is the transfer of power from the producers to the retailers. This shift in power balance has changed the structure of the industry, taking what was once considered the domain of manufacturing and wholesalers or sourcing firms into the retail domain. In Lane and Probert’s paper ‘National Capitalism’s Global Production Networks: Fashioning the Value Chain in the UK, US and Germany’, they state:

> Thus, we still do not fully understand when and why power passed from producers to retailers, how retailers utilise their dominance in the chain, and whether this imbalance of power may be found in all western clothing industries (Lane & Probert 2009, p. 72).

Webber and Weller explain this shift from the perspective of the Australian industry and other western economies by suggesting that the enormous buying power of department stores such as Marks and Spencers in the UK, Sears Roebuck in the USA, and the then Coles-Myer group in Australia has been the cause of this shift in the balance of power. These retailers now manage their own supply networks (Webber & Weller 2001, p. 87). In a discussion on the distribution channel arrangements in the Australian TCF industries, the third Productivity Commission review in 2008 confirmed the shift of power away from Australian manufacturers to Australian discount retailers, as demonstrated in the

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8 Refer to chapter 1 page 7

1. Retail firms buy generic product [own brand], designed to their own requirements, from local sourcing firms, through an offshore agent or directly from an offshore manufacturer.

2. Sourcing firms design to a retailer’s specific requirements and place the production with offshore manufacturers or an offshore agent.

Figure 1: Channel [supply chain] arrangements in the Australian TCF industries

In this diagram, I have selected the information that reflects channel arrangements with respect to generic [or own brand] product development and have substituted “Local Wholesaler” with “Local Sourcing Firm”, as this best reflects the firms examined for this thesis. According to the 2008 Productivity Commission report, in the past discount retailers mainly used local wholesalers [sourcing firms] to design and source product in China, whereas now the chains directly source their own product from off-shore suppliers (Commonwealth of Australia 2008, vol. 2, p. 99). The report also focused on strategic planning for the future, taking into account the need to educate future industry participants to be able to navigate the globalised industry.

In summary, the third Productivity Commission report into the Australian TCF industries concluded that, as a whole, the industry has gone into negative growth (Commonwealth of Australia 2008, vol. 1). Its figures were based on the last 2006 population census figures that measured employment in manufacturing. However, according to TFIA
(Council of Textile and Fashion Industries Australia), fashion designers, textile designers and product developers are not included within the manufacturing sector census figures. Dransfield, the Australian retail chainstore owner of *Bras and Things*, stated in his submission to the 2008 Productivity Commission that he employs his own design team, but manufactures 80% of his product off shore (Dransfield 2008). In the Australian Bureau of Statistics (ABS) categories, the positions of fashion designer/product developer are not categorised. Textile designers are categorised as professionals and garment pattern makers are categorised under manufacturing (ABS 2009). The ABS categories therefore do not effectively capture data that reflects the present occupational status of the fashion industry. This, in turn, has a bearing on the educational courses on offer to service industry needs.

The 2008 Productivity Commission report also includes a report commissioned into the state of fashion design education in Australia, and in Vaughn and Schmidt’s analysis of the strengths and weaknesses in design and fashion in the Australian TCF industries, the authors highlight a prevailing attitude that pigeonholes the different systems of education into servicing two different industry needs: one, the Vocational Education and Training (VET) further education (FE) sector, seen to be producing technicians for the generic product development market, or those firms that service the retailers, creating product specifically for that retailer’s brand; and the other, the Higher Education (HE) university sector, seen to be producing designers who value-add through design only (Commonwealth of Australia 2008, vol 2, p. 170). I have noted this view reiterated in the mass fashion industry. However, both technical capability and design capability should work ‘hand-in-glove’ to create successful products as Australia’s retailers now compete on a world stage where value-adding through original design is as important to their point of difference as pricing and sourcing.

In an article run by the *Melbourne Herald Sun* (1 October 2012, p. 12) the author, Anna Byrne, trumpets Australian consumers access to seasonably appropriate on-line merchandise from the ‘e-talier’ ASOS four months before the product was to be released.

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to northern hemisphere markets. ASOS has product aligned with mass produced high street fashion as well as up-market designer fashion. This really does pit Australian retailers against world markets.

Figure 2: Screen shot of the ASOS website on 20 November 2012 (http://www.asos.com/au/Women/New-Australian-Fashion)

The influx of North American and European brands has also made the Australian practice of copying samples bought in those locations risky, and exposed retailers and wholesalers to possible litigation. In a paper by Alice Payne entitled ‘The knock-on from the knock-off’, examining the issue of Australian retailers, wholesalers and sourcing firms copying high street fashion from northern hemisphere markets, Payne concludes that the practice is becoming less viable under the current pressure from global on-line retailers (Payne 2011). In re-conceptualising jobs for the future of the TCF industries, there needs instead to be an acceptance of technology, creativity and business skills working together (DIISR 2008; Commonwealth of Australia 2008, vol. 2, p.154). Frank Kisvarda, fashion industry consultant states:

Successful companies in the car industry, building [industry] etc ensure that the designer [and] technician work ‘hand-in-glove’; this should be no different in the fashion industry (Kisvarda, 2013).

The belief that the mass fashion industry only needs technicians with minimal design capability and maximum technical capability is counter-productive in the current ‘world order’. Design education needs to include an understanding of the design requirements of the mass fashion sector and the mass fashion industry needs to understand the need for design originality within the constraints of its given markets and supply networks. The
impact of *e-tail* and the globalisation of supply chains on the Australian industries has exposed the mass fashion sector on a world stage, competing internationally on the world-wide-web and locally in bricks and mortar premises. Woven through the discussion on this changing landscape in the Productivity Commission’s 2008 report is an evaluation of the skills required in the industry. There is a need to properly perform the tasks to execute the job of new product design efficiently and with the best outcomes for the whole supply chain.

### 2.3 Skills deficit or skills shortage

In order to better understand industry needs and education outcomes, it is necessary to provide a review of the literature on skills shortages or deficits in Australia. The literature discusses skills shortages in manufacturing, but these are also skills a designer/product developer requires to professionally and proficiently execute their job. In the book *The Reflective Practitioner*, Schön (1983) correctly assumes that in design practice, the designer often may not necessarily be the maker of the final product. Considering this absence of the designer in the production process has a great bearing on the skills requirements of the designer.

Research citing skills needs within the Australian TCF industries commissioned by the International Specialised Skills Institute (ISSI), defines a skills deficit as existing where a demand for a certain skill has not been recognised and no course to teach this skill has been devised (Walsh 2009). This definition does not go to the crux of the issue of skills deficiency, which is simply the *difference* between current skills and an optimum level of skill that a job requires (Green & Ashton 1992). Extant research examining the perceived skills shortage in the TCF industries, for example in the Productivity Commission’s 2008 TCF Review, notes that there are shortages in technical personnel: sample machinists, garment technologists, pattern makers and cutters (Commonwealth of Australia 2008, vol. 1). In a critique of skills shortages and deficiencies, Green and Ashton (1992) define *skills shortage* as “when there are not enough people available with the skills to do the job that needs to be done” (p.??). Juxtapose the perceived skills shortages with a declining garment and textiles manufacturing industry and it is clear that there may not be a robust future for these skills, especially when the report goes on to state that there
is a change in the occupational structure within the TCF industries, with the proportion of managers and professionals almost doubling between 1986 and 2006 (Commonwealth of Australia 2008, vol. 1). The Australian Bureau of Statistics’ definitions of both categories are broad and do not describe any particular set of skills that a person needs to perform these jobs within the fashion industry. A manager could be a Design Manager, categorised as a professional under category 2323 Fashion, Industrial and Jewellery Designers in the ABS data, or a Production Manager, but there is no clear definition in the ABS data for a person managing production in clothing manufacturing. Each of these areas requires specialisation in different skill sets. Skills perceived as pertaining to manufacturing only should not be overlooked in fashion education, as they also help shape the final garment and textile print designs. In data collected in the interviews and in my own personal practice, I have found the knowledge of sewing, pattern making and even production cutting can inform product design. Designer/product developers may not need to be proficient practitioners of these skills, but a working knowledge of them is important when it comes to executing their jobs properly.

In the paper ‘Designers Managing Technology’, Kavanagh (2004) outlines an interdisciplinary collaboration between textile design students and textile technology students at Loughborough University [UK]. The premise of the collaboration was that creative designers would be able to translate ideas into satisfactory artifacts once they knew how to communicate with technologists. The collaboration broke down many preconceived notions that the designers and technologists had about each other and together they could see value in the other’s discipline, and that both could inspire each other to create better products with satisfactory outcomes (Kavanagh, 2004). Kavanagh highlights the importance of the interdisciplinary crossover between design and production, both being integral to the success of the final product. Goworek (2010) highlights the overlapping responsibilities among buyers, fashion designers and textile designers in the development of new product. She singles out fashion designers as collaborating with the widest range of roles within the industry:

This reflects the diversity of content within the job of a fashion designer employed by a garment supplier, and indicates that communication skills are particularly significant in this role (Goworek 2010, p. 656).
In Australia, the industry is relatively small compared with the UK and often a fashion designer will also be designing textiles, or at least be intimately involved in the choice of base cloths and textile print artwork, therefore needing expert knowledge of both textiles and print processes. In the mass fashion industry and especially in children’s wear, these roles frequently overlap.

Within the fashion industry there has been no investigation into career path trajectories in the Australian context. There is also no discussion on the type of training that is presently taking place within the industry or what the requirements are for career development. My own experience in industry and that of my colleagues, as well as evidence collected from interviews for this thesis, points clearly to a crossover of disciplines within the industry. In their paper examining skills shortages or skills deficiencies in the UK manufacturing sector, Green, Ashton and Ashton (1992) emphasise that there is a close connection between investing in skills training and the positive impact that this can have on the future prospects of a firm. They argue that failure to train staff in new technologies as well as skills will lead to skills stagnation. Whilst fashion product development may not be construed as manufacturing per se, the designer/product developer does need to be aware of all the aspects of the firm’s supply network. Literature examining the specific needs of the Australian fashion industry in the context of workplace training is unavailable. One of the recommendations following the 2008 PC report was the use of group training in the industry to monitor quality and consistency of training (Commonwealth of Australia 2008, vol. 1 & 2). This would suggest that once people are in industry a model of one-size-fits-all be adopted. Given the pace of change and the varying degrees of uptake of that change, group training may not be suitable at an industrial level. It also suggests that a level of cooperation for the common good of all would be needed. However, in reality this industry is fiercely competitive and any training would be considered a competitive advantage. Succession planning and the development of talent within a firm will help create a better pool of knowledge capital within that firm. In order for a firm to successfully predict future talent needs, an assessment of the supply base for that talent needs to be undertaken (Cappelli 2008). As Cappelli suggests, talent can come from other firms, circumventing the need to train new talent, or talent can be trained within a firm, thus inculcating the company culture within
that resource. Supply chain/network literature emphasises the competitive advantage of a firm’s employee skill base, and therefore its knowledge capital, defining it from the rest of the pack (Lane & Probert 2006). In retaining its knowledge resource or talent, a firm preserves its resource assets by balancing employer-employee interests (Cappelli 2008).

2.4 Supply network

All Australian mass fashion designer/product developers work with external and often remote supply networks and the capabilities of the external supply network have a great bearing on the quality and visual aesthetic of the final product. Further, the timely delivery and quality of garments depends on the capabilities of designers/product developers to understand and negotiate the constraints of the supply network. Outsourcing product manufacturing has a significant bearing on a firm’s internal processes and the strategies used when setting up a supply network. Education outcomes and how well they match industry needs have a direct bearing on the competencies available to manage the supply network. Within the context of industry needs, an understanding of how to navigate the capabilities of the supply network before the development phase of new product design even begins facilitates timely delivery of product. The biggest challenge that faces any retailer is on-time product delivery. The fashion designer or product developer and/or the buyer essentially initiate this chain of production. Their technical knowledge of garments and textiles is elemental for the success of each style. The global production network or supply chain literature mainly views the supply chain in terms of the impact on developing economies and the flow of information through these networks (Gereffi et al. 2001). Much less is known about internal capabilities of clothing firms and how this shapes the supply network (Lane & Probert 2006, p. 36).

Lane and Probert’s study highlights the significance of understanding what the internal capabilities of clothing firms are. Their focus is on how this affects the sourcing strategies of the firms in the survey. They illustrate the seven steps in the clothing value chain as follows:
1. Planning and development requires several skills including knowledge of market trends, analysis of past corresponding seasons’ sales results and the impact they have on shaping the new seasons’ plan, fabric availability, and the integration of these into the development of new product lines. Costing is imperative in shaping the final product.

2. Designing and prototyping new models requires both creativity and technical aptitude in addition to understanding market demand and cost structures.

3. Production design is concerned with the most cost efficient method of producing the design, bearing in mind quality standards and fit. Decisions about manufacturing locations are also made at this stage (Lane & Probert 2006, p. 39).

From the mid 1980’s and especially since the 1990-91 recession, Australian wholesalers and retailers were forced into a form of buyer-led commodity chains (Webber & Weller 2001). According to Jin (2004), the apparel industry is a typical example of a buyer-driven commodity chain. The defining features of such a buyer-driven commodity chain are as follows:

- Production systems are decentralised and horizontal.
- Usually large retailers, brand named merchandisers and trading firms play the pivotal roles in this supply chain.
- The source of profit is in design, value services and marketing (Jin 2004 based on Gereffi 1994).
- This supply chain is also one dominated by consumption (Webber & Weller 2001).
There are two strategies when it comes to supplying the mass fashion market in Australia. The first, Design-Contract, is a strategy often used by both designer brand firms (e.g: Sprout, Leona, Jack and Milly, and even Adidas) and chain retailers alike (e.g: Pumpkin Patch, Espirit, Country Road and Seed). These firms only manage the design, sales, marketing and branding of product. Manufacturing is done by contract with offshore suppliers or through offshore agents. They rely entirely on a network of contractors to create the finished product. Their principle value-adding operation is derived from maintaining the brand image. The second strategy is the creation of specialist sourcing firms. These are firms that mainly produce generic product for the department stores, discounters and chain retailers. The basis of their business is estimating and costing, together with a detailed knowledge of potential overseas manufacturers (Webber & Weller 2001; Lane & Probert 2006). For example, Designworks in Melbourne, which was named Target supplier of the year for 2013, allocates 75% of its design and production resources in children’s wear to work with the retailer (Fashion Source News, 8 November 2012). These firms also employ design, sales and technical teams to sell and prepare styling for production. Knowledge of these supply chains is restricted to price, availability and location. Webber and Weller (2001) suggest that the resurgence of sourcing firms was encouraged by the retail buyers’ lack of expertise in production supply structures. In discussing the interaction of design and product development with the structure and capabilities of the supply chain, Lane and Probert’s study on domestic capabilities and global production networks examines the notion of a competency-based approach to strategic management. They define internal and supply chain capabilities as:

...a combination of various types of knowledge, which when embodied in products are difficult to imitate by competitors and thus ensure a firm’s competitive advantage (Lane & Probert 2006, p. 38).

The knowledge embodied in a designer is a valued asset and contributes to the commercial success of a firm (Wong & Radcliffe 2000). The expertise and skill of a designer depends on their ability to understand the underlying structure and capabilities of the supply network; what printing processes are available to them and the closeness of fit between print cost and garment cost; what sewing machinery is available in the given
supply network; how to create a textile design that maximises fabric quantities or usage in a garment. This knowledge is often gained through experience: knowing what to do with those capabilities are the skills that a designer/product developer learns, first through education, and then refines once they are in industry (Lane & Probert 2006). Prospective employers understand that the acquisition of this depth of knowledge takes time and they look for other indicators when selecting possible graduate employees, such as behavioral qualities (Velde 2009; Abraham 2008; Hernández-March et al. 2009), and quality portfolios demonstrating creative flare and commercial understanding. This point was also reitered strongly in industry interviews conducted for this thesis.

2.5 “A foot in the door”

Getting a foot in the door takes more than a qualification. As educators, we are driven to impart as much knowledge about design and production processes as we can possibly impress on a student. Employers, however, when really pressed to think deeply about their expectations of graduates, at best hope for “knowledge currency” - the technical skills required to perform a particular job - but usually also need to judge a graduate’s “knowledge potential” - the behavioral qualities of the person, their attitudes, values and motives - in order to ascertain their ability to fit in with the firm’s culture (Velde 2009; Hodges & Burchell 2003). The examination of work readiness and education outcomes often emphasises employability skills and definitions of these are abundant in the literature (Velde 2009; Abraham 2008; Hernández-March et al. 2009). Even a quick perusal of current fashion job vacancies on-line for assistant designers or fashion graduates will highlight the following criteria: willing to learn and continue to develop new skills; positive and can-do attitude; hard worker, with an understanding of the importance of meeting deadlines; overall, a fantastic work ethic and willingness to go the extra mile to help others at all times.

In a 2007 survey on employability skills and early career development conducted within the Indian apparel industry, Abraham (2008) found that employability skills are key to employment within the industry today. Often these ‘soft’ skills\(^\text{10}\) were rated above technical knowledge (Abraham 2008). In Hodges and Burchell’s survey (2003) it was

\(^{10}\) For example, a team worker; a good attitude; willing to learn; enthusiastic; good interpersonal skills etc
found that employers ranked *soft skills* above practical skills, citing an ability to learn, energy, passion, interpersonal communication and initiative as core requirements when selecting graduate recruits (Hodges & Burchell 2003). Similarly, Velde (2009) found on examination of Chinese firms employing graduates, that they also placed a high value on the soft skills. Firms stated that they were happy to employ inexperienced graduates as long as they had a strong desire to engage in *life-long-learning* (Velde 2009). In a survey based on a database of 5000 Spanish firms, Hernandez-March et al. (2008) found that employers were less concerned with cognitive skills deficits than they were with poor work attitudes, including motivation and general demeanor. They preferred graduates to be able to work within teams and relate well with co-workers, clients and collaborators (Hernández-March et al. 2009). Finally, in a report commissioned for the NCVER (National Centre for Vocational Education Research, Australia), researchers also found that employers placed more emphasis on "employability skills", citing once again “teamwork; self management and problem solving” as part of these (Sue Foster et al. 2007, p. 31 ). Teamwork, self-management and problem solving are all competencies that can be learned, but a willingness to learn, motivation and work ethic are all personal attributes. Personal attributes will facilitate the inculcation of employability skills in early career development. Employability skills as a skill set are not discussed in the Australian Productivity Commission’s 2008 review, however, these skills certainly do have implications for industry training and indirectly endorse the potential for industry training. It seems employers want employees willing and able to engage in life-long-learning. To date there is no examination of employability skills in the Australian fashion industry, even though the acceptance of the importance of these skills is implicit in the 2007 Vocational Education report by Sue Foster et al. Similarly, Frank Kisvarda suggests that it is only when an individual is willing and prepared to seek out knowledge and show an interest in learning as much as possible that firms will try to advance that person’s career (Kisvarda, 2013). The industry interview data in this study also reinforces the importance of a graduate’s attitude and nature in the work place. Participant R_09 stated, when discussing the merits of her designer/product developer:

“MC: And I know B says every thing she knows she has learned from you...
R_09: But she is a sponge and that’s a personality thing!”
Often, participants emphasised that success comes down to personality and not book learning: as Kisvarda reiterated in the previous statement “...it is the attitude of the individual...” (Kisvarda, 2013).

On the topic of graduates being work ready, there is a range of expectations as to how long it takes to train a graduate and what the graduate will bring to the job. Hodges and Burchell (2003) state that they found most industries in New Zealand expected graduates to be work ready immediately after graduation but, in the employers’ opinion, they were not. Employers stated that it could take from 18 – 24 months for a graduate to gain sufficient competency in the workplace, and that the cost to firms of training graduates was prohibitive and took some time to recoup (Hodges & Burchell 2003, p. 19). Once again, this is confirmed in industry interviews conducted for this research. In the research commissioned by the ISSI (International Specialised Skills Institute) citing skills needs within the Australian TCF industries, Walsh (2009) suggests that employers prefer to have a highly trained workforce, but highlights that they need graduates to have practical work skills so that they can immediately add value to the firm (Walsh 2009, p. 11). In a survey of Spanish businesses and their beliefs about graduate capabilities, Hernandez-March et al. (2008) found that most employers believe that graduates do come into the workforce with an acceptable level of preparation, but their competence is far removed from the level industry requires. The Spanish employers stated that their new graduates manage to get up to speed with industry requirements fairly quickly, at the most within the first year, but usually in less than six months.

From the current literature it appears that efficiency in skill is inculcated once a graduate is in the industry. The emphasis in the literature is largely on the importance of the soft skills – the attitude of graduates, – implying that there is an underlying satisfaction with the hard skills or work based competencies a graduate brings. Firms admit that graduates do have the training, but how they approach and assimilate new knowledge within the workplace is more important than the actual technical competencies taught in a course. In their paper on graduates’ skills and Higher Education, Hernandez-March et al. (2009) conclude that the ability of a university graduate to assimilate new knowledge rapidly is one of the most highly valued competencies, and this quality distinguishes university graduates from workers with less education and training. The assimilation of new
knowledge and the inclusion of that knowledge into design practice are very important in the creation of new product. Creating new product in industry includes a constant dialogue with new manufacturing processes and new materials. Getting a foot in the door as a graduate requires a willingness to take on new challenges and reflect on processes in design. The expectation that a novice will be quick to learn and apply that knowledge is more important than the book knowledge they bring to the position. The implications of this have a strong bearing on the research question of education outcomes and industry needs. All participants in this survey concurred with the importance of being open to life-long-learning. To only focus on the hard skills of current manufacturing and business practices is not enough.

2.6 Solving problems in design in practice

Training students and novice practitioners to use their surrounding resources to educate themselves and fine-tune their practice through a combination of creating, reflecting, making and re-assessing processes will embed good problem solving abilities in the graduate designer/product developer. The knowledge required by a designer to get a fashion style from conception through to delivery includes a myriad of both cognitive and practical skills. The cognitive skills include an understanding of how to research market trends, knowledge of how and where the product will be manufactured, and the cost of the product. The practical skills are a knowledge of all that is required in making the style, from the initial two dimensional sketch through to a two dimensional pattern, a three dimensional prototype, an understanding of textile and print behavior in that particular design and, finally, delivered production. In his paper on *Designerly Ways of Knowing*, Cross (2001) agrees that design knowledge is gained through a combination of direct involvement in the construction of the product, being instructed in how to create that product, and reflection on the end use of that product.

Further, in the book *The Reflective Practitioner*, Donald Schön (1993) also states that the knowledge a practitioner gains in their particular field is mainly through experience. He calls this “*knowing in action*”. In the process of product development, often a designer will be working with materials that are not even closely related to the final product. Take for instance the architect’s two-dimensional plan or even three-dimensional mock-up, the
fashion product designer’s illustration and the two dimensional pattern, or the textile designer’s rendition of a print on paper where the fluidity of the textile is not evident. Schön again qualifies that, often in design practice, the designer may not necessarily be the maker of the final product (Schön 1983, p. 79). This is certainly the experience of the designer/product developer in mass fashion as product invariably is outsourced. With attention to the constraints of the given supply chain, a reflective practitioner meets the challenges this imposes on new design and adjusts and includes different processes as a situation changes. Schön considers how a designer meets and then reflects and learns from this process of change in the situation. The designer reflects-in-action and adjusts further moves to take into consideration the new design [or making] problem for future designs. Schön’s thinking is focused on the idea of a reflective practitioner (Schön 1983). Manufacturing fashion products often encompasses a myriad of production processes, from textile and placement printing to embroidery and embellishment techniques and finishing and washing processes. These production processes are constantly changing, requiring the designer to constantly update their knowledge. In fashion, what may have been acceptable yesterday may no longer be acceptable under today’s circumstances. The changes can pertain to newly conceived safety hazards - for example, in 2010, attention was brought to the health risk to workers in industrial laundries caused by the process of sandblasting denim jeans to give them a worn look. This resulted in firms seeking alternative techniques for fear of a consumer backlash (Riddelious 2010); or there can simply be new sewing techniques, a more efficient construction method, or new machinery. The process of designing is a series of conversations with the situation involving constant re-evaluation of fabric performance, manufacturing techniques and supply chain capabilities to achieve the desired end result.

The process of design may seem laboured if the practitioner is constantly re-evaluating their approach and understanding. With practice, the experienced practitioner’s approach to the design problem becomes implicit by nature. Implied knowledge is the use of “previous experiences to facilitates the performance of a task that does not require conscious or intentional recollection of those experiences”, and explicit knowledge, requires a person to “perform tasks that require conscious recollection of the experience” (Schacter 1987, p. 501). The daily exposure and immersion in the design and production
process facilitates the inculcation of the knowledge that a designer needs to perform the task of designing within the context of their situation. The challenge is how to instill openness in students to the possibilities of new technologies and how to apply these in a restricted design environment.

Informal learning in the workplace also facilitates the inculcation of daily work practices for the designer/product developer and buyer. A study of a cross section of Australian businesses by Kajewski and Madsen (2012) surveying the use of informal learning in the workplace discusses the 70:20:10 learning principle and how it is used in different workplaces. The authors highlight that 70% of knowledge is gained informally in the workplace, 20% is gained in formal workplace training such as coaching, mentoring or in-house training, and only 10% is gained through a formal qualification. Further to the discussion on informal learning in the workplace, Eraut & McKee (2012) suggests that this form of learning is not formally recognised as a legitimate form of learning and is therefore not used and viewed as a tool for gaining knowledge. Eraut suggests that formalising informal learning will help firms identify their own processes and how to disseminate knowledge in an open and non-threatening environment (Eraut & McKee 2012). This will help lay the foundations for novice practitioners to ask the questions they need to ask about work practices and will expose designer/product developers to new techniques and technologies once they are in the industry. Targeted and meaningful professional development in the workplace can only facilitate best practice in product design and development.

2.7 Discussion and research questions

In summary, the literature relating to industry needs and education outcomes is mainly focused on managing the production process from a logistics and costing perspective (for example, Goworek 2010; Jin 2004). It does not address what industry actually requires in a designer/product developer per se, or even how education can address the needs of the mass fashion industry with respect to design and product development. Whilst the supply chain literature brings us closest to understanding the needs of the industry, it cannot address the micro problem of design and ‘product engineering’ – that is, engineering a product to fit into the constraints of the supply network. For example, a supply network
may only have access to screen printing, not digital printing, due to cost constraints, and the print design needs to reflect this. The value of both training and education in Australia is being underwritten by present industry needs. Whether these are current enough for the cohort of students going through courses at present is debatable. Does industry actually consider future trends in consultation with education, or instead, do both only consider immediate needs? The way industry proposes to embrace the changes in a global retail, as well as manufacturing, world has great bearing on skill requirements.

The value both industry and education place on true professionalism with respect to product design can prepare Australian retailers to be world players. Today, the typical customer has worldwide choice and is a lot more informed when selecting product. This was well illustrated in a small article entitled ‘A season ahead of the fashion pack’, printed in the *Melbourne Herald Sun* on 1 October 2012, proclaiming the global e-tailer ASOS would be releasing it’s spring/summer campaign to Australian customers four months before UK customers.

The practice of Australian retailers and wholesalers copying garments sourced from the northern hemisphere (western markets), which are six months or a season ahead of Australia, is widespread in the mass fashion sector (Payne 2011; Walsh 2009). The effect of this practice results in diminishing the need for originality and ingenuity in local product design. Under these circumstances there is no incentive to understand the supply network capabilities as a garment is supplied with minor changes. Collaboration and communication with the supply network is difficult as product developers are not equipped with the knowledge to have a technical conversation with suppliers (see Kavanagh 2004). When a firm fails to take the time to evaluate the constraints of the supply network, they fail to work efficiently with that supply network and control of product design and quality is relinquished to the supplier. Relinquishing that control does not ensure exclusivity, nor does it add value to the product - but are industry stakeholders in education relying on this practice to guide them with respect to training needs? And does design education see value in educating students to go into the mass fashion sector? This is, after all, the sector with the larger market share. Is it realistic then, for educators to emphasise encouraging students to design the once-off signature piece that simply looks good on the runway in a school fashion parade?
Being prepared for the reality of the fashion world is very important. There is significant growth in the mass fashion sector, especially with retailers managing their own product development. The skills required to create new product are quite different to the skills required when selecting and merchandising product from a range of ready-made garments. The knowledge required to manage a supply network and the timely planning of getting product into that network are quite different from the traditional role of the retail buyer in the past. Today, the expectation that employees are well rounded and aware of all aspects of product design is a given, and whilst this knowledge may be acquired through job experience, the underpinning knowledge can be acquired through education. Throughout the literature pertaining to the needs of industry (e.g. Abraham 2008; Hernández-March et al. 2009; Hodges & Burchell 2003), it is noted that most industries emphasise personality traits rather than particular skills. The enthusiastic, willing-to-learn, hard working team player is seen to be a more valuable asset than pure talent or expertise. Whilst education has included the quantifiable employability skills such as teamwork, self-management and problem solving into courses, it is more difficult to teach innate skills such as a desire to learn, work ethics and enthusiasm.

To sum up, a truly honest discussion needs to take place between industry and education. A realistic understanding of future trends such as the impact of Internet sales, the impact of a more informed consumer about styling and trends, and the tendency for successive generations not to pay exorbitant prices for garments is clearly needed. Only an informed designer/product developer can manage the new world that industry stakeholders find themselves in. The intermeshing of disciplines within the fashion world and the expectation of seamless navigation between these disciplines warrant further investigation. It is for these reasons I pose the following questions:

- *Is there synergy between industry expectations and education outcomes?*
- *Is education addressing the discipline crossover between garment design, textile design and merchandising or buying?*
CHAPTER 3: METHODOLOGY

In Chapter 3 I discuss the research design and the reasons behind the selection of the particular participants in this research. Participants were selected for their specific expertise in answering my research questions about mass fashion children’s wear design and the synergy between education outcomes and industry needs. These participants were also able to inform me about the extent of discipline crossover between textile design and fashion design. This chapter also describes each participant, highlighting their particular field of knowledge and the perspective they bring to this research.

- Section 3.1 focuses on defining the research design and describes the sectors researched.
- Section 3.2 describes the data collection and coding techniques, establishing what the coded headings are and how they were further refined to capture comparisons and similarities between different themes.
- Section 3.3 describes the participant’s backgrounds, dividing them into three groups: wholesalers/sourcing firms, retail firms and educators.
- In conclusion, sections 3.4 and 3.5 discuss the depth of experience and level of education of industry participants and educators respectively, preparing the foundation for further in-depth analysis in Chapter 4.

3.1 Research design

In Australia, there are four major players in the mass fashion retail sector and these firms also supply the majority of children’s clothing to Australian consumers. This is evident when assessing the landscape of the Australian children’s wear marketplace. As this research focuses on the needs of this market, I have chosen to study these retailers and the sourcing firms that service them. A description of each sector relevant to this study is provided in Table 1:
Table 1: Description of sectors

<table>
<thead>
<tr>
<th>Retail firms:</th>
<th>The IBISWorld definition of department stores is:</th>
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<td></td>
<td><em>Goods are normally sold via separate, in-store departments. Department stores purchase products from wholesalers and manufacturers, and sell them to consumers, generally without changing products. They also undertake activities like customer service, product merchandising, advertising, inventory control and cash handling</em> (Outlaw, August 2012). The majority of participants interviewed from retail firms were intimately involved in developing new product with either sourcing firms or their own supply networks. Only two participants sourced product from wholesalers, but they were also deeply involved in their own generic product development.</td>
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| Sourcing firms:        | The closest definition of firms supplying generic product to retailers is Webber and Weller’s (2001) definition of these firms as “sourcing firms” that develop product and manage the supply network. The sourcing firm participants interviewed only managed the design and manufacture of *generic product* for retail firms. All product created was done so under the house brand names of the retail firms they supply. Sourcing firms do not engage in marketing or advertising. |

| Wholesale firms:       | The IBISWorld definition of wholesale firms is: *Companies [that] purchase clothing and then sell the garments to retailers, generally with minimum or no further development of the items. Most wholesalers in the industry undertake sales and administrative activities, such as establishing relationships with manufacturers and retailers to ensure the reliable supply and demand of stock, marketing and advertising their products, and storage and transportation of stock* (Nugawila May 2012). Although no wholesale firm participants were interviewed, I feel a description of wholesale firms is necessary so as to differentiate between firms that create wholesale products and firms that create generic product: wholesalers develop and supply product under their |
own brand name and manage marketing and distribution of that brand.

*Generic product – product designed specifically for a retailer’s own home brand.

The education sector that offers courses for fashion, textile and merchandising are divided into two different delivery models. The first is TAFE (Technical And Further Education) and the second is the university model. The different approaches are highlighted in Table 2:

Table 2: Description of education sectors

| TAFE (Further Education): | The TAFE system in Australia delivers vocational education and training to students. The NCVER (National Centre for Vocational Education Research) defines vocational education in the following way: **First, the providers are registered under the Australian Qualifications Training Framework (AQTF), and hence known as registered training organisations, to deliver certain qualifications. The qualifications are based on nationally determined training packages that set out the competencies to be achieved.** NCVER (2007) This system is built around competencies and the criteria for those competencies. The minimum qualification earned in the TAFE system for fashion, textiles and merchandising students is generally a diploma. |
| University (Higher Education): | The university sector awards degrees and post-graduate degrees. The university sector curriculum is understood by industry to be catering more for creative design than for technical expertise. |

The research design was created after first identifying the research questions and the participants to be questioned. The literature review revealed the lack of examination of the specific field being studied, that is, mass fashion and its needs. From my understanding of the industry, I followed the process outlined by Janesick in the chapter entitled ‘The Dance of Qualitative Research Design’ in Denzin and Lincoln’s *Handbook of Qualitative Research* (1994, pp 209-219). Following is a table describing the strategies examined and those used and the reason why certain strategies were rejected.
Table 3: Description of interview strategies and coding

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<td>1. Action research</td>
<td>Action research is defined as the participation and subsequent influence of the researcher within the community they are examining. This process was not suitable for this research as the research examined a number of firms and education institutions.</td>
</tr>
<tr>
<td>2. Participative research</td>
<td>Often linked with Action research. The researcher has a passive involvement, not seeking to influence the outcome of the research. Whilst I was not working within either sector at the time of the research, this best describes the understanding my work experience brought to the research process.</td>
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<tr>
<td>3. Open-ended questions</td>
<td>Questions requiring a descriptive answer.</td>
</tr>
<tr>
<td>4. Structured and closed questions</td>
<td>Questions that are scaled or simply require an affirmative or non-affirmative answer.</td>
</tr>
<tr>
<td>5. Semi-structured questions</td>
<td>Guided questions requiring descriptive answers to the question.</td>
</tr>
<tr>
<td>6. Thematic questions</td>
<td>Questions that follow a theme.</td>
</tr>
<tr>
<td>7. Coding</td>
<td>Dividing information into measurable themes and sub themes.</td>
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(Denzin & Lincoln 1994)

The following procedures illustrated in Table 4 were followed in order to minimize the risk of alienating or possibly offending participants. The process of seeking ethics approval was followed in accordance with RMIT requirements. The rigor of these requirements ensured that all participants were well informed of the intention of the research and were able to follow due process if they were at all threatened or in any way uncomfortable with the interview process. In the consent form participants were asked to sign they were also give permission to be quoted by name or to remain anonymous. Table
4 also illustrates the processes followed in order to create the final semi-structured thematic interview schedule.

Table 4: Procedures followed when collecting data

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<td>1.</td>
<td>Ethics approval</td>
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<td>2.</td>
<td>Plain language statement</td>
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<td>3.</td>
<td>Pilot interview schedule</td>
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<tr>
<td>4.</td>
<td>Pilot interviews</td>
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|5. | Refining the interview schedule | Conducting the first interviews with the pilot questionnaire brought to light a number of issues:  
  a. The flow of questions: The ordering of the initial questionnaire did not work as the participants both naturally went on to answer other questions that were placed later in the process. This was addressed in the final question schedule and worked well in interviews.  
  b. Length of interview: All participants concurred on the length of time the interview should take. All repeat or similar
questions that elicited the same information were eliminated.

c. Themes and sub-themes: It became evident that it was necessary to target the information needed for this study and to keep participants on topic by dividing the questions into themes.

d. Coding: The themes and sub-themes were also instrumental in organizing the data clearly for coding.

According to Denzin, "The first interviews should be broad, allowing the participants to ‘tell their stories’” (Denzin & Lincoln 1994, p. 229).

Whilst I was not working within any of the particular firms or education institutions at the time of gathering the data for this thesis, my prior involvement in both sectors could easily be aligned with Participative Research. That is, having been embedded in the work cultures of both industry and education I was able to utilize this knowledge in my enquiry (Denzin & Lincoln 1994, p. 325). In informal discussions, both industry and education practitioners recommended that interviews should be no longer than forty minutes. Further consultation highlighted the need for the structure of the interviews to be seen as relevant, easy to understand and most importantly, succinct.

Considering these conditions I chose to use an open-ended thematic interview process above an unstructured interview process or questionnaire format. The descriptive nature of the answers to questions gave participants significant opportunity to express their opinions. The structure framed the interviews around the research questions and assisted in keeping participants on topic, but at the same time kept the interviews free flowing. Further, the design of the questions used for the semi-structured interviews included themes and sub-themes. These themes were informed by my own practice in both the education and industry sectors and facilitated in the subsequent coding of data. The information I required from participants was to test whether either industry practitioners or teachers believed education outcomes were pertinent to industry needs. The validity
of answers therefore provided a functional fit to the questions asked, and worked to achieve the goal of identifying what information students and novice designers require to adequately perform in their early careers (Denzin & Lincoln 1994, p. 127).

Access to firms and participants was obtained through my own networks. Numbers of potential participants were limited as only participants in the mass fashion children’s wear sector and those servicing this sector were being surveyed. The size of the Australian retail and sourcing industry is relatively small and the choice of stakeholders is not large enough to gain information through self-administered questionnaires. The size of the industry coupled with the natural inclination of people not to respond to questionnaires would have resulted in very low response rates. Questionnaires would also not have provided the depth of understanding that the open-ended thematic interviews provided.

All participants saw the relevance of the study and were willing to be part of the research. However, they were also all busy - or as one participant put it, “time poor” - and were anxious about the duration of the interviews. A semi-structured interview process was therefore chosen to balance out time constraints, depth of information and richness of data. The structure enabled participants to focus on the subject being researched and the openness of questions enabled them to talk about their own experience in relation to the subject. A list of preliminary questions was drawn up for industry practitioners and then tested on two participants. The questions were then adjusted for ease and flow according to the natural progression of the discussion. During interviews, participants often went on to the next set of questions before they were asked without any prompting. Similarly for the teachers, I chose to discuss a draft list of questions with three teachers before I compiled the final list, again modifying the initial questions to allow for more natural flow of answers. I personally conducted all interviews, as the common work connection between the participants and myself informed the reflexive and reflective flow of the interviews (Denzin & Lincoln 1994. p. 204). This process also facilitated participants’ reflection on their own views: as they reflected on their answers juxtaposed against other questions as the interview progressed, they found that the opinions they initially held about graduates and work readiness changed, as is outlined in the results in Chapter 4.
3.2 Data collection

My own position as an insider in both industry and education facilitated the selection of participants. I selected participants in the retail sector by first enquiring who the divisional manager of the children’s wear department was and then approached that person with my request to interview participants. Once I had their consent I requested a cross-section of employees including buyers, buyer assistants or product developers and graphic artists. One retail firm did not respond but I was able to engage the buyer directly with the intervention of a friend in that firm; the buyer then recommended other participants. Sourcing firms were enlisted on recommendation from retailers, as well as from my own contacts through freelance designing and in-house training in industry. Teachers were recruited by word of mouth as well as by contacting the institutions delivering fashion and textiles courses. A purposive sampling approach was taken in order to capture the particular information the research questions investigated.

The research design required data collection from participants who had an in-depth understanding of the issues of children’s wear product design, textile design and merchandising as they pertain to their particular circumstances and experience. Existing research into the use of purposive samples suggests that there is a point of data saturation in a homogeneous population. This point is usually reached at about twelve participants (Guest et al. 2006). It is for this reason I selected 22 participants in total, dividing them into the different sectors. I had enough participants in each sector not to go over saturation point. I selected 9 participants in retail firms, 7 participants in sourcing firms, and 6 teachers/lecturers with particular expertise in teaching computer aided graphics to fashion, textiles and merchandising students.

The teachers’ interview questions were different to the industry sector as the information to be obtained had a different perspective to the industry perspective\(^\text{11}\). I found in each sector the similarity of answers became evident after the first three or four interviews. This is closely aligned with the findings in the paper written by Guest et al. (2006). I also chose participants by their amount of industry experience, trying to get a cross section, as well as a representative sample of participants. In the retail firms I was able to interview

\(^{11}\) See appendices B & C,
participants who worked in the same teams or areas, further adding value to the depth
and span of knowledge required by these participants. In sourcing firms there was a cross
section of job responsibilities, but not from the same team. Being an ‘insider’ in both
industry and teaching, I found that a rapport was easy to establish with all three sectors
and interviewees were all very generous with the time they gave me, even after asking
for assurances that the interview would not take long. Most interviews took between
forty and sixty minutes.

The questions were structured under main themes and then sub-themes. The themes
facilitated in the coding of data once interviews were transcribed. For industry
participants the main themes consisted of background information about industry
experience and studies; the participants’ use of computer graphics; their own knowledge
of construction processes and how this knowledge informs their understanding when
either developing product or placing product in the supply network; participants’
attitudes towards graduates and novice designers; their opinions on succession planning
and training; and lastly, how they believe education can best serve the future of the
industry. Teachers’ themes were similar but some questions within these themes had a
different emphasis. The teachers’ themes included background information about
teaching experience; any industry participation, as well as courses studied; their use of
computer graphics, what programs they taught and what they included when they taught
these to students; their background knowledge of textile and garment construction and
whether they believed this was necessary information; curriculum relevance and design;
and lastly, their views on the future of education and whether it should be
accommodating the possible crossover between disciplines. Participants each received a
“plain language statement”\textsuperscript{12} explaining the nature of the research and the list of
questions, giving them time, if they wanted to collect information for the interview.
Participants were put at ease and ensured that the interview process did not seek to
expose any shortfalls in their own work practice, but was more concerned with their
opinions about the subject. This was important, as the goal of the interview was to gain
an understanding of the needs of both industry and education (Denzin & Lincoln 1994).

\textsuperscript{12} A formal letter stating the purpose and possible impact of the research on participants, ref appendix A
page 116.
The interviews were recorded, each taking from 40 minutes to one hour, and then transcribed. Once the transcriptions were completed a combination of manual and computer aided coding and analysis was embarked upon. All transcriptions were imported into a qualitative data analysis program, NVivo. As Welsh (2002) suggests, NVivo is well placed to facilitate in organising the data set more efficiently enabling easier comparisons of answers in each theme. The following main themes were chosen for the industry participants:

1. Background information – this established years of industry involvement, level of education, institution studied at, career path and present position. For example: How long have you been in the industry? I found the distinction of years in industry more pertinent than age as this related to industry experience. This information was collected to frame attitudes and beliefs surrounding the theme of education and industry readiness.

2. Computer graphics – this set of questions established participants’ understanding and use of computer aided graphics and how they used these in their day-to-day transactions. For example: When did you first come across CAD in the industry? The need for the selected participants to be familiar with the use of computer graphics as a communication tool is an integral part of how they conduct their daily business.

3. Production processes and information – these questions addressed the fundamental questions I was asking as the answers highlighted from where and how participants gathered this information themselves. These questions also encouraged participants to reflect on their own development in the industry. For example: How have you gained your own knowledge of production processes? This invariably exposed whether participants’ own expectations of graduates or novices in the industry were reasonable. Participants also reflected on their own work procedures, teasing out valuable information that could be used for training and development.

4. Graduates and novice designers – the questions on graduates and novice designers first established participants’ attitudes towards employing graduates or whether they preferred more experience, what influenced the participant’s choice when employing a junior, and what the expectations were of a graduate or novice. For example: What
are the primary qualities in a graduate or novice designer that would sway your choice in employing them?

5. Succession planning – these questions established whether the firm planned for succession and what the firm’s attitude was towards training and mentoring junior design/product development staff. For example: Do you believe the firm has a duty of care to plan for succession? This group of questions also established whether participants were confident about the future of the firm and ongoing training.

6. Future – the last set of questions clearly asked participants if they believe education outcomes are pertinent to industry, taking for example the present trend for retailers to source their own product and not include sourcing firms in the network? Participants were asked about a combination of crossover skill sets and whether graduates should be learning these.

The following main themes were chosen for the education participants:

1. Background information – once again this established how many years of teaching practice the participants had, their type of qualification or institution studied at, career path and present position. This information was collected to frame attitudes and beliefs surrounding the theme of education and industry readiness.

2. Teaching computer graphics – this established the length of time participants had been familiar with computer graphics in fashion and textiles. Often the answers to these questions revealed a history of involvement that preceded industries’ large-scale take-up of computer graphics applications in the fashion business. On a practical level participants were asked about the impact that the quality of computers and systems had on their teaching.

3. Background knowledge – established participants’ own understanding of the knowledge practitioners require when rendering fashion or textiles computer graphics. Participants were also asked if they had any time for industry release and how they kept abreast of current industry practices. This line of questioning revealed whether participants saw value in a holistic view when teaching graphics or chose to teach the operational aspect of the graphics package only.
4. Curriculum relevance – participants were asked to comment on the relevance of training packages in the vocational education system with reference to teaching computer graphics. In higher education, they were asked to comment on the establishment of the curriculum and how this affected outcomes. Participants were also given the opportunity to say if they would like to add more to the course.

5. Future – the last set of questions, once again, clearly asked participants if they believe education outcomes are pertinent for industry. Participants were asked about a combination of crossover skill sets and whether these should be included in curricular. Participants were also asked to comment on written and graphic communication and whether this needs to be clarified and emphasised within courses.

Once the data was coded, it became evident further refinement was needed in order to clarify similarities that were revealed in the data. There were questions that needed to be simplified and divided into dichotomous yes/no categories. For example, when participants in industry were asked if they would employ a graduate, often the answer was descriptive. While it was important for the participants to be able to tease out their own response, a simple yes or no answer worked better when comparing this kind of information, as with a question like: How long have you worked in the industry? Whilst NVivo was useful in facilitating the coding process, I found it easier to feed coded information into Excel when teasing out the simpler information. Excel facilitated in creating graphs and charts that enabled visualisation of the characteristics of the population.

3.3 Description of participants

The participants were divided into three groups: practitioners working in the retail sector, practitioners working in the sourcing sector, and teachers/lecturers working in both the TAFE (further education) and university (higher education) sectors.

Table 3 encapsulates the background information and job titles of participants engaged in the retail industry:
Table 3: Background information of retail participants

<table>
<thead>
<tr>
<th>Interview No.</th>
<th>Years In Industry</th>
<th>Fashion/Textiles Degree</th>
<th>Fashion/Textiles Diploma</th>
<th>Graphics Degree/Diploma</th>
<th>Present Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>R_01</td>
<td>21</td>
<td>✓</td>
<td></td>
<td></td>
<td>Buyer/Product developer girls private brand</td>
</tr>
<tr>
<td>R_02</td>
<td>21</td>
<td>✓</td>
<td></td>
<td></td>
<td>Buyer boys’ wear 1-14</td>
</tr>
<tr>
<td>R_03</td>
<td>7</td>
<td></td>
<td>✓</td>
<td></td>
<td>Graphics/ product developer</td>
</tr>
<tr>
<td>R_04</td>
<td>28</td>
<td>✓</td>
<td></td>
<td></td>
<td>Manager of product development and forecasting</td>
</tr>
<tr>
<td>R_05</td>
<td>8</td>
<td>✓</td>
<td></td>
<td></td>
<td>Category developer private brand: girls 8-16; boys 3-16; girls sleepwear 3-16 National brand and private brand footwear 8-16</td>
</tr>
<tr>
<td>R_06</td>
<td>7</td>
<td></td>
<td>✓</td>
<td></td>
<td>Stylist/ product developer girls 1-6</td>
</tr>
<tr>
<td>R_07</td>
<td>12</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>Graphic artist and textile design development girls 1-6</td>
</tr>
<tr>
<td>R_08</td>
<td>6 months</td>
<td>✓</td>
<td></td>
<td></td>
<td>Product developer assistant and category buyer for 3 brands</td>
</tr>
<tr>
<td>R_09</td>
<td>21.5</td>
<td>✓</td>
<td></td>
<td></td>
<td>Buyer girls’ wear 1-6</td>
</tr>
</tbody>
</table>

A: Fashion degree or diploma  B: Textiles degree or diploma

Nine retail participants were interviewed ranging in age and position. All participants have input into the development and production of new product. Only one participant was a manager. This participant (R_04) was selected for her extensive experience and her position straddling the crossover between design/product development and buying. As the only area manager of designer/product developers, her novel position made her contribution informative and useful. Four buyers were interviewed, three of them being in the industry for over 20 years and one being in the industry for under 10 years. The focus of the buyers’ roles varied slightly, from one position being solely on financial, quantitative and supply network management, to the other three having high input into product development.
Table 3 also shows that the majority of buyers (R_01, R_02, and R_09) had over 20 years of experience and so had therefore also experienced the industry when manufacturing was still local and this had informed their own career development and work practices. The participant, R_05, with 8 years experience was the only example of a buyer who had no experience of local manufacturing in her early career development and her input was important for this reason as it highlighted how novices in the industry can develop an understanding of production processes without immediate access to them. Participant R_08 was in the unique position of having just six months’ experience and her input in terms of her own industry readiness and the memory of her course just studied was invaluable. The remaining three participants (R_03, R_06 and R_07) all worked producing graphics for styling and textiles and each added more value as to how informative an understanding of production processes is in their positions. The usefulness of the courses they studied and how this in turn impacted on their every day work practices informed me of the practical needs in their early career development.

Retail participants interviewed could be broadly categorised into two streams of job specifications, that is, buyers and designer/product developers. The job of buyers generally drives new generic product development, from analysing sales information through to direction and choice of new product ranges. The contribution of buyers to the intricacies of new product development depends wholly on the expectations of the firm they work for as well as the buyers’ own experience and preferences. Buyers who had previous product development experience in a sourcing firm or who had done a fashion design qualification enjoyed the intimate involvement in product development down to stitch detail on garments. To quote one participant:

“It’s my job to manage that design coordinator [graphic artist] to get the sketch right before it goes to China. However, when you are producing 1500 styles a season, checking over every stitch mark is quite hard and sometimes you don’t catch it until it is in first fit stage for example” (Participant R_05).

Only one retail firm was clear in designating the responsibility and intricacies of product design to the designer whilst the buyer managed the broader running of the department. Buyers were always responsible for managing production networks, negotiating price and
placing product with either offshore suppliers or local wholesalers or sourcing firms. Designers/product developers had varying degrees of responsibilities. The one firm that was unambiguous about the responsibility of buyers was also the only retail firm that clearly saw value in the design process and gave the designer the freedom to design product from start to finish. The buyer in this firm had high expectations that the designer could work autonomously and had a clear understanding of their customer profile, supply network and production processes. This buyer praised the development of the designer who was responsible for creating his product by noting that when the designer first started in the position, the prints he developed needed two to three strike-offs from artwork before they were considered good enough to go into production. Today, he said, they only need one strike-off and it is usually approved. Clearly the designer had become familiar with this firm’s supply network and was designing to the particular capabilities of the network. This firm also had openly demarcated paths of career development for the buying and merchandising stream and the product development and design stream. Clear career path development has a significant impact on firms being able to retain skilled staff. As previously stated, supply chain literature emphasises the competitive advantage of a firm’s employee skill base, and therefore knowledge capital, defining it from the rest of the pack (Lane & Probert 2006).

Other retail firms that were similar in size had varying degrees of responsibility for either designer/product developers or, as one firm called them, graphic artists, and another design coordinators. The designers were given guided autonomy whilst graphic artists and design coordinators worked to tight buyer and designer briefs. In these firms there was not a high expectation that the graphic artist should have production process knowledge. The expectation was rather that graphic artists be quick at producing finished artwork that conformed to the needs of the department and closely adhered to buyer specifications. The skill required was expeditious operation of the particular graphics package utilised in that firm. Career path development from this position was found to be limited, as these firms have strict rules on the process of progression through the ranks. The pinnacle of a career in these firms is buying and to that end a person had to go through the buyer traineeship program run by the firm. Even though product development was expected of buyers product development is not considered adequate
preparation for career advancement. Career development rated very high when I interviewed less experienced participants: they all spoke of the need to see that there was a visible path of progression and they wanted to know clearly how to progress.

The following are lists of job responsibilities of buyers, designer/product developers, and graphic artist or design coordinator retail firm participants:

**Buyer:**
- Oversee and manage buying team, design/graphics team and production team.
- Analyse sales, range planning and research.
- New product development – broad selection of style categories and seasonal drops; set seasonal colour directions.
- Brief designer/product developer or graphic artist on broad seasonal themes and colours or specific styles and seasonal themes (depending on the firm’s operational management).
- Work with sourcing teams to acquire enough fabric stocks for the season. (Not all firms did this. Some would do this style by style or perhaps only for large, store-wide programs such as a tee-shirt program).
- Negotiate production costs with suppliers and follow up new sample costs.
- Manage and place production with suppliers.
- Input into first sample fit and finish and overall appearance and marketability.
- Oversee marketing and brand management.

**Design/product developer**
- Research and plan new product ranges in consultation with buyer.
- Develop new styling placement prints and textile prints in computer graphics packages.
- Brief and delegate graphic work to a graphic artist.
Prepare production art packs with detailed construction drawings, finished placement print and textile print repeats, details of any new garment trims, and colour specifications.

**Graphic artist**

- Draw up new styling on computer.
- Develop new placement prints and textile prints on computer.
- Prepare production art packs with detailed construction drawings, finished placement print and textile print repeats, details of any new garment trims, and colour specifications.

Table 4 encapsulates the background information and job titles of participants engaged in sourcing firms:

**Table 4: Background information of sourcing firm participants**

<table>
<thead>
<tr>
<th>Interview No.</th>
<th>Years in Industry</th>
<th>Fashion Degree</th>
<th>Fashion Diploma</th>
<th>Other</th>
<th>Present Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>S_01</td>
<td>25</td>
<td></td>
<td>✓</td>
<td></td>
<td>Pattern maker/ garment technician</td>
</tr>
<tr>
<td>S_02</td>
<td>25</td>
<td></td>
<td>✓</td>
<td></td>
<td>Sales, product development and production manager</td>
</tr>
<tr>
<td>S_03</td>
<td>25</td>
<td></td>
<td>✓</td>
<td></td>
<td>Graphics product developer and textiles designer</td>
</tr>
<tr>
<td>S_04</td>
<td>10</td>
<td></td>
<td>✓</td>
<td></td>
<td>Garment technician</td>
</tr>
<tr>
<td>S_05</td>
<td>5</td>
<td></td>
<td>✓</td>
<td></td>
<td>Graphics product developer and textiles designer</td>
</tr>
<tr>
<td>S_06</td>
<td>15</td>
<td></td>
<td>✓</td>
<td></td>
<td>Licensed product administration and liaison</td>
</tr>
<tr>
<td>S_07</td>
<td>2</td>
<td></td>
<td>✓</td>
<td></td>
<td>Assistant account manager</td>
</tr>
</tbody>
</table>

A: Fashion degree or diploma  
B: Textiles degree or diploma

Participants interviewed from sourcing firms could be divided into two broad categories: sales/product design and development, and garment technician/production roles (see Table 4). Responsibilities varied markedly between firms and the size of the firm had a direct bearing on the responsibilities of participants. Job titles for similar positions varied between firms and some titles did not really describe the participants’ responsibilities in the conventional sense. For example, the assistant account manager’s role (S_07) was purely a production follow-up role for a particular retail account. This differed from my
own understanding of the position as being one of assisting in the creation of new products; however, this participant did no development work at all. The participant’s relatively fresh position in the industry was informative about novice industry participants’ attitudes and expectations, as she had only been working for two years.

In the sales and product development position, participant S_02’s depth of involvement in the quality control and production management of styling was a direct result of her career history. This particular participant worked very closely with the retail clients she was creating generic\textsuperscript{13} product for. Essentially she would go on buying trips for samples to be directly copied or used as inspiration for a wider range of coordinated garments\textsuperscript{14}. She would then brief graphic artists/designers on final designs to be illustrated. This participant expected the designer/product developers to have a particularly in-depth understanding of the firm’s supply network and operational structure. As a highly experienced practitioner who has been in generic children’s wear product development through many industry changes, participant S_02’s perspective clearly illuminated the changing needs of the industry as well as the difficulties facing sourcing firms who are up against the competitive pressures of retailers doing their own designing, and supply network management. The two product developers and textile designers (S_03; S_05) had exactly the same responsibilities. Both designers took instructions from a sales manager to create finished art storyboards including styling, textile designs and placement prints. The difference in years worked - S_03 having worked for 25 years and S_05 for only 5 years - once again encapsulated the difference between practitioners who had learned about production processes when all product was locally made (S_03), and those learning now, when product is manufactured off shore (S_05). Both designers discussed how their careers had been shaped, how they gained their expertise in production process knowledge, and how they use this knowledge in their own product development creating styles and textile and placement print designs.

The garment technicians interviewed (S_01; S_04) had similar responsibilities, checking garment drawings in terms of production technology available in the firm’s supply network, ensuring that all garment details and stitch details were represented in

\begin{flushright}
\textsuperscript{13} Product designed specifically for a retailer’s own home brand.
\textsuperscript{14} A group of garments that can be worn together as coordinated items.
\end{flushright}
drawings, and creating size and grading specification charts for the garments. Garment technicians were not expected to create detailed production drawings and did not have the computer graphics skills or the time to do so. Both garment technicians believed that the skill to generate technical sketches rendered on computer was a necessity and both had plans to up-skill themselves if, and when, they had the time to do so. Both garment technician’s perspective of production process needs highlighted the importance of inter-company communication as well as communication with the supply network.

The licensed product administration participant (S_06) was responsible for a variety of different aspects to do with the products and approvals from a manufacturing and operational perspective, not style and branding. This participant was responsible for ensuring all stakeholders understood the supply network capabilities within the limitations of the licensor’s expectations. She liaised with buyers, designers, the licensor and the supply network. Licensed product is a highly price-sensitive area with many costs having little to do with actual material product and production and more to do with intellectual property and the license itself. This area highlights how important it is to be completely aware of supply network capabilities as careful negotiation is required to keep product cost in line with the licensor’s expectations and the licensee’s needs – a competitively priced product in a cut-throat environment. This participant contributed some unexpected insights as I was not aware of the details of her daily work activities before the interview. I found her need to negotiate the complex communication among all the different stakeholders involved in licensed product informative.

The following lists the job responsibilities of participants in sourcing firms:

**Sales and product development**

- Research new seasonal styling, prints and textiles.
- Research fabric stocks available within the firm’s supply chain.
- Plan new product ranges.
- Brief designer/product developers.
- Negotiate new sample costs with suppliers and secure production space.
Present and sell product to retailers based on storyboards and textile quality swatches.

Follow through sales and place production orders.

Negotiate production costs with suppliers.

Oversee all aspects of sending production packs to offshore suppliers.

Manage and place production with suppliers.

Input into first sample fit and finish and overall appearance and marketability.

Input on quality of final stock delivery into store.

**Design/product developer**

Develop new styling, placement prints and textile prints in consultation with sales manager and create storyboards for sales manager to present to retailers.

Prepare production art packs with detailed construction drawings, finished placement print and textile print repeats, details of any new garment trims and colour specifications.

Follow up on any new colour lab dips, organise approvals of lab dips and placement print or textile strike-offs with retail buyer.

**Graphic artist**

Draw up new styling on computer.

Develop new placement prints and textile prints on computer.

Prepare production art packs with detailed construction drawings, finished placement print and textile print repeats, details of any new garment trims and colour specifications.

**Garment technician**

Develop garment size specifications and patterns.

Ensure fit, measurements and quality adhere to firm’s standards.

Organise and manage first sample and pre-production garment fitting sessions.
Work closely with design/product developers, production and quality assurance departments.

Ensure all information is correct prior to sending packages off to remote suppliers.

Regularly liaise with production.

Table 5 encapsulates the background information and job titles of participants engaged as teachers/lecturers:

Table 5: Background information of participants employed as teachers:

<table>
<thead>
<tr>
<th>Interview No.</th>
<th>Years in industry and/or Teaching</th>
<th>Fashion/Textile Degree</th>
<th>Fashion/Textile Diploma</th>
<th>Other degree</th>
<th>Present Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>E_01</td>
<td>2.5</td>
<td>9</td>
<td>✓</td>
<td>✓</td>
<td>Textiles Design and Textile CAD Teacher</td>
</tr>
<tr>
<td>E_02</td>
<td>12</td>
<td>12</td>
<td>✓</td>
<td>✓</td>
<td>Fashion CAD Teacher</td>
</tr>
<tr>
<td>E_03</td>
<td>31</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>Merchandising CAD Teacher</td>
</tr>
<tr>
<td>E_04</td>
<td>3</td>
<td></td>
<td></td>
<td>✓</td>
<td>Fashion CAD Teacher</td>
</tr>
<tr>
<td>E_05</td>
<td>15</td>
<td>5</td>
<td>✓</td>
<td>✓</td>
<td>Fashion CAD Teacher</td>
</tr>
<tr>
<td>E_06</td>
<td>+/- 15</td>
<td>25</td>
<td></td>
<td>✓</td>
<td>Fashion and Textile CAD Teacher</td>
</tr>
</tbody>
</table>

A: Industry  B: Teaching  C: Fashion degree or diploma  D: Textile degree or diploma

Teachers’ responsibilities were similar and their responses were alike in terms of their own teaching practice and skills compliance. The delivery and assessment of courses in TAFE (further education) prioritises student’s ability to understand and use CAD programs to render fashion or textile drawings. The computer skills subjects are run earlier in the course and then later embedded as part of the final design components and not assessed separately. At university (higher education), graphics is embedded in design courses throughout the degree. Students are taught how to use programs, but are not assessed on the operation of programs, rather on outputs and design.

The selection of teachers for this research was based on the courses they taught in. I was looking for a cross-section of courses that feed into fashion product development, such as TAFE fashion, TAFE merchandising, TAFE textile design, and university fashion and textile design. Teachers were recruited by first speaking to managers of teaching institutions.
and then the teachers were given the option to contact me. I also recruited some participants by speaking to them directly myself. I was not aware of any teacher’s prior industry experience or how many years they had been teaching; my only criterion was that they were teaching computer aided graphic design in a fashion textiles or merchandising course.

Table 5 shows that E_01 had spent some time in industry and was now teaching and studying. E_02 owned and ran a small bridal business before starting teaching. E_06 ran his own studio and freelanced as a textile artist; he also maintains a textile art and design practice creating design artifacts. Two of the participants, E_03 and E_04, had no formal fashion or textile design expertise at all; both had taken up graphics because of a passion for computer graphics. E_05 was the only teacher who had also spent 15 years in industry, as a fashion designer and product developer.

3.4 Retail and sourcing firms’ industry experience and education qualifications

Participants’ background information revealed some surprising congruencies. An examination of the years worked in the industry for both the retail and sourcing sectors revealed that 44% and 43% of participants in retail and sourcing firms respectively had been in the industry for either more than twenty years or less than ten years. This concurs with the interview data obtained when participants were asked about succession planning. Participants often commented that staff with many years experience held most senior positions, for example, as participant R_09 observed:

“...when I look at children’s wear buyers, most of them are over 40”.

Participant S_01 reiterated the same sentiment:

“...there is a problem here, as most garment techs [technicians] are in their late 40’s early 50’s and we have no young ones to train”.

Participant R_09 also commented on the lack of product development experience within the buying team as she was the only member who had experience in both development and buying; others had only done buying, which she felt was not enough for current industry needs. Retail firms have also not planned for the intimate involvement in product development that the role of buyer now needs. The fact that most practitioners
had either worked more than 20 years or less than 10 years exposes a significant lack of planning on the part of both sourcing firms and retail firms. This reveals either that the industry is not retaining staff through those middle years or that there may have been years of not hiring staff. Another factor, as a few more experienced participants pointed out, is that the majority of employees in product development are women, and women often leave employment to have children. One of the teachers interviewed had left product development after having children and went back to work as a teacher.

The following is a chart illustrating years worked in the industry:

![Chart illustrating years worked in the industry](chart.png)

Figure 3: Number of years worked in industry by participants in retail and sourcing firms

In terms of education and training, most participants interviewed in the industry had a fashion qualification. Among retail firms 11% had done a textile degree, 11% a graphics degree or diploma, 22% a fashion degree, and the majority, 56%, had done a fashion diploma qualification. In sourcing firms, 86% of participants had a fashion diploma and 14% a fashion degree. There is obvious disparity between these figures and the figures gleaned from the Australian Bureau of Statistics 2006 census figures as reported in the productivity review of the Australian Textile, Clothing and Footwear Industries (2008, Vol 1, p. 41). It’s Table 3.13 is only based on manufacturing firms and includes all workers in the industry, thus skewing the figures in the “no post school qualification” column (Ames 2008; Commonwealth of Australia 2008, Vol 1). This does not give a true representation of the education requirements in the fashion industry. Most participants did not have any particular preference for either a diploma or degree qualification. All participants said that the education they received had served them well to a point, but no education could compare with industry exposure. Participants found when looking for their first position
in the industry, potential employers were more interested in their portfolios and their attitude, as well as possible experience gained in the industry while studying. This was looked upon favorably, more so than actual grades or courses. Studies conducted in New Zealand, India, Spain and China also all concur with the comments about attitudes and work experience during studies (Abraham 2008, Hernández-March et al. 2009, Hodges and Burchell 2003, Velde 2009).

When participants reviewed the career path that had brought them to their present position, most believed that whatever the trajectory of their career had been, it had been the best way to “learn the ropes”.

Participants all agreed on one point and that was that all graduates and novices should be completely familiar and proficient on graphics programs, in particular Adobe Illustrator and Photoshop. The other expectation was for graduates to have solid foundation skills including: a working knowledge of Microsoft office (Word, Excel, PowerPoint, etc); basic design skills (an understanding of colour, aesthetics, proportions and balance); research skills (identifying industry trends, consumer trends and fashion forecasting); an ability to track the design evolution of garments from a mood board through to work board; and board preparation and presentation skills incorporating elements of design with marketing skills (Downing & Shinn 2011 , p. 2). All participants claimed the best place to gain depth of learning in all skills is on the job. Industry participants all concurred when it came to deepening knowledge: only the reality of performing day-to-day tasks on the job can instill the skills and knowledge needed to perform those tasks. As Donald Schön (1983) states in the book The Reflective Practitioner: How Professionals Think in Action,
the knowledge a practitioner gains in their particular field is mainly through experience. He calls this “knowing in action”.

3.5 Teachers and lecturers’ industry experience and education qualifications

The expertise of teachers and their opinions on discipline crossover, as well as their understanding of how much students can absorb in an undergraduate course, are very pertinent in trying to establish a minimum standard in teaching graphics. Graphics teachers varied in approach, from only teaching students the nuts and bolts of the program, to including an understanding of garment construction and pattern making in the process. Teachers all brought their own personal experience to class, offering students varying degrees of expertise in textile design and garment construction. Only one teacher had come into teaching after spending a number of years in designing, range development and textile design in industry. Her response to my question about the crossover between garment styling and textiles print and if she felt it was necessary to teach this, was as follows:

“Well I think I do because that is my experience, but I don’t know if others do. Like the present person teaching the first semester computer graphics, she doesn’t have that experience so she doesn’t teach it. But they [the students] are still competent according to the package [TAFE training program]. So there is nothing wrong with that!” (Participant E_06 CAD teacher)
Establishing the core, fundamental knowledge required to design new garments goes beyond the use of a computer graphics program. Students are required to include all the principles learned in other subjects when rendering fashion and textile graphics. An awareness of the technical construction and print processes is important when creating working drawings. Fashion graphics teachers often spoke of students’ lack of follow-through from pattern construction and sewing classes to drawing in a computer graphics program. Nearly every teacher teaching fashion graphics made the same observation. The two textiles teachers did not highlight this lack of transfer of knowledge, especially the higher education textiles lecturer who stated that the use of computer graphics was embedded within design subjects. A teacher’s own experience and abilities impact significantly on what they see as important information to include in their teaching. Their own depth of knowledge of particular skills is evident when they teach. This varies from course to course and teacher to teacher.

In conclusion, Chapter 3 has laid the foundation for the results and discussion in Chapter 4. I have outlined a definition for each sector and it’s place in the industry. How participants were selected and their particular roles in industry have been listed as well as descriptions of job specifications. Finally, I described participants’ length of time in industry and their education, and the impact this has on their work practices. Chapter 4 details the findings in relation to the research questions of industry needs and education outcomes.
CHAPTER 4: RESULTS AND DISCUSSION

In Chapter 4 I provide a detailed discussion of results derived from the interviews. This chapter is divided into three main sections and then sub-sections:

- The first section focuses on industry participants and their understanding of the industry and expectation from education. Retail firm interviewees are: RF01; RF02; RF03; RF04; RF05; RF06; RF07; RF08 and RF09. Sourcing firm interviewees are: SF01; SF02; SF03; SF04; SF05; SF06 and SF07.

- The second section focuses on education and what education is doing to address the needs of industry. Education interviewees are: E01; E02; E03; E04; E05 and E06.

- The third section poses the question of whether graduates can ever meet industry needs.

- The fourth section discusses the answers to the research questions:

  “Is there synergy between industry expectations and education outcomes?

  And, is education addressing the discipline crossover between garment design, textile design and merchandising or buying?”

4.1 Industry participants

Chapter 3 provided a descriptive analysis of the participants and some background information. The following section goes on to detail some of the answers to the questions, and comparisons between answers, given by participants. To best describe the results, the participants have been divided into two groups: the group that has worked for more than 20 years and the group that has worked for less than 10 years. One person in each of the sectors, that is, retail and sourcing firms, has worked for 12 years and for 15 years, respectively.

A common theme to emerge from these interviews is that production process knowledge is most important and it informs design, and that this knowledge is best gained through direct experience with manufacturers. Throughout the interviews I found that participants who had been working in the industry for longer periods had a rich variety of
experiences and depth of knowledge. The majority of participants spoke of the early years of their careers as the most formative, where the learning curve was the steepest. Practitioners who had been in the industry for more than 20 years discussed how the industry was structured and how important training in industry was for them. Training was formalised in firms with clear learning outcomes needing to be achieved, such as understanding sewing techniques in conjunction with pattern making processes or printing techniques and textile performance. One participant said that each time one of her allover textile print repeats was going into production she was able to be at the print house to observe the first few meters being printed because of the printer’s proximity to her place of work. Every company had at least one junior who would spend time under the mentorship of an experienced practitioner, “learning the ropes” (R_01; R_04; R_09; S_01; S_02; S_03 and S_04). When R_01 first went into the industry, 21 years previously, the firm she worked in had their own manufacturing arm and she was expected to spend time in each section at the factory, from design to sewing as well as garment costing, so she could understand all processes. Other interviewees, for example R_09, S_01, S_02 and S_03, all spoke of working with machinists and cutters, doing their own pattern making, checking production quality, and generally being immersed in the whole process of design and production. Retail participants in children’s wear senior buying positions generally had a design and production background, which illustrates the importance of this knowledge in this role, as the buyer holds a key negotiating role within the supply network.

Participants who had been in the industry for less than ten years relied heavily on their direct superiors and other staff members to inform them about work practices. These participants all spoke of needing to actively seek that information themselves: there is no formal industry training in product development. Formal training programs are available for trainee buyers in retail firms but there is nothing available for product developers in retail firms. Each participant said that the education they received did not prepare them at all for the industry. All admitted that the best place to learn was in industry itself and that they would not have been able to understand the needs of industry from the classroom perspective only. Once in industry, the younger participants saw the need to gain further qualifications or clarification about actual industry practices. One of the
participants had gone on to further studies after completing a textile degree and others were interested in doing advanced pattern making. One of the younger participants had the opportunity to travel to remote factories and witness the manufacturing process firsthand. He was able to see production of textiles through to a finished garment, including placement printing and textile printing. This participant said that this experience and his collaboration with other designers within the group certainly informs the way he designs product. More often than not however, younger designer/product developers do not see the manufacturing plants that their production goes through. The majority of interviewees said that they would gain from being able to visit factories that made the product they designed. Participants R_06 and R_07 were expected to communicate directly with offshore manufacturers in regard to the design artwork they produced, thus circumventing any risk of misrepresentation or being lost in translation.

When participants were initially contacted about this study, I found the majority of participants passionate about the outcomes of the research and their own opinion on whether education outcomes meet the mass fashion markets needs. Informally, participants quickly reacted by emphatically stating: “No, education does not meet our needs at all!” Indeed, this was my own perception on initiating this research: I similarly felt that education does not meet industry’s needs. Through the reflective flow of the interviews, however, participants and I discovered that in fact education does meet industry’s needs as well as it can, considering the nature of the work. The outcome of this research concurs with the Hernandez-March et al. survey (2009) which finds that most employers believe that graduates do come into the workforce with an acceptable level of preparation, but this is far removed from the level required by the business.

In the following sub-sections, detailed responses are broken down into the themes of the interview schedule:

4.1.1. Computer graphics:

All participants were aware of, had used or are using computer aided graphic design to create garment and textile prints and placement print illustrations. Participants who had been in the industry for over 20 years generally came across graphics programs in industry. First introduction to graphics programs ranged from the mid 1990’s to early
2000s. Four participants, R_09, R_04, S_01 and S_04, were first introduced to the computer graphics package CorelDRAW. Two participants (R_01 and S_03) first came across specialised industry specific textile packages or garment drawing packages. Participants were all aware of the graphics packages Adobe Illustrator and Photoshop, both being current industry standards. Participants’ use of programs varied depending on their job descriptions.

Table 6: Use of computer graphics packages

<table>
<thead>
<tr>
<th>Interview No.</th>
<th>How do you use Computer graphics in your present position?</th>
<th>Computer graphics package used</th>
</tr>
</thead>
<tbody>
<tr>
<td>R_01</td>
<td>Brief an artist to draw up garments, yardage prints and placement prints</td>
<td>Adobe Illustrator &amp; Photoshop</td>
</tr>
<tr>
<td>R_02</td>
<td>Brief an artist to draw up garments, yardage prints and placement prints</td>
<td>Adobe Illustrator &amp; Photoshop</td>
</tr>
<tr>
<td>R_03</td>
<td>I use Illustrator every day to draw up styling and placement prints</td>
<td>Adobe Illustrator &amp; Photoshop</td>
</tr>
<tr>
<td>R_04</td>
<td>Sometimes I sit at a computer and draw just to keep my hand in it</td>
<td>Adobe Illustrator &amp; Photoshop</td>
</tr>
<tr>
<td>R_05</td>
<td>Brief an artist to draw up garments, yardage prints and placement prints</td>
<td>Adobe Illustrator &amp; Photoshop</td>
</tr>
<tr>
<td>R_06</td>
<td>I use Illustrator every day to draw up styling and placement prints</td>
<td>Adobe Illustrator &amp; Photoshop</td>
</tr>
<tr>
<td>R_07</td>
<td>I use Illustrator every day to draw up styling, yardage prints and placement prints</td>
<td>Adobe Illustrator &amp; Photoshop</td>
</tr>
<tr>
<td>R_08</td>
<td>Brief an artist to draw up garments, yardage prints and placement prints</td>
<td>Adobe Illustrator &amp; Photoshop</td>
</tr>
<tr>
<td>R_09</td>
<td>Brief an artist to draw up garments, yardage prints and placement prints</td>
<td>Adobe Illustrator &amp; Photoshop</td>
</tr>
<tr>
<td>S_01</td>
<td>Not at all</td>
<td>N/A</td>
</tr>
<tr>
<td>S_02</td>
<td>Brief an artist to draw up garments, yardage prints and placement prints</td>
<td>Adobe Illustrator &amp; Photoshop</td>
</tr>
<tr>
<td>S_03</td>
<td>I use Illustrator every day to draw up styling, yardage prints and placement prints</td>
<td>Adobe Illustrator &amp; Photoshop</td>
</tr>
<tr>
<td>S_04</td>
<td>A little bit of style adjustment when I have the time to</td>
<td>Adobe Illustrator</td>
</tr>
<tr>
<td>S_05</td>
<td>I use Illustrator every day to draw up styling, yardage prints and placement prints</td>
<td>Adobe Illustrator &amp; Photoshop</td>
</tr>
<tr>
<td>S_06</td>
<td>Not at all, in this job</td>
<td>N/A</td>
</tr>
<tr>
<td>S_07</td>
<td>Not at all, in this job</td>
<td>N/A</td>
</tr>
</tbody>
</table>

As Table 6 illustrates, the majority of participants (81%) are using computer graphic packages or directing another employee to create graphics in their day-to-day business transactions. The participants who were involved in the creation of new product had the

15 All-over textile print design
most to do with using computers. Garment technicians all felt that knowledge of, and skills in using Adobe Illustrator in particular was very important in their positions, but none had the time to actually use the program or to hone their drawing skills in the program. Most garment technicians depended on illustrations provided by the product developers. Often they noted the technical inappropriateness of these illustrations. Drawings are rendered in a way that looks attractive for sales staff and potential clients, but in the garment technician’s opinion, they are not easy to read in terms of manufacturing processes. The use of flat technical drawings allowing for dimensions and information to be annotated on these drawings is more appropriate. Garment technicians stated that often measurement specifications are all that a supplier has to create a first sample from. No garment patterns are supplied and the technical drawing needs to accurately represent the finished garment. As participant S_02 commented:

“You must remember we deal only with people from China. A lot of these people, they don’t speak a word of English ….. Therefore the diagrams of the garments have to be spot on to what you are expecting back.”

Or, as participant R_05 said:

“Whereas I have a junior [graphic artist] that hasn’t studied fashion design or construction so it is a real issue that the construction isn’t portrayed correctly on the technical sketch. That is pretty much the only way of communicating to my supplier in China how to construct it!”

The majority of participants briefing designers (R_01, R_02, R_05, R_08 and S_02) had no computer graphics skills or experience at all; only one participant (R_09) had training in CorelDRAW and was self taught in Adobe Illustrator. R_03, R_06, R_07 and S_05, the product developers and graphics artists, had all learned to use Adobe Illustrator and Photoshop during their studies. Once participant R_07 went into industry after she had studied, she found that she needed to deepen her knowledge of Adobe Illustrator and Photoshop and undertook a graphics design course to do this. She believed that at the time she had done her textile design course there was not enough emphasis on this skill:

16 A measurement specification sheet consists of a detailed drawing of the garment style, front and back, as well as measurements and construction details.
“In that course we did learn Photoshop and Illustrator but I didn’t feel we learned it to a high enough standard to go and get a job straight away, because you need to be really fast” (Participant R_07).

In summary, all participants relied on computer graphic rendering of styling and textile prints and placements as a form of communication with the supply network. Firms relied in varying degrees on supplying technical drawings and print artwork to create garment production from. Some firms supply a sample as well as technical drawings and other firms only supply very detailed drawings. Invariably all production packs\textsuperscript{17} include detailed computer graphic rendering of the styling, the all-over textile print and placement print, or embroidery or embellishment. All details for the new style need to be included as a graphic representation. While all participants had varying degrees of production process understanding and supply network capability knowledge, participants were nonetheless unanimous about production processes. All agreed that knowledge of these processes is very important when creating new product designs.

4.1.2. Production processes

Not all participants managed supply network capabilities similarly; this often depended on company culture and competitive pressures. For example, some retail firms used the sourcing firms to provide product that was more complex than the product they created themselves. The easiest way to understand production process attitudes is to look at participants by their industry experience or years worked in industry.

Participants who had worked in industry for more than 20 years – R_01, R_02, R_04, R_09, S_01, S_02 and S_03: Historically, most of these participants had experienced manufacturing in Australia in varying degrees during their early career development. Participant R_01 had worked in the UK during her early career development and although she had only ever been in retail buying positions or training to be a retail buyer, it was always with firms creating their own generic brand who followed the European and British models of having in-house design teams (Payne 2011). The less experienced participants, R_03, R_05, R_06, R_08, S_04, S_05 and S_07, had all come into the industry

\textsuperscript{17} A production pack includes all the artwork, trim details, fabric qualities and colours, size specification sheets and construction information – it is the blue print for a new product design.
when production was being sent to remote suppliers. These participants gained their understanding of production processes in a totally different way to the former group of experienced practitioners. Accordingly, the response to the question of how participants had gained their own production process knowledge was the decisive point in this research. From this question the moment of revelation came to both the participants and myself because this informed us that the majority of knowledge is gained through informal learning on the job. This finding concurs with the Kajewski and Madden (2012) white paper discussion stating that 70% of knowledge is gained in the workplace. As interview S_03 stated:

“They just teach you the basics, I think, and there is only time for the basics at school, isn’t there?”

The following is a summary of production process knowledge required to efficiently develop new product:

a. An understanding of textile qualities and textile construction

This was a key point on which the majority of participants corroborated when asked about construction knowledge. The participants who had been in the industry for less than 10 years stated that this was the one area that they felt least prepared for when coming into the industry. Indeed, the experienced participants noted that the majority of graduates demonstrated an alarming lack of knowledge with respect to textile qualities and textile construction, sometimes being unable to understand the difference between a knitted fabric and a woven fabric!

b. An understanding of the components and processes that add to the cost of a garment

Many of the experienced participants highlighted the need to understand what makes up the price of a garment. These participants spoke of product developers clearly understanding consumer expectations of garment cost and value for money. For example, children’s clothes are often bought off the hanger in a hurry, so the immediate impact is what can be seen on the hanger – the front of the garment will catch the consumer’s eye before anything else. All participants stated that textile consumption was the major cost in all products and that this was where designer/product developers had to be creative, considering print repeat sizes and two-way print designs. It was also considered that an
understanding of pattern making and lay plans helped a designer/product developer understand how to engineer designs to fit into lay plans\textsuperscript{18} as efficiently as possible.

c. An understanding of the capabilities of the supply network

Participants saw the capabilities of supply network impacting more on all-over textile prints, placement prints, and embellishment on placement prints such as beads or jewels. For seamless product supply, it is best to work with what is available in the offshore manufacturer’s supply network where the garment is being produced. Product developers need to be aware of the print techniques available in the network to be able to supply artwork and designs that are achievable, for example, screen printing, rotary printing, four colour process placement prints or digital printing. Often the supply networks for children’s wear are low technology networks and this needs to be considered when designing new product. One participant commented:

“I have got a cousin who is a supplier and she gave me a good tip: Always put yourself in their position! It’s like we demand so much and never put ourselves in their position...” (Participant R\textsubscript{08}).

The majority of participants said that the best way to understand how anything is produced was to actually be on the factory floor. One participant said he made a point of visiting the manufacturers in his supply network to see if they had new machinery or new production methods that he could use in the future. Other participants relied on their supply network to inform them of new or different production methods. Less experienced participants relied on their co-workers for technical knowledge, often saying that the other team members in their team were an enormous help to them.

d. Concise and clear communication

Concise communication was seen as a priority among participants. Participants repeatedly said how important it is to be able to write clearly and in short, to-the-point sentences so that when information was translated into another language there could be no problem with understanding the meaning of the instruction. The experienced practitioners emphasised the need to have a clear understanding of construction,

\textsuperscript{18} A plan of all garment pattern pieces laid out to a specific fabric width and size ratio.
garment fit, and print production processes to brief a graphic artist or product developer about the product requirements. Further, when working with remote suppliers it is best to understand exactly what processes go into creating a product so that if there are any problems the buyer can clearly communicate how to correct the problem to their satisfaction. For example, if a fit sample is incorrect, it may be that the fitted sleeve armhole was not curved enough. Knowledge of pattern construction is then important in communicating the solution to the problem. Participants varied their answers when it came to explaining how much detail to actually communicate about new products. The majority of participants preferred providing as much detail as they possibly could put on the garment specifications and illustrations, stating that if anything could go wrong it would go wrong! Other participants stated that details should be kept to only the important points, highlighting the differences, as suppliers would not bother to read too much detail. Fashion industry consultant and mentor Frank Kisvarda confirmed this, saying:

“There is too much emphasis on ‘over-supply’ of technical information ‘just-in-case-they-get-it-wrong’ rather than working with the supply companies to ensure the key information is supplied in a concise way” (Kisvarda 2013).

Participant R_09’s response to getting processes and communication correct was as follows:

“It is good to get the communication right, because if you save five minutes on all of those 800 styles... it's a few hours”.

4.1.3. Novice designers

The questions on employing novice designers and graduates created dichotomous responses between the more experienced and less experienced participants. In response to the question, ‘Would you employ a TAFE or university graduate to be a fashion graphics artist?’, the stand-out feature was that 100% of participants in both retail and sourcing firms who had worked for more than 20 years said they would NOT employ a graduate in the position of fashion graphic artist, even though this position is considered an entry level position by the majority of the firms interviewed. On the other hand, 100% of all participants who had worked less than 19 years and less than 10 years said they would employ a graduate. Often the experienced group said they would be happy to
employ a person with at least eighteen months experience. This concurs with the study conducted in New Zealand, which found that it takes at least eighteen months to train a graduate and that the cost of the training is prohibitive (Hodges & Burchell 2003, p. 19).

All participants said that they had no preference at all for which education sector a graduate came from: 38% of participants stated that a fashion qualification was preferable to a textile qualification, 13% preferred a textile qualification, and only 6% put real value on a graphics qualification. The remaining 38% of participants had no preference at all, stating that they would be more influenced by the quality of the graduate’s portfolio and work experience during years of study. Participants own educational qualifications had no bearing on their opinion of graduates.

Seniority in the management hierarchy also appears to impact on experienced participants’ decisions to employ or not to employ graduates and novice practitioners. Sales managers, buyers or department managers find it difficult to allocate time to mentor or train junior employees. The majority of participants would have liked to employ a graduate, but often participants qualified their answer by citing that their reluctance was due to the perceived length of time it took to train a graduate. As participant S_02 affirmed:

“We are usually [too] time poor; so to train a novice designer needs a lot of time!”

And participant R_04 reiterated the sentiment:

“Umm, I have employed a couple before, so we did an in-take of three and they have turned out really well. But my only thing is, it is literally two years of having to molly coddle them! And they work at probably 60% the rate of an experienced designer.”

Responses to the question about graduate employment by less experienced practitioners in retail and sourcing firms was affirmative (R_03, R_05, R_06, R_07, R_08, S_04, S_05, S_06 and S_07). These participants answered by stating that graduates needed to gain experience through work in industry. All the affirmative participants suggested that they were given the opportunity and did not see why they should not give others the same
chance. Participant R_05 added the further dimension of the role of mentoring, stating that she had an excellent mentor when she first started working towards her current position which had made her understand the importance of mentoring and training and given her an excellent example to follow. R_05 also stated however that she had noticed that graduates and trainees do not always receive quality mentoring. She believed that a program should be devised to train staff in senior positions how to mentor, and that this should be seen as part of their workload, and should also be appraised as such. Eraut and Mc Kee (2012) suggest that formalising informal learning helps firms identify their own processes and how to disseminate knowledge in an open and non-threatening environment. In the process of formalizing workplace training, firms also send a clear message to staff about their value in the supply network and the importance of their contribution. Interviewee R_02 responded initially that he would employ a graduate and then qualified this by saying “not for the position of graphics designer, certainly for the position of junior buyer”. This response clearly illustrates the point that retail firms seem to have an adequate training program in place for graduates who wish to go into buying, but no similar program for product development.

When participants were asked what their expectations of a graduate designer were, invariably participants listed the qualities they expected. Participants expected at least the following knowledge or technical expertise:

a. Proficiency in Adobe Illustrator and Photoshop;
b. A basic understanding of pattern making and garment construction;
c. A basic understanding of how to create repeat textile print designs;
d. A realistic view of cost structures and how to understand them.

Participants often stated that the role of product developer/designer required the use of both creative and analytical skills. Participants were then asked to list the qualities that would influence their decision to give a graduate the opportunity to be employed in their first position. The participants listed the following qualities they believed indicated the knowledge potential of graduates:

a. Enthusiasm;
b. Willing and eager to learn from more experienced staff;

c. A good attitude;

d. A team player;

e. Creative design flair – evident in the presentation of an excellent portfolio that communicates the graduate’s ability to research and design commercial and innovative garments;

f. Good values and work ethic and respect for other staff;

g. An eye for detail;

h. Happy to start at the bottom with enthusiasm and interest;

i. Industry internships during undergraduate study seen as significant additional benefit for graduates.

This clearly shows again that getting a foot in the door requires more than an academic or vocational education qualification. The behavioral qualities of a person, their attitudes, values and motives, facilitate in determining whether the graduate will fit in with the company’s culture (Hodges & Burchell 2003; Velde 2009). Much of the literature on work readiness and education outcomes emphasises employability skills and definitions of these are abundant (Abraham 2008; Hernández-March et al. 2009; Velde, 2009). A graduate or new trainee’s attitude can have a significant impact on their career development and can help determine whether they either gain the right experience and knowledge to progress to the next stage or remain in the same position. Participant S_05, who is very highly thought of by her immediate superiors and co-workers, believed it was her responsibility to search out correct information before a garment went into production, rather than wait to be told that something was not right. This attitude has aided in her successful promotion from assistant graphics designer to girls wear designer in five years.

4.1.4. Succession planning:

19 Employability skills have been discussed in Chapter 2 section 2.5 “A foot in the door”.
Succession planning was understood in notably different ways depending on the level of participant’s experience. Participants who were novices in the industry or had worked less than ten years saw succession planning more in terms of career path development and being given opportunities to advance in their chosen field. More experienced practitioners saw succession planning as having someone capable of taking over their particular role, or at least, being able to share job responsibilities in a useful way. Participants agreed unanimously that planning for succession was very important for the survival of a firm and that management had a duty of care to plan for succession.

![Figure 6](image)

**Figure 6:** Proportion of firms that offer training programs and the proportion of participants who mentor junior staff member/s

Sourcing firms did not engage in any formal training programs as most did not see the value in training new staff. Their concerns are more immediate than retail firms, which did offer training programs for buyers, and one retail firm offered a more general graduate training program. However, neither of the two programs offered by the retail firms filled the gap in planning for succession in product development. None of the participants who worked in sourcing firms were mentoring another staff member, whilst in retail firms just under half the participants (45%) were mentoring another staff member.

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20 Note the gap in retail and sourcing respondents who had worked between 10 and 19 years in Chapter 3 section 3.4.
member. All staff believed that it was, or would be, their duty to mentor staff if they were called upon to do so.

Sourcing firm participants put the lack of succession planning down to a lack of confidence in the future of the industry and the unpredictability of future needs in their own firm. Participants noted that when they needed a job done, they could just call on someone with the needed expertise to come in and do that job. Participants in managerial positions (R_01, R_02, R_04, R_09 & S_02) felt it was easier and more cost efficient to get trained staff rather than training staff themselves. Some employees in both sourcing and retail firms stated that there was not enough experience in firms today and that experienced staff are so overworked that they had no time to mentor anyone.

Retail participants’ opinions about their firms’ delivery of training programs were varied. Participants noted the importance of targeted programs to deliver the necessary skills shortfalls in the business. For example, one participant stated that the graduate program in the firm she worked in did not target potential recruits in a meaningful way for the business. This participant felt that graduates were recruited because they were graduates, not because they were graduates of the fashion or merchandising disciplines. She also believed that the shortfall in talent for the product development side of the business would lead to future shortfalls in experience, citing herself as the most experienced practitioner in the division she worked.

4.1.5. The future and education:

Table 7: Education and present industry trends

<table>
<thead>
<tr>
<th>Interview No.</th>
<th>Do you think education outcomes are pertinent for present industry trends?</th>
<th>YES/NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>R_01</td>
<td>I don’t believe education emphasises the reality of the industry enough</td>
<td>☑</td>
</tr>
<tr>
<td>R_02</td>
<td>You know it is like most things; you have to experience it to get a true understanding of it!</td>
<td>☑</td>
</tr>
<tr>
<td>R_03</td>
<td>Yes from what I have seen. We have actually employed a couple of people who have come here as students and I think they are fantastic!</td>
<td>☑</td>
</tr>
<tr>
<td>R_04</td>
<td>Yeah, I don’t think so! I suppose it’s more what A was trying to say, just keeping it real!</td>
<td>☑</td>
</tr>
<tr>
<td>R_05</td>
<td>If I go by my present intern, she has done a merchandising course and she is so switched on she has a very good career ahead of her!</td>
<td>☑</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td><strong>R_06</strong></td>
<td>I think it is probably ideal to have that general kind of knowledge. Because every company works differently and to go into depth may be ok for one company, but not another. So I think the broader understanding of things is better.</td>
<td></td>
</tr>
<tr>
<td><strong>R_07</strong></td>
<td>Now, I’m not sure. But I did feel, when I was at school, I don’t think they taught enough graphics in my course and I did not feel confident enough. So then I had to go and get my graphics, but I don’t know if that has changed.</td>
<td></td>
</tr>
<tr>
<td><strong>R_08</strong></td>
<td>In terms of knowledge it gives you a great base and exposes you to a lot of things that are all very relevant. But I don’t think there is enough depth!</td>
<td></td>
</tr>
<tr>
<td><strong>R_09</strong></td>
<td>This participant has not had any recent experience of fashion, textile or merchandising graduates and could not answer this question.</td>
<td></td>
</tr>
<tr>
<td><strong>S_01</strong></td>
<td>Yes, but they still need a lot of training</td>
<td></td>
</tr>
<tr>
<td><strong>S_02</strong></td>
<td>I think so. I think education does meet those needs</td>
<td></td>
</tr>
<tr>
<td><strong>S_03</strong></td>
<td>Yes and no. I think they need to learn the basics of yardage printing</td>
<td></td>
</tr>
<tr>
<td><strong>S_04</strong></td>
<td>Yes! The last girl that started here was fantastic!</td>
<td></td>
</tr>
<tr>
<td><strong>S_05</strong></td>
<td>There is not enough time, but I think there should be a bit of textile design and merchandising</td>
<td></td>
</tr>
<tr>
<td><strong>S_06</strong></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td><strong>S_07</strong></td>
<td>I don’t believe I had enough depth in my course</td>
<td></td>
</tr>
</tbody>
</table>

The majority of participants did not emphatically answer the question on whether they believed the current cohort of graduates and novice practitioners were industry ready. Most qualified their answers in relation to their own particular needs. For example, R_05 had just employed an intern in her area and she was so happy with the quality of her education she felt education was addressing industry needs. Participants who had finished courses within the last six months to two years (S_08 and R_07) believed that they did not have enough depth in their courses compared to their job requirements. This further reiterates what the literature says about industry requirements and job readiness (Hernández-March et al. 2009; Hodges & Burchell 2003).

Under the theme of future education needs, the questions related more to participants’ opinions on the crossover of disciplines in an industry context. Participants were asked to comment on whether they believed there was a crossover between the different disciplines of fashion design, textile design and possibly merchandising. This was then followed up with another question, which asked whether they believed education should address the issue of discipline crossover? The majority of participants felt that in children’s wear there was definitely a crossover between fashion and textile design disciplines. Sourcing firm participants who were doing both product development and creating graphics believed that it was essential to learn about textile design at undergraduate level. Participant R_06 suggested that it was best to have a broad basic
knowledge, and then to add to that knowledge once in the industry with short courses or further study. This point was reiterated by Frank Kisvarda in follow up discussions once the interviews were complete (Kisvarda 2013), and by the less experienced practitioners who acknowledged the need to undertake further practical studies to broaden their knowledge base. Overall, industry participants believed that education was meeting basic needs. However, firms believed that graduates did not know enough to meaningfully contribute to the firm’s performance for at least six months to eighteen months. Hernandez-March et al. (2009) and Hodges and Burchell (2003) similarly highlight this issue in their studies. Industry participants did concede that the best place to learn was within the industry.

In conclusion, it would seem that education is meeting industry needs to a point and that the basics of textile design needs to be taught in fashion design courses. Many of the less experienced participants were open to professional development once they were in industry, such as short courses tailored to give them an understanding of garment construction and textile print design and process. Industry on the whole, however, needs to examine how to retain talent and a suitable level of skill for new product development.

4.2 Education Participants

Chapter 3 discussed the background information and descriptions of the graphics teachers/lecturers. In total, six teachers were interviewed from different courses and institutions. Following are detailed findings from these interviews.

4.2.1. Teaching computer aided graphic design

In the interviews with teachers and lecturers, all participants agreed that teaching computer aided graphic design to fashion, textile and merchandising students requires a fine balance of teaching students how to operate certain graphics packages that are current industry standards (the Adobe suite of programs) and applying these programs to the different design disciplines. The needs of each discipline are quite different and the depth of knowledge required to operate the different programs within the Adobe suite are varied as well:
a. Fashion students require an in-depth knowledge of Adobe Illustrator to render detailed garment styling and enough understanding of Adobe Photoshop to create mood and direction boards.

b. Textiles students require in-depth knowledge of both Photoshop and Illustrator as these are both used as tools in rendering textile print designs and repeats.

c. Merchandising students are expected to create presentations, mood and direction boards and a detailed understanding of Adobe Photoshop is needed when going into industry. Merchandising students are taught Adobe Illustrator, but as the merchandising graphics teacher pointed out to me, a good understanding of garment construction is extremely useful when rendering illustrations of styling in Adobe Illustrator. However the merchandising students only have 20 hours of pattern making in the whole course.

Results from the industry interviews conducted for this research appear to reflect the above-mentioned breakdown of needs. Industry requires graduates to be competent and quick on computer graphics packages as soon as they have graduated. Skills in operating computer graphics packages can only come with time and the majority of graphics teachers stated they would prefer more time to teach the graphics packages. The majority of participants stated that there was only enough time to teach students basic skills. Differences between the approaches taken by further education (VET/TAFE) and higher education (university) sectors are interesting and illustrate the dichotomy between achieving competency in what the mass fashion industry sees as a necessary skill and the importance of using computer rendered graphics as a tool to create finished artwork. Assessment of work in the diploma and advanced diploma qualification is primarily based on the ability to operate the particular graphic software (in the case of fashion it is Adobe Illustrator) to a perceived entry level standard for industry. At degree level, in higher education, the ability to operate the programs is embedded in the design subjects and students are assessed on design rather than operating the programs. One of the participants who taught in both further education and higher education highlighted the differences with the following comments:
“I’ve been teaching the degree only one year…. There are less contact hours and they [the students] are expected to do a lot of research out of hours…. With CAD what I have found is that they can be very poor at CAD and still pass the subject because, except in first year where it is now a separate subject, it is [assessed as] a percentage of the design subject. You can actually not master it and still end up passing the subject if you are strong in other areas!” (Participant E_05).

This participant added that the requirement of just mastering the software is a task in itself. She further stated that the institution she worked for has changed the requirements of the design subject, qualifying that an inability to use graphics packages is an unacceptable outcome for fashion design students.

All participants agreed that the quality, speed and currency of computer software and equipment and fast access to the school intranet systems are very important. Most participants were satisfied with the institution’s maintenance of software and hardware upgrades. Participants all emphasised how important it is to keep current with new versions of the programs. Students always had personal access to the latest versions of the programs as they would purchase these when they started a course, and teachers felt it was important to be teaching the version to which the students had access.

4.2.2. Background industry knowledge

Participants all agreed that it was important for computer graphics teachers/lecturers to have an understanding of the technical expertise required to render fashion styling and all-over textile print repeats. Not all teachers came from a fashion and construction background or a textile print background21 and they had to learn the information either through other colleagues, or through industry release and collaboration. Currency is maintained through contact with industry via ex-students and joint industry and education student projects. Keeping abreast of present industry needs requires constant research to keep up with the requirements of new technology.

21 This has been illustrated in Chapter 3 p. 66.
Participants spoke of the need to balance current industry needs with perceived future requirements. They could see the possibilities of existing programs and how they could be applied in the industry today. For example, using the publishing program Adobe InDesign would make the creation of books with a range of fashion collections in them a lot more efficient. A range book is a selling tool that often accompanies finished garment collections in industry. Also, the high use of web-based marketing would require that future industry stakeholders have an understanding of the tools used in “e-tailing” or online shopping. Whilst these requirements would have immediate application in the industry today, the time required to teach them is just not available in the courses in which the participants teach. Two of the participants spoke of bringing in new concepts that industry is not currently using, or is even aware of the possible applications for, in clothing and textile design, for example, three-dimensional modeling using three-dimensional printers as well as animation. These technologies do not appear to be on the horizon in the industry sector examined for this research. The concept of three-dimensional printing will possibly have very real applications in the future, but industry needs are based on current practice. The use of computer aided design as a format for selling garments started to become commonplace in the industry in the mid to late 1990’s. Education started to introduce graphics into fashion and textiles programs at the same time. Education led the way by introducing off-the-shelf computer graphics software as an option for creating artwork as opposed to industry specific software, which was prohibitive in price. Industry followed through by first adopting CorelDRAW as a standard and then changing to the Adobe suite, in particular Adobe Illustrator, which is currently the global standard for the industry (Downing & Shinn 2011).

Two participants had the opportunity to work in industry whilst they were teaching and others liaised with industry on collaborative projects. The majority of participants saw industry release or collaboration as a very valuable experience for both themselves and students. One participant (E_05) noted that the feedback she received from industry with respect to a joint industry project she had running with them every year was informative about the required industry standards for graduates. All teachers appreciated the validation industry collaboration gave to their particular subject.
4.2.3. Curriculum relevance

On the topic of curriculum relevance, participants teaching in further education and teaching fashion or merchandising (E_02, E_03, E_04 & E_05) all suggested that the training unit and competencies used to deliver the computer graphics components in the fashion training packages are very vague. As participant E_02 stated:

“This is a hard question because I find training packages can be good, but they are also quite loose and quite open. So you know deciphering them, so you sort of translate them into the language that you think is relevant, so you sort of have to tweak it yourself language wise. “Use Electronic Fashion Design Tools,” or whatever. It doesn’t specify which software. From a Fashion department I believe that Illustrator is the main one that people use.”

The description on the unit entitled “Use electronic fashion design tools” reads: This unit covers the skills and knowledge to use a range of electronic design programs and equipment such as software programs and computing technology (LMTFD4020B May 2012), illustrating the vagueness of the unit requirements and corroborating the above mentioned statement by E_02. The performance criteria do not relate to competency in the use of the actual computer graphics packages used in industry – the Adobe suite of programs - but lists criteria that are general rather than specific. All teachers suggested that the vagueness could be useful as teachers could then interpret the criteria in a way that they saw applicable to the course they taught in, in the same way as a higher education curriculum is created. Textiles teachers teaching in further education suggested the unit was more appropriate for textile design in computer graphics packages (LMTTD5007A Develop textile designs using computer based design programs, October 2012). The difference of opinion between the perceptions of fashion graphics teachers and textile graphics teachers is influenced by the needs of the industry being met. For example:

5.1. The end product in textiles is a print, weave or knit design where knowledge of production processes must be embedded in the final product for it to even be

22 The subject guide has since been modified in the May 2012 version, see appendix D.
24 See appendix E.
conceivable. Textile designs are assessed as such and the performance criteria in the unit of competency reflect this.

5.2. The performance criteria in the fashion design unit cover the use of pattern making software, the creation of garment specifications software and the creation of graphic illustrations software. The areas that this covers each require a different skill base where, firstly, operational knowledge of the program is necessary. The understanding of operating programs is not specifically assessed in the performance criteria within the unit of competency.

Teachers/lecturers teaching in the higher education programs welcomed the freedom to tailor and align the outcomes of teaching computer aided graphic design to the outcomes of the course. The majority of teachers said they welcomed the time they had to first develop foundation operational knowledge and then to build on that when the skills are embedded in design subjects.

When participants were asked what else they would like to add to the courses they teach, the majority stated that they would like more contact hours with students. Teachers often cited the personal needs of students in class time, stating that teaching computer graphics is done in a workshop situation where students’ varying levels of capability impact on the amount of content a teacher can deliver. Ideally students would like one-to-one attention and the institution would prefer classes to be the maximum capacity of twenty students.

In conclusion, the length of time it takes to develop units of competency and curricula in consultation with industry is far too long with respect to changing technology. In the 2008 Productivity Commission report commissioned into the Australian TCF industries, discussions surrounding the current strengths and weaknesses of the education system cited that the length of time it took to develop the latest VET (Vocational Education and Training) package was approximately four years (Commonwealth of Australia 2008, vol 2, p. 151). The following statement by participant E_02 highlights the reality of the need to keep abreast of continuously evolving new technologies:

“I still think, especially with CAD related subjects you know, the technology is constantly evolving and changing. So while you can get a great background in
undergraduate study I think once you are out there in industry and seeing how it all works it will give you some appreciation. And maybe do some short courses or some professional development that will keep you current. And even, say, community of practice groups, where you can set up user groups and what not. We used to run these quite regularly here where you get professionals in from different areas and you just have an informal discussion about what works and what do you do. Yeah, I think the training can never stop, it is ongoing, forever evolving” (Participant E_02).

With the continuous evolution of technology and the industry in mind then, how do participants see the future of education developing? In particular, do any of the participants believe the discipline crossover between fashion, textiles and, possibly, merchandising needs to be addressed?

4.2.4. Discipline crossover and communication

Participants were asked to comment on whether they believed the future of education should address the discipline crossover between fashion and textile design; further, whether communication should be addressed as part of all units or subjects considering the importance of communication in the current industry environment, particularly with regard to the use of global supply networks. Participants appeared to be divided on the topic of discipline crossover. Participants E_02 and E_05 believed it is necessary to teach textile print construction to students. Participant E_03 did not believe that merchandising students need this skill and participant E_01, the textile design lecturer, stated that courses could not deliver the depth needed and the crossover could not be addressed in enough detail. Participant E_06 pointed out that students need to understand the “language” of the different disciplines, but did not necessarily need to understand how to create either fashion styling or textile designs if they were studying the alternate discipline. Discussions about language and communication often came up with educators as well as industry participants when discussing visual, technical and written communication. As stated in Kavanagh’s 2004 paper on designers managing technology, understanding the technical language of the discipline is paramount to being able to visualise and correctly communicate the designer’s vision to supply network
technologists. All participants believed that students should be learning to communicate ideas to others succinctly and clearly in language that all stakeholders could understand. Like employability skills, communication skills should be embedded in each subject.

When participants were asked if they had anything more to add, each participant highlighted what they believed education and industry should aspire to, and each of their responses was pertinent to this study:

Table 8: Education participants’ last comment

<table>
<thead>
<tr>
<th>Interview No.</th>
<th>The last word</th>
</tr>
</thead>
<tbody>
<tr>
<td>E_01</td>
<td>Believes that the value education places on design process and not on the final object [of desire] will encourage students to be reflective designers adding value to products rather than “churning out stuff”, as this participant put it.</td>
</tr>
<tr>
<td>E_02</td>
<td>Believes that industry stakeholders do not have a realistic view of the undergraduate learning environment. She cited the expectation for fashion graduates, in particular, to be multi-skilled – or in her words: “a hamburger with the lot and all they want to pay for is the pickle!” Her belief is that institutions should cater for industry stakeholders to upgrade their skills in line with new technology.</td>
</tr>
<tr>
<td>E_03</td>
<td>Felt the course he taught in covered all the necessary bases for graduates to go into the industry confidently. This was reflected in industry as the graduates from this course, which was more focused on business skills, were managing to find employment shortly after graduation.</td>
</tr>
<tr>
<td>E_04</td>
<td>This participant believes that students are not able to digest the volume of information being delivered to them. His belief, as well as other teachers, is that one can only lay the foundation for the students and once they understand the interchange and links between subjects their understanding will grow.</td>
</tr>
<tr>
<td>E_05</td>
<td>Participant E_05 reiterated other educators’ views on communication and presentations as well as documenting design process. She felt that, as well as addressing the crossover between textiles and fashion, students should also be learning about knitwear garment design as she identified a gap in learning here. This participant also included the issue of copyright and that this does need to be emphasised in courses - a particularly contentious issue in Australia as garments are constantly being copied. She also stated that professional development is very necessary.</td>
</tr>
<tr>
<td>E_06</td>
<td>In terms of future technology, participant E_06 believes that education institutions should</td>
</tr>
</tbody>
</table>

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25 This is being addressed in some fashion courses.
In terms of maintaining currency with new technology, the majority of teachers/lecturers did this in their own time. Technology teachers are faced with a vast amount of change each year in the subject they teach, from the introduction of new versions of programs to the many and varied implications of new emerging technology. Failure to keep up will result in a dereliction of duty of care to students. The majority of participants worked in the TAFE/VET sector, the contact hours in this sector for full time teachers being 24 hours per week. Participants did not believe they had enough time to update their own skills.

Teachers/lecturers are well aware of the gap between current industry needs and education outcomes, but as industry participants also stated, this gap can only be filled by industry experience. The majority of participants in this research believed that industry does not offer enough internships or opportunities for undergraduates to experience the industry while studying. All teachers saw the need to prepare students to be open to life-long-learning. This is very important for the future of the industry, especially when it comes to adopting new technology. Once again, Frank Kisvarda states:

“Education institutions are well placed to offer professional development to the ever-changing needs of the industry, as this cannot realistically be embedded into a degree or diploma course. Institutions should be able to offer specialised ‘updating’ courses in graphics, merchandising for the internet, development in the global market, sourcing outside of China, etc. These courses could be offered as a combination, academic/practical approach with formal teaching staff supported by industry experts” (Kisvarda, 2013).

4.3 **Can graduates ever meet the immediate needs of the industry?**

The results of this research are inconclusive about whether education meets present industry needs with regards to the mass fashion children’s wear sector. The short answer
is no, graduates are not industry ready at all. But on reflection in the course of the research interviews, industry practitioners considered their own career path trajectories and all stated that the greater part of their learning came through experience in the workplace. On deeper examination, the research has found that industry participants do believe that graduates have the training, but how they approach and assimilate new knowledge within the workforce is more important than the actual technical competencies taught in courses. Extensive studies have been conducted on the work readiness of graduates and perceived employability skills (for example Abraham 2008; Hernández-March et al. 2009; Hodges & Burchell 2003) but to date there has not been any formal examination of the Australian mass fashion industry and the expectations this industry has of graduates. Once again Frank Kisvarda states:

“Agreed, that no education can compare with industry exposure and I feel that both should complement each other” (Kisvarda, 2013).

Discussion surrounding skills shortages across many industries have been prevalent in the Australian media for a few years now and the issue is certainly documented in the Productivity Commission’s report on the TCF industries (Commonwealth of Australia 2008, vol 2). In the words of one of the sourcing firm participants about the prevailing perception of skills shortages:

“They just teach you the basics [at school] I think and there is only time for the basics at school, isn’t there? Then it’s up to you depending on what part of the industry you get into what you do” (Participant S_03).

The perceived expectation that textile, merchandising and fashion design courses can cater to the myriad of different needs in the industry is not reasonable and this is why further discussion needs to take place on the topic of industry training and professional development within firms. Maintaining the cultural values of a firm is easier done from within the firm. As participant R_05 stated, the firm she worked for was quite a formal business and there was a need to marry the culture of employees with that of the business. Cappelli (2008) discusses the dichotomy firms face between internal development of employees as opposed to hiring outside talent. The approach to hiring new staff can be reactionary –if there is a need, fill it – leaving no time to train existing
staff and possibly risking not finding the right fit to address the particular need. Cappelli puts forward a model for planning and managing ‘talent’ or staff with the skills to do the jobs that are required. He equates the model to the management of supply in a firm where, for example, a manufacturing firm will need a certain range or number of components to create products that enable it to maintain normal business activity. Surely, by the same token, a firm needs adequate human resources to create its products. To quote Cappelli:

For example, it is hard to forecast with accuracy how many units of some product will be needed, but it is relatively easy to know the costs of not having enough product and services to meet demand [losing opportunities as a result] (Cappelli 2008, p. 11).

Finding capable and skilled staff that suit a firm’s culture can be difficult, further fueling the perception that there are not enough skilled people to do the work. Adding to this perception, Cappelli argues that when firms cannot find the right staff for their business they often blame a skills gap and schools for not preparing students for jobs (Cappelli 2012, p. 8). However, more pro-active staff development and succession planning strategies would appear to be at least part of the solution, whilst building knowledge of a firms own supply network capabilities is key to creating products that can be manufactured to the firm’s standards and within the firm’s values.

4.4 Did this research answer the questions posed?

1. Is there synergy between industry expectations and education outcomes?

The answer from industry to this first question was a qualified yes. To understand the industry participant’s views of graduates it would be expedient to view this in the light of their own career paths. Even though participants all concurred that the majority of knowledge they had gained was gained through their own work experience, they still wanted graduates to have a deeper understanding of the industry and skills required to best perform their jobs. Only on deeper reflection did industry participants understand the impossibility of their expectation of graduates and graduate skills. More useful to
them were the soft skills or qualities of graduates and new employees in general. These qualities have been referred to frequently in this thesis.

An ability to be open-minded as well as willing and able to assimilate new and changing technologies and interperate these into new product development was seen as an important attribute. Industry participants mostly highlighted the importance of understanding the capabilities of the supply network within the particular firm. This was the key to understanding garment production and textile print and embellishment cost structures. To understand the given supply network of a firm it is therefore advantageous for novice designers and product developers to undergo professional development or training within the firm. Many of the more experienced participants had undergone such training in their own early career development. Often the scope of a sourcing firm or a retail department can be narrow and quite unique, only focusing on the particular needs of that firm or department. The expectation that a graduate will come in with the skills to negotiate and understand these needs is not realistic. The sourcing firms, especially, did not engage in formal training for product developers, and they were also not likely to employ graduates as has been mentioned on page 85. Managers preferred to hire trained staff rather than train staff themselves. Contrary to sourcing firms, retail firms did engage in professional development of their staff, but only for trainee buyers. The retail firms had well established training programs for trainee buyers on financial and retail operations management, but very little, and sometimes nothing, established for product development. As has been established in this research, the position of buyer is intricately intertwined with that of product development, more often than not being undertaken by the same person. Many senior buyers interviewed for this research had spent some years in product development for sourcing firms.

Many participants highlighted, and emphatically agreed, that there was a high degree of discipline crossover between product development, buying and textile design. The participants believed that this was not being addressed at all in any of the learning programs as graduates did not readily understand or negotiate these crossovers with ease. The least industry expected was an understanding of garment construction and an understanding of all over textile print design. R_04’s retort to the question of the crossover was:
“If I ring an HR [human resource hiring] company and I tell them I want someone that has garment experience and graphics and account management experience, they look me and say: “We don’t have anyone like that!” So I have had to hand pick people... I don’t think anybody else... [wants these same skills in the one designer]. People come in and they say: Oh I want a graphic designer or I want a designer. It’s like: No, they are the same person. I can’t afford to have 2 separate people. I need one person doing the job.”

And participant R_06 reiterated in her answer to the discipline crossover question:

“Yes, that is probably ideal to have that general kind of knowledge. Because every company works differently and to go into depth may be ok for one company, but not another. So I think the broader understanding of things.”

This statement also highlights the importance of professional development that includes product and textile print knowledge and development within a firm. Once again I would like to re-iterate the tenuous ground that sourcing firms are standing on due to the industry shift from retailers relying on sourcing firms for product sourcing and development, to relying on the retail firm’s own supply network to produce product. Sourcing firms are all facing an uncertain future and many firms relying only on developing generic product have had to close because they no longer have the retailers support. This means that a pool of trained product developers may no longer be available for the retailers to select trained employees from.

2. Is education addressing the discipline crossover between garment design, textile design and merchandising or buying?

Teachers/lecturers were unsure of the value of addressing the crossover. The textiles lecturer and merchandising teacher (E_01 and E_03) both discussed the depth of understanding required in each of their disciplines and that perhaps adding yet another discipline would add to what are already full curriculums; and, as the textiles lecturer pointed out, not all of their students go into fashion. Two of the fashion teachers/lecturers felt it was important to incorporate textile repeat knowledge, and five of the industry participants (R_04, R_09, S_02, S_03 and S-05) were emphatic that textile design should, indeed, be a graduate skill. Other industry participants felt this could be
learned once graduates were in industry, or that specialist textile designers should be employed for the purpose of designing textiles. The short answer to my second research question was, therefore, that the discipline crossover was best addressed once a novice was employed and skills deficits in the particular area of the sector, for example in children’s wear, were recognized; only then should any deficit be addressed. Whilst some participants in industry saw the crossover as non-negotiable, which it is for certain sectors, most saw no reason why this knowledge could not be sought once a graduate was employed. Ideally though, industry participants in the mass fashion sector do want the discipline crossover addressed in a basic way.

Teachers/lecturers highlighted the wide range of coursework required in each discipline to cover the basic career entry levels of the particular fashion, textiles or merchandising industry. The reality of including all disciplines at undergraduate level in any depth is not possible. But basic knowledge such as the structure of textile repeats and how to create them in Adobe Illustrator, as well as an understanding of repeat sizes, is feasible in fashion. Teaching textile students the basics of fashion garment construction was not seen as a priority due to the non-fashion areas that textile design incorporates.

Participant R_04’s response to her expectations of a graduate were:

“But also from just employing a designer …. If you went out into industry, for example, everyone does a textile yardage in a swatch on Illustrator. Yet, the student when they come here, they don’t know how to do that! I have to teach them how to do that!! And they don’t know it has to be um – roller printing in China is 64cm and they don’t know it has to be a fraction of that so when you do your repeat!!”

In conclusion, it would be difficult to fully address the discipline crossover at undergraduate level. Graduates should be encouraged to seek further learning once they have found a niche within the industry, and industry should include more professional development that is product development specific as this will certainly be an area of future deficit if this is not addressed now.
CHAPTER 5: IMPLICATIONS OF THE FINDINGS

The salient point in this study is the rate of change in attitudes and practice in the industry. As stated in the introduction, the changes that have taken place in just four years are enormous and at this rate the impact and pace of change will affect this industry markedly in the near future. Without adequate and ongoing industry liaisons and joint projects, education will be hard pressed to keep up with changing needs. Education also needs to maintain a balanced perspective under the circumstances and keep focused on core knowledge. The opportunities for educational institutions to offer professional development are immense with the adoption of new technologies that open up new potential areas of expertise. In concluding this research I will give a brief overview of the industry and teaching perceptions and discuss future trends and research:

- In section 1 I include a statement that sums up the current perception of the Australian fashion industry; this is the perception that drove me to do this study.
- In Section 2, the expectations of industry participants are discussed, as well as possible new ways to think of educating graduates. I also give an overview of the changes in industry that have occurred in the short time that I have been doing this study, and how these may be driving the need to review professional development.
- Section 3 discusses the possibilities of future technology and whether this should be incorporated at undergraduate level or not.
- Section 4 concludes with recommendations.

5.1. “Saying it like it is!”

The following is a quote from an interview with Kerry Dickson, TCF Consultant and industry mentor to the Fellow (July 2009), reported by Sylvia Walsh in a study conducted for the International Specialised Skills Institute (Australia):

The retail-driven sector [in Australia] comprises retailers sourcing and developing, designing, and/or capturing (often referred to as ‘knock-off’) styles, based on maximising sales at the best cost price...‘knock-off’ approach
means that the design component is one of copying at worst and adaptation at best. Much of the design concepts and product ideas are electronically sourced and cheap imports flood stores with limited design points of difference.... It appears this is the nature of close to 90% of Australian fashion businesses (Walsh 2009).

This is a common perception of Australian retailers and the way mass fashion product development is driven by the demands of these retailers. The motivation for copying garments lies in the pure expedience of the situation. Retailers and sourcing firms will take what is believed to be the best designs to suit their particular needs. Their goal is to drive down price and the only way to do this is by compromising the fabric quality and content, the added embellishments, or any printing techniques and manufacturing details. In doing so, the garments meet a defined price point in the list of products that the retailer needs on the shop floor. However, the international pressures facing Australian retailers from the on-line shopping revolution and the availability of up-to-date information for consumers as well as retail buyers, should prompt some shifts in retailer’s approach to product development. Retailers and sourcing firms will be forced to start developing product from the ground up as time is running out for them to be competitive on price alone.

I have raised the issue of original design and product development because this research clearly points to a lack of depth in understanding the importance of working with a given supply network. When a graduate or novice product developer/designer receives professional development that addresses the firm’s particular product supply network capabilities, they are more able to negotiate the constraints of that network. Having worked in mass fashion for many years I have found that an understanding of network capabilities and cost constraints is paramount to creating successful product. Rather than taking a sample and stripping it of even the best features to cut costs, one is designing within the network capabilities and cost restrictions. In children’s wear this is best done with a sound understanding of print processes and textile embellishments.

The more experienced practitioners interviewed for this study who had entered the industry more than 20 years ago, agreed that, at that time, the industry was predisposed
towards in-house industry training. These participants benefitted from this training as well as from their exposure to a local manufacturing industry. They were unanimous about the advantages of experiencing first hand manufacturing processes in their early career development. Experienced participants also spoke of clear career pathways from junior positions through to senior positions: they were aware of the experience they had to gain to aim for the positions they wanted. Currently there are no clear career pathways for designer/product developers from the position of graduate through to experienced practitioner. A common observation among experienced practitioners is that graduates want to come into the industry and go straight to designing; in Abraham’s (2008) paper on employability skills, the following statement illustrates this point well:

   Unfortunately they enter the work place with perceptions that make it difficult for them to adjust themselves to what the reality is... The student should understand clearly what skills he has gained for immediate use at the workplace and what skills he needs to practice and develop further” (Abraham 2008)

In the firms surveyed for this research, both sourcing and retail firms do not have any formal training for novice product developers/designers, nor do these firms have a clear concept of how to develop potential design/product development talent. The current disposition of the mass fashion retailers is to initiate new product design and manage their own manufacturing supply networks. This sector expects employees to be multi-skilled, from design development to the financial management of product from conception to final sale. Industry training is available in retail firms for junior or assistant buyers, however, this training is usually based on managing retail operations, not on understanding product development. For product developers and buyers, product development and supply network capabilities are learned at the discretion of their manager in an informal manner; novice practitioners who are lucky enough to have the right manager who mentors them will learn faster than novice practitioners who do not have the same resource. Experienced employees, in both retail and sourcing firms, have all come to their present positions through a fashion design qualification followed by industry exposure and training in product development. As this research reveals in Chapter 3, there is a ten year gap in experience with the majority of participants having
been in the industry for more than twenty years or less than ten years. Considering that there are no formal training programs for less experienced employees, the skills gap is notable and most industry participants commented on this.

5.2. **Between the lines**

The mass fashion sector, as with other sectors in the fashion industry - and even individual departments within firms - all have their own particular needs, and these can be difficult for educators to follow. Incorporating all sectors of the industry’s needs into a single course to produce the perfect multi-skilled graduate would be impossible. So what is between the lines? Industry wants graduates to be independent, problem solving individuals who are able to be creative, work autonomously on the second day in the job and have a head for business at the same time, as well as be able to master all the skills of garment production, understand print processes, understand retail operations - and they should be realistic and commercial and understand customers and be able to forecast fashion trends and, and, and…. I have basically rolled all participants wishes into one huge, breathtaking sentence!

The Australian retail and sourcing market is relatively small compared with international markets and the current trend is for Australian retail firms to follow the European model of having design teams develop new product within the firm. As participant R_04, a retail firm design manager, states:

“….. because we are changing we are always trying to up-skill everybody. So every year I give them [the graphic artists and designers] goals to reach up to because we want to be the best design team in the world! International standard!”

To date, retail firms have been able to source experienced product developers from the sourcing and wholesale firms. This is evident when looking at the career pathways of experienced buyers in this study, for example, R_09 and R_04, and the majority of experienced participants in retail product development, who have a fashion qualification and, more often than not, come from a fashion wholesaling or sourcing background. This resource of talent, however, depends on the survival of sourcing firms. Retailers are
taking on more and more of their own product development, possibly rendering the sourcing firms redundant. The loss of these firms minimizes the possibility of being able to source ready-trained product developers, strengthening the case for industry training programs.

Whilst everyone is well aware that learning is best inculcated in the workplace, the gap between what more experienced industry participants’ want and what can be delivered at undergraduate level may not be feasible. Many firms have a niche market that they service or, in the case of retailers, buying and sourcing teams have a particular specialty and work within a narrow area. In general, industry needs are wide, but once a graduate is in a particular sector the needs are very narrow. The majority of courses aim to prepare students going into ladies’ wear and not men’s wear or children’s wear; some will offer a semester of men’s and children’s wear but others not at all. Both these areas have their own particular skill sets. These sectors also claim a significant proportion of the Australian apparel market. According to a November 2012 Australian retail report, the men’s wear, boys’ wear and girls’ wear sectors command 40.3% of the Australian retail clothing sector. The same report also states that children’s wear revenue has grown faster than the average over the past five years (Willianto 2012, p. 14-15).

In this research the focus has been on the mass fashion children’s wear sector. I selected this sector because I believe it captures the current industry in a nutshell, in particular:

1. The sector’s focus on maintaining low retail prices;
2. The sector’s stringent fit and quality control requirements;
3. The sector’s need to understand supply network capabilities;
4. The sector’s need to understand and create all-over prints and placement prints within supply networks’ capabilities, or to know what to look for in the supply network to achieve certain design ends within the price constraints of a firm.

The children’s wear designer/product developer really does need to straddle many different disciplines and this cannot realistically be addressed in an educational context at an undergraduate level.
Throughout the duration of this study, I maintained my own teaching and private industry training practice. I have found in my own practice, fashion industry practitioners continually requested training on how to use Adobe Illustrator and Photoshop for drawing garments as well as creating textile prints. I have also found that firms prefer programs tailored to their own particular needs, and for examples to be used from their own archives. I have also found in my teaching that students respond well to a teacher with industry exposure as this legitimises industry needs for them.

None of the industry participants ever mentioned the possibility of future technical developments in garment design or production and print processes. The availability of digital textile printing does not even feature in the supply networks available to this sector, even though it is now commonplace in up-market boutique labels as well as high street fast fashion, and is fast becoming available at better prices. Only four years ago designer/product developers did not necessarily need to know how to use graphics packages to draw, but in the last few years many have flocked to short courses to learn how to use Adobe Illustrator and Photoshop. Technological boundaries are being pushed daily and it is only a matter of time before what seems innovative and beyond our reach today becomes part of our lives in the near future. The fierce competition in the mass fashion industry demands more, not less, creative input. Even though the mass fashion retail sector is not necessarily fashion-forward and innovative, those designing for this sector need to be well aware of new technologies and how they can be adapted to this market sector to fit within price constraints. Alternatively, designer/product developers need to understand how to adapt old technology to look like new technology; so, for example, creating an all-over screen print to look like a digital print with limited colours will require an understanding of both processes.

5.3. Future and innovation

The use of computer aided design as a format for selling wholesale product, within the garment sourcing and retail sectors, started to become commonplace in the industry by the mid to late 1990s. Education started to introduce graphics into fashion and textiles programs at the same time. It led the way by introducing off-the-shelf computer graphics software as an option for creating artwork as opposed to industry specific software,
which was prohibitive in price. Industry followed through by first adopting CorelDRAW as a standard and then changing to the Adobe suite, in particular Adobe Illustrator, which is currently the global standard for the industry (Downing & Shinn 2011). Since these first moments of using computer technology as a tool in fashion design there have been significant changes in manufacturing procedures as well as in the availability of new technology in garment design and production processes, for example, digital textile printing. Achieving and maintaining a balance between learning new technology and understanding old-fashioned supply networks is a conundrum that is very difficult to navigate. If educational institutions do not keep up with the latest technological changes they are doing students a disservice; if institutions introduce new technology long before it becomes commonplace in industry, it is an unnecessary burden that takes away from precious teaching contact hours. For example, the literature specifically investigating the use of three-dimensional design in fashion examines the creation of styling by drawing finished garments onto a three dimensional model and then converting this into two dimensional pattern pieces (McCartney et al. 2000; Liu et al. 2010); other literature examines the creation of virtual animated catwalk shows (Volino et al. 2005). Whilst new technology is not the focus of this research, it is, however, important to mention as these are possible future areas of common use in the industry, illustrating once again that this uptake of new technology will need to be addressed within professional development courses. To date there are no papers discussing the possibility of using three dimensional printers in clothing design as they are used in other design industries such as architecture, industrial design and jewelry design.

5.4. **Recommendations**

At first glance, it appeared from preliminary discussions with industry and education that there is a dissonance between industry needs and education outcomes. However, on deeper reflection it became apparent that the discord is actually happening at the level of industry expectations and its perception of on-the-job training. The glaring hole in the length of experience of industry participants, either those who have worked more than 20 years or those who have worked less than 10 years, as opposed to the lack of participants who have worked between 10 and 20 years, is evidence of how firms have
failed to plan for future needs. Whilst it is difficult for firms to anticipate future staff needs in unstable economic times, it is still important to manage talent requirements in a firm to ensure future stability. Retail participants all concurred that the training programs for buyers do serve a purpose and the success of these programs is evident in the fact that retail firms do employ graduates to go into these training positions, thus ensuring a source of new talent for the position of buyer. The same is not the case for product development, where firms rely on employing experienced staff.

The mass fashion industry participants were emphatic about the need for graduates to be aware of the “reality” of the industry. They emphasised that graduates need to be aware of the constraints of meeting customer needs in terms of style and price. Many participants suggested that internships would be the best way to learn this.

In summary, I believe the following recommendations need to be seriously considered in order to help build better synergy between education outcomes and industry needs, and to help address current and future skills gaps in the Australian mass fashion sector:

1. A much deeper collaboration is needed between industry and education that could include more internships throughout undergraduate study (Industry participants suggested ongoing internships in different firms for students to understand the variety and scope in the industry. The programs mentioned in Chapter 2 page 24 are only once-off projects with one firm).

2. Coaching students on industry expectations.

3. The possibility of educational tours of working factories in offshore locations in collaboration with industry partners.

4. Further research needs to be conducted in the area of professional development within the industry and tailoring training programs to firms’ particular needs.

5. A deeper understanding of supply network capability and the impacts of this on pricing needs to be inculcated into young practitioners at industry level.

6. Further investigation needs to be conducted into supporting industry mentors.
The close connection between industry and education is very important, both for undergraduate study and for professional development. The responsibility lies with both parties to make this a success. Educational institutions need to be confident that any candidate who is put forward to industry is a representative of the particular institution and should be the best fit for the organization. Industry should be clear in their mentoring and guidance of young practitioners. Career pathways need to be understood more clearly considering the enormous role retailers play in product development today.

The Australian mass fashion industry faces numerous challenges with respect to skilled and experienced participants. At present, firms do not see the value in staff training (note R_01, R_04 and S_02), and all state that the length of time it takes to train a graduate (up to two years), does not make it worthwhile. The reality is that firms are, unfortunately, measured on short-term financial gain, not on what may be achieved in two to three years’ time. Considering the quantity of graduates going through a tertiary undergraduate fashion qualification, it is important for all stakeholders to seriously consider the longevity of the industry. Education institutions need to include professional development and an on-going relationship with graduates to keep the knowledge flowing. Industry needs to see the value in developing staff before there is a true skills crisis that certainly cannot be blamed on education.
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APPENDICES

APPENDIX A – PLAIN LANGUAGE STATEMENT TO PARTICIPANTS

Dear _____________

My name is Marianne Centner

I am undertaking a Masters Degree by Research at RMIT University in the School of Fashion and Textiles

The title of my research is:

**Computer Aided Graphic Design in the Mass Fashion Market:**

Is there synergy between industry expectations and education outcomes?

I am seeking to interview both fashion industry personnel and, in particular, computer graphics teachers. I would like to invite you to be involved in this project as I believe you would have the relevant professional experience to be able to add value to this research project.

**Aim/s and brief background**

The aim of my research is to understand what the necessary industry needs are when sending artwork to remote suppliers. I would like to understand how much detail is needed when communicating with remote suppliers. For example is it necessary to understand garment construction processes? Would a good understanding of the production printing process help when designing yardage prints or placement prints for off shore production? Currently textile and fashion design are treated as two separate disciplines in education, whereas anecdotal evidence and my own experience, working within the children’s wear fashion sector as a computer aided graphic design artist, suggests this is not the case. I would like to also know if graduates and novice fashion and textile graphic designers are, in your opinion, industry ready. I will only be focusing on everyday commercial and business practices. My research will not seek to expose workplace conflict, personal behavior, professional practice or the uptake of technology. My research will seek to establish current accepted needs and expectations.
Possible outcomes

The results from my study will raise our understanding of industry needs and will establish when it is best to communicate complex production requirements to either students or novice designers either in their study or early career development.

Procedures to be followed

I will be conducting interviews with product developers, designers, buyers and production planners or quality assurance staff within the children’s wear retail sector and the wholesale sector to establish industry needs. I will also conduct interviews with Graphics teachers in fashion and textiles courses. The interviews will be audio-tape recorded. I hope to take at the most 30-40 minutes of your time. These interviews will be conducted in a free-flowing manner, hopefully providing a forum for you to answer my questions in a way that you feel is informative and does not compromise you or anyone else in your company. I am hoping to interview approximately 15-20 people from each sector.

Please take note of the following points:

No discomfort or possible hazards are expected, as stated earlier my research is looking purely at supply chain and business issues, not personal practices.

I am available should you have any questions about this process or any aspects of the study.

My contact details are as follows:

Marianne Centner, Mob: 0419 103 088, email: marianne.centner@rmit.edu.au,

School: Fashion and Textiles

My supervisors contact details are as follows:

Dr Juliette Peers, Tel: 9925 2784, email: juliette.peers@rmit.edu.au,

School: Architecture and Design

Patrick Snelling, Tel: 9925 9411, email: patrick.snelling@rmit.edu.au,

School: Fashion and Textiles
The results from this study may appear in academic journal publications and may also be cited for conference papers.

The Australian National Statement on Ethical Conduct in Human Research requires that you know your involvement is entirely voluntary, participants can withdraw at any time and withdraw any unprocessed data. You are assured of complete anonymity. There is no way of identifying you personally, as your contact details will be stored separately to your interview transcriptions and tapes. The data will be stored in secure places (locked filing cabinets, password protected computer files). The information will be kept for a period of five (5) years and then destroyed. Please note that the confidentiality of information provided can only be protected within the limitations of the law.

If you have any concerns or complaints about your participation in this project they may be directed to the Executive Officer, RMIT Human Research Ethics Committee, Research & Innovation, RMIT, GPO Box 2476V, Melbourne, 3001. Details of the complaints procedure are available at: http://www.rmit.edu.au/rd/hrec_complaint

Results

If you would like to be informed of the research finding, please contact myself,

Marianne Centner, Mob: 0419 103 088, email: marianne.centner@rmit.edu.au,

School: Fashion and Textiles

Thank you for your consideration.

Yours sincerely

Marianne Centner
APPENDIX B – INDUSTRY QUESTION SCHEDULE

1. Could you give me a short overview of your background:
   - Where did you study?
   - What course did you do?
   - What was your first job
   - How long have you been in the industry?
   - What positions have you held in the industry?

2. What is your present position?

3. Computer Graphics
   - When did you first come across CAD in the industry?
   - What packages?
   - Have you used any packages?

4. Production Processes and Information
   - Do you feel it is important to have an understanding of garment construction in your position?
   - Do you expect other members of your team to inform you of any new production processes?
   - How have you gained your own knowledge of construction and production processes?
   - Does your understanding of the above inform your choice of product design?
   - Do you feel an understanding of textile/yardage print and placement print processes are important in your position?
   - What is the impact of the detail of communication with manufacturers?
   - Could you list the typical contents of a pre-production package?

5. Novice Designers
   - Would you employ a college/TAFE or university graduate to be a fashion graphics artist?
   - Would you be selective about either university or TAFE graduates?
• Would you be selective of the institute the graduate comes from?
• Would you be selective of the course the graduate has done – either fashion or textiles? Maybe even a graphics course?
• What would be the primary quality in a novice designer that would sway your choice in employing them?
• What would your expectations be of a design graduate and would your expectations differ between university or TAFE?

6. Succession Planning?
• Do you believe the company has a duty of care to plan for succession?
• Does your company have a traineeship program in place?
• Do you have an assistant who is under your mentorship?
• Do you believe you have the time to mentor a novice to the industry?

7. Future
• Do you think education outcomes are pertinent for present industry trends?
• I.E: the present trend for retailers to be more vertical and not include wholesalers in the sourcing chain?
• Does this include more merchandising in design or more design in merchandising?
• Should education be training product designers to know more about textile design?
• Or textile designers to know more about fashion design?
• Should communication, be it graphic or written, be given more emphasis when students are studying?
APPENDIX C – EDUCATION QUESTION SCHEDULE

1. Could you give me a short overview of your background:
   • Where did you study?
   • What course did you do?
   • Have you worked in the fashion or textile industry as a practitioner?

2. What is your present position?

3. How long have you been teaching?

4. Teaching Computer Graphics:
   • When did you first come across CAD in fashion/textiles?
   • What packages?
   • What computer graphics package and which version do you teach?
   • How many hours of dedicated computer graphics teaching are allocated in your institutions fashion or textiles design course?
   • Do you believe the quality, speed and currency of computer equipment impacts on how and what you can teach?

5. Background knowledge:
   • Do you feel it is important to have an understanding of garment construction when teaching CAD to students?
   • Do you feel an understanding of textile/yardage print and placement print processes is important when teaching CAD to students?
   • How do you keep abreast of current industry practice?

6. Curriculum relevance
   • If you are a TAFE teacher do you consider the VET training package relevant for teaching computer graphics?
   • If you are teaching a university degree course do you set your own curriculum or are there expected outcomes within the course that you need to adhere to?
   • If you could would you add anything else to the subject you teach?

7. Future
   • Do you think education outcomes are pertinent for present industry trends?
• I.E: the present trend for retailers to be more vertical and not include wholesalers in the sourcing chain?
• Does this include more merchandising in design or more design in merchandising?
• Should education be training product designers to know more about textile design?
• Or textile designers to know more about fashion design?
• Should communication, be it graphic or written, be given more emphasis when students are studying?
APPENDIX D – LMTFD4020B USE ELECTRONIC FASHION DESIGN TOOLS

LMTFD4020B Use electronic fashion design tools

Revision Number: 1
LMTFD4020B Use electronic fashion design tools

Modification History
Not applicable.

Unit Descriptor

Unit descriptor This unit covers the skills and knowledge to use a range of electronic design programs and equipment such as software programs and computing technology.
Application of the Unit

The unit applies to the creation of designs, patterns or production specifications using electronic programs and equipment such as graphic and design software, computers and peripherals, and specialised equipment.

This unit requires the use of computers. If training in the use of computers is required then the unit LMTGN2009A Operate computing technology in a TCF workplace should also be selected.

Work may be conducted in small to large scale enterprises and may involve individual and team-related activities.

The application of this unit is according to OHS practices of the enterprise and workplace practices, which may include:

- requirements prescribed by legislation, awards agreements and conditions of employment
- standard operating procedures
- work instructions
- oral, written and visual communication
- quality practices, including responsibility for maintenance of own work quality and contribution to quality improvement of team or section output
- housekeeping
- tasks related to environmental protection, waste disposal, pollution control, and recycling

This unit requires skills in communication and technology to interpret requirements and create design effects using electronic tools. Planning and organising, problem solving and initiative and enterprise skills are used to generate outputs. Self-management skills are used to monitor outputs against quality standards and design brief.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisites
Employability Skills Information

Employability Skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Not applicable.

Elements and Performance Criteria

<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>PERFORMANCE CRITERIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify design brief</td>
<td>1.1 Design specifications are identified and interpreted.</td>
</tr>
<tr>
<td></td>
<td>1.2 Suitable programs and equipment are identified.</td>
</tr>
<tr>
<td></td>
<td>1.3 Garment considerations are identified.</td>
</tr>
<tr>
<td></td>
<td>1.4 Production requirements are identified.</td>
</tr>
<tr>
<td>Use design tools</td>
<td>2.1 Design programs and equipment are used to create required designs, patterns or production specifications.</td>
</tr>
<tr>
<td></td>
<td>2.2 Design programs and equipment are used to modify and edit designs, patterns or production specifications.</td>
</tr>
<tr>
<td></td>
<td>2.3 Design programs and equipment are used to test designs, patterns or production specifications.</td>
</tr>
<tr>
<td></td>
<td>2.4 Design programs and equipment are used according to OHS practices.</td>
</tr>
<tr>
<td>Assess electronic outputs</td>
<td>3.1 Outputs generated using electronic design programs are assessed against design specifications and production requirements.</td>
</tr>
<tr>
<td></td>
<td>3.2 Outputs are presented to appropriate personnel to assess accuracy and completeness.</td>
</tr>
<tr>
<td></td>
<td>3.3 Improvements are made as required.</td>
</tr>
<tr>
<td>Maintain electronic design systems</td>
<td>4.1 Designs, patterns or production specifications are created, stored, organised and protected.</td>
</tr>
<tr>
<td></td>
<td>4.2 Design programs and equipment are used, maintained and stored.</td>
</tr>
</tbody>
</table>
Required Skills and Knowledge

This describes the essential skills and knowledge and their level, required for this unit.

Demonstrates knowledge of:

- principles of design
- electronic equipment and program features
- editing tools and procedures
- operating procedures
- garment production requirements
- quality standards
- OHS practices, including hazard identification and control measures
- quality practices
- workplace practices
- recording and reporting practices

Demonstrates skills to:

- receive and interpret design brief
- use electronic and program functions
- read, interpret and follow information on work specifications, standard operating procedures and work instructions, and other reference material
- maintain accurate records
- communicate within the workplace
- sequence operations
- meet specifications
- clarify and check task-related information
- carry out work according to OHS practices
Evidence Guide

The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Critical aspects of evidence

Demonstrates skills and knowledge to:
- plan work tasks to achieve specifications
- prepare workstation and work before commencing operations
- use electronic tools and equipment
- use software programs
- apply OHS practices in work operations
- maintain accurate records

Consistency in performance

Consistently applies skills and knowledge when:
- organising work
- completing tasks
- identifying improvements
- using workplace practices
- using OHS practices
- recording and reporting accidents and incidents
- assessing operational readiness of equipment used and work processes
- recognising and adapting to cultural differences in the workplace, including modes of behaviour and interactions
- completing work systematically with attention to detail without damage to goods and equipment

Resource implications

Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.

Context for assessment

Assessment may occur on the job or in an appropriately simulated environment.

Interdependent assessment

This unit may be assessed independently or in combination with other relevant units.
Ranga Statement

RANGE STATEMENT

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Legislative/regulatory requirements: All work must comply with relevant Federal and State or Territory legislative or regulatory requirements.

Design specifications may include:
- visual content and presentation
- style details
- fabric types and quantities
- production requirements
- special effects or features
- quality criteria
- finishing details
- sizing

Programs and equipment may include:
- computer
- software programs, eg computer-aided design (CAD), Illustrator, Photoshop
- hardware peripherals such as scanners, printers
- specialised equipment

Garment considerations may include:
- type of fabric
- colour of fabric
- purpose of garment
- quality standards

Production requirements may include:
- timeline
- available resources
- instructions
- documentation

OHS practices: OHS practices must include hazard identification and control, risk assessment and implementation of risk reduction measures specific to the tasks described by this unit and may include:
- manual handling techniques
- standard operating procedures
- personal protective equipment
- safe materials handling
- taking of rest breaks
- ergonomic arrangement of workplaces
- following marked walkways
- safe storage of equipment
- housekeeping
- reporting accidents and incidents
- other OHS practices relevant to the job and enterprise

**Unit Sector(s)**

**Sector**  
Fashion Design and Technology
LMTTD5007A Develop textile designs using computer based design programs
LMTTD5007A Develop textile designs using computer based design programs

Modification History
Not applicable.

Unit Descriptor
Unit descriptor: This unit covers the skills and knowledge required to use a range of computer based design programs, equipment and computing technology to generate, produce and manufacture computer aided designs for textile products.
Application of the Unit

The unit applies to the creation of designs and production specifications for woven, knitted or printed textiles, tapestries, and experimental textile products using computer based programs and equipment.

This unit requires the use of computers. If training in the use of computers is required then the unit LMTGN2069A Operate computing technology in a textiles, clothing and footwear workplace should also be selected.

Work may be conducted in small to large scale enterprises and may involve individual and team-related activities.

The application of this unit is according to OHS practices of the enterprise and workplace practices which may include:

- requirements prescribed by legislation, awards agreements and conditions of employment
- standard operating procedures
- work instructions
- oral, written and visual communication
- quality practices including responsibility for maintenance of own work quality and contribution to quality improvement of team or section output
- housekeeping
- tasks related to environmental protection, waste disposal, pollution control, and recycling

This unit requires the application of skills associated with communication to interpret and apply technical information and develop documented design specifications. The use of computing technology and programs is central to this unit. Initiative and enterprise, planning and organising and problem solving will be used to create design concepts, patterns and specifications.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisites
### Employability Skills Information

**Employability Skills**  
This unit contains employability skills.

### Elements and Performance Criteria Pre-Content

Not applicable.

### Elements and Performance Criteria

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<th>ELEMENT</th>
<th>PERFORMANCE CRITERIA</th>
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| 1 Analyse brief for textile product | 1.1 Textile *design specifications* are identified and interpreted  
1.2 *Product considerations and production requirements* are identified |
| 2 Select and use design tools | 2.1 Suitable *programs and equipment* are identified  
2.2 Design programs and equipment are used to create required designs, and production specifications  
2.3 Design programs and equipment are used to modify and edit designs, or production specifications  
2.4 Design programs and equipment are used to test designs, patterns and production specifications  
2.5 Design programs and equipment are used in accordance with *OHS practices* |
| 3 Examine design results | 3.1 Outputs generated using electronic design programs are assessed against design specifications and production requirements  
3.2 Outputs are presented to appropriate personnel to assess accuracy and completeness  
3.3 Improvements are made as required |
| 4 Maintain electronic design systems | 4.1 Designs, patterns or production specifications are created, stored, organized and protected according to workplace practices  
4.2 Design programs and equipment are used, maintained and stored according to workplace practices |
Required Skills and Knowledge

This describes the essential skills and knowledge and their level, required for this unit.

Demonstrates knowledge of:
- relevant OHS legislation, codes of practice, policies and procedures
- principles of design
- electronic equipment and program features
- editing tools and procedures
- operating procedures
- product production requirements
- quality standards
- workplace practices
- reporting procedure
- OHS practices including hazard identification and control measures associated with computing use
- quality practices
- workplace practices
- recording and reporting practices

Demonstrates skills to:
- receive and interpret design brief
- maintain accurate work records in accordance with workplace practices
- use required electronic and program functions
- carry out work in accordance with OHS policies and procedures
- meet work specifications
- communicate effectively within the workplace
- interpret and apply defined procedures
- read, interpret and follow information on job instructions, specifications, standard operating procedures, patterns, charts, tickets, order forms and other applicable reference material
- sequence operations
- clarify and check task-related information
- maintain accurate records
- communicate within the workplace
- sequence operations
- meet specifications
- clarify and check task-related information
- carry out work according to OHS practices
Evidence Guide

The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Critical aspects of evidence to be considered

- Demonstrates skills and knowledge to:
  - plan work tasks to achieve specifications
  - prepare workstation and work prior to commencing operations
  - use electronic tools and equipment
  - use software programs
  - apply workplace OHS practices in work operations
  - maintain accurate records

Consistency in performance

- Consistently applies skills and knowledge when:
  - organising work
  - completing tasks
  - identifying improvements
  - using workplace practices
  - using OHS practices
  - recording and reporting accidents and incidents
  - assessing operational readiness of equipment used and work processes
  - recognising and adapting to cultural differences in the workplace, including modes of behaviour and interactions
  - completing work systematically with attention to detail without damage to goods and equipment

Resource implications

- Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.

Context for assessment

- Assessment may occur on the job or in an appropriately simulated environment.

Interdependent assessment

- This unit may be assessed independently or in combination with other relevant units.
Range Statement

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**Legislative/regulatory requirements**
All work must comply with relevant Federal and State or Territory legislative or regulatory requirements.

**Design specifications may include**
- colour
- style details
- fabric, fibre and quantity
- production requirements
- special effects or features
- quality criteria
- sizing
- finishing details
- presentation

**Product considerations may include**
- product outcome or end-use woven fabrics, tapestry works, knitted fabrics, digitally printed fabrics
- quality standards
- colours and trends
- environmental factors
- computer
- software programs, eg Illustrator, Photoshop, Scotweave, Lectra, WeaveMaker, DesignerKnit, Internet
- hardware peripherals such as:
  - colour scanners
  - laser or inkjet printers (film output, film separations)
  - drawing tablets
  - drawing tablet
  - data projector
- specialised equipment:
  - direct digital textile printer
  - industrial knitting machine
  - electronic jacquard loom
  - networked file storage and back-up devices
  - trade journals and trend information

**OHS practices**
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• following marked walkways
• safe storage of equipment
• housekeeping
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• other OHS practices relevant to the job and enterprise

Unit Sector(s)

Sector: Textile Design and Development