

The experienced worker, the student, and the
information gap: What are the information needs
of vocational trades students while on work
experience?

INFO 580 Research Project

17 February 2017

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Acknowledgements

Thank you to all the willing interviewees in this study, whose time and sharing made this project possible.

Thank you to the trades tutors for expert guidance and insider knowledge.

Thank you to a wonderful supervisor Philip Calvert, whose wisdom, and insight were such an inspiration.

Thank you to my supportive husband Geoff Pitt.

Thank you to my grandchildren Simon, Rylah-May and Nova-Lee, for arriving home from Australia and completing my life.

Thank you to the terriers Penny and Bazil for unconditional devotion.

And thank you most of all to my family of human friends and special librarians, for that magical support.

Abstract

Research question – What are the information needs of vocational students while on work experience.

Research justification – Very little research that has been published on the topic of workplace information literacy, within the library information science discipline. Even less research has been published from the perspective of the information needs of young adults during work experience.

Methodology – This qualitative study uses the in-depth interview combined with the critical incident technique. Data was gathered by interviewing three plumbing students and four electrical students.

Findings – The information practice of the workplace is a two-way process, where the information literacy of the more experienced workers identify the information needs of the students, and the student use of mobile phone technology for making a visual literacy record of everyday workplace solutions, adds to the information landscape of the workplace.

Research implications – This study is based on a small sample that may limit generalisation. This research contributes to understanding student information needs in the context of the workplace. The key findings suggest a way for academic libraries to align their services with the learning goals and priorities of the students, though facilitating resources that support student competency with the technical and jargon language of the workplace, and their visual literacy of work tools through image resourcing.

Originality/value – This study contributes to understanding the New Zealand workplace information landscape from a student's perspective. The student voice describes the workplace: culture, context, members, activities, and tools that are the resources that help trades students meet their information needs.

Key words – Trades students, workplace information needs, vocational electrical and plumbing students.

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1. CHAPTER 1: INTRODUCTION

The aim of this project is to provide an understanding of young adult information needs, in the context of work experience, from the perspective of the student.

Information literacy is an important area of research within the library information science (LIS) discipline, but very little has been published about its importance and place in the workplace (Kirton & Barham, 2005). Much of the LIS research concerns the academic delivery of information literacy to high school teenagers, or university undergraduates (Nesset, 2014).

There is very little research into workplace information literacy, and even less research into workplace information literacy of young adults taking vocational studies. The trades students are at the pre-apprenticeship stage, on voluntary work experience, prior to obtaining formal apprenticeships. Of interest is whether students satisfy their information needs through social interaction or using technology.

While there is a growing body of literature in the field of New Zealand vocational education, there appears to be a research gap around student feedback (Squires, Dawe, Kennedy, Jagusch, Sauer, & Patterson, n.d.). There appears to be value in researching the information needs of young adults while on work experience.

Research into the information needs of trades students differs from research into the information needs of academic undergraduate and graduate students. Trades students learn through repetition and the practical application of work skills. Evidence of learning is not necessarily text based but can be manufactured products, or competent task completion (McConatha, Penny, Schugar, & Bolton, 2014). The information need of the trades student is a need for practical and relevant information, which is situated within the information landscape shaped by:

the workplace, shared knowledge base, participants, activities, and tools that make up the workplace environment. This study will explore the information needs of trades students as they navigate the information landscape, to fulfil their information needs during the work experience process.

1.1 RESEARCH OBJECTIVE

The research objective is to find out how trades students fulfil their information needs while on work experience, away from the trades campus and without the support of their tutors. To understand the information needs of students, this study will also need to understand the context of the workplace.

The goal of this study is to inform the library service of how young adult trades students satisfy their information needs while off campus on work experience, and to identify if there is a service that the library can supply that will support the trades student's information needs.

1.2 RESEARCH TOPIC QUESTION

What are the information needs of vocational trades students while on work experience?

1.2.1 Research questions

- What is the context of the learning process for the trades student whilst on work experience?
- What sorts of information needs do young adult students have while on work experience?
- How do the students satisfy those information needs while on work experience?
- How can library resources and services support the information seeking needs of trades students during work experience?

1.3 DEFINITIONS

Auditory learning style is learning through listening to verbal instruction, guidance, and explanations.

Cognitive style is how a person thinks. It is the way information is processed, and affects the processing of information into conceptual knowledge.

Community of practice is the information landscape of the workplace. It is the communication space where information is created and shared. It is characterised by signs, symbols, artefacts, and activities. (Hepworth & Walton, 2009; Lloyd, 2010).

Conceptual knowledge is establishing relationships between pieces of information, or between existing knowledge and new information.

Constructionism is the group construction of meaning and knowledge as human beings engage in, and make sense of, the world (Crotty, 1998).

Constructivism is the individual construction of meaning (Crotty, 1998).

Experiential learning is practical activities sequenced in such a way that enhances the educational experience for the student (Threton, Walter, Clark, & Ewing, 2011).

Information behaviour are activities an individual engages in to satisfy their information need (Wilson, 1999).

Kinesthetic learning style is hands on learning through doing. Some learners need to 'feel' objects in their hands to derive information.

Learning style is a person's learning preference. One common classification is the visual, auditory, or kinesthetic (VAK) learning style.

Visual learning style is learning from watching concrete information being presented such as maps, diagrams, charts, graphs, and flow charts.

Workplace information literacy includes skills in: communication, sociability, mental aptitude, perception, embodied knowledge, judgement, time management, critical analysis, and team work (Hempworth & Smith, 2008, as cited in Lloyd 2010).

Workplace learning is what Billet (2001) calls situated learning, and is the result of learner attitude, workplace context, and work activities (Billett, 2001).

2. CHAPTER 2: LITERATURE REVIEW

Very little research has been carried out on the information needs of young adult trades students. While there is a body research into the impact of social interaction on young adult information behaviour there appears to be very little research from the perspective of young adult information behaviour in the workplace. There is growing body of research from the vocational education perspective, which draws upon a constructivist theoretical perspective.

2.1 SOCIAL INFLUENCE OF FAMILY

Laplante's (2014) research into secondary college students identified the social influence of family, friends, and teachers as a major influence on young adult information behaviour. Research into the information behaviour of tertiary vocational students was not part of Laplante's (2014) research.

Prensky (2001) coined the term 'digital native' to define the current generation of students, who think and process information differently from previous generations. However, not all members of a single generation have the same digital skills. Chan (2011) noted that while vocational students could be classed as digital natives, they have a different set of digital literacy skills to other students, and are proficient with devices like game consoles and mobile phones, but not with a personal computer (PC) using a Windows operating system.

2.2 MOBILE TECHNOLOGY

One of the key themes in the literature on young adult information literacy is the use of smart phones. There is a prolific amount of research on the impact of smart phones on information behaviour, the impact of smart phones on young adult information literacy, and the influence of mobile learning to extend the reach of teaching and learning (Douch, Savill-Smith, Parker, & Attewell, 2010).

Research New Zealand (2015) describes many of the attributes of the mobile phone generation, where 91 percent of New Zealanders aged between 18 and 34 years own a smart phone. Furthermore, they prefer a smart phone over other electronic devices to find: data, pictures, attachments, reference material, and services. Smart phone use represents a cultural shift in information behaviour, where information is searched whilst the user is multitasking, on the move, and up to 4 seconds is spent on finding information that is fit for purpose (Kaikkonen, 2008). The students for this research project fall into the precise age group represented by the mobile phone generation, where mobile technology has the potential to influence information behaviour.

Instruction in the use of mobile touch tablets is viewed as bridging the digital divide for students (ChanLin, 2015; Huang, Chen, & Ho, 2014), and in New Zealand to improve the digital literacy of trades students (Chan, 2011). The use of mobile tablet technology for information searching by automotive students was also researched by Baglow and Lovegrove (2015). Their research investigated the potential of mobile technology for preparing students for the automotive work force. This was an action research study on embedding mobile technology into vocational education, using qualitative surveys, and informal team conversations. Their findings were that tablet computing has the potential to enhance learning.

2.3 COGNITIVE STYLE, AND LEARNING STYLE

The literature on learning styles versus cognitive styles is about competing theories of learning versus cognitive ways of thinking. Rayner (2001) manages to combine both theories in the one sentence by stating that, individual cognitive style defines a person's tendency to process information holistically as a whole, or analytically as piecemeal information, while mentally representing information verbally or visually.

Threeton, Walter, Clark, and Ewing, (2011) in their qualitative study on experiential learning as the preferred learning style of automotive technology students, found that only 39.8 percent of the postsecondary automotive technology students could be called hands on learners. Their conclusion was that while automotive students

were a diverse group of learners and, from a pedagogical viewpoint, all learner styles would benefit from learning experiences that would support conceptual knowledge development.

Research on learning and cognitive styles indicates that a learner's cognitive styles can be stimulated by visual, auditory, kinesthetic, or experiential information.

In addition, regardless of preferred learning style:

- All learners respond favourably to a virtual reality environment (Hauptman & Cohen, 2011).
- Both visual and auditory learners benefit from a video based format where information is presented simultaneously as words and pictures (Chen & Sun, 2012).
- Object visualisers thought of images as a one piece of information (Kollöffel, 2012).
- Spatial visualisers are analytical. They saw relationships between pieces of information and link existing knowledge to new information. This results in conceptual knowledge development (Kollöffel, 2012).

2.4 WORKPLACE INFORMATION LITERACY

The workplace information literacy of knowledge workers was investigated by Bruce (1999) in the context of higher education. Information literacy was viewed as a means for evaluating people's ability to operate in an information society.

Andretta (2005) states, that in an information society, literacy is the ability to access information for personal and professional needs. Over time the concept of literacy has expanded to include spatial, electronic, visual, and auditory literacy (Hepworth & Walton, 2009). This impacts on the definition of what is information literacy.

Definitions of information literacy are context specific, and are different within each information landscape (Andretta, 2005; Bruce, Edwards & Lupton, 2006; Hepworth & Walton, 2009; Lloyd, 2010). The information landscape in the work environment is found within the community of practice (Lloyd, 2010; Hepworth & Walton, 2009).

Workplace information literacy is called 'situated learning' by Billett (2001). Situated learning is the combination of everyday work activities, the physical environment, the individual construction of meaning, guidance by experienced workers, collateral learning by observing other workmates, and work activity collaboration (Billett, 2001).

2.4.1 Workplace information need

Recognising an information need is what distinguishes information literacy from a lower level information skill. Lloyd (2010) stated in her research on fire fighters, that identifying an information need was not recognised by novices, and experienced workers identified novice information gaps by observing their capabilities. In the workplace, tasks and activities are often set by an experienced worker or supervisor to build on the skill set of the apprentice (Billett, 2001).

Workplace information practice relies on the information literacy of experienced practitioners (Billett, 2001), and acknowledges newcomers as information illiterate (Lloyd, 2010). This is different to information needs research that focuses on individual information behaviour, as information seeking activities (Wilson 1999).

A workplace curriculum is identified by Billett (2001) where work activities satisfy the learners evolving information needs. Baglow and Lovegrove (2015) were involved in tutoring automotive students in a tertiary polytechnic. They used the term 'living curriculum foundation' to describe the process of learners being involved in complex conversations designed to stimulate curiosity and create knowledge; learning was viewed as communal and a social construction.

Lloyd (2010) viewed workplace information literacy as a skill based competency, where information literacy is viewed as a subset of 'embodied knowledge'. Embodied knowledge is information gathered from physical and sensory experiences, which gets embedded in the human body; as well as in the social practice and traditions of the community of practice. An example of embodied knowledge is the term 'fire sense' used to describe the intuitive safety practises of experienced fire fighters.

2.5 THEORETICAL FRAMEWORK

Constructivism is used as the theoretical underpinning used for this project. Crotty (1998) suggests that the term constructivism should be reserved for looking at constructionism from an individual's point of view. A constructivist view of information literacy focuses on an individual perspective of the information landscape.

The constructivism framework for this project analyses the satisfaction of student information needs in relation to the information landscape, as represented by the community of practice. The community of practice functions to define information, validate sources of information, and recognises important information (Hepworth & Walton, 2009).

2.5.1 Four constructivist principles

Cooperstein & Kocevar-Weidinger's (2004) four constructivist principles have been adapted as a success criteria (Flanagan, 1954) to analyse student information need satisfaction:

1. Student information needs are satisfied when abstract concepts acquire meaning through association with concrete tasks.
2. Student information needs are satisfied when new information is built on previous knowledge, and experience is transformed into knowledge.
3. Information need satisfaction, is enhanced by social interaction, such as collaboration between student and experienced co-worker, plus indirect learning by observing co-workers.

4. Student information needs are satisfied through performing concrete tasks, leading to the construction of meaning.

2.6 CRITICAL INCIDENT TECHNIQUE

Flanagan (1954) pioneered the critical incident technique (CIT) methodology for research into behaviour from a vocational viewpoint, with the intention that the CIT would provide a foundation for research into many areas of psychology.

Subsequent applications of the CIT have been to investigate the behaviour of educators. Billett (2001) used the CIT for the qualitative analysis of experienced worker as educators, where CIT questions were applied to work related activities. The CIT was used as part of the research design for this project.

3. CHAPTER 3: METHODOLOGY

Collecting data that would convey the voice of the student experience was the aim of this research project, and the qualitative interview was the obvious methodology. All methodologies come pre-packaged with assumptions that impact on the type of data collected (Walshaw, 2015). As this is a problem driven study, this project is suited to the qualitative methodology. The methodology requirement was to collect rich descriptive data, which would help address the research question.

3.1 RESEARCH DESIGN

The aim of research is to understand the human condition (Walshaw, 2015). The theoretical approach for this project research design is the constructionist framework, to investigate the human drive to fulfil the information need.

This projects research design uses the qualitative methodology approaches of the in-depth interview (IDI) methodology and the CIT methodology, to answer the research question. The research design for this project is a combination of the CIT close ended question, which is off set by the IDI of open-ended probing. The CIT keeps the research focused on the student's information needs associated with work activities, and the IDI enabled the research to focus on gathering rich descriptive data. Hughes (2008) favours the use of CIT as a methodology for the holistic investigation of the human condition, using data that has relevant personal significance.

The interview schedule (Appendix A) was designed using the critical incident questions, and the student was asked to "think of a time when the work task was a bit hard", and the student "needed help to accomplish the task". The CIT question structure helped elicit data on how an information need was satisfied while on work experience. The CIT questions for this project are adapted from the CIT questions used by Billett (2001) to investigate the role of work activities in contributing to workplace learning.

The research preference for individual interviews over a focus group, was based on the ease of arranging individual interviews, versus time management issues of coordinating group interviews.

The content analysis process was used to help the researcher break down the data into themes and subthemes to analyse how information needs were fulfilled, and what factors contributed to satisfying the information need.

3.2 METHOD

The methods must support the methodology. The pre-packaged world view of the IDI method, is that open ended questions and responsive probing would capture the voice of the student (Walshaw, 2015). The pre-packaged world view of the CIT method (Flanagan, 1954) is that contextualised data about human activities and behaviour is useful for practical problem solving. Together the IDI and CIT interview methods, support the qualitative methodology.

Seven students were recruited from two trades courses, plumbing and electrical engineering. The interviews were conducted in the privacy of a small office. A tape recorder was placed in the centre of a small table. The small table created an informal atmosphere, similar to socialising around a kitchen table.

The prewritten schedule kept the face to face IDI on topic, and smoothed any lulls in conversation when a topic had been exhausted. The schedule included instructions for the interviewer. Five CIT questions focused on work activities. One question focused on mobile technology. Prewritten IDI probing questions were added to the interview schedule, as an interviewer aid, should the interviewee need prompting (Appendix A). The interview schedule enabled consistency and reproducibility of the interview process. The questions were read aloud during the introduction. This contributed to transparency, plus allowed time for students to engage in memory recall. The questions on the interview schedule were read onto the digital recorder, to aid data identification and subsequent analysis. Once the interviewees had finished replying, empathetic recapping helped with: in-depth

probing, gave the interviewee opportunity to add more information or correct misinformation, conveyed to the student that they were being listened to, established empathy, developed rapport, and contributed to making the transcription process more explicit.

3.3 DATA COLLECTION

Qualitative data was collected using the face to face IDI and CIT, which facilitated interview probing, and gathering information rich detail. Data was gathered from seven trades students over two days. Data was collected from plumbing and electrical students, so that similar data from similar trades would support analysis.

Flanagan (1954) states that a necessary condition of the data collection phase is the immediate recording of data whilst still fresh in the mind of the researcher. The use of a modern digital recorder, has been invaluable for keeping data fresh for the researcher. The interviews were transcribed into a PC word processing programme. Each interviewee was colour coded to identify the voice of each student. Memo notes in different coloured font was later added to the transcription. Cutting and pasting the coloured transcripts enabled data to be sorted into themes. Once themes were established, further cutting and pasting was used to group similar incidents or similar behaviours.

3.4 SAMPLE

This research project used purposive sampling (Bryman, 2008). Participants were selected by tutors, who chose students, who could the best answer the research question (Creswell, 2014). Tutor support was needed to select participants based on work experience, and over the age of 18 years. Tutors gave permission for their students to exit the classroom

The target population was the automotive, electrical, and plumbing students. These students had been on work experience, and were over the age of 18 years. A minimum of five interview participants was deemed the bare minimum sample size

for this project. A sample size of seven electrical and plumbing students was achieved. The plumbing and electrical trades students are at the pre-apprenticeship stage, work experience is voluntary and not a course requirement.

Student engagement in the interview process was achieved using interviewer empathy to reflect to students the skills they had used to successfully meet their information needs, and the researcher being genuinely interested in the students' viewpoint. The students reciprocated by explaining technical terms, interpreting work practices, and helping the researcher understand the context of the work tasks and activities being discussed.

3.4.1 Sample delimitation

Students under the age of 18 years require parental consent to participate in the interview process, and were delimited from the sample selection. Students under the age of 18 years had participated in work experience, and research into the information needs of these students may be of research interest.

Hospitality and hair dressing trades students were delimited from this study. The context of the hospitality and hairdressing workplace, was considered too dissimilar to the workplace of the plumbers and electricians to enable comparison.

No students from the automotive engineering courses were sampled. Work experience for automotive students at level two is compulsory for progression to level three. Not all automotive students elect to participate in work experience. Further research into automotive students would be of value.

3.5 ETHICAL CONSIDERATION

Dual ethics approval was sought first from the Victoria University of Wellington Human Ethics Committee (HEC), and then the Whitireia New Zealand HEC. A new HEC process had recently been introduced at Whitireia, whereby the approved HEC application paperwork from another institution could be used in lieu of the

Whitireia HEC paperwork. This could potentially save the HEC applicant from filling out duplicate paperwork.

The preliminary application for Whitireia HEC approval was declined (Appendix B), as the VUW HEC paperwork did not include the research project's aims, background, methods, and analysis. A subsequent Whitireia HEC application a month later was approved (Appendix C) using the VUW research proposal submitted to the VUW research supervisor.

Permission to enter the trades campus was sought from the Dean of Faculty (Appendix D). The Dean granted access permission and advised the appropriate contact person.

Part of the HEC process is the Participant Information Sheet (Appendix E). This was produced on a VUW letterhead and outlined details such as the purpose of the research project, and confidentiality aspects for the participant. The Participant Information Sheet handout included the withdrawal date, and contact information.

Of ethical consideration was the use of the CIT, and the potential for causing distress to an interviewee. This addressed by voluntary participation with regards to any question. The voluntary nature of the interview was reiterated by the written inclusion of the statement "You do not have to answer any question that makes you feel uncomfortable" on the participant Information sheet (Appendix E).

As the subject of this project is young adults, a major ethical consideration was the age of the trades students. Hence the inclusion of a tick box stating that the interviewee is over 18 years on the Participant Consent Form (Appendix F).

The collection of sensitive personal data is also of ethical consideration. Identifying information was kept separate from the interview data. The transcripts were stored in a password protected digital environment. Further ethical consideration was given to making sure no misunderstandings arose where interviewees might misinterpret participation as having an effect on their grades.

Tutors were consulted as key research informants. No ethical dilemmas were anticipated, as all information was viewed as either second-hand information, or as hearsay, and would have no negative impact on the tutors professional career.

Consideration was given to providing food as an incentive for interviewee participation. Participant survey burnout was not seen as part of the trades student culture, and the decision was made not to include incentivising in the HEC approval process.

Ethical consideration was given to the potential power relationship between researcher and student. As the librarian-researcher was not in a position to influence student grades, nor requesting students to evaluate the library service, a conflict of interest was not envisaged.

3.6 ROLE OF RESEARCHER

Flanagan (1954) states that for the results of the research to be of value, the role of the researcher is to report not only on the research limitations, but to make a judgement call on the validity of the research findings.

The researchers role is to select the best method for answering the research question. The use of the CIT method for researching behaviour within a vocational context was deemed the best fit for investigating specific information behaviour.

My role as a researcher is to strive for engagement, neutrality and acceptance. I consider that this is contributed to by others viewing me as an older woman of Asian ethnicity, short stature, kiwi accent, and physically non-threatening. As a novice interviewer, I appreciated having information in written format on the Interview Schedule, the Participant Information Sheet, and the Participant Consent Form. When students indicated that they were interested in a summary of the research findings, a blank space on the Participant Consent Form was used for keeping a record of contact details.

Research access to students was helped by acceptance into the culture of the trades campus, which is in a separate location from the main campus, and has been without a dedicated librarian for some time. As the new liaison librarian, my professional interest in the literacy, recreational, and technical needs of the campus has been supported by tutors as key informants on student needs, what elements to look for in a good technical resource, and the benefits of work experiences for students.

3.7 METHOD OF DATA ANALYSIS

Flanagan (1954) states that the purpose of CIT data analysis is to efficiently summarise and describe the data. Below are three issues that Flanagan (1954) views as important to CIT methodology.

1. Theoretical frame of reference, and a criteria for success.
2. Categorise themes and subthemes. The theme title should indicate discernible meaning, and the subthemes should form a logical structure.
3. Decide if generalised or specific details best fit the research question.

3.7.1 Frame of reference

The frame of reference is constructivism theory. The criteria for success is that the information need is satisfied. However, the unsatisfied information need is equally valid for informing this research question.

3.7.2 Category themes and subthemes

Flanagan's (1954) research focus was human behaviour, where similar types of behaviour were grouped into themes and subthemes, and the skill and judgement of the researcher determined the final quality of the research (Flanagan, 1954).

As the focus of this research is the information need, the themes that emerged were satisfaction due to the workplace environment, social interaction, and mobile technology for information searching. The four constructivist principles were used to analyse the specific details of the themes.

3.7.3 General or specific details reported

The benefits of using the voice of the student is that their exact responses can be used to report rich qualitative data as specific details.

3.8 CREDIBILITY

To help create a trusting secure interview environment, the questions were read aloud to the interviewees before the interview began, with the explanation that sub-questions may be added as an aid for the interviewer. This was done to: gain the participants co-operation in the interview process, give the participant an opportunity to preview upcoming questions, and allowed the student to anticipate the structure of the interview process.

Having project consent forms and information sheets as handouts added credibility and acted as icebreakers to introduce the project aims. Different wording was used for the probing questions to seek information, but from a different angle.

3.9 LIMITATIONS

The limitation of this project is that the data about student experiences is derived from a small sample size. This is the same research limitation that applies to other qualitative research into workplace learning (Billett, 2014). Due to the data being derived from a small sample size, the findings are specific to the small sample, but are generalised findings when applied to a larger population. The limitation of volunteer sampling is that a self-selected sample may not be representative of the larger population.

Convenience sampling was used for acquiring data. The limitation of sampling from only one tertiary provider limits the robustness of this study. Whitireia HEC approval (Appendix C) included an invitation to sample across both Weltec and Whitireia institutions. This opportunity was lost due a major earthquake in November 2016, that resulted in campus closures and relocations. Sampling across both institutions would have strengthened the robustness of this research project, and a missed opportunity is an opportunity for a future research project.

4. CHAPTER FOUR: FINDINGS

Quotes are used in the findings, to portray the voice of the student in describing the workplace: context, experienced worker, activities, and tools. These are the resources that enables trades students to meet their information needs.

All students reported information needs satisfaction was achieved through performing concrete task. This supports constructivism as the appropriate theoretical lens for analysing student information need fulfilment. This supports similar findings to Threeton, Walter, Clark, and Ewing (2011) where experiential learning was seen to have pedagogical value regardless of students VAK preferred learning style.

As suggested by Flanagan (1954), as the original researcher the judgement call is that despite the limitations, the research findings do have validity, and have been arranged into the three key themes.

Theme 1: Physical environment

Theme 2: Social interaction.

Theme 3: Technology.

4.1 THEME 1: PHYSICAL ENVIRONMENT

The physical environment of workplace plays a role in supporting the information needs of the student (Billett, 2001). Hence, the information landscape (Hepworth & Walton, 2009) of a commercial site, involves visual literacy in the form of health and safety artefacts, and contributes to the workplace information literacy of the student (Lloyd, 2010):

“Kinda of got a work orientation, more of an induction. Inducted to the site. Health and safety. High viz safety gear. Hard hat. And repercussions if you don’t. And a rule board. But no, one, supervisor on a commercial site.”

The health and safety ethic of the community of practise is embedded in the workplace practise of mini debrief sessions:

“In a school environment with the school kids running, before we started work, or after every break, we had mini tool box meeting near the site shed. A quick five min meeting, this is what is happening, what to do what to look for.”

The health and safety ethics are also embedded in residential situations:

“The hazards change every three hours because of moving from room to room. There is a lot of work keeping the hazards safe, and who is going to be in the room at the same time. And we would discuss what would be happening.”

4.2 THEME 2: SOCIAL INTERACTION

This project found the primary source of information need satisfaction was the experienced worker. Course tutors were used as a secondary source. The relationship between the student and the experienced worker enabled the student to access the workplace information landscape (Lloyd, 2010).

The social interactions between of the experienced worker and the student enables the student to access the community of practice information (Hepworth & Walton, 2009). When social interactions failed, the information need was not meet, and the student was unable to construct meaning (Crotty, 1998) from the technical terms, trade specific slang, or jargon language of the community of practice (Lloyd, 2010). The findings indicate a potential library service to host a trades technical and jargon dictionary:

“Getting an explanation, the slang term and technical language. Both sorts of language. It always happens. They just say something, and I don’t know what they are talking about.”

All students reported being made aware that asking questions of the experienced worker (Billett, 2001), is the correct information behaviour to improve their information literacy (Lloyd, 2010). Family and friends are non-members of the community of practice. This may account for why the social influence of family and friends upon student information behaviour (Laplante, 2014) was superseded by the social influence of experienced worker:

“He said, just come and ask me. He would rather that, than just sit there. And an hour later I had done no work.”

No students reported using Facebook, texting friends or asking family to help them with their work experience information needs. One student did however, say that tutors were consulted as a secondary source:

“Usually I asked the work mate. Most questions, answered on job. But I talked to the tutors. For getting a different point of view is helpful. Tutors ask: How is it going? Is it all good? What work have you done? Most of the time, they are interested.”

4.2.1 Constructivism analysis

The fulfilment of information needs can be viewed through the constructivism lens (Kollöffel, 2012), where demonstrations and engaging in work related activities (Billett, 2010) helps the individual construct new meaning and knowledge (Cooperstein & Kocevar-Weidinger, 2004).

The four constructivism principles have been used as the unit of analysis for the subthemes. The logical titles for four subthemes was taken from each principle. Student quotes have been used to speak for each subtheme.

4.2.1.1 Abstract concepts

This is constructivism principle 1: This principle can be used to analyse abstract concepts acquiring meaning through association with concrete tasks, where the student acquires workplace information literacy (Lloyd, 2010) through performing a concrete task (Cooperstein & Kocevar-Weidinger, 2004). Most students reported that performing work activities satisfied their information needs:

“I didn’t know the formula of where the lights were supposed to go. There is a whole bunch of maths and equations, but I didn’t know the formula ..., so I had to get the foreman in to help me.”

“He would ask me questions trying to make me think, he said just think about it. He gave me a clue to help me think.”

One student related that the learner’s information need to construct their own meaning was satisfied when abstract concepts were visually demonstrated (Cooperstein & Kocevar-Weidinger, 2004):

“Do the demo, so they could watch. And they came away with new knowledge. So, they had to see, and get a full demo, to even understand what was going to happen.”

Students anecdotally reported it was through association with concrete tasks that satisfied their information needs (Threeton, Walter, Clark, and Ewing, 2011

It opened up how I think. It is totally different. It really helped a lot, it’s the only way for me to learn. To make a few mistakes, then I can learn.

4.2.1.2 Experiential and previous knowledge

This is constructivism principal 2: This principle can be used to analyse situations where new information is built on previous knowledge, and experience is transformed into new knowledge (Kollöffel, 2012). All students reported on the value of experience for constructing new knowledge:

“Now I know what that looks like, and I would be able to explain it. From being frustrated, and him explaining. To trying to see if I could figure myself, how to do it, and him trying to get me to learn through doing”

“You can learn from the school, but I was so happy I was able to apply from the course, to do the work experience.”

The student information need to learn through doing was reported by all students as part of their satisfaction with the work experience process. One student reported collateral learning due to workplace exposure (Billett, 2001), but it was the experiential exposure that transformed observed information into information with personal meaning (Cooperstein & Kocevar-Weidinger, 2004):

“It’s likely I would have seen it without personally doing. What I would not have done is the hands on myself. Seeing and doing it myself, it’s never the same in each situation. Something is in the way. It’s always different. But can I put a cable around it? Can I put a cable through it? Hence, the work experience.”

Learning through doing, helped with the construction of conceptual knowledge based upon prior learning:

“We have done it at tech, but that’s on a board, where it’s coming through a little hole. I got a couple wrong and I got some right. I did have to get help to make sure it was right.”

Experience is transferred into new knowledge:

“That I can use power tools better than I thought, and seeing the demo and thinking that is way too rough, but [then finding] I could.”

4.2.1.3 Social interaction

This is constructivism principle 3: This principle can be used to interpret the rapport between student and experienced worker as a support mechanism for the collaboration between student and experienced co-worker. All students experienced social interaction with the experienced worker, and saw the support of the experienced worker (Billett, 2001) as enhancing their information need satisfaction:

“We definitely have some banter, and we make fun of each other’s idea. And in the end, we come together with serious ideas. And sometimes he likes my ideas, as my ideas are young, more modernised, and I think he does appreciate my opinion.”

“He was quite good at working with me. That’s what helped the most.”

“They come along and critique. And, sometimes they let you finish. And then say, how about you try this”

The social interaction of task sharing enables the experienced worker to observe the information gap of the student (Lloyd, 2010):

“He stared. And then he started showing me. Another couple of houses [later]. He watched me. Then I was doing most of the work. And he was explaining. See, hear, watch. Then, I do it.”

All students reported being assigned an experienced worker for answering their information needs (Billett, 2001). Occasionally the more experienced worker forgot that the student had information needs:

“I asked, ‘Is this how you wanted it?’ He admitted he forgets I am basically a trainee apprentice. But he then tells me, do this, and this. And forgets I might not be fully up to speed. Then, he will kinda show me everything.”

All students interviewed reported being encouraged to ask questions to satisfy an information need. All students actively participated in the social interaction of asking questions:

“He loves it when I ask questions; ‘I don’t want you going home thinking, I should have asked a question’. He asked me to ask. So, I am thinking – what can I ask?”

Social interaction for team problem solving, helps the individual construct new knowledge:

“You can’t always drill holes. A bit of problem solving and we work around it. They have the main idea. And I have to do it. Usually, I have to go into the roof.”

When verbal information did not satisfy the information need, a visual demonstration was used, this supports the findings of Threeton, Walter, Clark, and Ewing (2011) that trades students are a diverse group of learners:

“I did it three times, before he finally showed me a path in the end. Every time he came back, he would tell me how to redo it without showing me how. ... He was trying to get me to learn through doing.”

4.2.1.4 Construction of meaning

This is constructivism principle 4: This principle can be used to interpret the construction of meaning through association with concrete tasks. All students reported on the value of performing concrete tasks for satisfying their information needs:

“I learnt on the job, I was given a demo, instruction, and shown the proper way of using it. And they showed me the do’s, and don’t on the job.”

Knowledge construction (Kollöffel, 2012) was often reported as being due to the kinesthetic learning (Rayner, 2001), and experiential learning (Threeton, Walter, Clark, & Ewing, 2011):

“Getting the experience. And hands on. And getting used to it. The training over and over. It’s the practical side, getting drilled into it. I know how to do this, now.”

Students often reported attempting cognitive problem solving, with some experienced worker support, which demonstrates that social interaction contributes to construction of meaning:

“He explained what to look for but I hadn’t seen it before ... so I found it and I had to look at it, and figure it out from what he had told me ... It’s different from course. A bit of problem solving.”

4.2 THEME 2: TECHNOLOGY

The use of mobile technology for mobile learning, was demonstrated when used to satisfy work experience information needs (Douch, Savill-Smith, Parker & Attewell, 2010). Mobile searching demonstrates the use of information skills (Lloyd, 2010) to satisfy an information need for connecting the name of a workplace tool with a picture (Kollöffel, 2012).

Some students reported that their use of mobile technology seems to come to them more naturally (Prensky, 2001) compared with the more experienced workers:

"It's not in their nature to think like that, we have grown up with phones."

One student used cell phone photos, for social interaction with family (Laplante, 2014), to satisfy the information needs of a mother asking after the student work experience day:

"I like to show my Mum. When she says 'What did you, really, do today?'"

While some trades students appeared very proficient with mobile technology (Chan, 2011), not all members of this generation were equally proficient. One student, thought in terms of a tangible artefact to represent the information landscape (Hepworth & Walton, 2009; Lloyd, 2010):

"One time I was asked to go to the plumbing shop to buy some parts, I had a problem, he didn't give me the old pipe that I was to buy. So, I drove back to the client's house to ask the plumber. As it was hard for me to explain. It was hard for me to explain to the supplier what I wanted. During the course, I was not exposed to that part of the plumbing supplies, so I needed an example."

Another student reported mobile information behaviour using Google to satisfy a visual information need, and retrieve a picture of a work tool, while on the move (Kaikkonen, 2008) getting a tool from the work van:

"Just to make sure. I used my phone, to Google what the tool looked like."

4.2.1 Mobile social interaction

Constructivism principle 3: This principle can be used to interpret mobile technology as a work tool that supports workplace social interaction:

“If there are builders on site and it’s really noisy, and I can’t hear him, so I just call him. Or I can put it on speaker, and use the phone like a walkie talkie. And just put it down, on loud speaker”

4.2.2 Mobile information searching

Constructivism principle 3 and 4: These principles can be used to interpret the use of mobile technology to support mobile learning, construct new knowledge associated with a concrete problem, and to enhance the collaboration between student and experienced co-worker.

“We were both on this task. I was watching a YouTube video. I looked in the booklet menu and it had a YouTube link. So, I looked on that. And he was talking to the fireplace company. We were both trying to suss it out for ages, and the whole time it wasn’t our fault. It was just a faulty fireplace.”

4.2.3 Mobile photo

Constructivism principal 2: This principle can be used to analyse this situation where an observed workplace activity (Billett, 2001) of mobile behaviour (Prensky, 2001) was transferred to a new situation, (Kollöffel, 2012). The student observed the mobile technology behaviour of another trade worker on a worksite:

“It was a good idea to use a phone to take a photo. I saw a phone being used by a worker on another job. They would put their phone up into the roof like a periscope, and take a photo.”

Then transferred that behaviour to a new situation:

“The first time I did it, he thought I was just using my phone to take photos... I just said wait there and took a phone over to take the photo of the wires. Then passed the phone through the hole so he could have a look.”

4.2.4 Mobile photo construction of meaning

Constructivism principle 4: This principle can be used to analyse the use of mobile technology to preserve visual information of a construction, so that the student can reverse construct an electrical termination after it has been dismantled. Students use their mobile phones to take photos as a visual record of everyday situations to satisfy their information need:

“I think I use it for every day stuff. Take photo of correct termination. So, take a photo. So there, this is the correct termination.”

4.2.5 Mobile photo reconstruction

Constructivism principal 2: This principle can be used to analyse situation where an workplace activity (Billett, 2001) involved mobile behaviour (Prensky, 2001) that was transferred to a new situation, (Kollöffel, 2012). The use of mobile technology was used to preserve information, transfer the information to a similar situation and contribute to the community of practice. A month later when the experienced worker and the student were on a similar job:

“He didn’t know how to do the correct termination and reassemble the job. I said hold up. I think I took another picture a month ago, I showed him, he said ‘yeah’. “

5. CHAPTER FIVE: DISCUSSION

This chapter discusses how the research questions were answered by the findings of this research project. Part of the research question involves how the community of practice uses social interaction between experienced worker and student to place an old head on young shoulders. The other part of the research question concerns how students have a piece of the information, like the name of a YouTube video, or a work tool name, and uses mobile technology to fill in the missing piece of a puzzle that satisfies the information gap.

5.1 CONTEXT:

What is the context of the learning process for the trades student whilst on work experience?

The information landscape of the workplace is context specific. The trades student context is an information need for practical and relevant information. The learning process is guided by the information literacy of the experienced worker. The workplace activities and workplace tools support the experiential learning process of the student to learn through doing, to attach new information to prior information, and contribute to conceptual knowledge development.

5.2 INFORMATION NEED:

What sorts of information needs do young adult students have while on work experience?

The experienced worker identifies the information need of the student by observing the students performance of work activities. The workplace and the work activities fulfil the information needs students have while on work experience which are: learning through doing, acquiring kinesthetic hands on knowledge, and experiential learning activities that leads to the construction of new knowledge base on prior learning.

5.3 INFORMATION NEED FULFILLED

How the students satisfy those information needs while on work experience?

Asking questions of the experienced worker is how the information needs of students are satisfied through social interaction. Some students used their mobile information skills to search for work related YouTube information and Google images of work tools.

5.4 LIBRARY SERVICE

How can library resources and services support the information seeking needs of trades students during work experience?

The findings suggest there is potential for a library service to host a virtual reality environment (Hauptman, & Cohen, 2011) of vocational work tools. This would support the student information need in object literacy. Hence, students on work experience at a distance from their course tutors and the guidance of the experienced worker, can satisfy their information need for a visual of what a tool looks like, when only in possession of auditory information.

The research findings also suggest a further library service to help the student navigate the information landscape of the workplace. A vocational trades dictionary would help fill the information gap of trades students, and assist them in engaging with the community of practice jargon, slang and technical terminology.

6. CHAPTER SIX: CONCLUSION

The conclusion for this research project was that social interaction with the experienced worker satisfied the higher information needs of the students while on work experience, and that Google was used to satisfy the lower information needs of the students, for example to connect the name of a workplace tool with a visual picture of what that tool looks like.

This research found that the use of mobile technology by students in the workplace: contributes to satisfying the students individual information needs, contributes to satisfying the information needs of the experienced worker, contributes to the information literacy of the workplace, contributes to the community of practice, and most important of all contributes to student participation in the information society.

6.1 TRADES DICTIONARY

A library supported trades dictionary would help students satisfy their information needs concerning technical and jargon terminology that is part of the community of practice, which students are seeking entry to.

6.2 VIRTUAL REALITY RESOUCCE

A library supported virtual reality resource would also be of value to help students visually identify workplace tools of the trade.

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8. APPENDICES

Appendix A: INTERVIEW SCHEDULE

Questions for semi structured interview.

The interview questions to be read out to the interviewee at the start of the interview as an introduction to the interview process.

1. Think about a time when you were given a new task?
2. Think about a time when you had a bit of trouble and needed help to finish the job?
3. Did you ever have a problem that you and a work buddy had to work out together?
4. Can you think of a time when you had a task that was too hard for you to do alone? And you could not finish without help?
5. Can you think of a time when a task, or just an expectation, was not clearly explained to you?
6. Can you give an example of a MOB on the job.

Interview schedule

Interview process use safe factual questions first. Feeling questions last.

Includes additional probing questions if required

Did you get an orientation/ introduction to the work place?

- Who showed you around?
- Was it clearly explained to you what was expected, if not— how did you figure it out / understand workplace requirements
- Did you get given/ assigned a work buddy/ supervisor?

1. Think about a time when you were given a new task?

- Can you tell me about this task you were given?
- Were you assigned a mentor, work buddy?
- Do you get shown what to do?
- Was enough time set aside to help you with questions?

- If not, did a mentor have lots of other jobs/ roles/demands?
- What was it that helped (or didn't help you) complete this new task?
- Why do you think recall this task so well?
- If you have a question or need more information, what happens?
- If you have a problem, who do you ask?(family/ friends/ cell ph/face book)
- What did someone do that was really helpful/ not so helpful

2. Think about a time when you had a bit of trouble and needed help to finish the job?

- Can you give me some details about this task?
- Were you assigned a mentor, work buddy?
- Do you get shown what to do?
- Was enough time set aside to help you with questions? - If not, did a mentor have lots of other jobs/ roles/demands?
- What was it that helped (or didn't help you) complete this new task?
- Who did you ask? (family/ friends/ cell ph/face book) - What did someone do that was really helpful/ not so helpful
- Why do you think recall this task so well?

3. Did you ever have a problem that required you and a work buddy had to work out together?

- Can you give me some details about this task?
- Do you get shown what to do?
- Was enough time set aside to help you with questions? - If not, did a mentor have lots of other jobs/ roles/demands?
- What was it that helped (or didn't help you) complete this new task?

- What did someone do that was really helpful/ not so helpful
- Why do you think recall this task so well?

Further probing questions if needed:

- Do you feel a rapport was achieved at the workplace, how important is rapport, does it help your learning.
- Did it help having a mentor who is more experienced workmate, but not the boss.
- Do you think your work buddy was able to get the best out of you?
- What is the best way to get the most out of your performance?
- Would you consider letting them know what works for you?

4. Can you think of a time when you were give a task that was too hard for you to do alone? And you could not finish without help?

- Can you give me some details about this task?
- Do you get shown what to do?
- Was enough time set aside to help you with questions? - If not, did a mentor have lots of other jobs/ roles/demands?
- What was it that helped (or didn't help you) complete this new task?
- What did someone do that was really helpful/ not so helpful
- Why do you think recall this task so well?

Further probing questions if needed:

- *Was the task at the right level for you to learn?*
- *This is about being placed in the deep end by mentor/ lack of support, and it is about being in a situation/ assigned a task that didn't go too well.*
- *The apprentice is not at fault, if the person who was meant to help, but did not build the relationship properly.*

5. Can you think of an example of when something (maybe be a task, or just an expectation) was not clearly explained to you.

- Can you give me some details about this task?
- This is about social expectations
- Do you get shown what to do?
- Was enough time set aside to help you with questions? - If not, did a mentor have lots of other jobs/ roles/demands?
- What was it that helped (or didn't help you) complete this new task?
- What did someone do that was really helpful/ not so helpful?
- Would you ever use a smart phone to look for information?
- Would you ever use a friend/ class mate/ tutor/ Facebook contact for useful work place for information?
- Why do you think recall this task so well?
- Do you feel you could have had better have access to important technical knowledge?

Quick fire closing questions after rapport has been build and to give interviewee some positive feedback.

- What was the best thing you found out about the work experience?
- What was the best thing you found out about yourself?
- What do you now know about the trade that you didn't know before?
- What do you now know about yourself that you like?
- Was a work buddy helpful?
- What about an example of a time when they were at the right place at the right time?
- And a time when it was not helpful to have a work buddy?

And that's a wrap !!! Thank you so much for helping with your expertise and insights, I am very grateful.

Appendix B: HEC SUBMISSION DECLINED



12 October 2016

Alice Pitt
Whitireia Library
Whitireia Porirua Campus

Dear Alice

Thank you for your application to the Ethics and Research Committee.

Your project entitled "*What are the information needs of trades students while on work experience?*" (RP138-2016) was considered by the Ethics and Research Committee at their recent meeting on Wednesday 05 October 2016.

The Ethics and Research Committee has deferred your research project and would welcome a resubmission with the inclusion of a research project outline, including aim, background, methods and analysis.

With thanks and best wishes.

Yours sincerely



Dr Ruth Anderson
Director Academic

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Appendix C: HEC SUBMISSION APPROVED



09 November 2016

Alice Pitt
Whitireia Library
Whitireia Porirua Campus

Dear Alice

Thank you for your application to the Ethics and Research Committee.

Your project entitled "*What are the Information Needs of Trades Students While on Work Experience?*" (RP138-2016) was considered by the Ethics and Research Committee at their recent meeting on Wednesday 02 November 2016.

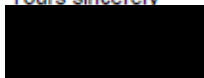
I am delighted to inform you that your research project was approved by the Ethics and Research Committee.

The Committee suggests you may wish to engage across both institutions by contacting Graham Carson, Head of School, Engineering and Built Environment, WelTec. As this proposal has been given Ethics approval, no further approval will be required when engaging with WelTec students.

In addition, The Committee noted the significant progress that has been made since the original proposal was submitted. This is now a very readable and clear proposal with a good methodology and framework.

With thanks and best wishes.

Yours sincerely



Dr Ruth Anderson
Director Academic

cc Mary Weddell, Manager, Poutama Student Support Services

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Appendix D: APPROVAL TO ENTER TRADES CAMPUS

Kia ora Alice

I am happy to support your research project which includes interviewing up to six Trades' students at our Mohuia Campus. Your contact to arrange these interviews will be the Programme Manager, Graham Garthwaite.

Good luck for your research.

Nāku na

Helen



Helen Gardiner
Dean
Faculty of Trades and Services
Te Kura Ringa Rehe



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Appendix E: PARTICIPANT INFORMATION SHEET

Participant Information Sheet

Research Project Title: What are the information needs of trades students while on work experience.

Researcher: Alice Pitt, School of Information Management, Victoria University of Wellington

As part of the completion of my Masters of Information Studies, this study is designed to find out what information needs students have while on work placement, and how they go about seeking that information. Victoria University requires, and has granted, approval from the School's Human Ethics Committee.

I am inviting automotive or electrical students to participate in this research. Participants will be asked to take part in a forty five minute interview. Permission will be asked to record the interview, and a transcript of the interview will be offered to participants for checking. All participants will be over 18 years of age.

Your participation is voluntary. You do not have to answer any question that makes you feel uncomfortable. Your answers will have no effect on your coursework or grades. You will not be identified personally in any written report produced as a result of this research, including possible publication in academic conferences and journals. All material collected will be kept confidential, and will be viewed only by myself and my supervisor Dr Philip Calvert, Senior Lecturer.

The research project will be submitted for marking to the School of Information Management, and subsequently deposited in the University Library. Should any participant wish to withdraw from the project, they may do so until 20 December and the data collected up to that point will be destroyed. All data collected from participants will be destroyed within 2 years after the completion of the project.

If you have any questions or would like to receive further information about the project, please contact me at pittalic@myvuw.ac.nz or telephone [REDACTED], or you may contact my supervisor Philip Calvert (Philip.Calvert@vuw.ac.nz), ph: 04 463-6629.

Should you have any ethical concerns about the research they should contact Dr Susan Corbett (Susan.Corbett@vuw.ac.nz), ph: 04 463 5480, Chair of the Human Ethics Committee, Victoria university.

This research project has been approved by the Faculty of Education Human Ethics Subcommittee under delegated authority from the Victoria University Human Ethics Committee. Approval number 0000023550.

Alice Pitt

Appendix F: PARTICIPANT CONSENT FORM

Participant Consent Form

Research Project Title: What are the information needs of trades students while on work experience.

**Researcher: Alice Pitt, School of Information Management,
Victoria University of Wellington**

I have been given and have understood an explanation of this research project. I have had an opportunity to ask questions and have them answered to my satisfaction.

I understand that I may withdraw myself (or any information I have provided) from this project, without having to give reasons, by e-mailing pittalic@myvuw.ac.nz by the 20th December 2016

I understand that any information I provide will be kept confidential to the researcher and their supervisor, the published results will not use my name, and that no opinions will be attributed to me in any way that will identify me. I understand that the data I provide will not be used for any other purpose or released to others.

I understand that, if this interview is audio recorded, the recording and transcripts of the interviews will be erased within 2 years after the conclusion of the project. Furthermore, I will have an opportunity to check the transcripts of the interview.

Please indicate (by ticking the boxes below) which of the following apply:

- I would like to receive a summary of the results of this research when it is completed.
- I agree to this interview being audio recorded.
- I am over 18 yr old.

Signed:

Name of participant:

Date:

Total word count 11, 105 including references and appendix

Alice Ching Wen Pitt 198100960