

ALBERTA APPRENTICE ONLINE CLASS REGISTRATION:

Assessing Student Experience Using the Technology Acceptance Model

By

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Disclaimer

The views expressed in this capstone project are those of the author and do not reflect the views of the Northern Alberta Institute of Technology, the University of Alberta, the Faculty of Extension, or the Communications and Technology Graduate Program.

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Abstract

Background: Student experience has traditionally been understood in relation to instructional models; that is, how students experience classes. Recently, however, there has been a growing interest in student experience with services. One of these services is student enrolment / registration. Apprenticeship and Industry Training (AIT) is a sector within Apprentice and Student Aid, which is a Division within the Alberta Ministry of Advanced Education. AIT and technical training providers have recently launched an online registration platform for Apprenticeship students. New applicants and existing clients can now apply to AIT programs or register for a set of class dates for their period online through their MyTradesecrets portal.

Objectives: While the MyTradesecrets platform has already been deemed successful, this project seeks to better understand how apprentices experience the process of using it to register online. The apprentice perception of usefulness and ease of using the platform based on the Technology Acceptance Model (TAM) demonstrates how they come to accept and use the portal. By understanding the experience of registering online for class, continuous improvements can be made to further support students and provide the highest quality of service to the industry.

Method: A review of existing literature was conducted to connect various ideas and themes which may impact the student experience. Themes from the literature review related to the behaviour of accepting technology based on ease-of-use and usefulness. The Technology Acceptance Model guided the creation of interview questions, which revolved around ease-of-use and usefulness. I then recruited five plumber / gasfitter (B) apprentices to participate in this project through interviews about the portal registration process. The participants first navigated the registration process on MyTradesecrets, then drew the process they took, and each completed a semi-structured interview. Data was gathered on their experience, including how easy they

found the platform to use, the elements that affected the ease-of-use, their perception of the platform's usefulness, and their previous experience.

Results: Nearly all participants found the online registration platform was useful. A strong positive correlation was found between perceived usefulness and participant likelihood to use the technology again. No direct relationship appeared between the ease-of-use and likelihood to use again, although participants did comment on their desire for improvements to make the process easier. The most surprising result was a strong correlation between ease-of-use and participant self-confidence with the online platform. Based on their interview data, apprentices who experienced any level of difficulty with registering, also referred to their own skill and ability in relation to their aptitude to register themselves online.

Conclusions: The new online registration application launched by AIT in consultation with Alberta training providers, industry, organizations and government has already been proven to be successful. Improvements can still be made, however, to further support apprenticeship students and improve their experience with the platform. Except for 1 negative case, participants in this study agreed they would use the online enrolment system again and that the online platform is useful. However, participants were split in their experience in terms of how easy they found it to use. The process could be made easier, according to participants who encountered some difficulty by improving some features of design and text. By clearly mapping out the process with the use of minimal text containing less technical terminology, and using bright colours and shapes, enrolling online could be made easier. One of the most interesting findings was that participants who encountered any level of difficulty with enrolling also expressed self-doubt in their ability to use the online platform. This may be an area for future research, to better

understand how student experience with online platforms affects student confidence, and if it impacts their future actions or behaviours.

Keywords: Technology Acceptance Model, Student Experience, Apprenticeship, Registration, Class Enrolment, Service Design, Online Text Comprehension, Service Blueprinting, Post-Secondary, Technical Training

ALBERTA APPRENTICE ONLINE CLASS REGISTRATION:

Assessing Student Experience Using the Technology Acceptance Model

Introduction

Apprenticeship and Industry Training (AIT) is a sector within Apprentice and Student Aid, a Division within the Alberta Ministry of Advanced Education. AIT consults with the Alberta Apprenticeship and Industry Training Board, industry, employer and employee organizations, technical training providers / post-secondary institutions and provincial and federal government (personal communication, July 31, 2017). Working with these groups, AIT supports the development, maintenance and delivery of designated trade and occupation programs (personal communication, July 31, 2017). Designated trades are careers that are regulated by the provincial *Apprenticeship and Industry Training Act* and have an apprenticeship program for either a compulsory or optional certification (Tradesecrets, n.d.).

AIT has traditionally provided information through their Trade Secrets website. This application also provides a portal for clients called MyTradesecrets, which apprentices use to check their examination dates and grades, and to access information and examination practice resources.

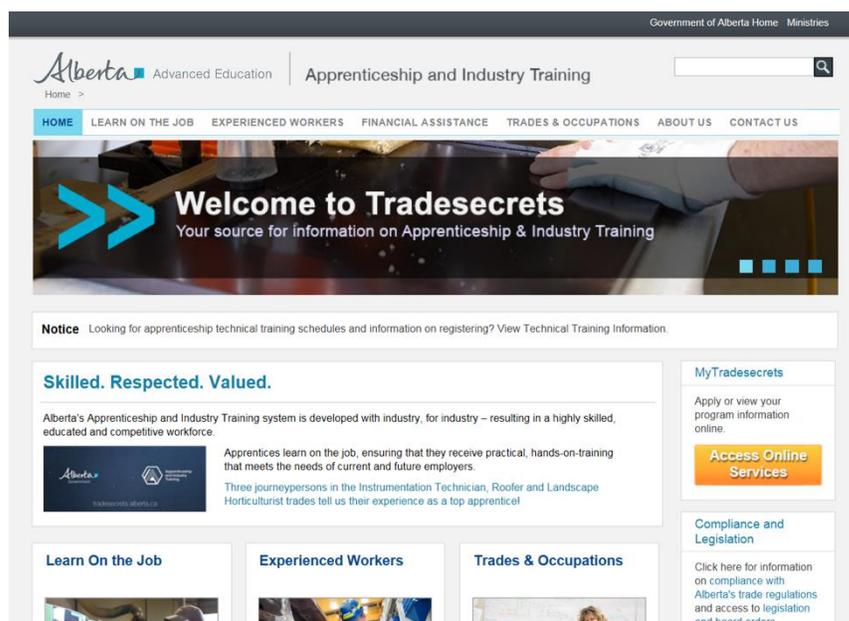


Figure 1. Mytradesecrets homepage

Recently, AIT launched an online application platform through MyTradesecrets. This new platform was designed to increase the timelines of program applications and registration, to ensure completeness of applications, to meet security standards, and to improve service quality. For students to complete an

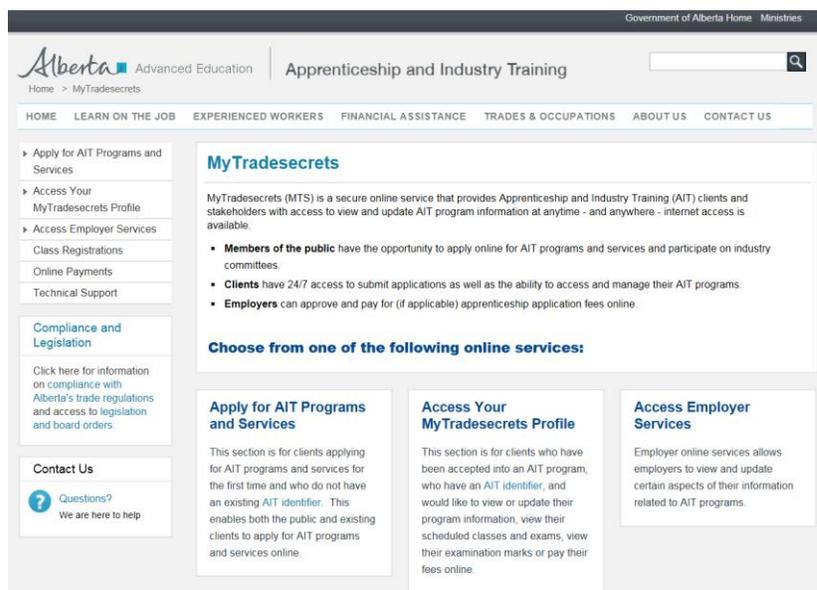


Figure 2. Mytradesecrets access to online services

apprenticeship program they typically complete a certain number of hours of on-the-job training, then complete several weeks of formal education at a technical training provider / post-secondary institution. This is typically repeated 1 to 4 times. The completion of one of these cycles is referred to as a period, which then indicates the ‘year’ of an apprentice (i.e. 1st year apprentice, 2nd year apprentice, etc.).

Historically, apprentices could register for each period of formal training in Alberta by going to a training provider (such as NAIT) and registering in person, or by calling the institution and registering by phone. Employers also have the ability to register apprentices into technical training programs. The launch of the online registration application enables clients to apply for a new apprenticeship program online, or to register online for a period in their apprenticeship if they have met pre-requisites to do so. The paperless, online system is more environmentally friendly by reducing paper consumption, increases accessibility by using an online application, improves form completion by preventing incomplete forms from being submitted, and protects

against credit card fraud and identity theft by adhering to Payment Card Industry (PCI) Data Security Standard. In addition, the online application enables AIT employees to provide higher quality service to clients by accessing information faster, as information is populated in AIT's database from the submitted applications (personal communication, July 31, 2017). Overall, the online platform has enabled AIT to be more effective and provide a higher quality of service to industry partners (personal communication, July 31, 2017).

While the platform has been a success to date for industry partners, the government, and post-secondary training providers, I am interested in how students themselves perceive the service. Based on the Technology Acceptance Model (TAM), perceived ease-of-use and usefulness may affect the likelihood that apprentices will use, or continue to use the new application. To continue providing quality service to students, and improve services in the future, understanding how apprentices experience the online platform is important in shaping the future of this service. This project seeks to understand how apprentices experience the new online registration process, the factors that affect their experience, and if / how their experience affects their likelihood to use the online platform in the future.

While this project adds to existing literature on the Technology Acceptance Model, as well as student service design, it also begins a conversation about services for apprenticeship students in Canada.

Literature Review

The student experience has predominantly been understood as how students are being instructed and how instructional models enhance learning. Non-traditional components of the student experience are now beginning to garner attention among researchers. For example, student services have garnered attention in recent years. Service design has been used to create seamless service to improve student experience, by reducing barriers, improving accessibility and providing a positive experience. One form of student services is online enrolment in courses and training programs. Online enrolment has been available to students across Canada in most institutions, but apprenticeship students have only recently gained access to an online registration platform through Alberta and Industry Training (AIT). AIT has launched this online application with the goal of improving service quality, parallel to changes in other post-secondary service design.

My research seeks to understand the perceptions, expectations, and experiences that apprentices have in relation to this new online application system. To better understand the elements, ideas, and theories which may affect apprentices as a demographic, or student experience, I explored existing research on this topic. My searches included the relationship of behaviours, perceptions, expectations, technology adoption, demographics, and comprehension.

Methodology

When I first began to examine literature related to my research question, I quickly realized that the existing literature on student enrolment, apprenticeship experience, and student experience was limited. This led me to conduct an interpretive/configurative review of literature to better understand the themes and elements that may influence student experience and technology adoption. The methodology I used to conduct this review is described using the 8 steps of the STARLITE framework: sampling strategy, type of study, approaches, range of years, limits, inclusion and exclusions, terms used, and electronic sources (Booth, 2006).

Search Strategy

To ensure a broad range of information, I examined multiple types of qualitative and quantitative studies. Previously conducted literature reviews, focus group studies, experiments, conference proceedings and doctoral dissertations were included in the types of studies examined for my literature review. In addition to electronic subject searches (Booth, 2016), I examined the literature and sources of the literature I had found. This citation snowballing led me to identify directly and indirectly related themes and theories to aid in broadening the knowledge of my research. This literature ranged from 1975 to 2016. While I sought more recent literature, I found a great deal of behavioural research built on existing research, making the initial research essential to my review.

Through a preliminary search of literature, I found that existing literature on online enrolment or similar topics were often connected to other theories such as text comprehension, or service design. Based on this finding, I purposefully sampled literature which included the terms enrolment and apprenticeship, or similar terms. As the search results started becoming saturated with repeating literature, I diversified my search fields to include more variation sampling methods that encompass indirectly related themes. The themes of my sample expanded to include text, online, and hyperlink comprehension, behaviour models and different types of student demographics. I extended the scope of my sample to ensure I had captured an adequate range of themes which could impact student experience. I increased the scope of literature being reviewed to broaden the understanding of how apprentices experience an online enrolment system by understanding multiple possible factors or influences.

My library search process began with the examination of Apprenticeship best-practices, text comprehension, barriers to comprehension such as English as a second language or High School language levels, student expectations, student needs, and relevant enrolment research

from other Canadian post-secondary institutions and polytechnics, and apprentice goals, expectations and enrolment. To find research related to these areas, I used several keywords relevant to each area. As I conducted my research and found other keywords which I had not previously identified, I noted them and added them to my keyword search. I began with three themes: Apprenticeships, student experience and service design, and text comprehension. I examined the literature until I reached saturation with these three themes, or until I began finding the same articles for different search words or in the references of the literature. Upon doing this I identified two additional themes which emerge in my research – technology acceptance and general behaviour, which will be discussed later in my review of the literature. Upon finding literature, I entered them into a spreadsheet and assessed its relevance based on pre-determined eligibility criteria.

Search Criteria

When curating my collection of literature, I determined eligibility of whether to include certain sources based on geographic location of where the research was based. Canada was the highest eligibility, followed by the United States; this is because apprenticeship models are most similar in these regions. I also prioritized the demographic of which the research was conducted, where apprentices and students were the most sought; and the type of institution, primarily trades, vocational schools, polytechnics, apprenticeships trainers such as trade unions, followed by colleges and universities. The type of students and service design varies between the different types of educational institutions. I placed each piece of literature into a matrix sorted by a relevance scale of 1-3, 1 being least relevant, 3 being most relevant. Literature that met enough criteria to receive a 2-3 was included, and literature that received a 1 was considered, but not always included. Literature that did not meet eligibility on my relevance scale was not included in the literature review. In order of significance on the scale was: Location, Institution/

Organization, Theme, Method, Theory, Timeliness, Publisher/author (based on their relevance or contribution to the themes I had identified).

A common theme found in apprenticeship program research compares genders in apprenticeships, in terms of wage, employment, advancement and population. I have purposefully excluded this theme in my literature review, as my goal is to understand the general experience of students, and to broaden the discussion on apprenticeships and the apprenticeship student experience. I included age demographics in my research, however, as this characteristic may affect the likelihood for an apprentice to adopt the online enrolment system, as well as the perception of it. A comparison of demographics may be an area for further consideration.

Data Extraction and Organization

Sources were found primarily using the University of Alberta Library's subscription to the World Higher Education Database, Education Index Retrospective (EBSCO), Academic Search Complete, and ERIC in 2016. In my search for literature, terms I looked for included a combination of education, higher-education, process design, service design, online enrolment, text comprehension, conceptualization, student centered, trades, hypertext, 1) Student, 2) Apprentice, 3) Experience, 4) Expectation, 5) Perception (1:3,4,5 combinations) and (2:3,4,5 combinations).

Search Limitations

The review of existing literature was limited by the scope of apprenticeship literature available. Very little literature exists on apprenticeship in general, and most of the literature examines the technical aspect of apprenticeship training, or the value as an instructional method. Even less literature exists on the experiences of apprentices in their formal technical training or the processes they undergo to obtain their trade certificates. Considering the types of literature

that exist on apprenticeships, this literature was included to provide context, background and scope of apprenticeships.

Given the growth of the themes that are relevant to this study, such as student-centered learning, much of literature reviewed in these emerging areas are limited to the past 10 years. As these ideas continue to develop, more literature may be presented. Other themes reviewed, such as text comprehension or the Technology Acceptance Model (TAM) are well reviewed and have already developed in literature. Literature reviewed in these areas date back as far as 1967.

Themes

My literature search began with general apprenticeship information to understand how much and what kind of literature existed on Apprenticeships in Canada. Using ‘service design’, ‘student comprehension’ and ‘student satisfaction’ as main points of interest for my research. Five main themes emerged: Apprenticeship, text and online hyperlink comprehension, general human behaviour itself and as it relates to technology adoption and service design to improve experience.

Apprenticeships

When entering the labour market, most jobs provide apprenticeship type training in some form or another. Formal trades apprenticeships which include a mandatory combination of work-experience and post-secondary technical training are gaining more attention however, due to their ability to reduce educational gaps, reduce skills shortages, and enabling mobility through inter-provincial credential recognition for skilled trades (Gunderson & Krashinsky, 2015). In most cases, 80% of an apprenticeship is completed through on-the-job training, while the remaining 20% is completed through technical training institutions such as trade unions, trade schools, or polytechnics (Tradesecrets, n.d.). For some students who may otherwise drop-out of

post-secondary education, apprenticeships are a viable pathway to a career in their chosen field. This is important as “the positive correlation between education and earnings is one of the most well-established relationships in social science” (Ferrer & Riddell, 2002, p. 12). Using Canada Census data from 1995, Ferrer and Riddell demonstrate that someone with a trades certificate and high school diploma have higher annual earning potential than someone with only a high school diploma (2002). According to Ferrer & Riddell, “the marginal effect of a college diploma or trades certificate is 5 per cent for men and 3 per cent for women” (Ferrer & Riddell, 2002, p. 23).

A Red Seal is a seal of excellence for tradespeople that can only be attained through formal apprenticeship. This enables worker mobility across provinces as tradespeople who hold recognized certifications can easily move from one province to another for work. According to Apprenticeship and Industry Training’s website, Tradesecrets: “Tradespeople who hold a valid certificate with a Red Seal can work anywhere in Canada, including Alberta, without further training or examination” (n.d.). According to Gunderson & Krashinsky, apprenticeship certifications enable workers through interprovincial training to move from labour markets or regions with declining sectors to those with growing sectors, thereby reducing unemployment and reducing skills shortages simultaneously (2015).

The economic and personal benefits of apprenticeship are evident, but sometimes need reinforcing. Attending formal training for several weeks or months means apprentices must forgo their regular wage for the time they are completing their formal training portions of their apprenticeship. While government financial aid is available to ease the financial strain associated with attending training, the perceived loss can be discouraging. Registration and enrolment incentives have been created to increase interest in apprenticeships, and reduce perceived loss associated with completing training such as incentive grants (Wyman, 2015).

Although there are many positive outcomes of apprenticeship training, Bilginsoy finds that the United States has a very high rate of attrition in apprenticeship programs (2003). The consequences of this may include shortages of skilled labour, higher unemployment rates and lower wage-earning potential of apprentices who have not completed their apprenticeship. These consequences are widely discussed in the literature, “little, however, is known about the factors that influence entry into apprenticeships, successful completion of training and post-apprenticeship trajectories” (Lehmann, Taylor & Hamm, 2015, p. 45). Differences in access and range of available post-secondary education options and economic conditions of students in these programs impact the choice and outcomes of apprenticeship programs according to Lehmann et. al (2015). To address these challenges Lehmann goes on to call for the creation of “conditions for positive learning experiences and rewarding work independent of local employment conditions; it is not enough to simply attract more youth into trades” (2015, p. 61).

In Alberta, the provincial government is working to address some of these challenges. To improve the experience, Alberta Apprenticeship and Industry training and educational partners have launched an online enrolment system. Stoner, Bird & Gaal (2011) suggest that re-thinking the traditional apprenticeship and increasing accessibility to apprenticeships by taking advantage of technology may aid in changing the perceptions of apprenticeships. Requiring a substantial amount of classroom training can be inhibiting for apprentices who live in rural or remote communities, and are unable to attend classes or seek help registering regularly due to accessibility (Gunderson & Krashinsky, 2016). Stoner, et. al (2011) discuss distance learning and online classes. What is not discussed, however, is the experience that apprentices have with these technologies, or their perception of them.

Student Experience and Service Design

An important component in increasing accessibility of post-secondary training options to apprentices is the online self-enrolment or registration system that Alberta Apprenticeship and Industry Training and training providers has launched. The next aspect of developing this service however, is understanding how apprentices use this system, and what their experience is like. Service design is defined as: “how the user interfaces with the service and how such interfaces impact on the user’s perception of service quality and the user’s experience” (Baranova, Morrison, & Mutton, 2011, p. 123). One common tool used to better understand service design is called service blueprinting. Service blueprinting examines services from the interface used to the back end to understand how students perceive services which are often fragmented system of processes (Bitner, Ostrom, Burkhard, 2012). The ideal for service blueprinting is to create a seamless process where each part of the student experience is aligned to deliver a positive experience. This is useful for comparative consideration, in terms of what students should experience, what they expect to experience, and what they do experience with online enrolment. It is important to learn how students experience these services because it can impact the reputation of the institution, the likelihood of the student recommending the institution, and potentially even the students own success in their academic career (Douglas, 2008). Service blueprinting comes down to understanding what the student experiences and how the student experiences service, to inform design changes intended to improve student experience. Radnor, Osborne, Kinder & Mutton use service blueprinting in a co-creation method, using feedback from students and staff to align sometimes fragmented services (2014). While much of the literature on service blueprinting concentrates on a wide scope of typically in-person services, the same method can be applied to understanding online services.

Apprenticeship programs share the same constructivism theory as student centered learning models. Apprenticeships enable academic learning through practicing curriculum, practicing pedagogies, and personal epistemologies (Billett, 2016). While many educators use an inductive approach to student-centred learning by trying to garner engagement, apprentices are immersed in their education as they are taught for a period of time in an institutional setting, but are continuously practicing and being challenged on their knowledge in their jobs. According to Marsh (2004) in Billett, this immersive form training is “consistent with the original meaning of the word curriculum: the pathway of experiences to progress along” (2016, p. 620). Furthermore, Billett defines pedagogy as the “means by which experiences can be enriched or augmented to promote particular kinds of learning” (2016, p. 621), a practice that is often witness in apprenticeships as journeypersons use narratives, analogies or metaphors to explain and help their apprentices understand. Finally, “personal epistemologies are bases of individuals’ active knowing, engaging and learning” according to Billett (2016, p. 622), learning occurs through how a learner engages with their material. This is a necessary practice in apprenticeship programs as much of an apprentice’s knowledge is acquired by watching, internalizing, and practicing. Enabling apprentices to draw on this experience by enrolling themselves online aligns with the technology enhanced student centred learning model.

While Kang et. al find that student centred learning has a positive correlation with outcomes such as motivation and satisfaction, which may lend to hypothesizing that apprenticeship and online enrolment would share these outcomes because they share the student-centered learning approach.

However, this may not be the case. Souse, Soares, Coelho, Faria & Marques identify that students often feel displaced in their transition to post-secondary (2015). To overcome this, students may seek supports to increase their well-being. If service design lends to shifting

enrolment and other supports to an online environment to improve accessibility and the student experience, the discomfort with transitioning to post-secondary may affect the experience of the student without the support of instructions and guidance traditionally offered with in-person enrolment services. Wang (2014) similarly identifies the immediacy, clarity and style of instruction and how these factors affect the relationships students develop with their teachers. To better understand factors of how a student experiences the online process, behaviour, technology acceptance, the students' comfort with what is expected of them, and how well they understand how to complete the process can be examined.

Characteristics of Technology Acceptance

The most common characteristics found in the Technology Acceptance Model which predict the user acceptance of information technology include perceived usefulness and perceived ease of use (Adams, Nelson & Todd, 1992; Davis, 1989; Al-Gahtani, 1998; Ramayah & Ignatius, 2005; Saeed & Abdinnour-Helm, n.d.). According to these authors, the correlations between ease of use and usefulness are significantly correlated to the frequency of use. Based on this, apprentices will be more likely to use the online registration system if it is easy to use, and if they find it useful. Rodriguez Jaime's research is perhaps the most comparable to that of examining how apprentices experience the online enrolment system, by examining student acceptance of online enrolment processes (2013). The results of this study are positive, as the findings indicate that students perceive online enrolment to be useful in improving their productivity and enrolment process performance, and would be faster than in enrolling in person (Rodriguez Jamie, 2013). The type of enrolment system used in this study, however, is different than the one used by apprentices in Alberta, and the student participant demographics are different, which can greatly affect the perceived ease of use. Nonetheless, this study is an important model for my own work.

Agarwal & Prasad (1997) advance the TAM theory in their research by examining how these characteristics affect user acceptance, and how external pressure and social norms affect technology acceptance. Their study finds that previously hypothesized characteristics such as perceived usefulness and ease of use affect acceptance. They also find that external pressure versus autonomy or voluntariness also affects acceptance, and that pressure to use positively impacts acceptance. This is interesting as it relates to how apprentices perceive online self-enrolment, and how the perception of their colleagues, or peers, may affect adoption or experience. Although social norms and social pressure may increase the adoption rate of technology, Malhotra & Galletta find that adoption due to social pressure is also associated with negative feelings (1999). This research suggests that social norms may increase adoption of the online enrolment system, but may also negatively impact how apprentices experience the platform.

In addition to social acceptance, support may also affect how apprentices experience online enrolment based on the Technology Acceptance Model (TAM) extension of Amoako-Gyampah & Salam (2004). Amoako-Gyampah & Salam evaluate the impact of a shared belief construct, training and communication in relation to perceived use and perceived usefulness. Their study finds that training and communication affect the ease of use and perceived usefulness, providing support for implementation of training and communication interventions (2004). The support apprentices have, including communication and training in the new online enrollment system, may affect their experience and acceptance of the online system. This is reinforced by Kirshner, Saldivar & Tracy who find that first generation high school students cite support from staff as a key component in their experience with navigating educational systems (2011).

Student Behaviour in Accepting or Rejecting Online Enrolment

One factor which may determine how likely an apprentice is to adopt the online system to register for their next training intake, and affect their experience with the online platform is whether or not they have previously enrolled in person. “Frequently performed behavior is often a matter of habit, thereby establishing a boundary condition for the applicability of attitude” according to Aarts, Verplanken, & Van Knippenberg (1998, p. 1355). While Aarts et. al examine mode of transportation, Barnes, Myles & Stack more similarly examine habits using technology, but find similar results which suggest that once behaviour is repeated, it is less inclined to change. This may suggest that the online enrolment experience held by first year apprentices enrolling for the first time and third or fourth year apprentices who have enrolled in-person multiple times may be different due to the habits that have or have not yet formed. This may be similar to the Hawthorne effect identified by Merrier & Dirks in their evaluation of preferred communication methods with students, as students prefer the method they are most familiar with (1997).

If an apprentice had previously enrolled in-person may not be the only behavioural factor affecting their likelihood to adopt the online platform. Peter & Tarpey Sr. explain that technology is more likely to be adopted, and behaviour is more likely to change if it minimizes perceived loss, which may be the time it takes an apprentice to go to a training institution or call and wait in queue, if it maximizes perceived gain which may be registering in classes, and if it maximizes perceived net gain, which may be getting into the online system before someone else does, and securing a seat in the most desirable intake (1975). According to Peter & Tarpey Sr., perceived risk was the most dominant factor, which may affect the likelihood that an apprentice will use the online platform and their experience in doing so based on their comfort with technology, as apprentices with low comfort may perceive the risk of registering incorrectly too

high. Analyzing how likely individuals are to switch from shopping at stores to shopping online, Lu, Cao, Wang & Yang find that innovativeness in the new technology and relative benefit, similar to perceived usefulness used in the technology acceptance model, have a positive effect on switching platforms (2010). If apprentices find the online platform innovative and that it possesses a positive benefit, they may be more inclined to use it.

Online Design and Text Comprehension

Ease of use is a characteristic in predicting the acceptance of technology, making comprehension important to understand the factors that could affect ease of use with online enrolment. One demographic that stands out in this analysis is an aging workforce. Barth (2000) suggests that workers, governments, and employers all need to contribute to developing the skills of mid or late career workers to support growing skills needs of a global economy. The level of comfort this led late career workers to have with technology may impact their experience with online self-enrolment. Structural hindrances, stereotypes and attitudes are factors that may contribute to digital disengagement experienced by an older workforce (Lagac, Charmakeh, Zaky, & Frizly, 2016).

Issues that may be shared among apprentices include text comprehension, navigation comprehension, and hyperlink comprehension. Kintsh & Van Dijk propose a model of text comprehension and production which suggests that text is understood on a micro and macro level (1978). If the text contained the words dog, cat, bird, and hamster, macro rules would establish an assumption that the topic involves pets. During online enrolment, it can be expected based off this model that apprentices will relate the instructions to prior knowledge to understand what they are reading and follow-through with the process. Lowrance & Moulaison recognize that text is often skimmed, and study whether a readability application would improve comprehension (2014). The results of their study demonstrate little difference in comprehension, but find that

participants prefer the readability version (Lowrance & Moulaison, 2014). Lowrance & Moulaison do not explore how this affects the readers experience in depth, and may be an area for consideration. Comprehension of texts is even harder for students whose second language is English. Simplified texts are positively correlated to comprehension for students who speak English as a second or third language (Crossley, Yang & McNamara, 2014). The experience apprentices have with online enrolment may be affected by the simplicity of the language used, especially for students whose first language is not English.

A unique aspect of comprehension to online processes is that an online system, like the online enrolment system, consists mainly of hyperlinks. Strategies used for reading hard-copies are not sufficient for reading and comprehending online texts (Coiro, 2011). The comprehension of navigation and hyperlinks is an additional consideration to ease of use as it makes reading non-linear. Amadiou, Tricot & Marine establish comprehension, achieving outcomes, coherence and feelings of disorientation as measurements in determining how prior knowledge and concept map structure affect comprehension (2010). As one might expect, many of these measurements were positively correlated with prior knowledge. Similar results are found in research, concluding that participants who are more familiar with a specific type of text, such as hypertext, and specific structures of text, such as linear, hierarchal hypertext and mixed hypertext, can follow non-linear paths quicker than those who are less familiar (Burin, Barreyro, Saux & Irrazabal, 2015; Calisir & Gurel, 2003). This would suggest that similar to re-occurring behaviour, once apprentices use the online enrolment system and understand how to navigate it, their experience would be affected based on comprehension, coherence and reduced feelings of disorientation.

Other factors examined in comprehending hypertext include 'hints' and content representation devices. De Jong & van der Hulst studied whether graphical overviews or

highlighted sections as ‘hints’ would improve non-linear hypertexts, and found that these ‘hints’ did not affect the recall of participants (2002). Potelle and Rouet assess how content representation devices such as embedded links and menus effect comprehension. Their findings suggest there is no correlation between content representation and comprehension of high prior knowledge students (2003).

Discussion of the Literature

There are many gaps in the research in terms of students’ experience with online enrolment, and other online systems used in post-secondary administration, apprenticeship experience, service design for online services and comprehension of online processes.

The area that is most concerned with student experience is service design, in terms of understanding how to improve services for students to aid in supporting overall student success. One tool that may be useful in finding gaps or services which need to be further developed is service blueprinting. Most of the literature in this area focuses on student engagement, and the student’s experience while in class. Very little research exists on the administrative services students use, such as enrolment, adding or dropping classes, and academic appeals processes to name a few. Even less literature exists on services for apprenticeship students.

The new online enrolment system is more inclined to be used is apprentices find the technology easy to use, and useful. As social norms develop, they may increase the likelihood that apprentices will be more inclined to use the online platform, but apprentices who use it due to social pressure may have negative experience in doing so. Apprentices who have registered for classes in person or over the phone previously may be less likely to adopt the online system or may have negative perceptions of it because of habits they have formed by enrolling in person or over the phone. Difficulties in comprehending text, hyperlinks, or technology itself may

decrease the perceived ease of use of the new online enrolment system, and affect how students experience using the system.

Research Design and Methodology

The student experience has predominantly been understood through quality of instruction and by the instructional models being used to enhance learning. Non-traditional components of the student experience are now beginning to garner attention, including services and the design of those services. Very little research exists on the administrative services students use, such as enrolment, class scheduling, and appeals processes. Even less literature examining the apprentice experience exists. These students may be affected by service design; “little, however, is known about the factors that influence entry into apprenticeships, successful completion of training and post-apprenticeship trajectories” (Lehmann, Taylor & Hamm, 2015, p. 45). Stoner, Bird & Gaal suggest that re-thinking the traditional apprenticeship and increasing accessibility to apprenticeships by taking advantage of technology may aid in changing the perceptions of apprenticeships (2011).

In Alberta, the provincial government and educational providers are working to address some of these challenges. To improve the experience and accessibility, AIT and technical training institutions have launched an online self-registration system. Through AIT’s existing web application called trade secrets, apprentices can now access a training provider’s online class registration system through their MyTradesecrets account. MyTradesecrets is the online portal through which apprentices access their apprenticeship information including grades, AIT examination practice questions, and technical training dates. “Currently, [only] NAIT and Medicine Hat College provide online class registration” According to the Government of Alberta MyTradesecrets (MTS) Class Registrations webpage, “AIT is working with other training providers to implement their online services over the next year” (2007 – 2017). The design of this platform enhances services quality. Flexible enrolment, increased data accuracy, reduced application time and the addition of a step-by-step walkthrough to already existing information on

the website supports a more accessible online environment to improve the student experience. The discomfort with transitioning to a post-secondary program may affect the experience of the student without the support of face-to-face instructions and guidance traditionally offered with in-person enrolment services. The experience that students have with the online platform may affect their decision to use it in the future based on the Technology Acceptance Model (de Vaus, 2001). This study seeks to understand the perceptions, expectations, and experiences that apprentices have in relation to this new online enrolment system. Through a combination of visual activities and interviews, my research asks: how do apprentices perceive and understand the process of enrolment?

Research Design

Of the themes that developed from my literature review – Apprenticeships, student experience and service design, technology acceptance, understanding behavioural changes, and text comprehension – I decided to focus on the technology acceptance model as it affects student experience and service design (de Vaus, 2001). The enrolment platform is the common variable in the research. All the participants will be asked to use and comment on their experience with the online enrolment platform (if applicable, compared to previous enrolment methods such as phone, fax, or in-person).

My research is exploratory, as I seek to understand the experience apprentices have with the online self-registration process.

My research involves three stages of data collection:

- 1) Students enrol in an apprenticeship program using the online enrolment platform through their MyTradesecrets portal.

- 2) Students create drawings that visualize the steps in the enrolment process, as they experience and understand it.
- 3) Students complete an interview about their drawings, to learn about their experience and any challenges / barriers / best practices.

Each participant is set-up on a computer, and begin the registration process from a search engine. This enables participants to decide from where to access their portal, and the registration page. Participants are asked to find a specific class name and date range. To do this, the students must find their way from the search engine, to the AIT website where they log-in to their MyTradesecrets account and complete the steps in the registration process by finding the training institution, period and date range specified to register themselves into. The process is 'completed' upon finding the specified class, as many of the students enroll in May for the following year, and as such, have already registered for their class of choice. To ensure they do not accidentally un-register, or transfer their dates, or withdraw, the participants are monitored through this process.

Sampling Strategy for Study Participants

To recruit my research study participants, I use a combination of purposeful sampling and convenience or volunteer sampling. My sample includes Plumber / Gasfitter (B) apprenticeship students who are registering for technical training in Edmonton, Alberta and either have been, currently are, or will be attending NAIT. Whether they have registered for technical training before – via phone, fax or in-person was not a factor of inclusion or exclusion of the research as I sought to understand the general experience, which may or may not include a comparison to previous enrolment methods for that student. Gender also did not factor into selection as this was an initial and general study to understand experience. Students studying in provinces outside of

Alberta are excluded from this study to maintain reliability of the study by using the same provincial platform.

The main credential sought for this study is experiential relevance (Rudestam, 2007). Participants must be apprenticeship students enrolling into Plumber / Gasfitter (B) at NAIT to provide consistency. Students are asked to follow the online registration process using their MyTradesecrets portal just prior to their interview. A sample of 7 plumber / gasfitter (B) apprenticeship students and prospective students are used in this research. Participants are interviewed until saturation occurs in the data.

Setting

The interviews take place in neutral settings with internet access. This is conducive for the study as it provides protection for both the researcher and participant by being in a public location, and is neutral to reduce the anxiety a participant may have in relation to completing an interview. Allowing the participant to choose the neutral location was a decision to increase participant comfort, and reduce risks such as mental strain or anxiety the participant may feel. The noise may have affected the quality of recording due to excess sound. This risk was reduced prior to the interviews by testing the sound ahead of time and ensuring recording devices are in a good position, and selecting the quietest locations possible, away from as many other people as possible. If a participant was unable to meet due to time or location, accommodations were offered, such as travelling to a town that is closer to the participant or changing the location to one that is more convenient for the participant. Despite accommodations, prospective participant schedules and locations did hinder some participation.

Instrument

My research is cross-sectional, as data is gathered from students using face-to-face semi structured interviews, and the analysis of drawings of the participants' registration process. Having students draw their experience reveals 'nodes', or snapshots of the steps involved in the process, and links between these nodes. Wujec (2013) introduces drawings as a strategy for identifying how people understand a process. He uses the example of drawing toast. People generally start with a loaf of bread, and draw a series of nodes including snapshots of the process such as cutting the bread, putting the bread in the toaster, and spreading butter or jelly on the toast (Wujec, 2013). The areas between the nodes are typically filled with lines, or arrows to guide the audience to the next step, which Wujec identifies as the links (2013). By having students draw their experience of the online enrolment process, the links and nodes that students identify will reveal their level of comprehension of the system. Like service blueprinting, which examines services from the interface used to the back end to understand how students perceive services which are often fragmented system of processes (Bitner, Ostrom, Burkhard, 2012), drawing the process and then reflecting on it during the interview can aid in identifying fragments in the online enrolment process.

The face-to-face interviews require students to reflect on the registration process using their drawings. This enables participants to identify barriers, challenges and best practices as they envision or experienced them. To gather data, participants are asked to report on their experience in an interview. The interview is used to understand how apprentices feel and think about the online self-enrolment process, and their experience using it. Kang et. al (2015) examine student experience with online learning and examine their experience prior to learning (motivation), while learning (teaching presence, learning presence, and telepresence), and after

learning (satisfaction, achievement, transfer, and transformation). The characteristics are identifiable through the registration process, and can be compared to Kang's findings (2015).

Procedures

I conducted my study by completing a review of existing literature focused on student-centered learning, Technology Acceptance Model, text and online text comprehension, apprenticeships, student services and service design and behaviour in accepting change. I then determined my inclusion and exclusion criteria and which factors may exist, but not be relevant to the study and how they may affect reliability. Upon gaining ethics approval from the University of Alberta and NAIT, I then recruited participants through NAIT, and 'snowball sampling', or through word of mouth among participants. Participants chose or agreed upon a neutral location for the interview to take place.

During the interview, participants were asked to:

1. Go through the process of registering online
2. Draw their new understanding of the process after having gone through it
3. Participate in an interview, answering questions about their experience completing the online registration process.
 - a. The process of drawing, registration and interview takes approximately one hour.

The study is expected to be completed by September 2017.

The types of data I collected includes:

- 30 minutes to 1-hour interviews with 5 plumber / gas-fitter (B) participants
- Observations collected during the interviews about the parts of drawings referenced
- Participant drawings of the online registration process

- A sound recording of the interview which is captured on a recorder, and used to transcribe the interview to ensure accuracy of data.

The interview was recorded via:

- Digital audio-recording device
- Notes taken occasionally by the research investigator during the interview.

After the interview, the recording was transcribed and evaluated using post-it notes on a wall to identify categories and themes, which were used to identify a theoretical construct (Auerbach, Silverstein, 2003).

Having participants go through the registration process proved to be challenging, as I wanted to ensure that students did not touch anything within their MyTradesecrets account that would affect their existing registration. Many apprentices register into their classes by the end of May for the upcoming year, so at the time of the interview, most of the apprentices had already registered, or already completed their formal instruction at a training providing institution. These apprentices were not excluded from participating in the research. Instead, participants were instructed to locate a period and date range within the 'Registration' page in MyTradesecrets. Participants were observed when doing this based on their communicated level of comfort. Students were notified when they had to go back a step to prevent them from making any moves that might affect their accounts or existing registration.

Analysis

To analyze the data, I began by pulling relevant text from the interview transcriptions. Using descriptive content analysis, I identified patterns in the student interviews and their drawings. I skimmed through each interview individually, and copied and pasted anything participants said in the interview which seemed significant. As I copied the text from the

interview, I would find text from other interviews which had something in common, and paste them together. I identified the participant when copying and pasting either by their name or an anonymizing number so that I could move the pasted text from one idea to another without losing track of the source of the text. As I began combining similar ideas, themes began to emerge (Auerbach, Silverstein, 2003). The interview questions were developed with the Technology Acceptance Model in mind. Questions were created to determine if the apprentice found the process easy or challenging, useful or ineffective. Interview questions also sought to determine the level of experience participants had with the existing Trade Secrets website, to try and understand if previous experience would affect their experience. Questions were left vague to encourage conversation, and to reduce any biases from the interviewer from affecting the participant insights. Once these were broken out, a correlation is identified between student confidence and their answers in relation to the Technology Acceptance Model. I then put together a spreadsheet with the themes on a horizontal axis and the participants on a vertical axis to compare the responses and indicators of participant confidence.

Interview #	Perceived ease of use	Perceived Usefulness	Prior Knowledge	Likelihood to use again	Comment reflect self-doubt
1	"Easy"	"Pretty useful, yup, it was easy to use."	Yes	"I would go on, and do it online."	None
2	"Easy"	"Pretty useful"		"It'd be my... preferred method."	None
3	"It wasn't easy"	"Do I think registering online is useful? Yes. Do I think it needs to be easier? Yes."	No	"Now that I know where it is... probably pretty likely."	"But, again, my confidence, would be shaken if I was doing this by myself."
4	"Confusing - Like I said, as long as you know what you are looking for, it's easy. But if you don't know, the specifics on what you're looking for, it's very difficult to, locate specific things"	"It's definitely pretty useful"	Unclear	"Most likely. Seems like the best way to go from now on..."	" <u>Could be me</u> , could be the way it's worded, or, situated on the screen?"
5	"excruciating", "frustrating"	"So no, it's not useful"	No	"Not"	"Don't forget I am computer illiterate"

Figure 3. Portion of the participant response chart

One major limitation in my data is that the data does not indicate if student confidence is influenced by the online registration process, or if the level of student confidence influences their experience with registering themselves online. The data is further limited by the lack of research in this area to compare it to. This research is also limited by geography and a small purposeful sample used to increase reliability. Differences are not considered between age groups, gender, or trade. The use of semi-structured interviews helped to probe for more answers from participants, while allowing for positive, negative, and neutral responses and assuring content validity (Merrigan, Huston, Johnston, 2015).

Findings and Analysis

Based on the Technology Acceptance Model (TAM), the experience a student has with a new technology will influence their decision to use it in the future. TAM predicts the likelihood that a user will use a technology based on the perceived usefulness (PU) and perceived ease of use (PEU) of that technology (Davis, 1989). Apprenticeship and Industry Training (AIT) is a sector within Apprentice and Student Aid, a Division within the Alberta Ministry of Advanced Education. In consultation with technical training providers, AIT set out to increase service quality by providing an online apprenticeship registration system. My research seeks to understand how apprentices perceive this new online registration system, and what their experience is like. Understanding the client experience with the system provides a foundation for continuous improvement in providing quality service through service design.

To understand the apprentice registration experience, I recruited 5 participants to interview in my study. To maintain consistency in my sample population, I focused on recruiting students that either were going to register, were registered, or had been registered as a Plumber / Gasfitter (B) student at NAIT. For the study, participants were asked to find the registration page for a specified period, date, and training provider – their starting point was a search engine.

Following this, participants were asked to draw their steps in using the registration system. This was done to understand how they perceived the process of registering through the software.

Finally, participants answered interview questions and discussed their experience.

The findings and analysis of the research are organized in alignment with the Technology Acceptance Model (de Vaus, 2001) to understand how participants experienced online registration, and what kind of affect the experience had on their likelihood to use it again. In the findings and analysis, one of the most interesting relationships that I found was the participant's level of confidence throughout the process, and how it is affected by the process of registering online.

This chapter reviews my analysis of the interview data. The themes that emerged from the analysis of the interviews are: website content and layout, ease of use, perceived usefulness, prior knowledge, likelihood to use again, and confidence. In my discussion of findings, I provide details from the data which highlighted these concepts. The implications and relationships within the data, and between the data and literature is examined. This chapter wraps up by discussing the social implications of the results, and some suggestions for future research in this area.

Organization of Findings



The findings and analysis are structured to align with the Technology Acceptance Model (TAM). I used this framework to aid in understanding how apprentices experience the online registration process, and whether they would use it again. In addition to ease of use and perceived usefulness (Adams, Nelson & Todd, 1992; Davis, 1989; Al-Gahtani, 1998; Ramayah & Ignatius, 2005; Saeed & Abdinnour-Helm, n.d.), prior knowledge was also assessed based on

Aarts, Verplanken, & Van Knippenberg's (1998) finding, that frequently repeated behaviour or action would make apprentices more likely to continue using the online registration platform.

The data I analysed were drawn from two sources: 1) interviews from participants; and 2) their drawings of the online registration process. Although some participants were okay with not being anonymized, all interview data and drawings were anonymized anyway due to the small sample size. This was done to better protect participants who did wish to be anonymized.

Qualitative description is used to examine the data from an exploratory, inductive perspective. I provide details and direct quotes from participants, which reduces the amount of my own interpretation and clearly presents the participants' experience and perceptions (Neergaard et al., 2009). This reinforces the reliability of the research as the data is not highly interpreted, making it replicable between different researchers. The interview questions were left open ended, with the intention of having a conversation. The questions prepared ahead of time were used to assess the students experience in a way that aligned with the Technology Acceptance Model. This was done by either asking or talking about perceived ease of use, usefulness and likelihood to use the online enrolment system again. These questions ensured the interview was replicable and valid, and allowed the experience to be assessed using TAM.

Participant Demographics

Participants were purposefully sampled plumber / gasfitter (B) students who had, were, or planned on attending NAIT in Alberta, to ensure the participants were the target demographic / geographic and ensure validity (Leung, 2015). 5 participants were selected based on their geographical location, trade, and chosen technical training provider.

Process

During the interview, participants were first asked to locate a specified class for a specified date range. The interviewer set the specified class and date range based on the year of the apprentice. All apprentices were asked to locate a Plumber / Gasfitter (B) class for the period they were in (1, 2, 3 or 4), for a date range in the fall of 2018. The date selection was done with the goal of choosing a date on the second page of class selections if no filters were used. The objective of this was to have apprentices locate a date as though the employer had requested them to attend formal training during a specific time. The classes selected were on the second page to see how apprentices would navigate and to see if this extra step of changing pages or setting a filter would impact their experience. Participants were asked to complete the process, starting from a search engine. Participants were monitored to ensure they did not take any actions accidentally, and alter their existing registration or student status.

Once completing this process, participants were then asked to draw a representation of the process they used to register for the class. This activity was followed by a short interview about their experience with the enrolment software, which included questions relevant to TAM. These interviews were recorded and transcribed for further analysis. Upon completing the interviews, transcribed texts and drawings were compared. Any impactful comments were documented on a separate document, and if a concept was repeated, it was organized with similar concepts (Auerbach et al., 2003). These similar concepts became the themes I used to complete my analysis: Website content and layout, ease of use, perceived usefulness, prior knowledge, likelihood to use again, and confidence. In the next section, I discuss these themes, with reference to my research.

Website Content and Layout

When asked what made navigating the website easier or harder, a couple participants reported having no issues at all. However, others reported some content and design features which they found increased the difficulty of navigating the process. Among the design comments, two sub-categories were repeated. Participants found the menus challenging, and desired a clear, bold, and colorful path to guide the registration process. One participant reported:

“I kind of don’t like when a website goes like this either, they go from, a side menu, and then they have top menu as well. One thing would be nice. Especially if you’re older and don’t understand computers” (interview B, 2017).

This indicated that the menu layout could hinder less computer-savvy users. Another student also critiqued the menu, suggesting:

“I guess we need to dumb down the menu choices. You know, you basically put a taskbar across the top – what are you looking for? What do you need? How can we help you? What courses do you want?” (interview D, 2017).

When asked how navigating the process could be made easier, participant B expressed that making “big, bold buttons” would help in navigating the website. When asked what makes would make the buttons “bold”, the participant replied:

“the... colour. I guess. Orange. Letter. I know from taking computer class that your eye is more in... more likely to look at something big and yellow first, over anything else” (interview B, 2017).

In another interview with another participant, they indicated they weren’t always reading the full text. When asked what they use if not the text, the participant similarly responded, “colours on the screen, like box sizes even, you’d think that the bigger box sizes are the ones you

want to look at the most” (interview A, 2017). Repeatedly, participants expressed their desire for colours, boxes, and different sized text to guide them to important content without the need to read. One participant’s example criticized that “there were only a couple of times that I noticed the key phrases that I was looking for, that I went into. They weren’t larger than life to see, it wasn’t easy to see” (interview D, 2017). The drawings further demonstrate layout confusion.

Drawing D illustrates the process as groups of information the participant related as folders as headings, and sub-folders as sub-headings. The participant explains that in each folder, they found that they would click on sub-folders, and once discovering they were in the wrong place, they had to find their way back and try again – this is illustrated by the circles with x’s in them. Then, once finding the correct ‘folder’, they would move down into a sub-folder and start again.

These are characteristics, or factors, which may improve the ease of use by reducing the time and effort used in registering for technical training. This raises a concern, however, of whether apprentices are missing other relevant information because they are not reading and comprehending all the information that is provided to them.

Text Comprehension

Throughout the interview, participants made several comments in reference to the information provided in the online portal. One challenge that participants had with the content was the sheer amount of it on the website. While some students referred to it as ‘general’ information, because it applied so widely, other referred to the content in other ways. Several students referenced the generalization of the information, seeking information that was specific to them and their program of choice. One participant stated: “It’s too general, need to be specific. It should say: Registration for class, plumber, fourth period” (interview E, 2017). Interview

participant E also criticized that “everything had the same titles. NAIT this, NAIT that, NAIT this” (2017). The repetition of words or names decrease the meaningfulness of the text, and as a result creates more content that apprentices do not want to read, as one participant reported: “I’ve more learned to skim things, looking for links, and seeing if that’s what I need, I don’t bother reading” (interview B, 2017). This is reiterated by another participant who cited that there is “lots of little jargon, lots of little words, I don’t want to sit there and read about every single thing just to find the thing I want” (interview D, 2017). The layout and amount of text likely influenced the ease of use for participants, based on their responses.

Participant drawings reveal that most participants knew to go from google to their MyTradesecrets portal, but a few stumbled when locating the registration page. On drawing A, the participant had gone first to the application tab, and when they realized they were in the wrong place, switched to the registration tab.

Ease of Use

Participants were split on their reported ease of use. Participants who found it easy to use reported that “as long as you pretty much knew how to get on to trade secrets, pretty simple to get to it... it doesn’t take much time, it’s... fairly easy to get access to...” and that “it’s a lot easier than having to go down and do it at school or something” (interview C, 2017). While these participants expressed no difficulty with the process, those who did described it as “excruciating”, “confusing”, and just generally “not easy”. Participants were asked what made the process easier or more challenging. Participants mentioned the website content such as wordiness and jargon, and website layout and design such as the lack of colors, size difference and menus to guide them through the process affected their experience.

Perceived Usefulness

Although the perception on how easy the process was for participants was split, most participants indicated that online registration, despite its difficulties, was in fact useful. Participants explained that doing their own registration online is more convenient and allows them to be more autonomous, explaining that it is easier than going down to the school, filling out a paper or having to do anything with physical mail, and that it “allows you to be more independent, not trusting (in) your employer” (interview B, 2017) because you do it yourself and know whether it has been done or not. Only one participant of those interviewed indicated they did not perceive a use for the online process, finding the autonomy which one participant cites as a benefit, instead as a risk because they felt they had increased chances of completing it incorrectly, as opposed to having someone do it either for them or with them.

Overall, most participants agreeing to the usefulness of the online registration system indicates that despite challenges in using the online process, the difficulties did not diminish its usefulness. One participant reinforces this, responding: “Do I think registering online is useful? Yes. Do I think it needs to be easier? Yes” (interview D, 2017).

Prior Knowledge

None of the participants had ever registered themselves online through their MyTradesecrets portal, although most of them had used the website and their portal to retrieve their grades. This was not a great surprise given that the online registration was launched so recently, so many students cited not being aware of it, or being used to another method of registration which reduced or eliminated their motivation to register themselves online.

Likelihood to Use Again

Despite the challenges participants faced, and their lack of prior knowledge of the platform, most participants said they would use the online registration method in following years, one participant even saying, “it’d be my preferred method” (interview B, 2017). Another participant explained that now that they were shown how to do it, they would do it again, stating: “Now that I know where it is... probably pretty likely. But then again, everything you do, repetition makes easier. I’ve done it once, I’ll be able to find out where I need to go next time” (interview D, 2017).

All except one respondent indicated they would likely use the online platform again, one respondent indicated they would rather pay for parking, wait in line, and be registered by someone than use the online system. Based on the consistency of other responses, this may be an outlier case.

Confidence and the Technology Acceptance Model

One interesting, and unexpected, finding in my analysis of the data was how completing this process affected the confidence level of the participant. Participants rarely – if ever – asked me for help during the interview. Even when offered help, most participants would question why they were being helped, and had self-doubt about their own abilities. In interview D, the participant summed up their answers to the question, inspired by the technology acceptance model:

“Do I think registering online is useful? Yes. Do I think it needs to be easier? Yes. Was this faster than me calling? Probably! But, again, my confidence, would be shaken if I was doing this by myself” (interview D, 2017).

This statement points to a deeper issue that relates to student services and service design: the experience the participant had in using the online registration system negatively impacted their self-confidence. This statement caught my attention, and upon reviewing the responses of all participants, an important relationship is found between the answers of other participants, and comments they made which indicate a shaken self-confidence. Participants who easily completed the registration process were confident in their responses, and had little input for improvement. Participants who encountered some degree of difficulty usually didn't report much when directly asked "how did you feel about the process?", but had said something indicating their loss of self-confidence at some other point during the interview. While this statement was the most forthright, each of the participants who found some difficulty blamed themselves. When asked what made it challenge, one participant said, "could be me, could be the way it's worded, or, situated on the screen?" (interview A, 2017). Several participants justified their difficulty through their comfort, experience or skill with computers, saying "don't forget, I am computer illiterate" (interview E, 2017), "It's almost as though you need to be a computer wiz, different language" and "I'm not too big on computers" (interview A, 2017).

The language participants used was also negative and / or self deprecating, stating that they needed "dummy proof tags" and that "it's kind of insulting to say dummy proof, but, and I'm not insinuating to make it juvenile, or make it infinitesimal that you have to" (interview D, 2017). In addition, these participants cited that the process would have taken them longer without help. One participant worried that "we got it done in about 10 minutes, if I was by myself it probably would have taken about 30, easily" (interview D, 2017) and another said, "not to mention, if you weren't here to help me, I'd still be on page 3" (interview E, 2017).

These quotes indicate the level of confidence the participants had in themselves when using the online registration system. At first, I found it difficult to decipher whether the process

had affected the participants' confidence in using the online system, or if the participants' level of confidence affected their experience with registering themselves. One participant response indicates that the process affected them, stating: "But, again, my confidence, would be shaken if I was doing this by myself" (interview D, 2017). In this statement the participant indicates that it is their confidence that is affected by their ability to complete the process. The effect of the ability of apprentices to complete the process on their confidence with their ability to complete the process in the future may be an area for future research. In addition, does this affect the students' autonomy in completing online enrolment themselves again in the future, or other processes involving online platforms?

Key Findings

Interview #	Perceived ease of use	Perceived Usefulness	Prior Knowledge	Likelihood to use again	Comment reflect self-doubt
1	"Easy"	"Pretty useful, yup, it was easy to use."	Yes	"I would go on, and do it online."	None
2	"Easy"	"Pretty useful"		"It'd be my... preferred method."	None
3	"It wasn't easy"	"Do I think registering online is useful? Yes. Do I think it needs to be easier? Yes."	No	"Now that I know where it is... probably pretty likely."	"But, again, my confidence, would be shaken if I was doing this by myself."
4	"Confusing - Like I said, as long as you know what you are looking for, it's easy. But if you don't know, the specifics on what you're looking for, it's very difficult to, locate specific things"	"It's definitely pretty useful"	Unclear	"Most likely. Seems like the best way to go from now on..."	"Could be me, could be the way it's worded, or, situated on the screen?"
5	"excruciating", "frustrating"	"So no, it's not useful"	No	"Not"	"Don't forget I am computer illiterate"

Figure 4. Participant response colour coded responses

While there seemed to be no correlation between the perceived ease of use and usefulness, there was a correlation between perceived usefulness and likelihood to use – indicated in yellow and red. Participants who found the online registration useful, also were likely to use it again, regardless of whether they had previously used the platform or whether

they had difficulty with it. Although the participants did not possess a great deal of prior knowledge of the online registration, nor had they used it before, it did not seem to have any relationship to the participants ease in completing the online registration or their perceived usefulness of online registration. Participants did however, report that now that they have done it once, they would be more likely to use it again. In addition, there was an unexpected correlation between ease of use and participant confidence (indicated in blue and green). All respondents who indicated the process was even slightly difficult, made some indication that they were at fault or the cause of the difficulty as seen with the blue responses.

Discussion

The technology acceptance model is theorized to determine the behaviour of individuals, and whether they are likely to continue using a new technology. In this study, I applied the TAM model to study student experience of an online enrolment system. While the ease of use and usefulness of the online registration are significantly correlated to the frequency of use based on TAM (Adams, et al., 1992), exploring this model also demonstrates a significant correlation between ease of use of that technology platform and student experience. This research reinforces that of Rodriguez Jaime (2013), in that students perceive the online platform to be useful. In addition, comments made by participants such as “now that I know how”, indicate that greater support such as communication and training may improve their experience and increase the likelihood that they would use the online platform, as theorized by Amoako-Gyamph & Salam (2004) and later by Kirshner et al (2011).

Once apprentices have received instruction on how to use the online platform, as suggested by participants in this study, they would be more likely to use the platform in future years due to the establishment of a habit (Aarts et al., 1998). Participants in this study do report that they found the online platform useful, and mention the reduced need to depend on

employers, travel to register, and that it is faster, indicating a reduction in perceived loss, which also would increase the likelihood that participants would use the online registration again according to Peter & Tarpey Sr. (1975). While these positive correlations indicate participants would likely use the platform again, other relationships indicate a need for further development to improve the experience students have when they are using the online platform.

Several elements of the online system are mentioned by several participants as challenges or areas for improvement. These elements can reduce the users understanding and affect their experience with the platform. Participants typically skimmed the information on the AIT website as predicted by Lowrance & Moulaison (2014). When skimming the information, participants report that they skimmed for different coloured, boxed, or hyperlinked information. The navigation of the website using hyperlinks was cited to be both a challenge, and a focus of a recommendation by participants who sought clearer navigation with hyperlinks. This reinforces the disorientation that can be caused by hyperlinks as suggested by Burin et al. (2015).

Even if participants are likely to use the online registration platform again, the service quality may be compromised if the student experience is negative. This research demonstrated that ease of use and student experience were strongly correlated, and the students who encountered some degree of challenge with online registration also made comments of self-doubt, or reduced confidence.

This data is limited by the size and scope of the research, and by the lack of prior research in similar areas, namely apprenticeship student experience, and online enrolment. Knowing that students are affected by their experience registering for their classes personally may indicate a need for future research in the personal outcomes related to service design. If a

negative experience affects a students' confidence, it brings to question how long this affects the student for, and if it impacts future activities such as completing other academic processes.

Recommendations for AIT and Training Providers

This research explores the experience of apprentices with online class registration as an initial start to a conversation about student experience. Both apprentices and post-secondary students have to complete a number of administrative process throughout their academic life. Better understanding how students experience these processes, we can continuously improve the processes to make them easier and help students focus on their subject matter.

Design

Participants in this research cited the website layout and content as hindrances of their understanding. By blueprinting the client experience, and making continuous improvements to content, the process could be made easier. Adding numbers to indicate a flow, colours and size differences to draw attention to important are ways to improve the ease of use according to participants. Designing consistent language that is used across institutions and geography can also increase the users understanding of the process and further enable mobility. The use of words too often was also cited by participants as confusing. Keeping the content of a page to one specific subject or term, and using links to bring users to other areas of interest can reduce wordiness.

Personal Support / Presence

Each participant had a different level of challenge when using the online enrolment platform. By offering personal support on each page of the process, users can be reassured that help is available, no matter what step of the process they are on. A customer service phone number, or online chat can help reduce any feelings of being alone when completing the process

online. An available personal support such as a person to call or chat with enables the improved customer service even further by allowing clients to use an online platform with the comfort of knowing a person is easily accessible.

Feedback

Taking feedback from users can further help identify issues, perceptions, and needs. By taking feedback using surveys or focus groups, services such as online enrolment or registration can continue to be better understood and developed based on user experience.

Recommendations for Future Research

In the National Survey of Student Engagement there are five “benchmarks of effective educational practice: student-faculty interaction, supportive campus environment, enriching educational experiences, level of academic challenge, and active and collaborative learning” (2015). Providing an additional platform for enrollment contributes to their experience and may affect their experience. Future research is recommended to understand how students experience administrative process such as online class registration, and how these experience effect educational practice.

Students who encountered any level of difficulty with completing the online registration process also indicated a doubt in their own abilities. Further research is needed to determine how much a user’s confidence is affected by their level of challenge with using online enrolment, and whether this affects their likelihood to use that technology again, as well as similar technologies. For example, if a student tries registering for class online, and feels challenged by the process, will they register for class online again? Does it matter if they succeed in enrolling for class in the end or if they need to seek assistance? Does this experience affect their likelihood to use other online processes such as ordering books online, registering for orientation and extra-

curricular activities, or paying tuition online? Does the worry or self-doubt from this process also affect their confidence in unrelated areas such as their studies? These questions demand further research in the experience students have from the moment they decide to attend post-secondary.

Whether the student is an apprentice, a part-time or full-time student, or an international student, providing quality service and support to support the success of the student is a priority of training providers and AIT. To ensure students are supported and continue to improve services for them, it is important for further research to be conducted to understand how they can be supported in each stage of their academic career, from the initial decision to study a chosen field, to their program completion.

Conclusion

The research revealed that design and text impact the ease participants had with navigating the online registration process. Participants skimmed the web content seeking colours, boxes, and menus to guide them through the process. Participants reported that wordiness was distracting, and confusing. The repetition of words that participants did not find meaningful were frustrating because participants would stop reading, and click on hyperlinked text they anticipated would be relevant. These factors impact the student ease of using the online platform.

While following the process may not have been easy, participants still understood the value in the process, and all but one participants indicated they would use it again in following years. This reinforces the positive correlation between perceived usefulness and frequency of use. Also impacting the frequency of use, however, participants reported that having completed the process now, would make it easier for them to use it again in the future. Since none of the participants had previously used their MyTradesecrets portal to register for class, the impact of prior knowledge versus the impact of perceived usefulness cannot be assessed.

The other correlation found in my analysis of the data that was unexpected, was that participants who reported challenges with using the online platform for registering for class blamed themselves, and indicated their confidence was affected by using the platform. This demonstrates the importance of service design to support a positive, quality service to students, as their experience may affect the students personally in terms of their confidence in using an online platform. Increasing the ease of use can aid in improving student experience by guiding participants through the process using colors, boxing important information, and creating menus that cohesively guide students, according to this study.

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Appendix A – Information Letter and Consent Form

INFORMATION LETTER and CONSENT FORM

Working Title of Study:

How an Apprentice Experiences Online Enrolment in Alberta

Research Investigator:

KAYLEE BANKY-SWORD
University of Alberta

Supervisor:

Dr. Rob McMahon
University of Alberta

Background

- You are being asked to participate in this study because you are a plumber / gasfitter (B) apprentice, and your experience with registering for technical training through the MyTradesecrets website is important for us to improve the enrolment process for others. Your opinions and experience will help us understand the challenges of the website enrolment process, and can help inform future efforts to make online registration easier and more accessible.
- The results of this study will be used in a research project in support of the research investigator's Master of Arts in Communications and Technology degree from the University of Alberta.
- This research will also be shared with the Ministry of Advanced Education in Government of Alberta and/ or the Government of Canada, and post-secondary institutions and technical training institutions (ie. NAIT)
- NAIT has approved this research for one year, expiring May 9, 2018.

Purpose

- The purpose of this research is to better understand the experience that apprentices have with online registration systems. It is hoped this research can support governments and training-providers in developing easy to use, accessible, and useful platforms to improve apprentice student experience in enrolment.

Study Procedures

- For this research, you will be asked to:
 1. Go through the process of registering online – If you have already registered, or do not need to register, you may still go through the process, at the end you will be asked NOT to provide payment or submit the registration, instead, the registration will be discarded.
 2. Draw your understanding of how to register online for technical training. To do this, you will be asked to draw the steps in enrolling online, and identify any times that were easy, difficult, or that you don't understand.

3. Participate in an interview where you will answer questions about how you felt, and what went well or didn't make sense.

You can expect the drawing, registration and interview to take approximately one hour. The study is expected to be completed by September 2017.

- The types of data that may be collected includes:
 - 1 hour interviews of 10 plumber / gasfitter (B) participants
 - Observations collected during the interviews about the parts of drawings referenced
 - The drawings of the online registration process from the interview – these can be copied so you can keep your original upon request and a transcription of the interview.
 - A sound recording of the interview which will be captured on a recorder, and used to transcribe the interview to ensure accuracy of data.
- The interview will be recorded via:
 - Digital audio-recording device
 - Notes taken occasionally by the research investigator during the interview.
- The interview will be held at a time and location which is convenient for you.
- You will have the chance to ask any questions to clarify understanding.
- You can decline to answer any question you wish.
- If needed, the research investigator may email you to follow up with questions arising from the interview and data collection.

Benefits

- You may receive a free beverage and snack during your participation. You will not benefit in any other way from your participation in this study. If you must take a bus to participate in this study, your bus fare will be reimbursed when you provide your stub / ticket validated within an hour of the start or end of the participants meeting / interview. If you drive, parking may be reimbursed up to \$10.00. A public meeting place will be agreed upon that is accessible to the participant.
- I hope that the information we get from doing this study will help us better understand the experience that apprentices have when they register for classes online. We hope that by understanding this, we can further research and improve online registration / enrolment and student / apprentice post-secondary experiences.

Risk

- There may be risks associated to participating in this study that are not known. If we learn anything during the research that may affect your willingness to continue being in the study, we will tell you right away.
- Participating in the research may cost you: vehicle fuel if you decide not to take public transportation, and / or personal time.

Voluntary Participation

- You are under no obligation to participate in this study. The participation is completely voluntary. If you decide to participate in this study, you have no obligation to answer any questions that you do not want to, or do anything that you do not want to do. You are not required to say why you do not want to participate, or if you do participate and choose not to do or answer a question, you do not have to explain why.
- If you agree to be in the study, you can change your mind and withdraw. Participating or withdrawing will not impact your past, current, or future registration in any program. To withdraw, simply write an email, note, letter, or other written communication that says you do not wish to participate in the study, with the date and your signature by July 28, 2017 to bankyswo@ualberta.ca. If you withdraw, we will not use any information from you. The study may mention the number of participants that withdrew, but you will not be personally identified in any way as a participant who withdrew.

Confidentiality & Anonymity

- This research is intended for use in my capstone, a partial component necessary for completion of the Master of Arts in Communication and Technology degree at the University of Alberta. We may use the data we get from this study in future research, but if we do this it will have to be approved by a Research Ethics Board.
- Only the research investigator and the supervisor will be able to access your personal data. Your name will not be associated with any quotation.
- You will not be identified by name in the research, unless you give permission in the consent box below.
- Your name and identifying information will not be included in the transcripts unless you give consent for these to be used.
- You can request a copy of the completed study by checking the box in the consent section below.
- Your drawing may be used in the study, you can select whether you would like it to be anonymized or whether you are okay with being associated with it in the consent box below. This drawing is used to identify points that you had experiences with, to help understand the parts of the process which are very easy or very difficult to understand or use.
- All electronic data will be password-protected and encrypted and stored on the research investigator's computer on a password-protected account.
- Data will be kept in a secure place for a minimum of 5 years following completion of research project. Hard copy data will be kept in a personal safe for this period of time (the drawings), and electronic data will be password protected. Digital data will be destroyed and all paper documents will be shredded in 2022, ensuring privacy and confidentiality. Identifying information will be destroyed immediately following the study by September 1, 2017.

Participant Consent:

I am okay with being identified in this research by:

- Name
- Age
- Gender
- Program
- I would like my drawing to be anonymized (do not include my name or indicate it was mine)
- I am okay with being referenced by name in relation to my drawing
- I do not wish to be personally identified in any way

- I would like to receive a copy of the research report.

PRINT Name of Participant

Date

Participant Signature

Researcher Signature

The plan for this study has been reviewed for its adherence to ethical guidelines and approved by Research Ethics Board *REB 1* at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Research Ethics Office at (780) 492-2615.

This research has been reviewed and approved by the NAIT Research Ethics Board. If you have any questions or concerns about ethical matters, you may contact Dr. Melissa Dobson, Chair of the NAIT Research Ethics Board at REB@nait.ca or 780.378.5185.

Appendix B – Interview Questions

*These interview questions are open-ended prompts to begin, or continue a conversation.

1. How did registering online go?
2. Can you tell me about how you felt when beginning the process?
3. What was easy? Challenging?
4. What made it easy or difficult?
5. When you were enrolling online, did you ever feel confused or like you would have wanted more information or instruction? Can you point to the step in your drawing when you felt this way?
6. Can you tell me how you felt during the registration process?
7. How useful do you think it is?
8. What do you like, or don't you like about the online registration process?
9. If you were / are registering again next year, how likely would you be to do it online?

Appendix C – Student Drawings

A

- 1) Google → Trade Secrets
- 2) Trades & Occupations → Apply for A+T Programs and Services
- 3) ~~Sign in → start new application → pick a trade/Plumber/Gasfitter~~
3) Class Registration - Location - Edmont, Training provider - Newt
Per. end -
- Class start and End Date

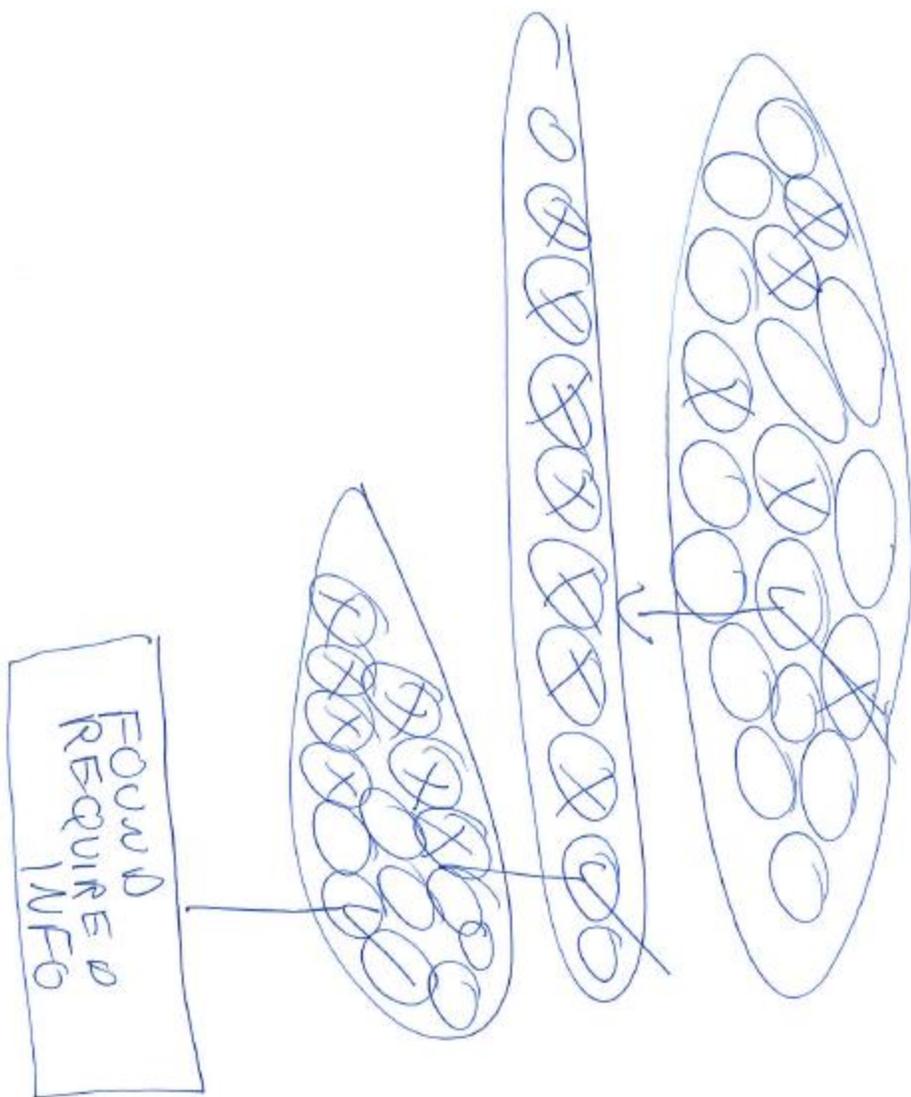
- ① Google mail Plumbing Registration
- ② How to apply
- ③ myraile secrets
- ④ sign in
- ⑤ class registration
- ⑥ register in class
- ⑦ page 2

B

Google → TradeSecrets → Access Your
my trade secrets profile → Sign in →
CLASS Registration → Register in CLASS → next page →

C

D



E
Step 1 Trade Secrets

Step 2 Home.

Step 3 classes.

Step 4 Register

go back access trade secrets file

5 schedule

6 class reg

7 Plumber go

8 next page.