Insights into Why Some Office Administration Students are not Learning to Touch-Type

Peggy Daniel

Central Michigan University

2018

Abstract

In our digital world, being able to touch-type with fluidity is a skill still required by employers. The Davis College Office Administration program, therefore, offers a compulsory keyboarding course, but many students fail to learn to type and do not pass this course. The purpose of this qualitative phenomenological research study was to better understand why students are not doing the touch-typing practice needed to reach the keyboarding speed required to graduate from the Office Administration program at Davis College. This better understanding provided a list of recommendations that faculty, staff, and administration stakeholders can employ to help more students pass their first-year keyboarding course.

Keywords: diligent practice, keyboarding, motivation, self-authorship, self-efficacy, student involvement, touch-typing.

Table of Contents

List of Tables

Chapter 1: The Problem Defined

Most students attend community college with the hope of gaining employment upon graduation in their field of study (Rosenbaum, 2016). In support of this goal, the Ontario Government has instituted a program standards review cycle. This review cycle aims to maintain consistency in province-wide programs, to "ensure graduates have the skills to be flexible and to continue to adapt, and to provide public accountability for the quality and relevance of college programs" (Ministry of Training, Colleges, and Universities, 2015, p. 5). Programs generally have three elements: (a) Vocational Standards that are the vocationally specific learning outcomes in a program with Elements of Performance that address how the Vocational Learning Outcome can be met, (b) Essential Employability Skills that are the Essential Employability Skills outcomes that are based on the Conference Board of Canada's Employability Skills (Government of Canada, 2016), and (c) the General Education requirement.

In 2015, the Office Administration Program underwent a provincial program review that saw many of its Vocational Learning Outcomes updated and the Essential Employability Skills Outcomes added. One element of the program that remained unchanged was the need to teach keyboarding skills. Vocational Learning Outcome seven stated "The graduate has reliably demonstrated the ability to prepare and produce a variety of business documents using available technologies and applying industry standards", with one of its Elements of Performance being to "meet industry standards for keyboarding speed and accuracy" (Ministry of Training, Colleges, and Universities, 2015, p. 13). It was left to each college's Office Administration (OA) faculty members to determine what level of keyboarding speed and accuracy they would require. After consultation with local employers, the OA faculty members at Davis College embraced 35 net words per minute (nwpm) as the keyboarding standard (D'Angelo, 2017). A self-directed, online

keyboarding credit course was developed for first-year, first-semester students. To pass this course, students must produce three timed writings that average 35 nwpm.

Being able to produce the three required timed writings is a challenge for many students. All students are to purchase keyboarding software, recommended by the OA department, that teaches them to touch-type. Touch-typing involves placing the eight fingers on the keyboard home row and typing the keys using the appropriate fingers without looking at one's hands. Touch-typing has been proven to be the fastest and most accurate method of typing (Logan, 2016). It takes time and practice to learn to touch-type. The more students practice, the better they become at typing (Logan G. D., 2009; Keith, 2007). However, many students are not able to master touch-typing and are failing the required keyboarding course. This failure rate has been a concern to students, faculty, staff, and administration.

In this paper, the Statement of Problem, Purpose Statement, and Research Question are presented for a qualitative phenomenological study to understand why students are not doing enough keyboarding practice to become proficient touch-typists. A review of three major motivational theories that could shed light on this problem is provided. Then the significance of the proposed study is presented with a helpful definition of terms and an acknowledgment of the study's potential limitations and delimitations.

Statement of Problem

Many Office Administration students are not earning their first-semester keyboarding course credit. To pass the keyboarding course, students must produce three, five-minute timed writings that average 35 nwpm (D'Angelo, 2017). Some students earn the credit in future semesters. However, some students never earn the credit and are, therefore, not graduating from

the Office Administration program. For example, in the Fall 2013/Winter 2014 academic year, 446 students registered for the first-semester keyboarding course. Of that number, 134 students did not pass the keyboarding course. Of the 134 students, 22 had not passed the keyboarding course near the end of their program and were scrambling to complete the keyboarding requirement to graduate (Davis College, 2014).

Keyboarding is a self-regulated, online course with no assigned instructor. Students are encouraged in the course outline to practice their touch-typing for four to five hours each week (D'Angelo, 2017). Two of those hours are spent completing exercises that are submitted to their Word Concepts course instructor for classwork marks. The other two to three hours are to be spent typing whatever the student feels would be appropriate. The keyboarding course learning platform has suggestions for games, activities, and exercises the students may wish to do. However, the onus is on the student to find text to touch-type for practice. Research has also shown that one's typing abilities get better with practice (Genter, 1983; Typequick, 2017). Students complete all this practice work on their own and come to Davis College at seven pre-determined times during the semester to do timed writings that test and measure their typing speed.

The quality of student practicing also needs to be considered. Students may say that they are doing a lot of practicing, but their perception of time spent on keyboarding may fall short of the encouraged four to five hours per week. Learning to type well is a lot like learning to play a musical instrument. The practice needs to be deliberate and thoughtful—not just randomly typing words and phrases at whatever speed the typist desires. The technical term is "deliberate

practice" (Keith, 2007, p. 135) and it is a method of practice that could be challenging for some students to embrace and maintain.

Since the keyboarding students are doing the lesson work without supervision, it is not possible to monitor or ensure that they are using the touch-type method when practicing. Some students may be practicing keyboarding for hours each week but not with the touch-type method, which could put them at risk of not getting their keyboarding course credit.

With the influx of international students into the College system (Legusov, 2017), there are concerns with this population. There is an unproven faculty concern that many of these students have not used a computer keyboard before. There is also an unproven faculty concern that many of the students do not have ready access to a computer keyboard to practice their touch-typing. Both scenarios could put students at risk of not getting the keyboarding course credit. This population is at risk because in 2016, only 11.6 percent of the international students and 37 percent of the non-international students passed the keyboarding course they were registered in (Davis College, 2016).

When students fail the keyboarding course in semester one, additional work is required by staff and faculty members. Failing students need to be counseled and tracked by faculty members to ensure that opportunities are made available for these students to take timed writing tests in the future. Some students will sign up and retake the keyboarding course, which requires that the College open other sections of the course to accommodate the increase in numbers; however, these students pay no additional fees. Other students will work on their touch-typing on their own and try timed writing tests as they come up in other classes. When these students finally meet the keyboarding benchmark, they must go through the administrative process of

getting an exemption for the keyboarding course. Failing students also have the option to take the keyboarding course in the classroom with an instructor through night school. Getting these students enrolled often involves a coordinated effort with the staff in the Continuing Education department.

From the viewpoint of support staff and faculty, having so many students fail semester one keyboarding adds an extra layer of academic counseling and paperwork.

Keyboarding may also be a reason why students withdraw from the Office Administrative program (Davis College, 2014). If students feel they are not capable of touch-typing, they may withdraw from the program before graduation.

At present, there is limited published research to explain why some students are not practicing sufficiently to become proficient touch-typists.

Purpose Statement

The purpose of this qualitative phenomenological research study is to better understand why students are not doing the touch-typing practice needed to reach the keyboarding speed required to graduate from the Office Administration program.

Research Question

What are Office Administration community college students' perceived reasons for not passing their first-semester keyboarding course?

- What are Office Administration community college students' perceived barriers to learning to touch-type?

- How do Office Administration community college students feel diligent practice impacts learning to touch-type?

Theoretical Framework

Currently, there is limited available research on how to specifically motivate OA students to be successful in their first-semester keyboarding course. However, numerous social science theories can be applied to this problem. For this phenomenological study, three theories were used as a framework for the qualitative research: Albert Bandura's theory of Self-Efficacy, Alexander Astin's theory of Student Involvement, and Marcia Baxter Magolda's theory of Self-Authorship.

Albert Badura's Self-Efficacy model can shed some light on students' reluctance to touch-type. Self-efficacy is a person's perceived capabilities for learning or performing tasks at certain levels of competency (Bandura, 1977). It is the student's perceived capability to perform a task that is important for motivation and not the student's actual capability (Bandura, 1977). An OA student's self-efficacy about touch-typing would be affected by four things: Actual performance (Did the student-produced timed writings meet the 35 nwpm?), Vicarious Experiences (Are the student's friends or those who sit near them meeting the 35 nwpm goal?), Some Types of Social Persuasion (Do the instructor and classmates encourage student success?), and Physiological Levels (Do students suffer from performance anxiety when completing timed writings in class?) (Bandura, 1977). Bandura's Theory of Self-Efficacy can help to explain some reasons why OA students are not being successful in their first-semester keyboarding course.

Alexander Astin's Student Involvement Theory also enhances an understanding of success in the first-semester keyboarding course. Astin's (1984) theory proposes that meaningful

student involvement in a course stimulates increased cognitive ability which can lead to greater learning. Involvement was defined by Astin (1984) as “the amount of physical and psychological energy that the student devotes to the academic experience” (p. 518). Learning to touch-type takes diligent practice (Keith, 2007). A student’s motivation to embrace diligent practicing is better understood through the lens of Astin’s student involvement theory.

A third and final motivational theory that may help explain students’ poor typing skills is Marcia Baxter Magolda’s Theory of Self-Authorship. Self-Authorship is "the internal capacity to define one's beliefs, identity, and social relations" (Baxter Magolda, 2008, p. 270). Students are thought to move from defining themselves by external references to defining themselves by their internal belief system that is flexible and able to change (Baxter Magolda, 2008). Perhaps once students are secure and grounded in who they are, they can understand the need for diligent practice and embrace doing it to improve their keyboarding speeds (Baxter Magolda, 2008).

While the keyboarding speed of 35 nwpm is a requirement of graduation from the OA program, the social science theories of Albert Bandura, Alexander Astin, and Marcia Baxter Magolda help explain why some students do not meet this typing goal in their semester-one keyboarding course. Many researchers have taken the theories of these three social scientists and developed classroom strategies to help elevate students’ levels of self-efficacy. involvement, and self-authorship. Adopting some of these strategies may help OA faculty members to motivate reluctant OA touch-typists to improve their skills.

The Significance of the Study

As a faculty member in the Office Administration program at Davis College, I have seen many students struggle over the years to earn the required 35 nwpm to obtain the keyboarding

course credit. It is disturbing to see students who are competent in so many other ways not be able to graduate from the program because they cannot type quickly and accurately.

Conducting a qualitative study to determine why students are not successful in their keyboarding course is helpful for the Office Administration faculty at Davis College and all colleges in the province. The challenge of getting students to type well is not limited to Davis College. At the 2016 Office Administration Symposium held at Seneca College for Office Administration faculty members from around the province, keyboarding was one of the round-table discussion items (Seneca College OA Faculty, 2016). Faculty members at all the Ontario Colleges were looking for help and guidance on how to motivate students to type well. Armed with the results of this study, faculty members can make changes in the keyboarding course to improve student success. Faculty members will better know how much practice time is required to be successful at keyboarding. Faculty members will also gain insight on how to apply the many published motivational strategies and techniques to help keyboarding students better embrace deliberate touch-typing practicing.

This research study's results also helped to alleviate some of the added work the current high failure rate imposes on faculty members and support staff. The research suggested ways and means to decrease the keyboarding failure rate. A reduced failure rate means support staff and faculty members need to spend less time dealing with students who do not pass the keyboarding course.

Students, faculty members, and support staff in Office Administrative programs across the province will benefit from the data analysis and findings of this proposed qualitative study.

Definition of Terms

35 nwpm

The students best three timed writings are averaged. If that average is 35 net words per minute (nwpm) or greater, the student earns the keyboarding course credit. Students start out with a gross-words-per-minute speed (gwpm), and then errors are subtracted to generate a net-words-per-minute (nwpm) typing rate.

Deliberate practice

Deliberate practice assumes "that an individual's level of performance in a particular domain (typing) is the result of effortful practice activities in which he or she has engaged in over the course of several years with the explicit goal of performance improvement" (Keith, 2007, p. 135).

Essential employability skills

Based on the Conference Board of Canada's Employable Skills (Canada, 2016), these are the Essential Employability Skills learning outcomes which apply to all Ontario community college programs of study.

Timed writing

Students are assigned a passage of text to type in the keyboarding software. Students will type the passage for five minutes, backspacing and correcting any errors they make. If students finish typing the passage, and there is still time on the clock, students will retype the passage as many times as possible until the time runs out. After five minutes, the keyboard locks and a gross-words-per-minute speed (gwpm) is calculated by the software. Two marks are deducted

for each uncorrected error, thereby generating a net speed or net-words-per-minute (nwpm) speed.

Touch-Typing

Touch-typing involves placing your eight fingers on the keyboard home row and typing the keys using the appropriate fingers without looking at your hands.

Vocational standard

Vocationally specific learning outcomes which apply to a program of study in the Ontario college system.

Limitations

As a master's student, the researcher had limited experience conducting qualitative research interviews. The quality of my research is dependent on my skill as a researcher and may be more easily influenced by my personal biases.

Delimitations

Since I am a faculty member at Davis College, only Office Administration students from Davis were interviewed.

For this study, only Office Administrative students who graduated in April 2018 and August 2018 plus third-semester students in the fall 2018 specialization term were interviewed. The input of Office Administration graduates from previous terms and years was beyond the scope of this study.

Chapter 2: Literature Review

For years, science fiction writers described people interacting with computers. There are no mice or keyboards in the future. People talk to the computer as they would speak to a person, and the computer understands everyone. Today, Voice Recognition Software (VRS) like Dragon allows people with physical disabilities who are unable to use a keyboard to speak to a computer and have their words transcribed onto the computer screen (Bailey, 2006). Such software often takes time to master as the user needs to teach the software to "recognize the timbre and phrasing of the user" (Smith, 2006, p. 40). Other people are choosing to use VRS applications to transcribe interviews (Matheson, 2007), make lists for themselves, or compose short documents (O'Neill, 2013). The technology has progressed such that the newly developed Deep Speech voice-recognition software proved to be three times faster at writing short bursts of text than someone using thumbs on a mobile device (Ruan, 2016). However, there are still stumbling blocks on the road to the keyboard-free future. Many business, medical, and legal documents are longer than a few words and need to be either typed or transcribed (Indeed, 2017). VRS still struggles to accommodate people who change their pitch, speed, and tone of voice not to mention accents or lisped speech (Gavaldà, 2015). Although the future may turn out to be keyboard-free, businesses of today still rely on individuals who can type quickly and accurately for document production.

Touch-Typing

Typing quickly and accurately involves touch-typing, the standard method of learning to type. Touch-typing involves placing the eight fingers on the keyboard home row and typing without looking at your hands. Purported to have been invented in 1888 by Frank Edward McGurrin, an American court stenographer (Barnett, 2016), touch-typists know

where the keys are through finger muscle memory (Logan, 2009). Using logarithms established with Fitt's Law (Fitts, 1954) and Hick's Law (Hick, 1952), it has been shown that typists who use this standard touch-type method type faster and more accurately than non-standard typists (Logan, 2016). Learn-to-type textbooks and software teach this standard method of typing.

With the arrival of personal computers in businesses and homes in the early 1980's, not everyone who used them knew how to touch-type (Matthews, 1985). To help with this problem, Mavis Beacon Teaches Typing arrived in stores in 1987, on 5¼ -inch floppy disks, to teach people how to touch-type (Lewis, 1987). Mavis Beacon is now available online to help today's generation of non-typists learn the skill of touch-typing. However, there are now many software applications on the internet that students can use for free or can purchase that will take the student through the touch-typing learning process (Carlson, 2017; Kazantsev, 2017).

Students coming to a college-level Office Administration program could have learned to type using one of these programs, could be self-taught, or may never have typed on a computer keyboard before.

High-School Typing

In the past, students could have learned basic keyboarding skills in grade nine or ten of high school (Ontario Ministry of Education, 1915-1990). The current *Ontario Curriculum, Grades 9 & 10: Business Studies* has an elective course that students could take called Information & Communication Technology (Ministry of Education, 2006). Of the 58 specific expectations for the course, only one of them refers to keyboarding: "demonstrate efficient use of a computer workstation (e.g., proper keyboarding technique, correct posture)" (Ministry of Education, 2006, p. 35). This description does not discuss teaching the students how to touch-

type. A review of the elementary school curricula revealed that typing is not part of the Ontario elementary school program either (Ontario Ministry of Education, 2017). Computers are in high schools and elementary schools, and students are using them (Government of Canada, 2017); however, students receive no formal education on how to touch-type. Older students who are registered in OA may have learned to touch-type in high school. Younger students, though, would learn how to type on their own through internet purchased programs or free keyboarding websites; or students are left to develop a self-created method of typing that works for them.

Learning to Type

Much of the research on how long it takes to learn to type is from the era when keyboarding was taught in school, such as the following: "Professional typists spend about a year learning to type and then accumulate thousands of hours of practice during their working lives" (Genter, 1983, p. 233). The online keyboarding software packages market that they can teach people to type in a shorter timeframe.

> It takes less than 10 hours to learn to type with ten fingers at about 15 words per minute and another 5 hours to reach handwriting speed of about 20 wpm. The best way is to learn over a short period of time. A lesson a day over ten days and a further five days of practice typing is recommended (Typequick Support, 2017).

Both the research of the past (Genter, 1983) and the current keyboarding products (Typequick, 2017) emphasize that typing becomes faster with practice, but the type of practice done is essential.

Diligent Practice

The type of practice students need to embrace is diligent practice. K. Anders Ericsson, Ralf Th. Krampe, and Clemens Tesch-Romer (1993) first labeled this type of practice as "focused and effortful practice activities that are pursued with the explicit goal of performance improvement" (Keith, 2007, p. 136). Deliberate practice “implies that well-defined tasks are practiced at an appropriate level of difficulty and that informative feedback is given to monitor improvement” (Keith, 2007, p. 136). The performance goals could be set by the instructor (extrinsically) or by the students themselves (intrinsically) (Ormrod, 2015).

Most of the deliberate practice research has been applied to learning to play music or chess. In 2007, though, Nina Keith and K. Anders Ericsson published research that showed how deliberate practice could help typing students improve their touch-typing (Keith, 2007). This deliberate practice research builds on earlier studies conducted on professional typists who used manual typewriters. In that era, it was suggested that an effective way to improve one’s typing skills was to push oneself to type beyond a comfortable level for 10 to 15 minutes and then to type drills that would target specific typing problems encountered during those 10 or 15 minutes of practice (Book, 1925). This typing practice would be considered deliberate practice because the typing is not work that students would regularly do on the computer. It is practice done to improve skills. Many of the typing software programs available to students today follow this same methodology of pushing students to type beyond their comfort level for short periods and then doing targeted drills to improve skills (McInnis, 1997).

Keith and Ericsson’s (2007) research also felt that attending a keyboarding class would be worthwhile for learning to touch-type. Students attending a class may have better performance because effective typing techniques are taught and monitored in class. A typing

technique, for example, could be using the correct fingering to press the keys. A typing class is also an excellent opportunity for performance goals to be set and immediate feedback to be given when students are typing drills or timed writings.

However, just because students attend a keyboarding class does not mean that they are participating in deliberate practicing. Students can have different levels of motivation to practice diligently during class time.

Motivating Learning

Following the keyboarding software, students teach themselves how to touch-type. "Learner motivation is a key to effective instruction and is critical to creating a successful online learning environment" (Kim, 2009, p. 317). Students must work through the pre-set lessons and master the skill of touch-typing on their own. By mastery, we mean automaticity. "Automaticity involves a skill that is so overlearned that it becomes almost automatic. Automaticity is central to the work of talented individuals but requires tremendous time to develop and maintain" (Marchant, 1991, p. 13).

As noted earlier, there are many keyboarding software programs from which to choose. Learners can find some of these programs boring or motivationally challenging, especially those with a "low degree of interactivity" (Kim, 2009, p. 317). In contrast, programs that are more motivating to the learner generally provide learners with "authentic and interactive learning activities such as animations and simulations . . . And control over the pace and sequence of instruction" (Kim, 2009, p. 317). Simply put, students may find some keyboarding software programs more motivating to use than others may.

Beyond the software itself, motivation to stick with practicing typing to the automaticity level can be challenging. Generally, motivation is a steady stream of behavior that requires three parts: (a) Goals (b) Energy in pursuit of those goals and (c) Persistence in achieving those goals (Petri, 2013). The goals may be set by the keyboarding software, by the instructor, or by the students themselves. Diligent practice research shows that students need feedback on their goal performance to keep trying to improve (Keith, 2007).

Feedback

To sustain diligent practicing, students need to receive immediate feedback on their typing efforts (Keith, 2007). This need for feedback is one reason why a keyboarding software program can be such a help to students. The software can immediately tell students how well or how poorly they did on a practice set. There have also been many studies on how factors like feedback and rewards can lead to autonomy and self-efficacy and thereby motivation to learn (de Villers-Scheepers, 2011; Gouds, 2000; Spratt, 2002; Tabernero, 2011; Wadhwa, 2015). When designing a keyboarding course, how students will get feedback needs to be considered.

Boredom

Boredom can be one reason why students are not motivated to master touch-typing. The keyboarding software being used could seem boring to students. The repetitive nature of diligent practicing could seem boring to students. Research, though, is also showing that the computer/laptop and ergonomics can create boredom (Szalma, 2014). There is also scholarly work outlining how some people are more predisposed to boredom than others (Eastwood, 2012). Student boredom may be a factor as to why students are reluctant to master touch-typing.

Student Demographics

Student disabilities (Alamri, 2016), cultures (Subramaniam, 2008; Zhao, 2016), or age (Maurer, 2001)can also impact student motivation. When developing a keyboarding course, what will motivate one student may not motivate another. Care must be taken to understand the student demographics and ensure that all students are being motivated to learn.

Stress/Anxiety

Anecdotally, instructors often note that students can touch-type, but as soon as the timed writing or typing passage becomes stressful, students revert to looking at their hands and do not type as effectively and efficiently as they could with touch-typing methods. The term one study used for this phenomenon was melioration. "In the context of typing, melioration implies an intuitive tendency to choose typing strategies that lead to a better immediate performance level than that obtained by touch-typing" (Yechiam, 2003, p. 671). It can be challenging to motivate students to keep working on their touch-typing skills when they want to abandon them for perceived short-term success. Students' oversensitivity to an immediate success can genuinely hamper the transition of practiced touch-typing skills to regular every-day typing (Yechiam, 2003). Acknowledging that students may type differently in different situations, needs to be considered when designing a keyboarding course for students.

A lot of study and research has been done on how to motivate students to complete practice tasks and exercises. Future study of the typing students' demographics and backgrounds and perceived barriers would be needed to determine how best to motivate Office Administration students to touch-type.

Students' Cognitive and Motor Abilities

When it becomes difficult for students to master touch-typing, they often start to wonder if there is something wrong with them that they cannot learn to touch-type. They begin to wonder if there is some cognitive or motor skill deficiency that is working against them. Most of the research in this area is from the manual-typewriter era. Some of this research indicated that there was no relationship between typing skills and cognitive skills (Stedman, 1929). There was also some research that said there was no relationship between typing skills and motor skills (Kitson, 1927; Walker, 1934). Yet on balance, there was also research from that era that showed there was some relationship between motor skills and the ability to touch-type well, especially in beginner typists (Gronert, 1925). Perhaps this relationship was not seen in more proficient typists of the era because the struggling beginner quit typing and searched for other work.

Since the field of social science is always learning more about the world around us and how we interact with it, two researchers in 2007 decided to apply current research skills to this typing concern and see if there was a relationship between cognitive skills or motor skills and keyboarding proficiency. In 2000, Philip Ackerman published a study that showed three separate abilities came into play when someone was learning to acquire a new skill: "general cognitive abilities, perceptual speed, and psychomotor abilities" (Keith, 2007, p. 136). N. Keith and K. Anders Ericsson (2007) designed a study that would apply Ackerman's three abilities to a quantitative study on typing. Their results showed that motor skills and perceptual speed (finger to keyboard character substitution) did not predict a person's typing performance (Keith, 2007). However, the researchers did find that general cognitive abilities could predict typing performance for meaningful typing material but not for nonsense typing material. (Keith, 2007). Here is an interesting interpretation of this finding:

> Based on this finding, it may be speculated that verbal skills and abilities contributed to this advantage rather than general cognitive abilities per se. It seems plausible that verbal skills help to decode the text to be copy typed and/or to activate available motor programs for well-known words, resulting in a speed advantage for meaningful but not for nonsense material (Keith, 2007, p. 141).

This interpretation dovetails nicely with older and more current studies that say that spelling ability is related to keyboarding ability (Limp, 1929; Cohen, 1990). There is more to learning how to touch-type, than just placing the correct fingers on the correct keys.

Online Courses

Although Canadian statistics are currently not available, the National Centre for Education Statistics in America reports in 2014 that over 25 percent of all students in post-secondary institutions took at least one online course per year (National Center for Education Statistics, 2014) with some studies showing the American rates as high as 33.5 percent (Allen, 2012). However, in some parts of America, the dropout rate for online courses has reached as high as 50 percent (Angelino, 2007). Although Davis College is in Ontario, it can be inferred that Ontario has a similarly high student online enrollment and failure rate.

Research has shown that many factors can be attributed to online course dropout rates. Some of these factors are students' lack of self-regulatory skills (Lee, 2013), students' inability to maintain active engagement in the course content (Bennett, 2008), students' low self-regulatory skills (Lee, 2011), and students' perceived lack of autonomy in the course (Song, 2004). To combat these factors noted above, three guidelines were developed that proved helpful. (a) Provide Choices. When given a list of activities to choose from, students tended to

put more time and effort into the activities (Lee, 2015). (b) Provide Rationale. If students could not choose from a list of activities and had to do required activities, the students performed better when they understood and endorsed the reasons for the assignment (Lee, 2015). (c) Provide opportunities for personalization. Students felt autonomous and were more successful when they thought that the instructor respected and accepted their interests and allowed students to incorporate their interests into assignments (Lee, 2015).

However, there are still other things that can be done to ensure the online learning experience is as positive as possible for students. For example, research has shown that if the online course itself is set up to be easy for students to navigate and to find information, students will rate that course as a better overall experience (Simunich, 2015). If students cannot find course components or have trouble finding exercises and assignments, the students will get frustrated which leads to decreased motivation and lower self-efficacy. Self-efficacy and motivation have both been shown to influence students' success in online courses (Irizarry, 2002).

Research has shown that successful students "who register for online/web-assisted courses have high levels of motivation and self-efficacy" (Nonis, 2012, p. 6). A problem arises, though, when students cannot choose between a face-to-face course and an online course.

> Students who feel that they have no other choice (but to take the online course) do not do as well in terms of learning and report lower levels of satisfaction with learning experiences as compared to those students who feel they had a choice (Nonis, 2012, p. 6).

In the United States, almost two-thirds of the academic leaders think that offering online courses is a critical part of their long-term institutional plans (Allen, 2011). The Ontario

Community Colleges are cash-strapped and may also consider online courses an integral part of their long-term plans (Morrow, 2014). As online courses become more and more common, more research will need to be done to determine ways to help all students be academically successful online.

Theoretical Framework

Although there is limited specific scholarly research on how to motivate Office Administration (OA) students to practice their touch-typing, there are numerous motivational theories that could be applied to this student population and problem. For this study, three theories will be discussed: Albert Bandura's theory of Self-Efficacy, Alexander Astin's theory of Student Involvement, and Marcia Baxter Magolda's theory of Self-Authorship.

Bandura's Theory of Self-Efficacy

Psychologist Albert Bandura proposed a self-efficacy model that, when applied to reluctant touch-typists, sheds some light on students' reluctance to practice touch-typing. Self-efficacy is a person's perceived capabilities for learning or performing tasks at certain levels of competency (Bandura, 1977). The theory stresses that it is not the student's actual capability, but the student's perceived capability to perform a task that is important for motivation. A student's self-efficacy is affected by four things: Actual Performance, Vicarious Experiences, Some Types of Social Persuasion, and Physiological Levels (Bandura, 1977).

Actual performance

If students practice typing and complete a timed writing that is at 35 nwpm or a few points below, these students may experience an increase in self-efficacy. Students could perceive that they can meet the keyboarding requirement and earn the keyboarding credit. Other students,

though, may practice typing and produce terrible timed writings—ones with more than five errors which count for a speed of 0 nwpm. These students may experience a decrease in self-efficacy and perceive that they are incapable of passing the keyboarding course. Students actual performance on a timed writing can positively or negatively affect the students' self-efficacy about their ability to pass the keyboarding course.

Vicarious experiences

If a group of students has been practicing their touch-typing together and one of them does well on a scheduled timed writing, the other students may perceive that they too will do well when they try their timed writings. If a group of students has been practicing their keyboarding skills together and one of them does very poorly on a scheduled timed writing, the other students may perceive that they too will do poorly. Students' self-efficacy can be increased or decreased depending on the experiences of others around the students.

Some types of social persuasion

Some students may have done some practicing and have high self-efficacy about their ability to produce a good timed writing. However, if their friend then makes a negative comment like "You guys are not going to get the 35, you know. You just don't practice enough." the self-efficacy for the students in the group could plummet. Conversely, a group of students who have done a lot of practicing and have been slowly improving may have a low self-efficacy about their chances for success at an upcoming timed writing session. The students' instructor may make a comment like "You've been practicing so hard and improving so much, I'm sure you'll do well on today's timings." and the students' self-efficacy could soar. An increase or decrease in self-efficacy is possible depending on what is said in certain social situations.

Physiological states

A timed writing is a typing test. If students have anxiety about tests in general, they may have a low self-efficacy about their ability to perform well on a timed writing and feel that no amount of typing practice will help. However, if students enjoy the challenge of taking tests, they may have high self-efficacy about their ability to produce a great timed writing and want to practice their touch-typing to ensure that they have timed writing success. Students physiological states could affect their level of self-efficacy about doing well on timed writings and the amount of practicing they will do to prepare for the tests.

It should be noted that a high level of self-efficacy cannot compensate for a lack of typing skills. Students may think they are capable of touch-typing, but if they have never mastered the ability to touch-type, they are still going to do poorly on the timed writings. Students who have a high level of self-efficacy may feel that they do not need to practice touch-typing at all. That could be true—the student may have a high typing speed. Or students may be deceiving themselves because they do not have the skills to produce timings at 35 nwpm.

Bandura's work has shown that there is a relationship between high self-efficacy and achievement. If students produce one timed writing at 35 nwpm, the students' performance will increase their self-efficacy. "If I can do one timing," the student may think "I believe that I can complete the other two." Keyboarding data seems to confirm this point (Davis College, 2014). Rarely is there a student who achieves one 35 nwpm timed writing who does not go on to produce the remaining two timings.

Faculty members can play a role in increasing students' self-efficacy. Instructors can supply opportunities for students to perform typing tasks that they can complete successfully.

Instructors can point out to students the typing successes of their peers who are like them in terms of cognitive skills, race, gender, or ethnicity. Instructors can encourage students to type and remind them of their previous typing successes. Instructors can also take steps to minimize text anxiety for students who get nervous doing timed writings. Bandura's theory helps to explain some reasons why some OA students are not doing their touch-typing practice, and it also gives instructors some strategies to help students improve their self-efficacy about keyboarding.

Alexander Astin's Theory of Student Involvement

Alexander Astin's student involvement theory proposes that meaningful student involvement in a course "stimulates increased cognitive skills" (Patton, 2016, p. 34) which can lead to greater learning in that course. Astin defines involvement as "the amount of physical and psychological energy that the student devotes to the academic experience" (Astin, 1984, p. 297). Unlike Bandura's theory which dealt with how the student thought or felt, Astin's theory is based on the student's behavior—what the student does in the class.

Astin's (1984) theory has five assumptions about involvement that can be applied to keyboarding practicing.

Investment of Physical and Psychological Energy.

Doing the needed typing practice to produce three 35 nwpm timed writings would be the object. Students must invest physical energy to do the practice work, and they must invest psychological energy to ensure that they are focused mentally on memorizing where the keys are on the keyboard and what key is pressed by what finger.

Involvement Occurs Over and Along a Continuum.

Some students will be heavily involved in doing the keyboarding practice and others will not. Some students will have more time and energy to devote to touch-typing practice than others. Even others will put off purchasing the keyboarding software until the end of the semester and therefore not have time to do much keyboarding practice.

Involvement is both Quantitative and Qualitative.

To master touch-typing, students need to embrace deliberate practice. Deliberate practice assumes

> that an individual's level of performance in a particular domain (typing) is the result of effortful practice activities in which he or she has engaged in over the course of several years with the explicit goal of performance improvement (Keith, 2007, p. 135).

The quantitative component is the amount of time spent practicing typing, and the qualitative component is the quality of practice needed to lead to improve keyboarding skills.

The Amount of Student Learning and Personal Development in a Program is Directly Proportional to the Quality and Quantity of Student Involvement.

The more energy students put into their keyboarding practice, the more benefit they will get from that practice.

The Effectiveness of a Program is related to the Program's Ability to Increase Involvement.

OA students are using a self-directed keyboarding software program to teach themselves to touch-type. Perhaps the software itself hinders student involvement in keyboarding practice. It was noted at the 2016 Office Administration Symposium for OA college faculty, that all the Ontario community colleges were using the same keyboarding software package to teach OA

students how to touch-type (Seneca College OA Faculty, 2016). For the academic year beginning in Fall 2017, Davis plus three other Ontario colleges used a new self-directed, online learning software package called Typistapp.ca (McInnis, 1997). It was designed by a former Centennial College OA faculty member. Centennial piloted the software for the Fall 2016 academic year. It is hoped that this new software program will increase student involvement in keyboarding practicing.

Student involvement in the keyboarding course can lead to students being able to produce the three needed timed writings. Students need to be invested physically and physiologically in doing deliberate keyboarding practice to have the best chance of passing the keyboarding course. The new keyboarding touch-typing software program may help students to develop the needed level of involvement to become successful touch-typists.

Marcia Baxter Magolda's Theory of Self-Authorship

While Bandura's theory dealt with students' self-efficacy, and Astin's theory focused on student's involvement, Baxter Magolda's self-authorship theory was more holistic. Self-authorship is "the internal capacity to define one's beliefs, identity, and social relations" (Baxter Magolda, 2008). A student's journey to self-authorship involves moving through four phases from external to internal self-definition. These phases can shed light on why some students are not motivated to do their touch-typing practicing.

Phase 1: Following formulas.

Students in this phase follow the plans or formulas laid out for them by external authorities (Baxter Magolda, 2008). The student may have chosen to take the OA program because family or others expect them to become an administrative professional. Such students may lack interest in doing the four to five hours per week of deliberate practice needed to

become a proficient typist. The keyboarding practicing needs to be done, and these students will do the bare minimum (two hours) assigned by the keyboarding software, but they could be reluctant to do the additional self-directed hours of practicing. The prescribed formulas that these students want to follow are sometimes in conflict. The student's peer group may not value doing keyboarding practicing, but the instructor wants the student to do the practicing. The student may be torn between these conflicting external formulas and eventually choose the peer formula which would have the student not doing the keyboarding practicing. Phase 1 students may do some keyboarding practicing, but it may not be deliberate enough practice to allow the students to become touch-typists.

Phase 2: Crossroads.

In time, students will progress on their self-authorship journey and enter Phase 2. Students in this phase are starting to realize that following the formulas laid out by others do not always work well. They want to be more authentic because they are dissatisfied with how other people have defined them. It is at this crossroads phase that students begin wishing to resolve the conflict they feel between what they want to be and what other people expect them to be (Baxter Magolda, 2008). In terms of keyboarding, students may decide that they would rather be studying something else other than OA, so their interest in deliberate typing practice can wane. Some students at this phase may want to leave their non-typing peers behind and embrace touch-typing practice. Alternatively, the opposite could happen. Students will lose interest in practicing their typing as they embrace a peer group that does not value the need to do keyboarding practicing. Still, others may look at the keyboarding software requirements and question why, if they have been doing all the typing that the software asked them to do, they

cannot touch-type to automaticity yet. As students near the end of this phase, they begin to exhibit more self-confidence and have a clearer sense of where they want to go.

Phase 3: Becoming the author of one's life.

In Phase 3, students have the self-confidence and sense of direction needed to choose their own beliefs and to defend them. These students come to realize that personal beliefs can be contextual, can change over time, and are sometimes vague (Baxter Magolda, 2008). Typing practice can become less important or more important depending on the career path the student now wishes to take. Students may now see that they can plan to do typing practice on a regular schedule, but competing goals can shunt the typing practice off the calendar altogether. Therefore, stronger time management skills may begin to develop to ensure the practicing gets done. Conversely, students at this phase could start to see that the bare minimum of two hours on the keyboarding software is not sufficient to become a touch typist. Students may begin to willingly sacrifice other priorities to do the additional two to three hours a week of diligent practice because they have a strong personal desire to be a competent typist. It is at this Phase 3 point on students' self-authorship journey that some reluctant typists could start to put effort into improving their skills.

Phase 4: Internal foundation.

Students who reach this phase are secure and grounded in who they are (Baxter Magolda, 2008). If Phase 4 students wanted to become proficient touch-typists, they would do whatever amount of deliberate practice is necessary to become proficient at touch-typing. Students in this phase may also realize that they do not want to invest the necessary time and effort to become a touch typist. Such students could leave the OA program and embark on a different career path. Phase 4 students have their belief systems in place, but they are also flexible and willing to

change. So just as some Phase 4 students may leave the OA program, others will arrive from other programs and areas of study. With a strong internal foundation, Phase 4 students can become master touch-typists.

OA students have diverse educational and career backgrounds. Some students are in the program for retraining. Some students have come directly from high school. Others have university degrees, and some have never completed high school. The OA computer labs will be full of students who are functioning at all the different phases of self-authorship. Where students are on their self-authorship journey could determine whether they will put in the time and effort to master touch-typing and earn the keyboarding course credit.

Earning the keyboarding course credit is essential for graduation from the OA program, and Albert Bandura's theory of self-efficacy, Alexander Astin's theory of student involvement, and Marcia Baxter Magolda's theory of self-authorship gave some insight into why students are reluctant to do the typing practice needed to earn the keyboarding course credit. Many scholars have taken the work of these three theorists and developed classroom and college strategies to help students increase their levels of self-efficacy, involvement, and self-authorship. Adopting some of these strategies may give OA faculty instructors some concrete ways to motivate reluctant OA keyboarding students to become proficient touch-typists.

Conclusion

Students of all types arrive in the Office Administration programs at Ontario's Community Colleges. Some mature students have learned to touch-type at high school. Some students have learned to touch-type by using online keyboarding software. Some students do not know how to type at all. Still, others have learned to type by creating their style of typing.

Research has shown that touch-typists type faster and more accurately than those who use a different method. Office Administration students purchase a keyboarding software package that allows them to learn online, on their own, how to touch-type to automaticity. Although students need to be motivated to complete the online work successfully, research has shown that motivation is multi-faceted, that diligent practice is required, and that students' language and verbal skills play a role in touch-typing success. Through analysis and critical thinking, this research could be applied to Davis College's keyboarding course.

Chapter 3: Methodology

Learning new skills can be humbling and challenging at the beginning, but very rewarding once mastered (Fieger, 2009). Learning to touch-type is a skill that Office Administration (OA) students need to master in the first semester of their program (D'Angelo, 2017). The failure rate for the keyboarding course in 2007 was 10 percent, and it has slowly risen to the 2016 failure rate of 61 percent (Davis College, 2017). The touch-type method of keyboarding where you use all your fingers to type without looking at your hands was established in 1888 (Barnett, 2016). Through research, we know that touch-typing is the fastest and most accurate method of typing (Logan, 2016). Once students learn what finger to use to press which key on the keyboard, it takes practice, practice, and more practice to become a fast and accurate touch typist (Ericsson, 2007). Yet students are choosing not to practice and are not passing the required keyboarding course. The purpose of this qualitative phenomenological research study was to better understand why students were not doing the touch-typing practice needed to reach the keyboarding speed required to graduate from the Office Administration program.

A qualitative study was proposed that would shed light on this problem in the Office Administration (OA) program. This chapter will discuss the methodology of this study with emphasis on the research questions, research design, population and sample, data collection, instrumentation, and data analysis. A representative sample of students from the OA program at Davis College was interviewed in accordance with the methodology presented in this chapter.

Research Questions

What are Office Administration community college students' perceived reasons for not passing their first-semester keyboarding course?

- What are Office Administration community college students' perceived barriers to learning to touch-type?
- How do Office Administration community college students feel diligent practice impacts learning to touch-type?

Research Design

Over the years, the OA faculty members have noted anecdotal evidence as to why students are reluctant to touch-type. However, a phenomenological study allowed faculty members to learn about touch-typing from the students' perspective. A systematic qualitative study searched for meaningful themes that reflected on various aspects of the students' keyboarding experiences. Conducting in-depth, semi-structured interviews with a purposeful sample of students allowed these various themes to be integrated into a seemingly typical student's experience with the OA keyboarding course. This typical student experience could then guide faculty members' decision-making in a manner that could help all OA keyboarding students.

The proposed research questions focused on the students' perceptions and feelings about keyboarding. Perceptions and feelings often take time to formulate and explain (Leedy & Ormrod, 2016). It took both pre-written questions and free-flowing supplemental interview questions to fully understand the students' concerns and experiences about touch-typing. A qualitative interview format gave this research study the best chance of finding out the underlying reasons why students were not doing the needed touch-typing practice to pass the first-semester keyboarding course.

Population and Sample

Population

The population for this study was the April 2018 and August 2018 graduates plus the Fall 2018 semester-three specialization students of the OA program at Davis College who did not successfully pass their first-semester keyboarding course. There are September and January intake students for semester one, and past data indicates that there are over two hundred students who do not pass the keyboarding course each academic year (Davis College, 2017). It is not feasible for one researcher to interview such a large group of students, so a sample of the population was needed that could give results that were generalized to the entire population. A purposive sample size of between six to ten students was proposed. Given the increase in international students in the population, a minimum of one international student was part of the sample.

The researcher is the Office Administration General Certificate coordinator who teaches first- and second-semester courses. As a faculty member, the researcher had access to the student reporting system and could access the Davis email accounts for each graduate and semester three student.

Invitation to Participate

An invitation to participate in the study was emailed to each graduating student from the 2018 winter term. The email was sent from the researcher's Central Michigan University email account to the students' Davis College email account. The email briefly explained the research problem, research purpose, research questions, and research methodology with a request for interested participants who did not pass the first-semester keyboarding course in semester one to contact the researcher and arrange a 30-minute interview either in person or over Zoom, Skype,

or Facetime to discuss keyboarding. (See Appendix A.) As stated previously, the goal was to have six to ten students participate. If this email invitation did not produce the needed number of participant responses, a follow-up email was sent. (See Appendix A.) This follow-up email served as a reminder to students who had initially been interested in participating but had forgotten to act on it.

If this request for participants did not result in six to ten participants, another opportunity to solicit volunteers was available in August 2018 when the spring students were graduating and the semester-three students were getting ready for their specialization term beginning in September.

Sample

Once a list of potential participants was assembled, the students needed to be cross-referenced with the Davis keyboarding data source to determine that the student failed the keyboarding course in semester one and to check whether the student was registered as a domestic or an international student (Davis College, 2017). An Excel spreadsheet was created and saved to a USB to manage this information. This information analysis categorized the possible participants and gave the researcher an organized pool of potential study participants to interview. Each domestic student participant was assigned a random number beginning with D. Each international student participant was assigned a random number beginning with I. The numbers had no significance and represented no significant order. At this point, one international students would be randomly filtered from the list and contacted to do the qualitative study. The remaining needed participants would be randomly filtered from the Excel spreadsheet and contacted to do the qualitative study.

If these interviews did not produce sufficient data that could be generalized to the entire OA population of students who have not passed their keyboarding course, then additional students from the lists would be randomly filtered out from the Excel spreadsheet and interviewed. Once the interviews were completed, the Excel spreadsheet that was created to determine interviewees and to keep track of those who had agreed to be interviewed was deleted to ensure that names and other identifiers could not be traced to certain interview responses.

Having a semi-structured interview with six to ten students (at least one being an international student) gives a snapshot of data surrounding the first-semester keyboarding course that could be valuable to OA faculty members.

Data Collection

Interviews

Once the study sample was determined, the researcher emailed the initially chosen students to arrange an interview time in person or over Zoom, Skype, or Facetime. The students chose the digital interview method they were most comfortable with. Included in the email was the list of questions that the interviewer asked. Each participant was interviewed at a different time. A reminder email was sent to the student to ensure the participant attended the interview session. Having the questions in advance helped the students formulate answers and helped them understand the purpose of the study. (Leedy & Ormrod, 2016). A conference/meeting room at Davis College was booked for each interview. These rooms provided a quiet place where the interview was held with minimal distraction or interruption (Leedy & Ormrod, 2016).

The interview began with benign pleasantries and then a written permission form was presented to the participant. The interviewer reviewed the permission form, elaborated on the nature of the study and the plans for using the results, and answered any participant questions

should they arise (Leedy & Ormrod, 2016). The participant was then asked to sign the permission form or if the interview was in person, to verbally give consent during the digital interview. Below the signature line, participants were able to check a box indicating (or verbally request through the digital interview) if they wished to be emailed a copy of the finished research report (Leedy & Ormrod, 2016). These signed permission forms were kept in a locked file cabinet drawer in the researcher's work area and will be kept for five years after the report has been completed. They will then be cross shredded.

At any point in the interview process, the study participant could choose to not answer a question or end the interview altogether. Any information collected from such an interview would be stored and deleted in the same format as the rest of the study data.

A semi-structured interview then commenced. Since the conference rooms have minimal background noise, a smartphone was used to record the conversations (Issac, 2017). The smartphone audio was tested prior to the interview beginning. The resulting mp3 interview files were downloaded to two USB flash drives. The mp3 files on the smartphone were then deleted. One USB was the working copy of the interview files with the second USB being a backup copy. Both USBs were encrypted using BitLocker (Paul, 2016) to ensure the confidentiality of the interview files. The mp3 files on the working USB were then played into Dragon voice recognition software to get a rough-draft of the interviews into MS Word (Nuance, 2017). The Dragon files and MS Word files were stored on both encrypted USB drives. The interviewer listened to the mp3 files and manually edited the Word files to ensure the transcription was verbatim. When not in use, the two USB drives were stored in a locked file cabinet drawer. Five years after the final research paper has been completed, these two encrypted USB's will be physically destroyed (University of Virginia, 2017).

Approval of Interview Transcripts

A second interview was set up via email with each study participant. A conference/meeting room at Davis College was once again reserved for either in-person interviews or digital interviews. Each participant was given a printed copy of their interview transcript and given an opportunity to read it and make corrections. Then the participant signed a written acknowledgment of the transcription's accuracy or gave oral acknowledgment (Leedy & Ormrod, 2016). The printed transcripts and acknowledgments will be kept in the same locked file cabinet drawer for five years after the research paper was completed and then cross shredded.

After incorporating the interview material into a semi-final draft research paper, those relevant sections were emailed to the participants for member checking to get their "final approval and written permission to use the data in the report" (Leedy & Ormrod, 2016, p. 269).

Emails to Participants

Once the final report was completed, all emails to participants were printed and locked in the file cabinet drawer for five years and then cross-shredded. After the emails were printed, the electronic copies were deleted.

Interview Memos

In addition to asking the actual interview questions, the researcher also made memo notes of impressions and interpretations of what was seen and heard (Leedy & Ormrod, 2016). When not in use, these memo notes were stored in the same locked file cabinet drawer, and they will remain there for five years after the research paper has been submitted and then they will be cross shredded.

Instrumentation

The semi-structured interview questions were a starting point for students to share their thoughts and concerns about learning to touch-type. Once the participant had signed the permission form and questions relating to the form had been answered, the interview formally began. The conversation began with "small talk that can break the ice" (Leedy & Ormrod, 2016, p. 267) about touch-typing and the research being done.

From there, a set of questions was asked of each student. The researcher took question ideas from Angela Duckworth's Grit scale (Duckworth, 2017), Marcia Baxter Magolda's Interview Strategies (Baxter Magolda, 2007), Albert Bandura's Self-Efficacy Model (Bandura, 1977), Alexander Astin's Theory of Student Involvement (Astin, 1984), and touch-typing theory (Logan, 2016) and modified them into open-ended questions that were designed to give participants an opportunity to share their keyboarding experiences. (See Appendix B)

Testing of Questions

Prior to using these questions in the formal interviews for this research project, the questions were tested for validity and reliability. The researcher had faculty members from a variety of disciplines review and answer the questions to determine if the questions solicited the types of answers needed for this research project. The feedback allowed questions to be altered, adjusted, or abandoned. It took several iterations of the research questions being reviewed by faculty members before the questions were considered unbiased and clear enough to not be misunderstood by the interview participants.

Researcher Bias

During the interview questioning, the researcher encouraged the participant to share as much information as possible, being careful not to sway the interviewee to say what the interviewer wanted to hear. The interview was not a two-way conversation, so the researcher needed to "show compassion and interest in other ways, perhaps through body language (smiling, maintaining eye contact, leaning forward) and such neutral encouragement as 'Go on' and 'What do you mean?'" (Leedy & Ormrod, 2016, p. 267).

Data Analysis

As noted earlier in the Data Collection section of this paper, the interviews were recorded on a smartphone, transferred to a flash drive, encrypted, and transcribed using Dragon and MS Word. Participants read and verified the transcripts, then the researcher began to develop themes and generalizations that shed light on the original research problem and questions.

Coding

Once the transcripts were signed-off by the participants and the interviews and memos had been transcribed, the coding began. Open coding and axial coding were employed. Open coding is the process of finding distinct concepts and categories in the data whereas axial coding is the researcher's view of the concepts and categories and how accurately they reflected the interviewees' responses (Leedy & Ormrod, 2016, pp. 297-298). Once an open coding scheme was developed, it was applied to the transcribed data. The coding scheme was then adjusted and altered until a final list of codes and sub-codes was developed. A table in MS Word was then created listing each "code and sub-code as specifically and concretely as possible" (Leedy & Ormrod, 2016, p. 293).

Once a manageable set of themes had been determined and tested, the coding scheme was applied to the research data. Significant patterns and relationships among the codes were identified. Axial coding was also applied to determine if the noted concepts and categories accurately reflect the interviewees' responses and to explore how the concepts and categories were related. Thought was given to outliers, exceptions, and contradictions in the data.

Given that data was collected as transcribed answers, interview memos, interviewee reviewed transcripts, and reflection notes, data triangulation strategies were applied to determine what pieces of information pointed to the same conclusions. With two or more of these data sets pointing to the same themes, patterns, and relationships, the validity of the results is strengthened (Denzin, 1978, p. 28). Therefore, data triangulation of the interviews was employed to gain confidence in the data's ability to provide reasons why students are not passing their keyboarding course.

Meaning-Making Strategies

Eventually, time was taken to apply meaning-making strategies to the data. After all, the goal was to find out why students were not practicing sufficiently to become touch-typists. The following were some strategies that were applied to this research data (Miles, 2014):

- Frequency and probability of certain events.
- Making comparisons or contrasts in data.
- Connecting findings to existing motivational theories.
- Using metaphors to explain key phenomena.
- Establishing possible mediating and moderating variables.
- Creating graphics to summarize patterns in the data.

Since qualitative data analysis is an iterative process, this Researcher made use of Creswell's Data Analysis Spiral which lists steps a researcher can repeatedly work through to find meaning in the data (Leedy & Ormrod, 2016). Also, given the inexperience of the researcher, an Evaluation Checklist for a Qualitative Study was also used. (See Appendix B).

There are numerous qualitative analysis software packages available to researchers. This Researcher used the atlas.ti software program to help create concepts maps and to visually summarize significant influences. The software was able to find connections missed by the researcher's bias and found connections that were overestimated by the researcher's bias.

By performing this research study, reasons why students are not successful in their first-semester keyboarding course have come to light so that OA faculty members can take steps to help students become competent touch-typists.

Timeline

May 2018	Dr. Patrick's approval.
May 2018	Mohawk College Business School Associate Dean's and Dean's approvals.
May 2018	CMU's Ethics Board's approval.
June 2018	Mohawk College's Ethics Board's approval.
June 2018	Emailed potential participants.
June 2018	Solicited study participants.
June/July 2018	Conducted interviews.
July 2018	Transcribed interviews and had participants sign off on them. Began Data Analysis.
August 2018	Conducted more interviews. More Data Analysis. Began writing final capstone paper.
September 2018	Finished writing and submitted final capstone paper.

Chapter 4: Data Analysis

Learning to touch-type is a skill that students in the Davis College Office Administrative (OA) program are required to master (D'Angelo, 2017). Students take an online course in semester one. In 2007, it had a failure rate of 10 percent. This failure rate has been increasing yearly until 2016 when the failure rate was 61 percent (Davis College, 2017). The touch-type method of keyboarding, where you use all your fingers to type without looking at your hands, was established in 1888 (Barnett, 2016). Through research, we know that touch-typing is the fastest and most accurate method of typing (Logan, 2016). Once students learn what finger to use to press which key on the keyboard, it takes much diligent practice to become a fast and accurate touch-typist (Ericsson, 2007). Yet students are choosing not to practice and are not achieving the required speed of 35 net words per minute (nwpm) needed to pass the keyboarding course.

Purpose Statement

The purpose of this qualitative phenomenological research study is to understand better why students are not doing the touch-typing practice needed to reach the keyboarding speed required to graduate from the Office Administration program.

Research Questions

What are Office Administration community college students' perceived reasons for not passing their first-semester keyboarding course?

- What are Office Administration community college students' perceived barriers to learning to touch-type?

- How do Office Administration community college students feel diligent practice impacts learning to touch-type?

Research Design

Although there has been much discussion amongst OA faculty members as to why students are not learning to touch-type, this phenomenological study allowed faculty to learn about touch-typing from the students' perspective. This systematic qualitative study searched for meaningful themes that reflected on various aspects of the students' keyboarding experiences. Conducting in-depth semi-structured interviews with a convenient sample of students allowed these various themes to be integrated into a list of student-perceived barriers to typing success.

Population and Sample

The students who graduated from the OA program in April 2018 and August 2018 and those who were entering their third semester OA specialization in Fall 2018, who did not successfully pass their first-semester keyboarding course in semester one, were the population for this study. From this population, a convenient sample size of eight students participated in semi-structured interviews with the researcher.

Data Collection

The researcher was an OA faculty member and as such had access to the student reporting system at Davis College. The researcher was able to obtain student Davis College email addresses from the college reporting system. Once final grades were assigned, and the graduation lists were processed, the researcher emailed the study population inviting students to participate in the study. Those students who did not pass their keyboarding course in semester

one were invited to email the researcher and arrange a 30-minute semi-structured interview either in person or via the electronic method of their choice.

The researcher was surprised by the number of students who had passed keyboarding in semester one but still wanted to participate in the study. These students felt that they had worked very hard to meet the course objective and wanted to give their input. Also, the researcher was disappointed in the number of students who met the population requirements and initially wanted to participate in the study, but then lost interest and did not arrange interviews or keep interview appointments. Many of these students would have brought a different demographic to the study sample. In the end, no visa students participated in this study.

Participants in the convenience sample were then de-identified, and the semi-structured interviews were conducted. The audio recordings of these interviews were transcribed using Dragon Speak and MS Word. The researcher's memo notes and reflective notes were also kept in MS Word for data analysis.

The participants were emailed copies of the transcripts to review and sign-off on, to ensure that these interview transcripts accurately reflected their views. At this point, any questions that were not asked in the initial interview were asked, and the participants' email responses were included in the study data set.

In addition, to the transcribed interviews, researcher memos and reflective notes, two participants provided written copies of their answers to the interview questions at the beginning of the interview. One student emailed comments about the keyboarding course when she responded to the interview invitation. These additional documents were also included in the data set for this study.

Data Coding

An open coding scheme was developed and applied to the data to find concepts and categories in the information. Axial coding methods were employed on the data to determine if the noted concepts and categories were related. Thought was given to outliers, exceptions and contradictions in the data. Meaning-making strategies were also applied to the data (Miles, 2014) including Creswell's Data Analysis Spiral (Leedy & Ormrod, 2016). The atlas.ti qualitative software tool was also used by the researcher to search for additional themes, connections, and insights. Given the different types of data collected, the researcher was able to make use of triangulation to give strength and credence to the emerging categories and themes. The results of this coding, analysis, and triangulation are presented in the rest of this chapter.

Study Subjects

Each study participant was given the letter D (for domestic) plus a number to provide anonymity in the study results. The table below gives some demographic information about the study participants.

Table 1

Participants' demographic information

Student	Age: >25	Previous Typing Experience	Other
D1	Yes	Had learned her own method of typing that suited her personal needs when communicating with family overseas.	Participant had a young family at home. English Language Learner.
D2	No	Typed via MSN using acronyms and basic words and could do this type of typing quickly.	Participant had a young family at home.

Student	Age: >25	Previous Typing Experience	Other
D3	Yes	No previous typing experience before entering the OA program.	Family at home.
D4	No	Little experience.	Took keyboarding in intercession to be able to graduate with the class.
D5	Yes	Completed a typing program in elementary school and had typed in high school.	
D6	Yes	No formal training. Learned to type on her own and developed her own typing method.	Participant had a young family at home. English Language Learner.
D7	Yes	No previous typing experience before entering the OA program.	English Language Learner.
D8	Yes	Had typing instruction in high school and in another college's OA program.	English Language Learner.

The subjects of this study were all domestic students. Seven were female and one was male. The difficulty with typing was not related to age. Students coming straight from high school struggled, as did students who returned to college to begin a second career. Not all participants had familial responsibilities in addition to their college studies. Some students were English Language Learners, and others were native speakers. Since age, family responsibilities, and native language were not barriers to all students' typing success, further analysis of the data was needed.

Data Analysis

Overview

Every student felt the keyboarding course was difficult, no exceptions.

- “I think my frustration came in when I was doing speed” (Student D4).
- “It was just getting that speed and the accuracy . . . the accuracy kills me” (Student D3).
- "But like the formal one (touch-typing) . . . it's really hard. I was thinking maybe it's hard because my fingers . . . I'm olde." (Student D1).

Whether it was the speed required, the accuracy level demanded, or the touch-typing method that was encouraged, all students found meeting the keyboarding course objective of typing at 35 nwpm challenging.

The answers to some of the survey questions were heavy with emotion—negative and then positive. The negative was hard to listen to:

- “I wanted to quit. I cried a lot. I complained a lot. It’s stressful” (Student D1).
- “And somehow I was just looking at how it can be possible for keyboarding to hold me back from graduating” (Student D8).
- "Yes. It's been very frustrating. A little discouraging. At one point you're just at a --just forget this. Screw it" (Student D3).

- "I felt disappointed in myself because I was like ‘How is it that everyone else is getting it and then I'm not getting it?'" (Student D4).

- “To be honest, I see other people typing and I get so jealous” (Student D7).

Then after the negative came the stoicism:

- “I just got really determined. There’s no way—there’s just no way that I’m not doing this. … I gotta graduate. I’m not coming back for another semester. I’m just not. This can’t happen” (Student D3).

- “It was a letdown, but I knew I needed to practice. There was nothing I could do about it except try and practice more” (Student D2).

- “If they (other students) can do it, I can do it as well, why not?” (Student D1).

Although the stress of failing was palatable, most students had friends and family to turn to for support and perspective.

- “It was kind of a stressful situation for me in that first semester. So, I had to share with my friends how I felt. I saw Sarah typing. Sarah’s typing was very fast by then. So that’s how I kind of developed . . . I got that spirit, that energy from her” (Student D6).

- "Yeah, it really became a full family thing" (Student D3).

- “My kids are very supportive and my husband” (Student D1).

The exception was the one student who needed to take the summer intercession keyboarding course, after four semesters in the program, to graduate with her peers. She did not speak of active friends and family that got her through the program or keyboarding. Her school friendships seemed superficial. Friends were people who gave opinions or chatted with you in class. They were not the people that helped you through the trials and difficulties of college life.

- “If I needed any opinions or something about a project that I was doing, I would always ask them for input” (Student D4).

- (Friends) "made my learning more enjoyable. Definitely come to class, and I had friends ... and I could say ‘Hey' and interact with them" (Student D4).

Generally, then, the support of friends and family seems to have helped many of the students be successful.

So, it is against this backdrop of failure, determination, and support that the researcher has taken the students’ comments and answered the research questions proposed by this phenomenological study.

Main Question

What are Office Administration community college students’ perceived reasons for not passing their first-semester keyboarding course?

It was interesting for the researcher to observe the level of repetition in the student responses. Students did not have just one reason for their failure. Students saw their failure as a combination of elements that they struggled to control such as how to improve their keyboarding skills, how to break old typing habits, dissatisfaction with the classrooms, computers, and

keyboarding software, time management issues, and difficulty learning in an online environment. Each of these items that students struggled with is explored in the pages that follow.

Students did not know how to improve keyboarding skills.

Not being initially successful at keyboarding came as a surprise to the students.

- "Like I didn't understand. Because like my friend, she'd be sitting beside me and I could hear her typing so much faster than me, and it was just like 'How?' like 'I'm in the same courses as you and how . . . like I don't understand?'" (Student D5).
- "I don't understand why. Why are the other kids—why are the other people can do this and why cannot I do it?" (Student D1).
- "We were both looking at (Sarah), and oh my god, we really have to do it (type) like that?" (Student D6).
- "Oh my God. I have to do it like that! What's wrong. Everybody's typing like 100 wpm" (Student D7).

The surprise then turned to resignation that they had to buckle down and type more.

- "It was a let-down, but I knew I needed to practice . . . there was nothing I could do about it except try to practice more" (Student D2).
- "(I) practiced until my brain was numb" (Student D5).
- "I typed until my fingers hurt" (Student D6).

However, this determination to type more did not result in the students meeting the 35 nwpm requirement. One student summed up the problem like this:

- “So, knowing that (I was failing) and then trying to figure out how I can improve myself knowing that I have the same tools, but I can’t improve myself with the tools that I have” (Student D4).

Students knew that they had to practice yet they found themselves in this endless loop of doing the same kind of practicing with the same tools, repeatedly, and seeing no progress. It was not that the students were not practicing. Some were doing a lot of typing practice, just not the practicing that would help them get the speed and accuracy they needed. The students wanted to improve, but they did not see themselves as having the right tools to develop their keyboarding skills.

Breaking old typing habits.

Students also shared their frustration of having to break poor typing habits to learn to touch-type.

- "I have the old way of doing it the way I want to do it. And then all of a sudden, I go back to school (Davis College), and you told us ‘This is the way it is' because your fingers should be ‘here' and ‘there'" (Student D1).

- “I had a (typing) habit. It’s been like that for 15 or 16 years. I only had 15 months to change it, and I didn’t have that much time (for practicing) . . . For a cheater like me, (touch-typing) is not possible” (Student D6).

The proper touch-typing technique is not taught in Ontario's elementary and secondary schools, so students arrive in the OA program with various typing techniques. However, every student is expected to embrace touch-typing as it is the proven method for fast and accurate typing.

Dissatisfaction with the classroom setup, computers, and keyboarding software.

Once again, the researcher was surprised by the consistency of the complaints about the classroom setup, computers, and keyboarding software.

Classroom setup. In an office, other employees besides yourself are typing. There are many activities going on. It is not quiet. However, the students shared repeatedly that listening to others type in a classroom during the typing speed and accuracy tests really made them anxious. Student D5 summed up the comments nicely when she said, "Yeah. Just hearing the people type around me really stressed me out." Many students found that listening to music helped them to block out the noise of the other students' typing.

- "I usually like to shut myself out and just really like pay attention and focus. So, I usually put like music on and then just like pay attention and go, kind of thing" (Student D5).

- "It helps me concentrate, which is bizarre" (Student D4).

- "I put my headphones in and blocked **everybody** else out" (Student D2).

Being able to focus on the keystrokes and text are essential during a typing test, and these students discovered a coping skill that worked for them.

Computers. Typing tests were completed in the College's sixty-seat computer labs. Some students felt the computers themselves affected their ability to be successful.

- "Every time I would sit down, I would get a keyboard that would stick" (Student D3).
- "I found it very difficult between there being different classrooms, so there were different computers, different keyboards" (Student D2).

To quote Student D3, "I found actually the reason I got my keyboarding speed was because I brought my keyboard from home." She realized the following:

> Some of (the keyboards) are not so good. And I get it. There's a billion people using them. So, I don't know how on earth you would keep up with making sure that the keyboards were in good order. I don't think that's possible" (Student D3).

However, some faculty members have embraced the view that "You (students) just do whatever you need to do (to meet the typing objective)" (Student D3).

Instead of blaming the keyboarding or computer for their lack of typing success, students took to bringing in their laptops to type on.

Keyboarding Software. Universally, students did not like typing from the Nelson Brain textbook when doing the typing tests. The common complaint was the triangle movement their heads made when typing. Students would have their eyes on the textbook, look at their hands to confirm the fingering, look up to see if what they were typing was correct on the screen, then look back at the textbook to read the next bit they were to type. Invariably they would lose their

spot ("Oh my gosh. Where's the last place I read?" (Student D5)), must "go back and find it and then start typing again" (Student D5), and all the while the timer clock is ticking away, and the student is not typing. In typing circles, this style of typing is colloquially referred to as the typing triangle bob.

Some students practiced with online typing programs that eliminated the typing triangle bob because their eyes are only switching back and forth between the screen that they both read from and typed on and the keyboard. Student D4's comment summed up the sentiment: "I found that it would let me see my words that are already typed, and it would get me to type faster."

Nelson Brain, though, was the software program used in the online keyboarding course. Students were to do hours and hours of required drills and many more hours of optional drills to achieve touch-typing automaticity (Davis, 2016). As the researcher, one comment made by Student D6 gave me pause. "I wanted to practice, but it (Nelson Brain) wasn't giving me the confidence, the umph, to want to do it." In the interviews, confidence came through as a big motivator to practice. At some point, the students would eventually start to see their typing speed, and accuracy numbers improve, and that gave them confidence and motivation to keep trying and to keep typing.

- "That's the best motivator—the time and accuracy of (the typing tests)" (Student D6).
- "That is how I encouraged myself to do better next time. It is good to see the numbers there" (Student D6).
- "I got so excited. It was like "Oh my God, I can do this!" (Student D1).

- “I was so happy. I was like “I am able to do it! I’m not incompetent!” “I can do it” (Student D5).

- "Fantastic . . . It was a very good feeling, thinking like I **am** doing something right. I **am** succeeding. I **am** going to get my goal finished” (Student D4).

Seeing improvement gave students confidence and motivated them to improve their typing skills.

From the students’ perspective, therefore, classroom setup, computers, and the keyboarding software all impacted their ability to be successful in the first-semester keyboarding course.

Time management issues: Students could not find the time to practice keyboarding.

In the online keyboarding course information, students had typing drills to submit each week and were encouraged to do supplemental typing on their own (D’Angelo, 2016). Students were encouraged to type between 30 to 60 minutes each day.

None of the students interviewed felt they had time to participate in any of the extra-curricular programs or activities offered by the College.

- “Actually, I kind of stuck pretty close to studying, just because I have family at home, so I didn’t have a lot of social time here. It was get in, get out, get home. Do my responsibilities” (Student D3).

- “I was very invested in my homework that I was doing for first year and second year of college, so I didn’t really have too much time to do activities. Like I was going to get too stressed out” (Student D5).

No one seemed to have time to participate in activities, clubs, groups, or programs. They all felt like they were balancing a lot in their personal worlds to be able to come to College.

Students talked about not starting homework until after midnight or 2 a.m. because of family responsibilities.

- “In the midnight I did it. Because we had to submit something (drills homework)” (Student D6).

- "I would do it usually early in the morning, hmmm, let's just say 2 o'clock in the morning or 3 o'clock" (Student D1).

For all but one student, practicing keyboarding seemed to be at the bottom of the homework priority list. The others openly admitted that they had the best of intentions but could not get the amount of practicing done that they knew they needed to do.

- “It was just the aspect of finding the time to fit it in with my school schedule. And I know that it was for school, but it was just like ‘What needs to be done right now?’ versus keyboarding. I think that was a big factor. So, then I would always try to give a time-slot for myself in a day, but I would always run out of time. And then I would always end up doing it on Saturdays or Sundays. So, then it would be a large chunk of time typing” (Student D4).

- “I’d stay up late to do my homework as much as I could. That’s the one thing that got neglected. I’m not going to lie” (Student D2).

- “But when we go home, for example I have five children. People have children. They go home, and one needs to go to doctor’s appointment, there’s no groceries, you need to do your laundry, you have to go pick a child up from school, you have a small time to maybe go out for coffee. So, looking at that, and you have keyboarding. You come back in the evening, you’re so tired and you think of tomorrow’s class. There’s a lot” (Student D8).

- “The thing is because I wasn’t really free, my time is so bad . . . my house is never empty. Never alone . . . So, let’s say I do (practice) four days in a row, one hour, my accuracy go up, my speed go up and then let’s say it’s the weekend and somebody comes over and I cannot do it for two or three days . . . and (my speed and accuracy) going down again” (Student D7).

- “I probably didn’t get as much time to do it as I wanted to … just because … life” (Student D3).

And the one student who did practice regularly admitted that a family member “forced me to do a lot of it. So I literally sat at the dining-room table, looking miserable, typing. I do not like this, but I have to do it” (Student D5). Perhaps this was not an ideal practicing environment.

The general mindset for homework seemed to be "get this assignment done. Get it in. Get this in. I'll do keyboarding some other time" (Student D2). However, that "some other time" was often difficult to find.

Difficulty learning to type in an online environment.

Touch-typing is a practical skill. Most of the students acknowledged that they are kinesthetic learners. Some thought they could also learn visually or auditorily in some situations.

Table 2

Participants' Learning Style

Student	Visual	Auditory	Kinesthetic
D1			✓
D2		✓	✓
D3		✓	✓
D4	✓		✓
D5	✓		✓
D6	**Still figuring it out.**		
D7	✓	✓	✓
D8	✓		✓

- “I’m a hands-on . . . with a little auditory” (Student D3).
- "I can learn by listening, but visual and hands-on are big for me" (Student D4).
- “I’m more of a hands-on person” (Student D1).

The online keyboarding course attempts to teach students how to type using videos and web articles. It may have been easier for these kinesthetic learners to learn a kinesthetic skill in a classroom with hands-on instruction. As one student shared,

> I couldn't understand why a keyboarding course dedicated strictly to keyboarding wasn't made an elective. Because I know it's available in summer school (the intercession course running through the Continuing Education Department). There's a class that you

can do it to get that. So why isn't that an elective? Keyboarding was very frustrating, and one of the reasons, I believe, was that there was not a course time dedicated to it! There's gotta be a course for it" (Student D3).

This same student, D3, made another observation. Keyboarding appears on students' timetables on Saturday afternoon for one hour. That is the way the scheduling department at Davis College has the course allocated. Timed writing tests for 35 nwpm were held in different classes throughout the semester. Here's what two students shared.

- "I didn't think there was enough actual keyboarding. It was just kind of mixed into other courses. So, I don't really feel there was a huge time allotted to that. I just didn't think that there really was enough given to that. It was almost like a second thought. And yet, there was so much importance put on it to get your diploma" (Student D3).
- "So at the beginning, when I found that the subject was offered online, I thought it was not something important . . . I did not take it seriously . . . If it's possible, just to make it (keyboarding) like the other subjects, like being offered in class rather than giving it as independent class" (Student D8).

These students shared the frustration of doing an online course that was not given much visibility in the semester, yet it was difficult to pass, and without it students could not graduate.

Although no international students volunteered for this study, there were English Language Learners in the sample. Two of them shared that their lack of English and of experience in Canadian school culture were a handicap in learning to type. Since the

keyboarding course is a fully online course, only minimal classroom instruction was given about keyboarding. Here is what the two students shared.

- "So, in the start we get like an hour with you, at the beginning. But the thing is, I wasn't really **in** the first semester. Everything is new. I don't really catch up what you're saying, to be honest. For me with English as a second language, I'm not talking people's whose first language. I'm talking about people whose English is second language. You taught the first couple of weeks, it's like 'What's she talking about?' So maybe you explain too much at the beginning with typing, but I didn't catch it the first time because I'm not in the mood yet. I don't understand everything. I don't get it. I don't understand for some reason . . . You give all the information, for most people this is new. They don't really understand, they don't know the problem they're going to face in the keyboarding. They're still 'Oh I can do it. Easy. Work online. Very easy and let you correct." . . . Most of the things you said in the first or second class in keyboarding, I didn't get it until the end of the semester, when I've discovered for myself the problems I had" (Student D7).
- "So, looking at that (keyboarding course), we can say that some people like me with English as a second language may not get it clearly. They may think all 'Yeah, keyboarding. Keyboarding. It's only typing. We can do it even at home.' It's typing, I'll do it later . . . and in the end, you are not going through (to the next course). So, you start thinking. What is the reason? How this thing happened? It happened because of me. My negligence. I did not take my chance. I did not use the chance which I was given. I think, based on my

> understanding, that it's going to be happening (to others). There might be people like me. So if it is offered in class, it would be more useful because we come to class prepared" (Student D8).

As English Language Learners, both students would have benefited from an in-class course where an instructor could help them understand how the keyboarding course, software, and testing work. The instructor could help students with problems as they came up instead of expecting students to remember what to do from the brief introduction to the online course.

Having English language learners in this study helped the researcher understand how important regular classroom instruction can be for students.

Some students shared what it took for them to finally achieve a typing speed of 35 nwpm. For most of them, it took the intervention, help, guidance, and support of a faculty member for typing success to come. Faculty members were able to give the students tips, correction, instruction, and validation that helped them be successful.

- Ms. W. discussed putting expectations on yourself. "Some people are just naturally disposed to certain things. If you're already a fast keyboarder and you practice every day, you could get to 100 wpm. If you weren't fast, you're going to improve, but you are never going to hit that 100 wpm. Just get your 35 and move on and understand that as much as you practice, you just may never get that crazy speed" (Student D3). This counsel helped the student see her 35 nwpm problem in a different light.

- Ms. Y. “was very uplifting, very like energetic—every time I went to class (to do a typing test) and though I was tired and was not having it, you brought my spirits up—Like Yah I can do this” (Student D5).

- Ms. V. “met with me and gave me lots of ideas and tricks on how to improve my typing” (Student D4).

Students appreciated the faculty support for keyboarding. One student summed up the importance of faculty support by saying, “Just stay accommodating to other students who are struggling and having a hard time. And just kind of like guiding them in the way that you can to try to help them in the best way you can” (Student D5).

These kinesthetic learners were struggling to learn to type in an online course that did not have an instructor assigned to it. Students reached out to faculty members for typing guidance, guidance that eventually helped the students succeed.

In response to the main question from this phenomenological study, students shared that they were not successful in their first-semester keyboarding course for the following five reasons:

- They did not know how to improve their keyboarding skills.
- They did not know how to break their old typing habits.
- They were dissatisfied with the classrooms, computers, and keyboarding software.
- They had time-management issues.
- They had difficulties learning in an online environment.

These reasons will require further reflection and discussion by the researcher.

Sub Question 1

What are Office Administration community college students' perceived barriers to learning to touch-type?

This question was the most revealing part of the interview process. When something is a barrier, it is usually perceived as something that stands in your way. If the barrier is removed, you can get where you want to go. This question gave students the opportunity to share the things they perceived as barriers—things that they thought the researcher could change about the keyboarding course such as the Nelson Brain software, learning how to break poor typing habits, the perceived high accuracy standard for the course, and the lack of time to practice. Each of these barriers is detailed below.

Nelson Brain Software

As noted earlier, all the students who used the Nelson Brain software and textbook complained about having to type their drills and typing tests from a textbook.

Two students felt that the Nelson Brain typing screen and text were just too small to allow them to type accurately.

- "And the Nelson book, I don't understand why. The screen is this much big (demonstrates large computer screen size) and the application, whatever, the screen is so small" (Student D6).

- "And I personally had trouble reading the book. It was very, very small" (Student D2).

Students would demonstrate how they would read the words in the textbook, look at their hands to know what keys to hit, check the screen to see if they were accurate in their typing, and then look at the textbook again. Students knew that this typing triangle bob, as faculty members call it, was slowing them down and frustrating them. The participants would demonstrate how they would do the triangle bob and then express their frustration in doing it, like Student D6 did, "That's how I'd get, kind of discouraged."

Those students who made additional use of online typing programs like typing.com and typistapp.ca felt that these programs were superior to Nelson Brain. One student shared that the online program she used "was like more interesting to use because at some points there would be like the keys falling on the screen and you'd have to like keep up with it. I thought it was really cool" (Student D5). Another student was more forthright in her view of Nelson Brain as a barrier to student success. "My speed wasn't improving, and then I would go onto a different program (online), and it would speed up" (Student D4).

Students saw the Nelson Brain software as a barrier to their typing success. They were not happy with the text size of the Nelson Brain software, and with the triangle bob they did when using Nelson Brain software. Students felt that online typing programs were superior to Nelson Brain.

Previously Learned Typing Habits

As mentioned in the main question data analysis, students shared their frustration of having to unlearn their already acquired typing habits to learn to touch-type. Students were not able to meet the 35 nwpm typing their old way. They had to embrace the touch-typing method or some hybrid of it to be successful.

- “In my case, I study the wrong kind of typing from my childhood . . . had no idea how to do proper keying, so I started typing like this (Demonstrates typing with poor technique). Somehow, I kind of mastered it in my own way . . . But for me, like a cheater like me it (touch-typing) is not possible” (Student D6).
- "The common complaint is to know the fingers, how they work. But the formal one (touch-typing) it's really hard" (Student D1).

Students will continue to come to Davis College with self-taught typing skills, and that barrier may continue to prevent students from typing at 35 nwpm.

Lack of Time

Universally, the lack of time was mentioned, and it was discussed earlier in this chapter under the topic **Time management issues: Students could not find the time to practice keyboarding**.

As a barrier, students may be saying that there is too much work in the OA program. If there was less work to do daily, students could have more time to devote to keyboarding.

- "In some programs at the College, it is like, well, you come, and you do your midterm, and you do your final, and that's sort of it. But here every class has so many little things. Yes!" (Student D4).

- "I don't have enough time to practice. . . I need time to do it (keyboarding), and at school, we don't have time" (Student D1).

- “It’s get this assignment done. Get it in. Get this in. I’ll do keyboarding some other time” (Student D2).

Students perceived that they did not have time to do the practicing needed to learn to touch-type. Perhaps it is a time management problem, or maybe there is too much work in the OA program to allow students time to sufficiently practice their keyboarding.

In this study, therefore, participants felt that the Nelson Brain software they used to learn to type, their previously learned typing technique, and a lack of time to practice were all barriers to their being successful in the Davis College keyboarding course.

Sub Question 2

How do Office Administration community college students feel diligent practice impacts learning to touch-type?

Although the goal of the keyboarding course is to type 35 nwpm, students need to participate in diligent practicing to master touch-typing to this level of speed and accuracy. The researcher had to hide her surprise that only one participant knew what touch-typing was.

> "I noticed when I first started that I was like all over the place, all over the keyboard, but now I actually stay on the home row keys . . . My typing has been getting a lot faster and more accurate because I've been, like we have two monitors. I look at the document on one of them, and I type on the other. And I literally just look at the screen and type" (Student D5).

A few students could demonstrate the home-row typing technique on imaginary keyboards during the interviews, but students missed the portion of touch-typing that requires you to not look at your hands while you type. Your eyes should only be on the text you are

typing (Techopedia, 2018). Some students did not know what the term touch-typing meant, others were unsure what it was, or others would have an incomplete explanation.

- “Uh . . . not really” (Student D1).
- “I think it makes you type faster” (Student D6).
- "Like on the home row keys, there's those little like indents on the keys" (Student D5).

One comment, though, has given me, the researcher, pause for thought. The participant felt that touch-typing instructions had been given “At the beginning. But I (the student) focused on the letters and skipped it (touch-typing information). I just wanted to type it (the exercises)” (Student D6).

The students were to teach themselves to touch-type, yet they did not know what touch-typing was, and some were skipping the touch-typing instructions and not using tough-typing to be able to get the work done and submitted. It would be difficult to diligently practice touch-typing when you do not understand what touch-typing is.

Just as students did not fully understand the concept of touch-typing, the study participants did not understand what diligent practicing was and how it could improve their typing skills. Diligent practice "implies that well-defined tasks are practiced at an appropriate level of difficulty and that informative feedback is given to monitor improvement" (Keith, 2007, p. 136). Beyond completing the assigned Nelson Brain keyboarding drills, students did not know what to type, and they underestimated the amount of practice needed to become a touch-typist.

Not Knowing What to Type.

A pianist does more than practice a piece repeatedly; scale work needs to be regularly completed (Sloboda, 1996). A sprinter does more than run races repeatedly. Work needs to be done in the gym to strengthen the body and quicken reaction times (Dintiman, 1964). Yet, when asked what they did in a practice typing session, most students showed no inclination towards using diligent practice. Students shared that when they practiced, they did the following things:

- "The typing.com lessons" (Student D4).
- "I went back and did letter by letter" (Student D7).
- "I did the timed writings" (Student D5).
- "I did the lessons because we had to submit them" (Student D6).

Although diligent practice was explained and model typing sessions were outlined in the online course lessons, students did not engage in diligent practice. The Nelson Brain and online typing programs provided users with constructive typing feedback on certain types of exercises, but the students may not have been using those parts of the program and therefore not benefitting from the feedback. Perhaps students did not grasp the importance of diligent practice, and maybe they did not understand how to set up an effortful practice session. By not knowing what or how to type when they practiced, students may have been doing practicing that was not as beneficial to their skill development as it could be.

Underestimating the Amount of Time and Work Needed to Become a Touch Typist.

As part of the online course, students completed and submitted weekly keyboarding drills, and students were also expected to complete supplemental typing on their own, for no

marks (Davis 2016). The course web page encouraged the students to type for 30 to 60 minutes a day and states that if they were struggling, they must type even more than that (Davis, 2016).

It was noted earlier, that students had time-management concerns and keyboarding went to the bottom of the homework pile. Unanimously, the students said that they completed the weekly drills because they were submitted for marks. However, students were not necessarily typing each day beyond that, as was intended in the course instructions. Beyond doing the hand-in drills, most students, when asked how long they practiced for, made comments like the following:

- "Usually for just how long I could fit it in for" (Student D2).
- "20 minutes" (Student D6)—with no indication if it was each day or not.
- "Until my brain felt numb" (Student D5).
- "And after failing the first test, I tried to do that (three timings) twice a day" (Student D8).
- "Every Saturday (for) three hours." (Student D4).

No student shared that she was practicing for the amount of time advised in the online course materials.

Sadly then, when discussing a sample practice typing session, students did not talk in terms of diligent practicing. They did not seem to understand what to type or how much to type beyond the required Nelson Brain weekly submissions.

Consolidation

The data themes determined from the student answers to the three questions in this study were then consolidated into five perceived reasons why students felt they were not passing their first-semester keyboarding course:

- The Classroom/Computers/Keyboarding Software Concerns.
- A Lack of Time to Practice.
- Not Knowing How to Improve Their Typing Skills.
- The Online Course Format.
- Students' Previously Learned Typing Habits.

Each of these reasons is discussed in more detail in the next chapter of this study.

Conclusion

All the students in this study sample were eventually able to type 35 nwpm and pass their keyboarding course.

- “I noticed when I first started that I was like all over the place, all over the keyboard. But now I actually stay on the home row keys” (Student D5).
- “I got myself to 40 nwpm” (Student D3).
- “So, when I passed the keyboarding, I was like very proud of myself . . . I even posted it on my Facebook page!” (Student D1).

During the semi-structured interview questions, students shared their views and feelings about the keyboarding course which, when analyzed, allowed the researcher to develop these

five barriers to students' typing success: Classroom/computers/keyboarding software concerns, a lack of time to practice, not knowing how to improve their typing skills, the online course format, and previously learned typing habits. These barriers will next be discussed through the lens of social science research. Social science research will help to develop strategies for assisting students to overcome these barriers and achieve 35 nwpm in their semester-one keyboarding course.

Chapter 5: Discussions

In semester one of the Office Administration (OA) program at Davis College, students take a keyboarding course that is offered entirely online (D'Angelo, 2017). To earn the keyboarding course credit, students must type 35 net words per minute (nwpm) in three, five-minute timed writing sessions. Students use the materials on the keyboarding course's learning platform along with keyboarding software to teach themselves how to touch-type. Touch-typing was developed in 1888 (Barnett, 2016) and has been proven to be the fastest and most accurate method of typing (Logan, 2016). Once students learn what fingers to use to hit which keys, it takes many hours of diligent practice to become a fast and accurate touch-typist (Ericsson, 2007). However, many students are choosing not to practice and are not passing the required keyboarding course. The failure rate for this course has been steadily increasing from 10 percent in 2007 to 61 percent in 2017 (Davis, 2017). Faculty members are concerned about this failure rate, so a phenomenological study was proposed to investigate the issue.

Purpose Statement

The purpose of this qualitative phenomenological research study is to understand better why students are not doing the touch-typing practice needed to reach the keyboarding speed required to graduate from the Office Administration program.

Research Questions

What are Office Administration community college students' perceived reasons for not passing their first-semester keyboarding course?

- What are Office Administration community college students' perceived barriers to learning to touch-type?

- How do Office Administration community college students feel diligent practice impacts learning to touch-type?

Research Design

With the failure rate for the OA keyboarding course rising steadily over the past ten years (Davis, 2017), OA faculty wanted to know why students were not doing the required practicing to be able to pass the keyboarding course. This qualitative research study searched for those reasons why by conducting semi-structured interviews with a sample of students who did not pass their keyboarding course in semester one.

Population and Sample

The researcher contacted those students who graduated from the OA program in April 2018 and August 2018 or who were in their specialty, semester three term in Fall 2018. Eight students who did not pass keyboarding in semester one participated in semi-structured interviews with the researcher.

Data Analysis

The previous chapter showed through data analysis of the semi-structured interviews that there was no one reason why students were not doing the needed practicing to achieve the 35 nwpm. Students shared these five common obstacles to their success:

- Computers/Classrooms/Keyboarding Software Concerns.
- A Lack of Time to Practice.
- Not Knowing How to Improve Their Typing Skills.
- The Online Course Format.
- Previously Acquired Non-Touch-Typing Habits.

In this discussion chapter, the researcher will provide some interpretations of these five findings, review the findings through social science literature and theoretical frameworks, provide some recommendations from of the findings, and present a consolidation of the findings and recommendations.

Discussion of Findings

Through data analysis, the researcher was able to consolidate the study's findings into five perceived barriers to learning to touch-type. The researcher will now provide some explanations about the five obstacles in hopes of finding ways to improve students' ability to type 35 nwpm by the end of their semester-one keyboarding course.

Computers/Classrooms/Keyboarding Software Concerns

As noted in Chapter 4, interviewed students shared that they found having to use a variety of computers in a variety of classrooms challenging to manage. When students apply for OA jobs, though, they are often asked to perform a timed writing test to verify their typing speed. As we heard from Student D3, "Hamilton Health Sciences and St. Joe's (hospital) put a huge emphasis on keyboarding speed." Students will complete employer timed writings on unfamiliar computers, so students are asked by faculty to do timed writings on different computers while here at Davis College.

Some students shared that they had success in typing tests when they could use their personal laptops (Students D2, D3). Perhaps students could always be encouraged to bring their own laptop to do the timed writings tests for the keyboarding course. Once students have earned their keyboarding course credit, they could be encouraged to keep practicing and doing timed writings on Davis College computers in anticipation of an employer typing testing.

In Chapter 4, students also made comments about how the noise of everyone typing made them anxious and became a barrier to their typing success (Students D4, D5). Students also shared, as noted in Chapter 4, that they liked to work with music on as it helped them focus and do better work (Students D2, D4, D5).

Perhaps students could be encouraged to bring their earbuds/headphones and music to do the timed writings for the keyboarding course. Faculty members could allow students to "sit at the back of the classrooms and like in a little corner put (their) headphones on and really (type)" (Student D5).

Students also saw the Nelson Brain keyboarding software as a barrier to their typing success as outlined in Chapter 4. It was through the Nelson Brain software that students did their required timed writing tests. It is also with the Nelson Brain software that students did drill work. The students shared their frustration of having to type from the textbook as they often lost their spot while their eyes moved from textbook to hands to screen to textbook again (Students D2, D5). Students also expressed concerns about the typing screens being small and the textbook text being small (Students D2, D6).

As an alternative to the Nelson Brain software, students made use of typing.com and typistapp.ca online typing software websites that allowed them to practice drills, timed writings, and games. Students spoke highly of this software because they were looking at their screens and hands and cutting out the textbook part of the vision triangle. Their perception was that the online software allowed them to type better (Students D4, D1). As faculty members, we had heard this complaint from students before this study began. So, for the 2017-2018 academic year, we had students use the typistapp.ca program for the keyboarding course and not the

Nelson Brain package. The failure rate for the first-semester keyboarding course went down 9 percent that year (Davis, 2018). With this encouraging news, Davis College will continue to use the typistapp.ca software in the 2018-2019 academic year to see if the improvement is sustainable. However, in the larger picture, a decrease from a 61 percent course failure rate to a 52 percent failure rate is still not a satisfactory failure rate for the Davis College OA faculty members. More than just changing the software needs to be done to help students be successful in this keyboarding course.

Interviewing the sample students has provided faculty members with some concrete things to do to help alleviate the barriers to typing success that students encountered. Changes can be made to the computers that students use for testing, to the classroom setting during typing tests, and to the software used in the online course. Making these changes could help students be more successful in their first-semester keyboarding course.

Table 3.

Recommendations to Overcome Barriers to Typing Success from Computers/Classrooms/Keyboarding Software Concerns

Continue using the typistapp.ca online software package that helps students learn to type.
Have students bring their own laptops to timed writing tests.
Have students listen to their music through earbuds/headphones while doing timed writing tests.

A Lack of Time to Practice

Although the data showed that most of the study participants saw themselves as students who worked ahead and accomplished tasks on time, the Chapter 4 analysis reminds us that none of the students practiced their keyboarding as much as they needed to or wanted to. Each of

them felt that after finishing the assigned homework, assignments, tests, and quizzes for other courses, there was no time left for keyboarding practice—"it was the one thing that got neglected" (Student D2).

The students in this study sample had busy lives, juggling home, family, work, and school. Perhaps these students would benefit from information and help on how to manage their time so that they can work smarter and not harder (Morgensen, 1932). Or perhaps these students would benefit from guidance and instruction on how to read efficiently or study effectively (Buzan, 1983). These topics, though, are generally not seen as part of the Office Administration Program of Study (Ministry of Training, Colleges, and Universities, 2015). What is, however, within the confines of the Office Administration program is the amount of classwork, homework, tests, and quizzes that are given by faculty members. Perhaps the amount of work that students are expected to do each week is too great for the novice typist or the typist who is trying to unlearn poor typing habits. Perhaps with a reduced out-of-class workload, students would have more success finding time to practice their keyboarding skills.

Another reason why students may not find time to do the keyboarding practice is the fact that no marks are assigned to general practicing. Students can find time to get an assignment done or to study for a test because this work has marks attached to it, and a faculty member is expecting submissions. In the Davis College online keyboarding course, there are no marks for practicing, and no instructor is looking for the work to be done.

Another alternative would be to allow students the option of taking the keyboarding course in a traditional classroom environment (Student D3). That way, those students who attend

class would be doing the two-hours per week of practicing in the classroom, and an instructor would be looking for the practice work to be submitted.

Student's perceived time management issues could be reflecting a lack of motivation for boring work. Typing practice drills is not exciting, so some students may lack the interest or desire to do the drills (Eastwood, 2012). The practice exercise work is put off not because there is a lack of time but because there is a lack of interest. However, this study did not ask questions about boredom with the keyboarding drills. Further research into this topic is needed.

A lack of interest could also be linked to the performance goal itself. The 35 nwpm can seem so daunting, so out of reach, that students could feel that their efforts are not going to matter. In Chapter 4, students shared their frustration of not being able to meet the 35 nwpm standard when other students around them could (Student D1, D5, D6). Perhaps incremental performance goals would help motivate these students to reach the 35 nwpm. These consecutive goals could be set generically for everyone by the faculty member, could be set for a student or a group of students by the faculty member, or students could set their own incremental goals to meet on the journey to typing 35 nwpm. The students all shared the great pleasure they experienced when they started to reach the 35 nwpm goal. Perhaps if students could feel this pleasure when they achieve the smaller goals, it will motivate them to keep meeting goals until they have reached the final 35 nwpm criteria.

In the interviews, all students shared that they ran out of time and did not get the keyboarding practicing done that they knew they should do. Their insights can help faculty members implement changes to the keyboarding course that may help reduce this time barrier for student success. Students can be provided with time management resources. Faculty members

could also reduce the amount of homework in other OA courses and have the typing practice exercises submitted for marks. Faculty members or students could establish interim goals that the students can reach before meeting the 35 nwpm standard. Or faculty members and students can work together to create the interim goals. There is also the possibility of having students take the keyboarding course in a classroom setting. Any of these proposed changes could help students be more successful in their first-semester keyboarding course.

Table 4

Recommendations to Overcome Barriers to Touch-Typing Success from A Lack of Time to Practice Concern

Consider a way to have keyboarding practice submitted for marks.
Have faculty members and students together set incremental goals to reach while on the path to achieving the 35 nwpm goal.
Have faculty members set incremental goals for students to reach while on the path to achieving the 35 nwpm goal.
Have the students set their own incremental goals to reach while on the path to achieving the 35 nwpm goal.
In first semester, allow students to choose between an online keyboarding course and an in-class keyboarding course.
Provide students with access to learning resources on time management topics.
Review the amount of semester-one homework in the OA program to ensure it is not excessive.

Not Knowing How to Improve Their Typing Skills

As we saw in the Chapter 4 analysis, the students eventually put in enough practice time to earn the 35 nwpm and pass the keyboarding course credit. As students started to see their timed writing scores improve, they were ecstatic. Student D5's comment still rings in the researcher's ears, "I was sooo happy. I was like 'I am able to do it! I'm not incompetent! I can do it!'" However, the path to success was not clear for all the students.

Students were to teach themselves to touch-type to a rate of 35 nwpm. However, from Chapter 4, we see that many of the students did not know what the term touch-typing meant. They certainly did not express an understanding that touch-typing meant typing without looking at your hands. It is possible then that the online keyboarding course did not explain touch-typing sufficiently, or the software did not present touch-typing in a manner that the students understood it and learned it. The researcher still remembers Student D6's telling statement that the Nelson Brain explained touch-typing at the beginning, but she only wanted to do the typing, so she skipped the explanation.

Since the students were all kinesthetic learners and typing is a practical skill, perhaps the students need faculty-member support to understand what touch-typing is and why it is essential. Maybe the students need a faculty member to help them place their fingers on the proper keys to feel and understand how to type specific letters. Currently, the Davis College keyboarding course expects students to be able to learn visually to understand touch-typing. This study's participants have shown that the online course content is not supporting all of the different learning styles.

Chapter 4's data analysis also makes it clear that none of the students understood what diligent practice meant. None of them created a diligent practice regimen for themselves. However, it is through diligent practice that the students will improve their typing skills (Keith, 2007). From the data analysis, we also know that all the students underestimated the amount of work needed to learn to touch-type. Perhaps because it is an online course with no instructor, students did not feel the course was that important. Maybe they thought that the course must be

easy because there was no faculty member assigned to the course or encouraging them to be successful.

The online course is set up generically—one course fits all. However, we all learn differently. Some students needed to improve their accuracy; some students needed to improve speed; some students needed to improve technique. The students would have benefited from some individual coaching so that they could focus on what their weaknesses were. That individual coaching and analysis could come from the software if the software was more robust. That individual coaching could come from a faculty member if the keyboarding course had faculty members assigned to it. The study participants arrived at a point in their keyboarding struggles where they reached out to a faculty member for help. Once they got some coaching support, they were able to move forward to success.

In the online course content, students receive suggestions of things to try and do to improve their typing skills. The course also gives samples of what a practice typing session would look like and instructions of how long a student should type for each day. However, these suggestions are not followed by the students. Perhaps the students are ignoring the online lessons. Perhaps, since the work does not need to be submitted, the students are choosing not to do it as they do not see it as being of value. Perhaps because the lessons are not detailed prescriptive lists of what to do each day or week, students do not know how to create their own typing training sessions. Perhaps students like Student D4 feel stuck as if they are doing the same thing repeatedly and not seeing any success.

At some point, students realize that they need to do the typing practice to succeed. They do it, and then they meet the criteria. The question then is, how do we get students to have this realization earlier in the OA program?

Table 5

Recommendations to Overcome Barriers to Touch-typing Success from Not Knowing How to Improve Their Typing Skills Concerns

Have practice work submitted.
Improve the online course content to explain diligent practice better.
In the online course content, give detailed weekly practice guides of exercises for students to do.
Offer faculty-member coaching to students to help them understand what they need to do to improve their individual typing skill set.
Offer in-class faculty-member instruction to help kinesthetic learners to feel what touch-typing means.

The Online Course Format

As presented in the Chapter 4 analysis, students felt they benefited from faculty guidance and support to finally reach the required 35 nwpm (Student D3, D4, D5). Perhaps having an in-class delivery of some sections of the keyboarding course would allow some students to be more successful in semester one.

In the current online course delivery model, that type of faculty member support can be challenging to obtain since no faculty members are assigned to the course. If a faculty member was attached to an online course, the instructor needs to be able to see the student typing to correct typing technique and form. This ability to view the student's hands on the keyboard could be done using camera technology or by having students come to in-class typing sessions held at Davis College. However, an investment in camera technology may not be within the

College's budget. Also, some students may appreciate having not just a few in-class sessions with their instructor but having the entire keyboarding course held in an in-class delivery format.

As mentioned in the Chapter 4 data analysis, all the students were kinesthetic learners. It may be easier for kinesthetic learners to learn a kinesthetic skill like touch-typing in a classroom environment with hands-on instruction.

The concern that students do not know how to diligently practice their keyboarding was discussed earlier in Chapter 4. This concern could be resolved with more faculty member involvement with the keyboarding course. Faculty members could provide guidance and support for recognized typing issues and concerns. The provided correction could be practiced in a diligent way.

The time management concerns noted earlier could also be mitigated with more faculty involvement in the keyboarding course because faculty members could coach students on how to practice effectively and efficiently.

The current online course does not stress that keyboarding is an integral part of the first-semester course load. The course materials do not mention that homework exercises given in other classes serve as keyboarding practice. Students may see each of their courses as having individual, stand-alone content, instead of seeing keyboarding as the thread that ties them all together. As an online course, more students than just Students D3 and D8 may feel that keyboarding appears on their timetable as an online course, as a second thought.

One study participant had suggested that the keyboarding be an elective course. Although keyboarding does not fit the requirements of a General Education Elective course as

outlined by the Ministry of Advanced Education and Skills Training (Ministry of Training, Colleges and Universities, 2015), the researcher felt that the student understood that an in-class keyboarding course was not necessary for all students. Instead, those students who think they would benefit from faculty guidance and support should have the option of taking an in-class course. Other students who feel they can meet the 35 nwpm requirement without faculty members' help could register for an online version of the course. Having an in-class course would be a great option for second-semester OA students who failed the online keyboarding course in semester one. Instead of retaking the online keyboarding course, which did not work for them, they can take the in-class course.

The study participants felt that they benefited from faculty support to reach their 35 nwpm. Having the option to take an in-class delivery of the keyboarding course may help students get that needed support. An in-class delivery of the course, therefore, may also help kinesthetic learners master touch-typing, help students who are struggling with diligent practice, help students with weak time management skills, give students short on time an opportunity to do diligent practice during in-class time, and help students to understand how integral being able to touch-type is to their current course load and their future OA careers.

Table 6

Recommendations to Overcome Barriers to Touch-typing from The Online Course Format Concern

In the first semester, allow students to choose between an online keyboarding course and an in-class keyboarding course.
Permit students who fail the online keyboarding course in semester one to take the in-class keyboarding course while in semester two.

Invest in camera software so that students can make videos of their typing at home and send the videos to faculty members for criticism and assistance.

Previously Acquired Non-Touch-Typing Habits

Some students arrive in the Office Administration program already knowing how to type, others arrive never having typed at all, and others arrive in the program having developed their own typing technique. With the help of online course modules and a typing software package, students are working towards mastering the touch-type method of typing. However, students who responded to the study questions found it very hard to alter their previously learned typing habits to master the touch-type method.

As noted in Chapter 2, it takes hours of practice to master touch-typing and reach 35 nwpm (Genter, 1983, Keith, 2007). When students who have touch-typing skills do lots of practicing, their typing will improve, as Student D5 noted in Chapter 4,

> I've noticed that working at reception at my job now that I type a lot, like typing up documents and stuff. Like my typing has been getting a lot faster and more accurate because I've been like we have two monitors. I look at the document on one of them, and I type on the other. And I literally just look at the screen and type.

It is possible that these students who arrive with poor typing habits are putting in the correct amount of practice time needed for someone who is learning to touch-type from scratch. However, they may need even more practice time to unlearn their previous typing habits. You may recall from Chapter 4, the following comment by Student D6:

> I had a (typing) habit. It's been like that for 15 or 16 years. I only had 15 months to change it, and I didn't have that much time (for practicing). Maybe 15 minutes a day. I was not really ready to dedicate. Dedication is very important, to change a habit.

Further to this point, if these students who already have a self-taught method of typing are learning to touch-type when they are doing the keyboarding homework, which way of typing are they using when they are doing classwork and homework in other classes? The touch-type method or their own method?

While students are learning to improve their touch-typing speed and accuracy in their keyboarding course, they are expected to type things for homework and as assignments in other classes. In that same first semester when students take the keyboarding course, students take Outlook and Word, which require typing. Students also take Professional Administrative Skills and Digital Communications which require that students type several homework exercises and assignments. This classwork/homework/assignment typing is considered by faculty members to be additional practice for the student who is learning to touch-type. However, if students have their own non-touch-type method of keyboarding, they may revert to their poor typing habits to get the work done. They may spend more time in the week typing documents with poor typing habits than they do with proper touch-typing technique. They may be unknowingly reinforcing their poor typing technique at the expense of mastering touch-typing. It would be hard to learn touch-typing if most of your typing is done with poor technique.

Since touch-typing is no longer a required element of the Ontario elementary or secondary school curricula (Ontario Ministry of Education, 1915-1990), some students are arriving in the OA program with pre-learned typing styles that do not match the touch-typing

method. A 14-week keyboarding course may not be enough time for these students to unlearn their typing habits and master the touch-typing method, especially if they are doing their classwork and homework for other courses using their incorrect typing technique.

Perhaps faculty members need to work with these students to help them modify their current typing technique to a hybrid touch-typing method that will allow them to reach the keyboarding requirement without having to unlearn and relearn their typing skills. However, the Davis College keyboarding course is a fully online course with no instructor. Having a faculty member available in a classroom setting would enable the student to get the one-on-one assistance needed to develop a hybrid touch-typing method.

Gone are the days when students arrived in the OA program already knowing the basics of touch-typing. Today's students may begin class with self-taught, non-touch-typing ways of keyboarding. It is challenging to both unlearn old typing habits and learn touch-typing skills, especially if students are using their old typing habits to complete the needed OA homework and assignments. Perhaps students could reach the 35 nwpm in the first semester if they learned how to modify their previously learned typing technique to embrace some but not all touch-typing methodology.

Table 7

Recommendations to Overcome Barriers to Typing Success from Previously Acquired Non-Touch-Typing Habits Concern

Give students more than the current 14 weeks to learn to touch-type.
Have faculty members help students develop their own hybrid touch-typing method that will allow them to meet the required 35 nwpm.

Completing this formal phenomenological study on OA students has shed light on the students' perceived barriers to touch-typing success. Through a discussion of these barriers, recommendations came to light that faculty members can consider that may help students type at 35 nwpm by the end of semester one of the OA program at Davis College.

Summary of Findings

Through an analysis of the survey questions, the following barriers to touch-typing at 35 nwpm by the end of semester one of the OA program at Davis College were uncovered.

- Computers/Classrooms/Keyboarding Software Concerns.
- A Lack of Time to Practice.
- Not Knowing How to Improve Their Typing Skills.
- The Online Course Format.
- Previously Acquired Non-Touch-Typing Habits.

Through a discussion of these barriers, the researcher was able to compile the following list of recommendations that faculty members could consider that may help Davis College OA students be more successful in their first-semester keyboarding course.

Table 8

Compilation of Recommendations Based on Analysis of the Five Barriers to Typing Success

Assign faculty members to online keyboarding course offerings.
Continue using the typistapp.ca online software package that helps students learn to type.
Give students more than the current 14 weeks to learn to touch-type.

Have faculty members and students together set incremental goals to reach while on the path to achieving 35 nwpm.
Have faculty members help students develop their own hybrid touch-typing method that will allow them to meet the required 35 nwpm goal.
Have faculty members set incremental goals for students to reach while on the path to achieving the 35 nwpm goal.
Have practice work submitted for marks.
Have students bring their own laptops to timed writing tests.
Have students listen to their music through earbuds/headphones while doing timed writing tests.
Have the students set their own incremental goals for reaching the 35 nwpm goal.
Improve the online course content to explain diligent practice better.
In the first semester, allow students to choose between an online keyboarding course and an in-class keyboarding course.
In the online course content, give detailed weekly practice guides of exercises for students to do.
Invest in camera software so that students can take videos of their typing and send the videos to faculty members for criticism and assistance.
Offer faculty-member coaching to students to help them understand what they need to improve their individual typing skill set.
Offer in-class faculty-member instruction to help kinesthetic learners to feel what touch-typing means.
Permit students who fail the online keyboarding course in semester one to take the in-class keyboarding course while in semester two.
Provide students with access to learning resources on time management topics.
Review the amount of semester one homework in the OA program to ensure it is not excessive.

Comparing Study Findings to Social Science Literature and Theoretical Frameworks

Although a general discussion of the data's findings is valuable, the recommendations are merely those of the researcher. It is important to take the data findings and reflect them in social science literature and theoretical frameworks to see if other research can shed light on what faculty members can do to help OA students reach 35 nwpm in their first-semester keyboarding course.

After analyzing the data provided by student interviews in this study, five barriers to typing success were developed. They are listed as follows:

- Computers/Classrooms/Keyboarding Software Concerns.
- A Lack of Time to Practice.
- Not Knowing How to Improve Their Typing Skills.
- The Online Course Format.
- Previously Acquired Non-Touch-Typing Habits.

Literature

In preparation for this study, a review of social science literature was made to determine if there was any research that could shed light on why students were not learning to touch-type. This phenomenological study reinforced some of the literature findings. In this section of the paper, the researcher will look at how this study's findings are confirmed by literature, and what recommendations that literature can make on how to improve the Davis College first-semester keyboarding course.

Barrier: Computers/Classroom/Keyboarding Software Concerns.

As noted earlier in Chapter 4, students struggled with the keyboarding course software and felt it was an obstacle to their success. Students found the online typing program more motivating; however, they still struggled with meeting the 35 nwpm course goal.

Although the touch-typing skill is not formally part of the Ontario elementary or secondary curricula (Ontario Ministry of Education, 1915-1990), some students learned to touch-type in elementary school using computer software. It was perhaps a decision by the classroom teacher or school principal to teach the children keyboarding skills with the typing computer

software. However, merely using the computer software did not mean that the children learned to touch-type. In this study, one student had been exposed to touch-type software in elementary school with further exposure to it in high school, yet she struggled to touch-type to 35 nwpm (Student D5).

Surprisingly for the researcher, learning to type with touch-typing software in elementary school and high school was not a marker that the student would be able to type at 35 nwpm in the first semester of the OA program. Perhaps the students used the software but did not type in the touch-type method that the software encouraged.

Research has also shown that the typing software students use can increase or decrease motivation to learn (Kim, 2009) and gives credence to the student's perceived barrier of Computers/Classroom/Keyboarding Software Concerns. There were student complaints about the Nelson Brain software, yet those students who made use of typing.com or typistapp.ca software spoke highly of these programs and their motivating features (Students D1 to D6). Having students use the typistapp.ca software and not the Nelson Brain in the 2017-2018 academic year boosted some students' success rates (Davis, 2018). As noted earlier in Chapter five, Davis College will use the typistapp.ca software in the 2018-2019 academic year to see if the 9 percent drop in the failure rate is replicated.

According to Petri's (2013) research on motivation, students need goals. Petri's (2013) research supports the student's perceived barrier of both Computers/Classrooms/Keyboarding Software Concerns and Not Knowing How to Improve Their Typing Skills. The Davis College keyboarding course has the main 35 nwpm goal, but the Nelson Brain software also had numerous, smaller lesson or topic goals to attain. However, Petri's (2013) research also shares

that motivation requires energy in pursuit of those goals and persistence in achieving those goals. Students had success meeting the smaller Nelson Brain goals, but they could not reach the larger 35 nwpm goal. Perhaps the gap between the Nelson Brain software goals and the course goal was just too great for some students to bridge. Maybe having smaller goals that incrementally reach the larger 35 nwpm goal would help students maintain motivation to practice.

Social science literature supports keyboarding students' need for engaging typing software and the need for smaller goals that lead to larger ones. Seeing the students' perceived barrier of Computers/Classrooms/Keyboarding Concerns confirmed by social science literature adds credibility to recommendations for course improvement.

Table 9

Recommendations to Overcome Computers/Classroom/Keyboarding Software Barrier to Typing Success Through the Lens of Social Science Literature.

Continue to use online software like typistapp.ca instead of Nelson Brain.
Have faculty members assigned to keyboarding courses to help students develop incremental goals that scaffold between the end of the software goals and the course goals.

Barrier: A Lack of Time to Practice.

All the study participants felt that they could not find time to do the needed typing practice to reach the 35 nwpm. Not finding time to get the work done is a common complaint expressed by unsuccessful students of online courses (Nonis, 2012). This lack of time to practice may be a result of a lack self-regulatory skills like time management (Lee, 2013), the inability to maintain active engagement in the typing work (Bennett, 2008), or students may perceive themselves as lacking autonomy in the course (Song, 2004). Self-regulatory skills, active engagement, and a lack of autonomy are all proven reasons why students struggle with online

courses. Perhaps if the OA keyboarding course format were changed to an in-class course, students would no longer see a lack of time to practice as an obstacle to success.

There is a large body of research on things that can be done to make an online course successful such as providing students with choices, with the rationale for activities, and with opportunities for personalizing their studies (Lee, 2015). There is also research on how to make the online course setup and navigation more appealing to students (Simunich 2015). Although the study participants gave no negative comments about the online course page, setup, and navigation, these factors may still be affecting student success. Perhaps a revamp of the online course setup and navigation is needed to ensure that these factors are not supporting the Lack of Time to Practice barrier to success.

Table 10

Recommendations to Overcome A Lack of Time to Practice Barrier to Typing Success Through the Lens of Social Science Literature

Consider updating the online course setup and navigation so that students get the best possible learning experience.
Offer an in-class delivery option for the keyboarding program.

Barrier: Not Knowing How to Improve Their Typing Skills.

Research shows that it can take hours and hours of practice to learn to touch-type (Genter, 1983, Typequick, 2017) and that point was made clear in this study. Across the board, all study participants admitted that they had not practiced enough in semester one to pass the keyboarding course. The online course encouraged practicing, faculty members encouraged practicing, and yet the practicing done was not enough.

Across the board, students did not know what to do to improve their typing skills beyond the practice drills laid out in the keyboarding textbook. Students all knew that they needed to practice more, but students were not incorporating diligent practice into their keyboarding sessions. From research, we know that diligent practice "implies that well-defined tasks are practiced at an appropriate level of difficulty and that informative feedback is given to monitor improvement" (Keith, 2007. P. 136). Students would have been doing this kind of practice when doing the keyboarding textbook lessons. Once the keyboarding lessons were done, students were to follow the guidelines in the online course lessons and develop a typing routine that suited them. However, once those diligent textbook exercises were done, students were not practicing at an appropriate level of difficulty. Students did not know what a proper level of difficulty was for them. Only when the students reached out for informative feedback from their faculty members, did their typing improve. Such feedback could be available to students in an in-class environment. It should also be made available to online students through enhanced lesson development.

Research has also shown that there is a relationship between the student's spelling ability and typing skills (Limp, 1929; Cohen, 1990), and this study saw examples of this conclusion. Students D2, D3, and D7 shared their strategy of spelling out words orally or in their heads to get the words typed correctly. These students shared that they could type common words quickly but needed to spell out trickier, less common words encountered on the screen or page. Once students embraced spelling out words for themselves, they found their typing speed increased (Student D3 and D7). Were students to get guidance on ways to improve their typing early in the first semester, students might have embraced this strategy earlier and had typing success in semester one.

Students in this study were at a loss to sort out how to practice and improve their typing skills beyond the initial keyboarding textbook drills and, therefore, saw Not Knowing How to Improve Their Typing Skills as a barrier to success. Students need more guidance either online or in the classroom to sort out how to create diligent practice sessions for themselves. Students also need access to faculty support to give them typing tricks and tips such as spelling out the harder words in a typing passage.

Table 11

Recommendations to Overcome Not Knowing How to Improve Their Typing Skills Barrier to Typing Success Through the Lens of Social Science Literature

Have a keyboarding faculty member available to help students understand what diligent practice is, why it is essential to typing success, and how to create diligent practice lessons for themselves.
Supply students with typing strategies including that of spelling out words while they type.

Barrier: The Online Course Format.

Research into diligent practice, therefore, would support having faculty member assistance for students who need it. Students would benefit from access to a faculty member who could help them determine an appropriate level and type of practice and who could help them choose typing activities that were suited to their typing challenges. A faculty member could help monitor improvement and provide feedback as needed. This faculty member support could come from drop-in typing assistance or from an in-class keyboarding course. The research shows that diligent practice helps improve keyboarding skills and this study shows that struggling Davis College OA students were not doing diligent typing practice.

Keyboarding software can give immediate typing speed and accuracy feedback and rewards (the ability to play games, for example, when the drill work is complete). However, the software cannot give feedback on typing technique and style—which is the type of help that so many of the students were seeking. There have been many studies on how factors like feedback can lead to autonomy and self-efficacy and thereby motivation to learn (De Villers-Scheepers, 2011; Gouds, 2000; Spratt, 2002; Tabernero, 2011; Wadhwa, 2015). Research would suggest that some OA keyboarding students would benefit from faculty member feedback and support to help them reach the 35 nwpm typing goal.

As noted earlier, Petri's (2013) research spoke to the need for appropriate goals that students can feel motivated to work towards. As mentioned previously, perhaps the gap between the smaller Nelson Brain goals and the larger 35 nwpm goal was too great to motivate student success. Having an in-class course with a faculty member may help the student to set appropriate interim goals between the textbook exercises and the 35 nwpm typing goal.

Finally, Nonis' (2012) research shared that students who feel they have no other choice but to take an online course report lower levels of satisfaction and learning. Davis College students have no choice but to take the online keyboarding course. There is no in-class alternative for them, so they saw The Online Course Format as a barrier to their success.

Table 12

Recommendations to Overcome Online Course Format Barrier to Typing Success Through the Lens of Social Science Literature

Have a keyboarding faculty member available to help students understand what diligent practice is, why it is essential to typing success, and how to create diligent practice lessons for themselves.
Have a keyboarding faculty member available to give feedback and support.
Have faculty members assigned to keyboarding courses to help students develop incremental goals that scaffold between the end of the software goals and the course goals.
Offer an in-class keyboarding course for those students who wish to take one.

Barrier: Previously Acquired Non-Touch-Typing Habits.

Although the literature shows that touch-typing is the most effective and efficient way to type (Logan, 2016), not all study participants mastered touch-typing and achieved their 35 nwpm in the semester-one keyboarding course.

While some students learned the touch-typing method of typing before arriving at Davis college, others arrived already knowing how to type using a non-touch-type method they had developed themselves (Students D2, D5). These students struggled with breaking their old typing habits and with melioration as outlined by Yechiam in his 2003 work. In the context of typing, melioration implies "an intuitive tendency to choose typing strategies that lead to a better immediate performance level than that obtained by touch-typing" (Yechiam, 2003, p. 671). These students found it hard to change their Previously Acquired Non-Touch-Typing Habits. Students reverted to their old improper typing habits when doing stressful timed writings or assignments for other classes and perhaps only did the touch-type method when doing typing practice or when being watched by faculty members (Yechiam, 2003). Eventually, some students

developed a hybrid typing style that was a combination of touch-typing and their previously learned method of typing (Students D1, D2, D6). Perhaps by focusing and practicing just this hybrid typing style, students were able to reach their 35 nwpm. This OA study illustrates the potential challenge some students had abandoning their old methods of typing for the touch-typing method. Previously Acquired Non-Touch-Typing Habits were a barrier to many students' typing success.

Table 13

Recommendations to Overcome Previously Acquired Non-Touch-typing Habits Barrier to Typing Success Through the Lens of Social Science Literature

To prevent melioration, faculty members can help students develop their own hybrid touch-typing method that will allow them to meet the required 35 nwpm in semester one.

Literature not supported by this study.

Social Science research is vast in scope and depth. During the literature review for this study, the researcher found information on other reasons for low student motivation that were not identified by this study's participants. Boredom, disabilities, culture, and age were cited as influencing student motivation, but none of them played a significant role in this study's findings.

Boredom. In 2012, Eastwood wrote about boredom being a possible factor in a student's low motivation to learn. None of the students explicitly said they were bored doing the typing practicing. Student D3 shared that she typed until her brain went numb. Such a comment could suggest a lack of engagement with the content instead of boredom. However, perhaps students did not want to offend the interviewer by saying that the typing work was boring. In hindsight, the researcher could have asked a more direct question about boredom instead of asking what the

students thought of the bronze, silver, and gold star exercises. More research would need to be done on boredom and learning to touch-type.

Disabilities and Culture. Although there is research on the relationship between student disabilities (Alamri, 2016), cultures (Subramaniam, 2008; Zhao, 2016), and motivation, these variables were not a factor in this study. One student learned while at college that she needed glasses (Student D2) and another student felt the typing screen was too small (Student D3), but both students were able to overcome these disadvantages by getting glasses or magnifying the screens. Admittedly, the question of disabilities was never asked in the study. As far as the cultural reasons for learning motivation, the study participants came from a wide variety of cultures, but none presented culture as a barrier to typing success. More research is needed to determine if there is a relationship between students' motivation to touch-type and disabilities or culture.

Age. Some students who were over 25 years of age felt that they were at a disadvantage in learning to touch-type (Students D1, D3), but there were also young people in the study sample who were also challenged by touch-typing. A different study would need to be conducted to see if there was a relationship between age and student motivation to learn to touch-type.

A Cultural Disconnect with Typing. When the researcher was setting up this study, she felt there might be a cultural difference between international students and domestic students that prevented international students from being successful at touch-typing. Anecdotally, faculty members had spoken with many international students who shared that they had never worked on a computer before attending OA classes at Davis College. Sadly, no international students participated in this study, so this potential visa-student cultural barrier was not investigated.

Although there were English Language Learners in the study, some had had previous typing experience and others had not. However, a much broader cultural concern within Ontario was uncovered in this study.

In the past, many Ontarians would have taken touch-typing classes in Grade 9 as part of the Ontario Ministry of Education's curriculum (Ontario Ministry of Education, 1915-1990). In 2003, however, with the elimination of Grade 13, typing was no longer taught at the high school or elementary school levels (Ministry of Education, 2006). In our digital age, students start using computers as an instructional tool in kindergarten and may never formally learn to touch-type. It is the researcher's perception, therefore, that Ontario, culturally, has moved away from supporting touch-typing. Only two of this study's participants had touch-typing training before coming to the OA program at Davis College. Social science research has demonstrated that touch-typing is the most effective and efficient method to learn to type and become a fast and efficient typist (Logan, 2016) so touch-typing is part of the Davis College OA curriculum. However, Ontario's elementary and secondary school culture does not support teaching touch-typing, while employers want students who can type quickly and accurately. Should Ontario's children be taught to touch-type in school? Should OA programs insist on touch-typing? Should employers accept any style of typing so long as it is fast and accurate? These questions are beyond the scope of this study.

Through the process of social science, researchers are always uncovering new ideas about how people live and learn (Haskings-Winner, 2011). Further social science research would be needed to determine if boredom, disabilities, culture, age, or a cultural disconnect with typing play a role in students not learning to type 35 npwm in their first-semester keyboarding course.

Through the lens of social science research, we see that social science literature supports the five perceived barriers to touch-typing that this study's participants experienced. Social science literature also gives support to faculty members with recommendations they can implement to help students overcome these obstacles. A compilation of these recommendations is listed below in the Summary of Findings Through the Lens of Social Science Literature.

Summary of Findings Through the Lens of Social Science Literature

Social science literature gives support to the five barriers to typing that have been identified in this phenomenological study. Table 14 provides a breakdown of this support.

Table 14

Social Science Literature Support for Five Barriers to Typing Success Developed from this Study Through the Lens of Social Science Literature.

Five Barriers to Typing Success Developed from this Study	Social Science Literature Support
Computers/Classrooms/Keyboarding Software Concerns.	• The typing software students use can increase or decrease motivation to learn. (Kim, 2009). • Students motivation rises if they have achievable goals to strive for (Petri, 2013). • Motivation requires energy in pursuit of these goals and persistence in achieving these goals (Petri, 2013).
A Lack of Time to Practice.	• Not finding time to get the work done is a common complaint made by unsuccessful online students (Nonis, 2012).
Not Knowing How to Improve Their Typing Skills.	• Diligent practice is required to succeed in learning to touch-type (Keith, 2007). • Students' motivation increases if they have achievable goals to strive for (Petri, 2013).
The Online Course Format.	• Students who feel they have no other choice but to take an online course report

Five Barriers to Typing Success Developed from this Study	Social Science Literature Support
	lower levels of satisfaction and learning (Nonis, 2012). • Students may need in-class instructor help to establish goals (Petri, 2013). • Students may need in-class instructor help to develop diligent practice skills (Keith, 2007).
Previously Acquired Non-Touch-Typing Habits.	• Students would revert to their old improper typing habits when doing stressful timed writings or assignments for other classes (Yechaim, 2003).

Implications of Findings Through the Lens of Social Science Literature

The researcher's review of social science literature has also resulted in suggested recommendations that faculty members can follow to help students be more successful at reaching the 35 nwpm in semester one of their OA program at Davis College. A compilation of these ideas is listed below in Table 15.

Table 15

Recommendations to Overcome Barriers to Typing Success from a Review of Social Science Literature

Consider updating the online course setup and navigation so that students get the best possible learning experience.
Continue to use online typing software like typistapp.ca instead of Nelson Brain.
Have a keyboarding faculty member available to give feedback and support.
Have a keyboarding faculty member available to help students understand what diligent practice is, why it is important to successful typing, and how to create diligent practice lessons for themselves.
Have faculty members assigned to keyboarding courses to help students develop incremental goals that scaffold between the end of the software goals and the course goals.
Offer an in-class delivery option for the keyboarding program.

Supply students with typing strategies including that of spelling out words while they type.
To prevent melioration, faculty members can help students develop their own hybrid touch-typing method that will allow them to meet the required 35 nwpm in semester one.

When completing the literature search for this study, the researcher found studies on several topics that she felt might have impacted students' ability to be successful in their first-semester keyboarding course. These topics included boredom (Eastwood, 2012), disabilities (Alamri, 2016), culture (Subramaniam, 2008; Zhao, 2016), and age (Maurer, 2001). However, the study participants did not identify these issues as being barriers to their success.

Further research would need to be done to determine if these factors are in fact barriers to students' success in the OA program. Also, the researcher noted a cultural disconnect amongst the Ontario population's view of touch-typing, the OA program's emphasis on touch-typing, and employers' need for effective and efficient typists. At present, there is no social science research on this cultural disconnect, so further research in this area would benefit OA faculty members who are working to train office workers.

In conclusion, then, we can state that social science literature supports the five barriers to typing success that were developed from this study, gives concrete recommendations on ways faculty can help students overcome these barriers, and provides future support and guidance to OA faculty as more research is done into possible barriers to student success in keyboarding.

Theoretical Frameworks

In addition to reflecting these five barriers to learning to touch-type in social science literature, it is also helpful to reflect them in social science theoretical frameworks to see if there

is any corroborating evidence or support. As outlined in the Chapter 2 Literature Review, Bandura's theory of self-efficacy, Astin's theory of student involvement, and Baxter Magolda's theory of self-authorship seemed to apply to the OA students who were not able to type 35 nwpm at the end of their first-semester keyboarding course. These three theories will now be analyzed with the five student barriers in mind.

Albert Bandura's Theory of Self-Efficacy.

Self-efficacy is a person's perceived capabilities for learning or performing tasks at certain levels of competency (Bandura, 1977)—their feelings about their ability to perform. At Davis College, keyboarding timed writings are a task that students must do at a competency level of 35 nwpm. Psychologist Albert Bandura's work has shown there to be a relationship between high self-efficacy and achievement. His theoretical model has self-efficacy being affected by four things: Actual Performance, Vicarious Experiences, Some Types of Social Persuasion, and Physiological Levels (Bandura, 1977). In this study about barriers to keyboarding success, Actual Performance and Some Types of Social Persuasion were factors that increased students' self-efficacy.

Actual Performance. When students finally started to see improvement in their timed writing results, their self-efficacy began to soar. Student D5 summed up her feelings and the feelings of others when she shared, "I was soooo happy. I was like 'I am able to do it!' 'I'm not incompetent!' 'I can do it!'" Actual performance success can be such a motivator. How do faculty members get their typing students to perceive themselves as competent and capable earlier in the first semester? Perhaps the keyboarding timed writing tests should be easier to accomplish with a lower speed requirement, a lower accuracy requirement, or a lower time

requirement. Maybe the student should only attempt the keyboarding timed writing tests when success is a realistic outcome, instead of when the calendar says it is a timed writing day. Perhaps students need to be scaffolded for success by completing incrementally harder timed writings as they gradually progress towards the 35 nwpm timed writings. This portion of Bandura's theory of self-efficacy supports the Not Knowing How to Improve Their Typing Skills barrier. Students shared that they did not know how to improve their typing skills, so they would continue to fail in the timed writing sessions. As they continued to fail, their self-efficacy would continue to fall. Only once they sorted out a way to be successful and saw some success on actual timed writings were they able to achieve the 35 nwpm timed writing goal.

Some Types of Social Persuasion. Bandura's work also showed that positive social persuasion could increase self-efficacy. Many students felt that it was the praise and support received from faculty members that enabled them, motivated them, and helped them reach the 35 nwpm. Again, Student D5 summed up the sentiments of the participants when she said, "And you (faculty member) were like 'Come on. You can do it.' But I'm like 'I can't.' I'm struggling so hard and you just kinda pushed me through it." The faculty member is in a position of authority as she is the one marking performances and handing out grades. She can use this status to help persuade students that they are capable, that they can type. This portion of Bandura's self-efficacy theory supports The Online Course Format barrier spoken of by students. Having the keyboarding course as a fully online course with no assigned instructor does not work for all OA students. The students in this research study took too long to get the Social Persuasion Bandura's work outlines. If these study participants had taken an in-class course, they would have seen an instructor regularly and perhaps would have received the typing support, guidance,

and tips (Social Persuasion) they needed to be successful in the first-semester keyboarding course.

Bandura's theory of self-efficacy has two other parts to it: Vicarious Performance and Physiological states, neither of which were evident in the comments of this study's participants.

Only Student D3 voiced support for the Vicarious Performance aspect of the theory. She self-identified with her friend Sarah. When she saw Sarah type quickly and be successful with her timed writings, Student D3 felt motivated and empowered. Other students though, like Students D2, D5, and D7, found listening to others type quickly or watching others type fast on timed writing tests very intimidating. Watching others be successful at timed writing tests did not make students feel that they could also type well. Instead, seeing others succeed intimidated students (Student D5) and made them question themselves and their ability to meet the typing standard.

Self-efficacy does not replace typing practice, but it can enhance the benefit of all the practicing a student does. A student who is practicing her typing skills and has success on actual timed writing tests and has a faculty member encouraging her performance efforts would see her self-efficacy increase, and achievement would become that much more possible. In Table 18, you can read some recommendations to OA faculty members for overcoming the five barriers to typing success that are based on Bandura's theory of self-efficacy.

Table 16

Recommendations to Overcome Barriers to Typing Success from Bandura's Theory of Self-Efficacy

In addition to being typing coaches who help students build their skills, faculty members can also act as cheerleaders, building the self-efficacy of those students who are practicing and working to improve.
Instead of doing timed writing tests on pre-set dates, let the students decide when they are ready to do the timed writing.
Make the timed writing tests easier by reducing the amount of time the students need to type for, the speed required, or the accuracy level that must be obtained.
Set up scaffold timed writings that slowly lead up to the 35 nwpm timed writings.

Alexander Astin's Theory of Student Involvement.

Astin's theory proposes that meaningful student involvement in a course stimulates cognitive skills that will lead to greater learning in the course. For keyboarding, that learning would be touch-typing to 35 nwpm. Involvement is the amount of energy (psychological and physical) that the student puts into the course learning, and Astin's theory makes five assumptions about that involvement. From the student responses in this study, we can see how Astin's theory helps to explain the five barriers to typing success.

Investment of Physical and Psychological Energy. All the study participants admitted that they did not do enough keyboarding practice to be able to type 35 nwpm. They did not invest the energy in learning to touch-type; therefore, they did not learn to touch-type. Astin's theory makes this relationship of effort equals success very straightforward for OA students and supports the barrier of A Lack of Time to Practice.

Involvement Occurs Over and Along a Continuum. Students who are new to typing or struggling with typing cannot cram all their practicing into the night before a timed writing test

and be successful on the test. Learning to type requires regular diligent practice (Keith, 2007). Some students in this study tried to cram their practicing into Saturday afternoon marathons (Student D4) or do bits and pieces of practicing here and there (Student D2) but to no avail. Astin's theory both validates the faculty member who has turned blue in the face from reminding students to practice daily and supports the barrier of A Lack of Time to Practice.

Involvement is both Quantitative and Qualitative. Students need to put in the time to practice, but the quality of the practice needs to be diligent (Keith, 2007). The students in this study did not seem to grasp the understanding or importance of diligent practicing. They seemed to lack direction on how to type effectively and efficiently to meet their 35 nwpm goal, with comments like "I'm trying to improve myself, … but I can't improve myself with the tools that I have" (Student D4). Astin's theory serves as a reminder to faculty members to help students find quality practice activities and supports the barrier of Not Knowing How to Improve Their Typing Skills.

The Amount of Student Learning and Personal Development in a Program is Directly Proportional to the Quality and Quantity of Student Involvement. In layman's terms, Astin is saying that the more students invest themselves in a program, the more they will get out of that program. Students who do not get their keyboarding credit in semester one will come to realize that they cannot graduate from the OA program without it. At that point, they will begin to pour themselves into their keyboarding work, and success arrives. The forceful comment from Student D3 comes to mind, "There's just no way that I'm not doing this!" Astin's theory gives comfort to the faculty members who worry about their non-typist students. At some point, the student will be fully engaged, will become fully involved, and will type at 35 nwpm.

On the other hand, faculty members should continue to try and help students overcome barriers to typing success. For example, some students may find a greater sense of involvement with an in-class course instead of an online course. Some students may invest more time in practicing if they knew what to practice to improve their skills. Finally, some students may engage more with the diligent practicing if they got faculty help in developing a typing method that incorporates both their previously acquired non-touch-typing habits and touch-typing skills. Astin's theory states that students will not learn to type at 35 nwpm until they are prepared to involve themselves in the work to do it. That student involvement might be hastened if faculty members help students overcome the five barriers to typing success developed from this study. This portion of Astin's theory gives support to three of the obstacles to typing success developed from this study: Not Knowing How to Improve Their Typing Skills, The Online Course Format, and Previously Acquired Non-Touch-Typing Habits.

The Effectiveness of a Program is related to the Program's Ability to Increase Involvement. By program, Astin was referring to educational policy or practice. However, from a keyboarding perspective, the program means a typing software program. The study participants did not speak highly of the Nelson Brain software and of the need to type from a textbook. One comment stands out for the researcher, "I feel like it was my downfall – Nelson Brain. I think the program itself was a downfall for me" (Student D4). However, when students made use of typing.com or typistapp.ca online software, they felt more engaged, more involved, and had more success (Students D1, D4). As noted in Chapter 4, when the OA program moved to the typistapp.ca, faculty members saw a 9 percent decrease in the failure rate for the keyboarding course. Astin's research reminds us that overcoming a barrier like

Computers/Classrooms/Keyboarding software concerns can create an increase in student involvement and therefore student success.

Astin's theory of student involvement links student involvement in a course to stimulated cognitive skills that will lead to greater learning in the course. For OA students, a greater amount of engagement and involvement in their keyboarding course and typing work will stimulate students' cognitive skills and lead to greater typing development. Astin's theory reinforces each of the five barriers to typing success that were developed from this study, allowing faculty members to embrace recommendations to overcome the barriers to typing success that are based on Astin's theory. Table 17 lists these recommendations.

Table 17

Recommendations to Overcome Barriers to Typing Success from Astin's Theory of Student Involvement

Have faculty members keep stressing to students that effort equals success.
Have faculty members keep stressing to students that they need to practice daily and not just the night before a timed writing test.
Have faculty members either supply or help students develop diligent practice activities.
Have faculty members remind each other that the students who want to learn to type at 35 nwpm will eventually learn to type at 35 nwpm.
Keep using the typistapp.ca software and as faculty members, always be on the lookout for better typing products for our students.

Marcia Baxter Magolda's Theory of Self-Authorship.

This theory looks at self-authorship as "the internal capacity to define one's beliefs, identity, and social relations" (Baxter Magolda, 2008). There are four phases that students move through on their journey of self-authorship: Phase 1: Following Formulas, Phase 2: Crossroads, Phase 3: Becoming the Author of One's Life, and Phase 4: Internal Foundation. From a

keyboarding perspective, students are on a journey to reach a typing speed of 35 nwpm. No one can learn to type for them. No one can do the timed writing tests for them. Students must individually reach the goal.

The Davis College keyboarding course has all students starting out in Phase 1: Following Formulas. Every student is assigned keyboarding drills from the typing textbook—exercises that are set out by the online course. The typing drills follow a sequential order, working the students through touch-typing finger placements with emphasis on speed and accuracy development. In this study, only one student was dissatisfied with these Phase 1 drills (Student D6). She felt they were a nuisance as she preferred to use one of the online typing programs. However, the online software drills also followed a sequential order of skill development. The rest of the study participants were either not bothered by them (Student D3) or thought they were good (Student D4). It is possible that students who could already type to automaticity felt that these formulaic drills were tedious or not worthwhile, but such students were not the focus of this study.

In Phase 2: Crossroads, students begin to want to be more authentic. They want to resolve the conflict between how other people see them and who they want to be. Many of the study participants spent a lot of time in Phase 2. The students want to be able to type at 35 nwpm like their peers, but they cannot. They want to be future Office Administration workers, but who wants to hire someone who cannot type? They perceive that they did everything their peers did in Phase 1, but their peers can type 35 nwpm and they cannot. Student D5 summed up the feeling with this comment:

> Like my friend, she'd be sitting beside me, and I could hear her typing so much faster than me, and it was like ‘How?' Like ‘I'm in the same courses as you are and how?' Like, I don't understand.

Some students talked about giving up for a while and then finally getting the grit and determination to move on to the next phase, "This is just not going to happen. There's no way I'm not going to pass this" (Student D6). Others spoke of wanting to move on to Phase 3, but not knowing what to do to get there (Student D4). It is at this Phase 2 that OA faculty members get frustrated. Faculty members have provided students with lists of what they should be doing to become touch-typists. Faculty members have nagged; they have cajoled. However, the individual students are not doing the diligent practicing they need to do to be successful. Students are stuck and have not yet decided that the effort they must expend to learn to type at 35 nwpm is worth it. In this study, the student frustration in Phase 2 is seen in the Not Knowing How to Improve Their Tying Skills barrier. As noted earlier, students want to go to Phase 3, but they do not feel they know how to get there. The student is perhaps looking for a fast and easy way to get to Phase 3 that bypasses doing all the practicing. Or maybe the students do not want to do the work to adjust their Previously Acquired Non-Touch-Typing Habits to a more touch-typing format to move to Phase 3. Or perhaps it is easier to blame external reasons like those listed in the Computers/Classrooms/Keyboarding Software Concerns barrier than to take personal responsibility to do the work. Baxter Magolda's Phase 2 gives support to three of the obstacles to typing success developed from this study: Computers/Classrooms/Keyboarding Software Concerns, Not Knowing How to Improve Their Typing Skills, and Previously Acquired Non-Touch-Typing Habits.

At some point, each of the students in the study reached out to an OA faculty member for help and assistance—they then moved on to Baxter Magolda's Phase 3: Becoming the author of one's life. Once the students took ownership of their own typing success and reached out for help and assistance, they were able to practice more diligently, improve, and reach their 35 nwpm. And once they reached the 35 nwpm, students slid into Phase 4: Internal foundation, where they were now confident typists who practiced and improved their keyboarding skills beyond the 35 nwpm. One student in Phase 4 reported passing a hospital typing test of 40 npwm (Student D3). Another student in Phase 4 shared that she now types error-free without looking at her hands (Student D5).

It is sometimes hard for faculty members to wait until students are ready to do the diligent typing practice needed to type fluently and accurately. Baxter Magolda's theory reminds faculty members to provide opportunities for those stuck in Phase 2 and be willing to give support and guidance when students are prepared to move to Phase 3. Since Baxter Magolda's theory of self-authorship supports some of the five barriers to typing success developed from this study, faculty members can benefit from recommendations her theory gives to educators. Table 18 provides some ideas for overcoming obstacles to typing success based on the work of Baxter Magolda.

Table 18

Recommendations to Overcome Barriers to Typing Success from Baxter Magolda's Theory of Self-Authorship

Faculty members need to realize that they cannot push students into Magolda's Phase 3. Students must want to get there themselves.
Faculty members need to make students in Magolda's Phase 2 aware that as educators they are available for keyboarding help and assistance whenever students want it.

Faculty members need to realize that they cannot push students into Magolda's Phase 3. Students must want to get there themselves.
Faculty members need to have plans in place so that when students reach Magolda's Phase 3, projects and activities are in place to help the students earn their 35 nwpm.

Bandura's theory of self-efficacy, Astin's theory of student involvement, and Baxter Magolda's theory of self-authorship are three social science theoretical frameworks that validate the five barriers to typing success developed from this phenomenological study. These three theoretical frameworks also give support to faculty members with recommendations they can implement to help students overcome these typing barriers. A compilation of these recommendations is listed below in the Summary of Findings Through the Lens of Social Science Theoretical Frameworks.

Summary of Findings Through Lens of Social Science Theoretical Frameworks

Bandura's, Astin's, and Baxter Magolda's social science theoretical frameworks give support to the five barriers to typing that have been identified in this phenomenological study. Table 19 illustrates this support.

Table 19

Social Science Literature Support for Five Barriers to Typing Success Developed from this Study

Five Barriers to Typing Success Developed from this Study	Social Science Literature Support
Computers/Classrooms/Keyboarding Software Concerns.	• **Alexander Astin's Theory of Student Involvement**, The Effectiveness of a Program is Related to the Program's Ability to Increase Involvement. • **Marcia Baxter Magolda's Theory of Self-Authorship**, Phase 2: Crossroads.

Five Barriers to Typing Success Developed from this Study	Social Science Literature Support
A Lack of Time to Practice.	• **Alexander Astin's Theory of Student Involvement,** Investment of Physical and Psychological Energy, Involvement Occurs Over and Along a Continuum.
Not Knowing How to Improve Their Typing Skills.	• **Albert Bandura's Theory of Self-Efficacy,** Actual Performance**.** • **Alexander Astin's Theory of Student Involvement**, Involvement is both Quantitative and Qualitative, Amount of Student Learning and Personal Development in a Program is Directly Proportional to the Quality and Quantity of Student Involvement**.** • **Marcia Baxter Magolda's Theory of Self-Authorship,** Phase 2: Crossroads.
The Online Course Format.	• **Albert Bandura's Theory of Self-Efficacy,** Some Types of Social Persuasion. • **Alexander Astin's Theory of Student Involvement,** Amount of Student Learning and Personal Development in a Program is Directly Proportional to the Quality and Quantity of Student Involvement.
Previously Acquired Non-Touch-Typing Habits.	• **Alexander Astin's Theory of Student Involvement,** Amount of Student Learning and Personal Development in a Program is Directly Proportional to the Quality and Quantity of Student Involvement. • **Marcia Baxter Magolda's Theory of Self-Authorship,** Phase 2: Crossroads.

Implications of Findings through the Lens of Social Science Theoretical Frameworks

From an understanding of how the social science theories of self-efficacy, student involvement, and self-authorship support the five barriers to typing success developed from this

study, the researcher created a list of recommendations that faculty members could employ to help students be more successful at reaching the first-semester typing speed of 35 nwpm. A compilation of these ideas is listed in Table 20.

Table 20

Recommendations to Overcome Barriers to Typing Success from a Review of Social Science Theoretical Frameworks

Faculty members need to make students in Magolda's Phase 2 aware that as educators they are available for keyboarding help and assistance whenever students want it.
Faculty members need to have plans in place so that when students reach Magolda's Phase 3, projects and activities are in place to help the students earn their 35 nwpm.
Faculty members need to realize that they cannot push students into Magolda's Phase 3. Students must want to get there themselves.
Have faculty members either supply or help students develop diligent practice activities.
Have faculty members keep stressing to students that effort equals success.
Have faculty members keep stressing to students that they need to practice daily and not just the night before a timed writing test.
Have faculty members remind each other, that the students who want to learn to type at 35 nwpm, will eventually learn to type at 35 nwpm.
In addition to being typing coaches who help students build their skills, faculty members can also act as cheerleaders, building the self-efficacy of those students who are practicing and working to improve.
Instead of doing timed writing tests on pre-set dates, let students decide when they are ready to do the timed writing.
Keep using the typistapp.ca software and as faculty members, always be on the lookout for better typing products for our students.
Make the timed writing tests easier by reducing the amount of time the students need to type for, the speed required, or the accuracy level.
Set up scaffold timed writings that slowly lead up to the 35 nwpm timed writings.

Consolidation of Findings and Implications

Keyboarding is not an advanced academic pursuit. No one gets a degree in keyboarding. Keyboarding is a skill to be mastered to enable someone to complete other important tasks such as writing a paper or completing a budget effectively and efficiently.

When the researcher undertook a literature review of keyboarding as part of this study, she was surprised to find very little research on the topic. Most research that did exist was from the days of typing pools and manual typewriters. As a newcomer to social science research, the researcher assumed she was not using the appropriate keywords to find journal articles. When that assumption proved incorrect, she settled on the assumption that keyboarding must not be a topic that social science research can support. However, this assumption was also proven wrong.

Social Science research is interested in social phenomena, in how individuals and groups of people interact with each other, themselves, and the world around them. Here at Davis College, we have a social phenomenon: Many of the OA students are failing their first-semester keyboarding course. The obvious question is why? As faculty members, we have brainstormed amongst ourselves and spoken with students in meetings and hallways, trying to find the answer to this question. However, the answers were never satisfying, never firm enough to lead to meaningful change. Many of the other Ontario College's OA programs are grappling with the same question (Seneca College OA Faculty, 2016). They have their keyboarding courses structured differently than the one at Davis College. They have different faculty members and different students. However, they too have students ready to graduate who have not mastered touch-typing, who have not done enough practice to type 35 npwm—a social phenomenon.

Although the researcher was only able to interview eight students for this phenomenological study into the reasons why students were not learning to touch-type at a rate of 35 nwpm, the interviews provided a wealth of information that was synthesized into the following five barriers to typing success:

- Computers/Classrooms/Keyboarding Software Concerns.
- A Lack of Time to Practice.
- Not Knowing How to Improve Their Typing Skills.
- The Online Course Format.
- Previously Acquired Non-Touch-Typing Habits.

An analysis of these barriers provided many recommendations of ways to mitigate these barriers for the students. The barriers were then analyzed through the lens of social science literature which both validated the barriers and gave further recommendations of ways to help students overcome these obstacles. Finally, these barriers were looked at through the theoretical frameworks of Albert Bandura's theory of self-efficacy, Alexander Astin's theory of student involvement, and Marcia Baxter Magolda's theory of self-authorship**.** These theories supported the barriers and provided further recommendations for ways to help students deal with these barriers. A complete list of the recommendations gleaned from this study is in Appendix D.

Thanks to this social science research study, faculty members at Davis College can embrace five student-perceived barriers to typing success, work with the list of recommendations, and help more students type 35 nwpm by the end of semester one of the Office Administration program**.**

Chapter 6: Conclusions

At Davis College, students in the Office Administration (OA) program take an online first-semester keyboarding course. Students follow materials on a course learning platform and teach themselves to touch-type. To pass the course, students need to produce three, five-minute timed writings at 35 net words per minute (nwpm). Although developed in 1888 (Barnett, 2016), touch-typing has been proven to be the fastest, most accurate way to type (Logan, 2016). Once students master the basics of touch-typing and know which finger to use to hit which key on the keyboard, hours and hours of diligent practice are needed to become a fast and accurate typist (Ericsson, 2007). Many students are choosing not to practice their touch-typing skills and are not passing the required keyboarding course. The failure rate for this course has been steadily increasing from 10 percent in 2007 to 61 percent in 2017 (Davis, 2017).

Purpose Statement

The purpose of this qualitative phenomenological research study is to understand better why students are not doing the touch-typing practice needed to reach the keyboarding speed required to graduate from the Office Administration program.

Research Questions

What are Office Administration community college students' perceived reasons for not passing their first-semester keyboarding course?

- What are Office Administration community college students' perceived barriers to learning to touch-type?
- How do Office Administration community college students feel diligent practice impacts learning to touch-type?

Research Design

Although there has been much discussion amongst OA faculty members as to why students are not learning to touch-type, this phenomenological study allowed faculty members to learn about touch-typing from the students' perspective. Conducting in-depth, semi-structured interviews with a convenient sample of students allowed students to share their views on the keyboarding course. From the interview data, the researcher was able to extrapolate five barriers that students felt prevented them from passing their first-semester keyboarding course.

Population and Sample

The students who graduated from the OA program in April 2018 and August 2018 and who were in semester three of their OA specialization in the Fall 2018 term, who did not successfully pass their first-semester keyboarding course in semester one were the population for this study. From this population, a convenient sample size of eight students participated in semi-structured interviews with the researcher.

Data Analysis

In Chapter 4 of this paper, it was determined through data analysis of the semi-structured interviews that there was no one reason why students were not doing the needed practicing to achieve the 35 nwpm. Students shared these five common obstacles to their success.

- Computers/Classrooms/Keyboarding Software Concerns.
- A Lack of Time to Practice.
- Not Knowing How to Improve Their Typing Skills.
- The Online Course Format.
- Previously Acquired Non-Touch-Typing Habits.

Discussion of Findings

A critical analysis of the five barriers to student keyboarding success led to a list of recommendations on how to help students overcome these obstacles. This research project did not change or improve upon any social science research. However, applying social science research to the five barriers validated the research findings and generated a list of recommendations that faculty members can consider when improving the keyboarding course for students. Appendix D contains the lists of recommendations.

Critical Evaluation of Research Project

Although the researcher was excited to work with the five barriers to students' mastering touch-typing and the list of recommendations the discussion of these barriers generated, there were problems with the research project. Unfortunately, very few students volunteered to participate in the study, no international students volunteered to participate, and since this qualitative study was the first one undertaken by the researcher, mistakes were made in the research process that can be attributed to inexperience.

Although the population for this study was over four hundred students, only 19 students responded to the invitation to participate. Of the nineteen, twelve students met the sample requirements, but only eight students followed-up and completed the interviews. Having such a small number of participants to choose from was disappointing, but the researcher appreciated the quality data the students provided.

No visa students completed interviews with the researcher. More and more international students are taking OA courses (Davis, 2017), so the researcher would have liked to hear from them about their perceived barriers to typing success. Perhaps the barriers would have been the

same; however, there might have been some cultural barriers this study could have explored. There were, however, three English Language Learners who participated in the study, and these students were able to give some valuable insights into the OA keyboarding experience.

As an inexperienced social scientist, the researcher would sometimes get enthralled with the interview and forget to take field notes, or she would second guess whether she should ask a supplemental question, fearing that the question may show her bias towards an answer. Although the researcher spent hours on the coding and triangulation to generate the five barriers to typing success, the researcher lacks confidence in her skills and wonders if there are other barriers that were missed.

Also, the researcher's lack of knowledge of social science theories may have handicapped the application of theoretical frameworks to the five barriers. As noted in Chapter 5, very little applicable research has been done on keyboarding, so the onus was on the researcher to find theoretical frameworks that she felt could shed light on the typing problems students were having. Although Albert Bandura's theory of self-efficacy, Alexander Astin's theory of student involvement, and Marcia Baxter Magolda's theory of self-authorship shed light on the students' problems and provided potential solutions to the students perceived barriers to success, the researcher cannot help but wonder if she missed considering a theory that would have been a better fit for the study questions.

The researcher is pleased with the findings of this study. However, the study sample was small, and no international students participated. Since this was the researcher's first formal qualitative study, mistakes were made, and the researcher's inexperience may have led to less than robust results.

Future Research Options

As noted in Chapter 5, very little social science research has been applied to keyboarding. That fact leaves the field open for research to be done on keyboarding concerns and issues. From the literature review, future studies would be needed to determine how factors like boredom, disabilities, culture, age, and stress affect the students' barriers to typing. Also, a quantitative study to have keyboarding students rank the importance of the five obstacles to their keyboarding experience would be helpful for faculty members to know which barrier to begin addressing first. Finally, once changes based on the recommendations listed in Appendix D have been made to the keyboarding program, a follow-up study would be needed to measure their impact.

Boredom

During the literature review for this study, research suggested that boredom can be a cause for low motivation to learn (Eastwood, 2012). None of the students reported being bored by the typing practice that they did either in the software packages or on their own. Further research in this area is needed to determine if boredom affects students' motivation to learn to touch-type.

The Relationship between Student Disabilities and Cultures with Motivation

Although there is research on the relationship between student disabilities (Alamri, 2016) and cultures (Subramaniam, 2008; Zhao, 2016) with motivation, these variables were not a factor in this study. Involving students with disabilities and international students in a keyboarding motivation study is needed.

A Cultural Disconnect with Typing

Social science research has demonstrated that touch-typing is the most effective and efficient way to type (Logan, 2016), yet Ontario's youth are not taught in elementary school or high school how to touch-type. In our digital world, students must learn to touch-type on their own or develop their own method of typing. However, employers want to hire OA support staff who can type quickly and accurately. Currently, the OA faulty members at Davis College are working to bridge the gap between students who arrive in the program not touch-typing and graduation when students need to touch-type. This cultural disconnect between Ontario's children not learning to touch-type, the OA program pushing for touch-typing, and employers' needs for fast and accurate typists leads to interesting questions such as the following: Should Ontario's children be taught to touch-type in school? Should OA programs insist on touch-typing? Should employers accept any style of typing so long as it is fast and accurate? These questions require further research.

Age as a Factor in Learning to Type

Some students who were over 25 years of age felt that they were at a disadvantage in learning to touch-type, but there were also young people in the study sample. A study with a larger sample may shed light on the importance of age in learning to touch-type.

Stress

The typing standard was hard for all the interviewed students to meet; however, the study questions did not delve deeply into the psychological states of the students when they were taking the timed writing tests. Although all the students found the typing tests stressful, they all were stoic and realized that they just had to work harder to be successful. No student mentioned that they stressed about all OA tests and, therefore, found typing tests hard to accomplish

because they were stressed. All students realized that the only way they were going to be successful on the timed writing tests was to practice, practice, and practice some more. Further research needs to be done to determine if the stress of doing a timed writing test is a barrier to students being able to type at 35 nwpm in semester one of the OA program.

How Common is Each Barrier?

Since the researcher has assembled a list of five common barriers to students' ability to learn to touch-type at 35 nwpm, it would be helpful to do a quantitative study that would survey the second-semester OA students and determine which barriers they feel apply to them. As noted in Chapter 5 and listed in Appendix D, a discussion of these five barriers has led to lists of recommendations for possible changes in the keyboarding course. A quantitative study that pinpoints which barriers are most common would help faculty members to prioritize the numerous recommendations from this study.

Follow-up Study on Recommendations

Once a critical analysis of the recommendations in Appendix D of this report has been done, and changes to the keyboarding course have been implemented, a follow-up study is needed to determine if the changes made have decreased or eliminated any of the five student-identified barriers or if new obstacles have been created inadvertently.

Research often leads to further research. As a result of this research project, then, typing boredom, the relationship between student disabilities and cultures with motivation, age and stress as factors in learning to type, how common each of the five perceived barriers to learning to type is in the OA population, and possible changes in keyboarding barriers as a result of changes made to the keyboarding course would all be possible future research opportunities.

Final Recommendations

There is no one reason why students at Davis College are not passing their first-semester keyboarding course. This phenomenological study has unearthed five potential barriers to student typing success. A formal analysis and discussion of the barriers led to an extensive list of recommendations for changes. Time will now need to be taken to consider and evaluate each of the recommendations and determine which ones will be incorporated into the keyboarding course. Once recommendations have been implemented, a follow-up study is needed to determine if any or all the barriers to success have been eliminated or if new ones have been inadvertently created.

Key Message

Although keyboarding may not be considered an academic pursuit, the pursuit of academic research on the topic of keyboarding has shed light on why students are not doing the touch-typing practice needed to reach the keyboarding speed required to graduate from the Office Administration program at Davis College. When interviewed, students supplied five barriers to their keyboarding success, and the academic rigor of a formal phenomenological study has generated an extensive list of recommendations of ways to overcome these barriers. Such is the power of social science research.

Appendix A

Email of Introduction to possible participants

Subject line: I need your help to improve the Keyboarding course.

Do you remember the KEYB10008 keyboarding course back in semester one? Do you remember the challenge and frustration of trying to type 35 nwpm? I'm emailing to ask for your help in improving the first-semester keyboarding course.

For those of you whom I may not have taught, my name is Peggy Daniel and I'm the Office Administration General Certificate coordinator and faculty member here in the Office Administration program. I am currently enrolled at Central Michigan University as a student in the Master of Arts in Education, Community College, degree program. I've been in the program for two years now, and I am conducting a research study as part of my graduation requirements.

I am seeking the help of ten office administration students who did not pass keyboarding (KEYB10008) in semester one to help me with a formal study.

The purpose of this study is to find out why students are not successful in their first-semester keyboarding course. As faculty, we want to help students get their keyboarding course credit, but we do not have any research on keyboarding from the students' point of view. I am looking for students to participate in a 30-minute interview with me about their keyboarding experience. The interview would be conducted over Zoom, Skype, or Facetime. I feel that learning about your experiences can add so much to our understanding of the issues students are facing with the keyboarding course. I hope that I will find out things that can help future keyboarding students be successful and that I will also find out things that could be making it difficult for students to be successful. These reasons are why I would appreciate your participating and sharing in this study.

Your decision to participate in this study will be strictly voluntary. Procedures have been put in place to ensure your privacy and the confidentiality of the data collected through the interview process.

If you wish to participate in this study, please email me at danie1p@cmich.edu by _____. Although my email address looks like it is my last name and the letter p for Peggy, the email address is really **danie** and then the number one and then the letter p.

Thank you in advance for giving some thought to participating in this study.

Enjoy your day.

Peggy Daniel

Reminder Email to Encourage Participants

Subject line: Reminder about helping to improve the Keyboarding course

You may remember from my previous email, that I'm looking for participants for a study I'm doing on ways to improve the KEYB10008 keyboarding course.

I'm looking for students who were unsuccessful the first time they took the keyboarding course.

If you would like to give back to the program and help improve the keyboarding experience for future students, please consider meeting with me for 30 minutes over Skype, Zoom, or Facetime to answer some questions about your keyboarding experience.

Your decision to participate in this study is strictly voluntary. Procedures have been put in place to ensure your privacy and the confidentiality of the data collected through the interview process.

If you wish to participate in this study, please email me at danie1p@cmich.edu by _____. Although my email address looks like it is my lastname and the letter p for Peggy, the email address is really **danie** and then the number one and then the letter p.

Thank you in advance for giving some thought to participating in this study.

Enjoy your day.

Peggy Daniel

Email to potential participants to get signed consent form.

Subject: Thanks for volunteering to help improve the keyboarding course

Thanks for helping improve the keyboarding course for future students by offering to participate in this keyboarding study.

The purpose of this study is to find out why students are not successful in their first-semester keyboarding course. As faculty, we want to help students get their keyboarding course credit, but we do not have any research on keyboarding from the students' point of view. I am looking for students to participate in a 30-minute interview with me about their keyboarding experience. The interview would be conducted over Zoom, Skype, or Facetime. I feel that learning about your experiences can add so much to our understanding of the issues students are facing with the keyboarding course. I hope that I will find out things that can help future keyboarding students be successful and that I will also find out things that could be making it difficult for students to be successful. These reasons are why I appreciate your participating and sharing in this study.

Your decision to participate in this study will be strictly voluntary. Procedures have been put in place to ensure your privacy and the confidentiality of the data collected through the interview process.

Here's what I need you to do:

- This is a formal academic study, so I need you to sign the attached consent form and send it back to me.
- Review the attached interview questions that I will be asking you.
- Email me any questions you may have about the interview questions or the consent form.
- Email me to let me know which digital interview method you would be most comfortable using: Zoom, Skype, Facetime.
- Email me some dates and times when you are available for this study interview

My email address is danie1p@cmich.edu. Although my email address looks like it is my last name and the letter p for Peggy, the email address is really **danie** and then the number one and then the letter p.

Thanks again for helping to improve the Office Administration Program for future students. I'm really looking forward to working with you.

Enjoy your day.

Peggy

Informed Consent Form

TITLE OF STUDY

Insights into Why Some Office Administration Students are not Learning to Touch-type

PRINCIPAL INVESTIGATOR

Peggy Daniel, a Graduate Student with Central Michigan University in the Masters of Arts in Education Program. This study is part of the principal investigator's capstone project for EDU 776 Seminar: Issues in Education.

Danie1p@cmich.edu

PURPOSE OF STUDY

You are being asked to take part in a research study. Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. Please read the following information carefully. Please ask the researcher if there is anything that is not clear or if you need more information.

The purpose of this qualitative phenomenological research study is to better understand why students are not doing the touch-typing practice needed to reach the keyboarding speed required to graduate from the Office Administration program.

STUDY PROCEDURES

Digital interview for approximately 30 minutes over Zoom, Skype, or Facetime.

- Student to sign this consent form to participate in study.
- Student and Researcher arrange to conduct interview over Zoom, Skype, or Facetime. The participant will decide which digital tool will be used for the interview.
- A mutually agreeable time will be arranged to do the interview. Peggy Daniel will conduct the interview either from her office at home or from one of the meeting rooms in M-wing at the College.
- Peggy Daniel will ask the questions. She will use her Smartphone to record the interview answers. She will also make notes during the interview.
- Peggy Daniel will transcribe the interview notes and email them to the student participant to ensure the student agrees with the comments that were transcribed.

RISKS

There is no risk to the student participant. As a study participant, you may decline to answer any or all questions, and you may terminate your involvement at any time you choose.

BENEFITS

There will be no direct benefit to you for your participation in this study. However, we hope that the information obtained from this study will help Office Administration faculty members to make improvements to the KEYB10008 keyboarding course. As a faculty, we want all our students to be successful. A study of the student's perspective of the keyboarding course may help us make positive changes to the course.

CONFIDENTIALITY

Your responses to these interview questions will eventually be anonymous. After you approve your transcript of the interview, your transcript will be assigned a number and will be anonymous in the study results. Every effort will be made by the researcher to preserve your confidentiality including the following:

- Assigning code names/numbers for participants that will be used on all research notes and documents

- Keeping notes, interview transcriptions, and any other identifying participant information on encrypted USB's in a locked file cabinet drawer in the personal possession of the researcher.

- Five years after the study has been completed, any paper documents in the locked file cabinet drawer will be cross-shredded and the USB's will be destroyed.

CONTACT INFORMATION

If you have questions at any time about this study, or you experience adverse effects as the result of participating in this study, you may contact the researcher whose contact information is provided on the first page. If you have questions regarding your rights as a research participant, or if problems arise which you do not feel you can discuss with the Primary Investigator, please contact the researcher's supervisor, Dr. Kaleb Patrick at Office Phone: 989-774-3144 Cell Phone: 616-322-6047. Email: kaleb.patrick@cmich.edu

VOLUNTARY PARTICIPATION

Your participation in this study is voluntary. It is up to you to decide whether to take part in this study. If you decide to take part in this study, you will be asked to sign this consent form. After you sign the consent form, you are still free to withdraw at any time and without giving a reason. Withdrawing from this study will not affect the relationship you have, if any, with the researcher. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed.

CONSENT

I have read, and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Participant's signature _____ Date _____

☐ Please email me a copy of the final research paper.

Investigator's signature _____ Date _____

This project has been reviewed and received ethics clearance from the Mohawk College Research Ethics Board (MCREB). Participants with concerns or questions regarding their rights as a research participant should contact:

Mohawk College Research Ethics Board (MCREB)

E-mail: reb.coordinator@mohawkcollege.ca

Appendix B

As a semi-structured interview, the goal was to get answers to the following questions. Given the free-flowing nature of the interview, some of the questions were answered without asking the questions, some questions were rephrased, some questions required further explanation or clarification, and new additional questions were asked by the interviewer to ensure the participants' answers were clearly understood.

1. Can you tell me about things you have enjoyed while studying here at College?
2. Can you tell me about why you chose to study in the Office Administration program?
3. Do you think you've grown as a person while here at Davis? How so?
4. Have you made any friends while at Davis? Can you share with me how your friends helped you as a student?
5. Can you share with me how you learn best? Are you a visual, auditory, or kinesthetic learner? Do you like quiet or music playing while you did school work?
6. Are you a marathoner or a sprinter in your school habits? A marathoner likes to do some work on a project each day or week, whereas a sprinter likes to do the project all at the end. Can you share an example?
7. Can you tell me about your experiences with the keyboarding course?
    a. What did you enjoy or not enjoy?
    b. Did you get to practice at home as much as you wanted to?

c. How did you handle the stress of not succeeding right away?

d. Can you tell me about some of the barriers or problems you had when practicing keyboarding?

e. Can you describe for me what you think an ideal keyboarding practice session would look like?

    i. What kinds of things would you type?

    ii. How long would you type for?

f. How did you feel about the weekly goals/lessons (bronze, silver, gold stars) that were set out for you to complete?

g. Can you share your view of the classroom timed writing sessions?

    i. How did you react when people around you were getting their timed writings and you weren't?

    ii. How did you feel when you saw your timing speed improve?

h. Can you share with me your feelings about the keyboarding software package you had to use?

    i. Was it easy to use?

    ii. Did it motivate you to want to practice?

    iii. What does the term "touch-typing" mean to you?

iv. Do you think it did a good job of explaining how to touch-type and the importance of touch-typing?

v. How do you think the software could be improved?

8. Can you share any Suggestions you have on how we could improve the keyboarding course?

9. Has the way you typed changed from when you first took the keyboarding course?

10. Did you pass your first-semester Communications course? ☐ Yes ☐ No

11. Are you 25 years of age or younger? ☐ Yes ☐ No

12. Were you a visa student? ☐ Yes ☐ No

Thank you for your participation in this study.

Appendix C

Table 21

Evaluating a Qualitative Study

Evaluating a Qualitative Study (Leedy & Ormrod, 2016, pp. 304 - 305)		
Findings and Interpretations	**Yes**	**No**
Are the data analysis techniques appropriate for the research question, methodology, and theoretical framework?		
Are data analysis techniques explicitly described?		
Do data analysis techniques allow for revision and reinterpretation as new data come to light?		
Are various data sources triangulated?		
If used, are tables, figures, and other graphics easy to read and interpret? Do they enhance the reader's ability to understand the study?		
Are sufficient data reported to support the conclusions drawn?		
Are any irrelevant and unnecessary data reported? If so what should be deleted?		
Are discrepant data discussed and reconciled?		
Have the setting and observations been sufficiently described to present a convincing case?		
Are participants "voices" used to support the assertions and present multiple perspectives?		
Is the report detailed enough that the findings can be compared to other studies in other contexts?		
Is the discussion congruent with the research question and rationale for the study?		

Evaluating a Qualitative Study (Leedy & Ormrod, 2016, pp. 304 - 305)		
Are implications for theory and/or practice discussed?		
Have other scholars in the field reviewed the proposal or report? If so, do they agree that the approach, methodology, and conclusions are appropriate?		
Have participants in the project read the report? Do they agree with the findings?		

Appendix D

Table 22

Recommendations to Overcome Barriers to Typing Success from Data Analysis

Assign faculty members to online keyboarding course offerings.
Consider updating the online course set up and navigation so that students get the best possible learning experience.
Continue using the typistapp.ca online software packages that helps students learn to type.
Give students more than the current 14 weeks to learn to touch-type.
Have faculty members and students together set incremental goals to reach while on the path to achieving 35 nwpm goal.
Have faculty members help students develop their own hybrid touch-typing method that will allow them to meet the required 35 nwpm.
Have faculty members set incremental goals for the students to reach while on the path to achieving the 35 nwpm goal.
Have practice work submitted for marks.
Have students bring their own laptops to timed writing tests.
Have students listen to their music through earbuds/headphones while doing timed writing tests.
Have the students set their own incremental goals for reaching the 35 nwpm goal.
Improve the online course content to explain diligent practice better.
In first semester, allow students to choose between an online keyboarding course and an in-class keyboarding course.
In the first semester, allow students to choose between an online keyboarding course and an in-class keyboarding course.
In the online course content, give detailed weekly practice guides of exercises for students to do.
Invest in camera software so that students can take videos of their typing, and the videos to faculty members for criticism and assistance.
Offer faculty-member coaching to students to help them understand what they need to do to improve their individual typing skill set.
Offer in-class faculty-member instruction to help kinesthetic learners to feel what touch-typing means.
Permit students who fail the online keyboarding course in semester one to take the in-class keyboarding course while in semester two.
Provide students with access to learning resources on time management topics.
Review the amount of semester one homework in the OA program to ensure it is not excessive.

Table 23

Recommendations to Overcome Barriers to Typing Success from Social Science Literature

Consider the way the online keyboarding course is structured including setup and navigation and make any necessary changes that would help students get the best possible learning experience.
Continue to use online typing software like typistapp.ca instead of Nelson Brain.
Have a keyboarding faculty member available to give feedback and support.
Have a keyboarding faculty member available to help students understand what diligent practice is, why it is important, and how to create diligent practice lessons for themselves.
Have faculty members assigned to keyboarding courses to help students develop bridging goals between the end of the software goals and the course goals.
Offer an in-class delivery option for the keyboarding program.
Supply students with typing strategies including that of spelling out words while they type.
To prevent melioration, faculty members can help students develop their own hybrid touch-typing method that will allow them to meet the required 35 nwpm in semester one

Table 24

Recommendations to Overcome Barriers to Typing Success from Social Science Theoretical Research

Faculty members need make students in Magolda's Phase 2 aware that as educators they are available or keyboarding help and assistance whenever students want it.
Faculty members need to have plans in place so that when students reach Magolda's Phase 3, plans and activities are in place to help the students earn their 35 nwpm.
Faculty members need to realize that they cannot push students into Magolda's Phase 3. Students must want to get their themselves.
Have faculty members either supply or help students develop diligent practice activities.
Have faculty members keep stressing to students that effort equals success.
Have faculty members keep stressing to students that they need to practice daily and not just the night before a timed writing test.
Have faculty members remind each other, that the students who want to learn to type at 35 nwpm, will eventually learn to type at 35 nwpm.
In addition to being typing coaches who help students build their skills, faculty members can also act as cheerleaders, building the self-efficacy of those students who are practicing and working to improve.
Instead of doing timed writing tests on pre-set dates, let students decide when they are ready to do the timed writing
Keep using the typistapp.ca software and as faculty members, always be on the lookout for better typing products for our students.
Make the timed writing tests easier by reducing the amount of time the students need to type for, the speed required, or the accuracy level that must be obtained.
Set up scaffold timed writings that slowly lead up to the large 35 nwpm timed writings.

References

Ackerman, P.L. & Cianciolo, A.T. (2000). Cognitive, perceptual-speed, and psychomotor determinants of individual differences during skill acquisition. *Journal of Experimental Psychology: Applied*, *6*(4), 259.

Alamri, A. &.-W. (2016). Factors Affecting Learners With Disabilties--Instructor Interaction in Online Learning. *Journal of Special Education Technology*.

Allen I. E., S. J. (2011). Going the Distance: Online Education in the United States. *Sloan Consortium*.

Allen, I. E. (2012). *Conflicted: Faculty and online education, 2012.* Retrieved from Inside Higher Education : https://www.insidehighered.com/sites/default/server_files/files/IHE-BSRG-Conflict.pdf

Angelino, L. M. (2007). Strategies to engage online students and reduce attrition rates. *The Journal of Educators Online, 4(2)*, 1-14.

Astin, A. W. (1984). Student Involvement: A Developmental Theory for Higher Education. *Journal of College Sudent Personnel, 25*, 297-308.

atlas.ti. (2017, April 8). *Atlas.ti Qualitative Data Analysis*. Retrieved from Free Trial Version: http://atlasti.com/free-trial-version/

Bailey, G. A. (2006). Keyboarding and Speech Recognition: Current Status and Future Direction. *The Delta Pi Epsilon Journal, 48(2)*, 96-107.

Bandura, A. (1977). Self-efficacy: Toward a Unifying Theory of Behavioral Change. *Psychological Review, Vol. 84, No. 2*, 191-215.

Barnett, S. &. (2016). *Rhetoric, Through Everyday Things.* Tuscaloosa: University of Alabama Press.

Baxter Magolda, M. B. (2008). Three Elements of Self-Authorship. *Journal of College Student Development, 49*, 269.

Baxter Magolda, M. (September/October 2007). InterviewStrategies for Assessmign Sself-Authorship: Constructing Conversations to Assess Meaning Makin. *Journal of College Student Development, Volume 48, Number 5,*, 491-508.

Bennett, C. F. (2008). Online courses the real challenge is "motivation.". *College Teahing Methods & Styles Journal, 4*, 1-6.

Book, W. F. (1925). *Learning to typewrite.* New York: Gregg.

Bunkowski, D. K. (2007). The Little Engine That Could--How to Start the Motor? Motiving the Online Student. *InSight: A Collection of Faculty Scholarship, 2*, 37-49.

Buzan, T. (1983). *Using both sides of your brain: New techniques to help you read efficiently, study effecively, solve problems, remember more, think creativly.* New York: EP Dutton.

Canada, T. C. (2016, November 29). *Employability Skills 2000+*. Retrieved from Employability Skills 2000+: http://www.conferenceboard.ca/Libraries/EDUC_PUBLIC/esp2000.sflb

Canadian Federation of Students, O. (2017, March 28). *International Students in Ontario.* Retrieved from cfontario.ca: http://cfsontario.ca/wp-content/uploads/sites/50/2016/06/2015-International-Student-Factsheet.pdf

Carlson, J. (2017, April 25). *TopTen Reviews*. Retrieved from The Best Typing Software of 2017: http://www.toptenreviews.com/software/education/best-typing-software/

Cohen, M. R. (1990). Component abilities of spelling, memory, and motor skills in novices' transcription typing. *Perceptual and Motor Skills, 70*, 19-31.

D'Angelo, L. (2017). *Keyboarding KEYB10008 (Course Outline).* School of Business, Davis College.

Davis College. (2014). *Keyboarding student records. Unpublished Internal Docment, Davis College.*

Davis College. (2016). Keyboarding Graduation Rates. *Unpublished Internal Doument, Davis College.*

Davis College. (2016). Online learning platform pages. *Unpublished Internal Docment, Davis College.*

Davis College. (2017). *Keyboarding student records. Unpublished Internal Docment, Davis College.*

Davis College. (2018). *Keyboarding student records. Unpublished Internal Docment, Davis College.*

de Villiers-Scheepers, M. J. (2011). Motivating Intrapreneurs: The Relevance of Rewards. *Industry and Higher Education*, 249-263.

Denzin, N. K. (1978). The research act in sociology. (2nd ed,). New York: McGraw-Hill.

Dewar, T. &. (2016). Online Learners and Their Learning Stragegies. *Journal of Educational Computing Research*, 385-403.

Dintiman, G. (1964). Effects of various training programs on running speed. *Research Quarterly. Amerian Association for Health, Physical Education and Recreation, 35(4)*, 456-463.

Duckworth, A. (2017, April 8). *Angela Duckworth.com*. Retrieved from Angela Duckworth Grit Scale: https://angeladuckworth.com/grit-scale/

Dweck, C. (2016). *Mindset, The New Psycology of Success. How We Can Learn to Fulfill our Potential.* New York: Ballentine Books.

Eastwood, J. D. (2012). The Unengaged Mind: Defining Boredom in Terms of Attention. *Perspectives on Psychological Science (7) 5*, 482-495.

Ericsson, A., & Pool, R. (2016). *Peak Secrets from the New Science of Expertise.* USA: Houghton Mifflin Harcourt Publishing Company.

Ericsson, K. A. (2007). A Deliberate Practice Account of Typing Proficiency in Everyday Typists. *Journal of Experimental Psychology: Applied, Vol. 13, No. 3*, 135-145.

Fieger, H. (2009). *Behavor Change: A View from the Inside Out.* Garden City: Morgan James.

Fitts, P. M. (1954). The Information Capacity of the Human Motor System in Controlling the Amplitude of Movement. *Journal of Experimental Psychology, 47*, 381-391.

Gavaldà, M. (2015, September 13). Here's Why Your Phone Can't Understand Your Accent. (N. Y. Radio, Interviewer)

Genter, D. R. (1983). The Acquisition of Typewriting Skill. *Acta Psychologica, 54*, 233-248.

Gouds, M. M. (2000). Feedback Regarding Goal Achievement and Intrinsic Motivation. *Perceptual & Motor Skills, 2000, 90*, 810-812.

Government of Canada. (2017, March 13). *Innovation, Science, and Economic Development Canada*. Retrieved from Government of Canada: https://www.ic.gc.ca/eic/site/cfs-ope.nsf/eng/home

Gronert, M. L. (1925). A Prognostic Test in Typewriting. *Journal of Educational Psychology, 16*, 182-185.

Haskings-Winner, J. C. (2011). *Social Science: An Introduction.* Toronto: McGraw Hill Ryerson.

Hick, W. E. (1952). On the rate of gain of information. *The Quarterly Journal of Experimental Psychology, 4*, 11-26.

Indeed. (2017, March 14). *Transciption jobs in Burlington ON*. Retrieved from ca.indeed: https://ca.indeed.com/Transcription-jobs-in-Burlington,-ON.

Irizarry, R. (2002). Self-efficacy & motivation effects on online psychology student retention. *United States Distance Learning Association Journal, 16(12)*, 55-64.

Issac. (2017, April 8). *3 Tips for Recording Research Interviews*. Retrieved from Weloty Academic Transcription Service: https://weloty.com/3-tips-for-recording-research-interviews/

Kazantsev, A. (2017, April 25). *All the Touch Typing Tutors*. Retrieved from Typingsoft.com: http://typingsoft.com/all_typing_tutors.htm

Keith, N. E. (2007). A Deliberate Practice Account of Typing Proficiency in Everyday Typists. *Journal of Experimental Psychology: Applied, Vol. 13, No. 3*, 135-145.

Kim, K. (2009). Motivational Challenges of Adult Learners in Self-Directed E-Learning. *Journal of Interactive Learning Research*, 317-335.

Kitson, H. D. (1927). Determination of vocational aptitudes: Does the tapping test measure aptitude as typist or pianist? *Personnel Journal, 6,* , 192-198.

Lee, E. P. (2015). Autonomy Support for Online Students. *Association for Educational Communications and Technology, Volume 59, Number 4*, 54-61.

Lee, Y. C. (2011). A review of online course dropot research: Implications for practice and future research. *Educational Technology Research and Developoment, 59*, 593-618.

Lee, Y. C. (2013). Discriminating Factors between completers of and dropouts from online learning courses. *British Journal of Educational Technology, 44(2)*, 328-337.

Leedy, P. A., & Ormrod, J. E. (2016). *Practical Resarch, Planning and Design.* Pearson.

Legusov, O. (2017, Volume 20 • Issue 1). The Growing Reliance of Ontario Colleges of Applied Arts and Technology on Educational Agents for the Recruitment of International Students. *College Quarterly*.

Lewis, P. H. (1987, November 17). *New York Times*. Retrieved from Science Section, Personal Computers; Feedback In Typing Program: http://www.nytimes.com/1987/11/17/science/personal-computers-feedback-in-typing-program.html

Limp, C. E. (1929). Some scientific approaches toward vocational guidance. *Journal of Education Psychology, 20*, 530-536.

Logan, G. D. (2009). The Left Hand Doesn't Know What the Right Hand is Doing: The Disruptive Effects of Attention to the Hands in Skilled Typewriting. *Psychological Science*, 1296-1300.

Logan, G. U. (2016). Different (Key) Strokes for Different Folks: How Standard and Nonstandard Typists Balance Fitts' Law and Hick's Law. *Journal of Experimental Pscology: Human Perception and Performance, Vol. 42, No. 12*, 2084-2102.

Marchant, G. J. (1991). The Master Educator: An Interview with Benjamin S. Bloom. *Mid-Western Educational Researcher, 4.1*, 13-15.

Matheson, J. L. (2007). The Voice Transcription Technique: Use of Voice Recognition Software to Transcribe Digital Interview data in qualitative research. *Qualitative Report, 12(4)*, 547-560.

Matthews, K. W. (1985). Business Computers in the Business Office. *Business Officer*, 35-38.

Maurer, T. (2001). Career-relevant learning and development, worker age, and beliefs about self-efficacy for development. . *Journal of management, 27(2)*, 123-140.

McInnis, M. (1997, March 30). *Welcome to Typist*. Retrieved from Typistapp: https://typistapp.ca/#/welcome

Miles, M., Huberman, A. M., & Saldana, J. (2014). *Qualitative data analysis: A methods sourcebook, 3rd edition.* Los Angeles: Sage.

Ministry of Education. (2006). *The Ontario Curriculum, Grades 9 & 10, Business Studies.* Toronto: The Government of Ontario.

Ministry of Training, Colleges and Universities. (2015). *Office Administration - Executive Program Standard.* Toronto: Government of Ontario.

Morgensen, A. (1932). *Common Sense Applied to Time and Motion Study.* New York: McGraw Hill.

Morrow, A. (2014, Aug 08). *Ontario unveils deal with universities, colleges to specialize programs*. Retrieved from The Globe and Mail: http://www.theglobeandmail.com/news/politics/ontario-unveils-deal-with-universities-colleges-to-specialize-programs/article19969302/

National Center for Education Statistics. (2014). *Enrollment in distance educaiton courses, by state: Fall 2012.* Retrieved from National Centre for Education Statistics: http://nces.ed.gov/pubs2014/2014023.pdf

Nonis, S. A. (2012). An eploratory study of student motivations for taking online courses and learning outcomes. *Journal of Instructional Pedagogies*, 2-13.

Nuance. (2017, April 8). *Dragon Speech Recognition Software*. Retrieved from Nuance.com: http://www.nuance.com/dragon/index.htm

O'Neill, M. (2013, November 6). *PC World*. Retrieved from Control Your PC With These 5 Speech Recognition Programs: http://www.pcworld.com/article/2055599/control-your-pc-with-these-5-speech-recognition-programs.html

Ontario Ministry of Education. (1915-1990). *Courses of study, grades IX, X, XI, XII Commerical Courses.* Toronto: Ontario Ministry of Education.

Ontario Ministry of Education. (2017, March 13). *Ontario Ministry of Education*. Retrieved from The Ontario Curriculum: http://www.edu.gov.on.ca/eng/curriculum/elementary/

Ormrod, J. E. (2015). *Essentials of Educational Psychology.* New Jersey: Pearson.

Patton, L. D., Renn, K. A., Guido, F. M., & Quaye, S. J. (2016). *Student Development in College Theory, Research, and Practice.* San Francisco: John Wiley & Sons, Inc.

Paul, I. (2016, August). *PC World*. Retrieved from A beginner's guide to BitLocker, Windows' built-in encryption tool: http://www.pcworld.com/article/2308725/encryption/a-beginners-guide-to-bitlocker-windows-built-in-encryption-tool.html

Petri, H. &. (2013). *Motivation: Theory, Research, and Application, 6th ed.* Belmont: Wadsworth Cengage Learning.

Rosenbaum, J. E. (2016, October 15). *ERIC.* Retrieved from Beyond Empty Promises: Policies to Improve Transitions into Colleges and Jobs: http://files.eric.ed.gov/fulltext/ED465094.pdf

Ruan, S. W. (2016). Speech is 3x Faster than Typing for English and Mandarin Text Entry on Mobile Devices. *ACM (Association for Computing Machinery*, 1-10.

Seneca College OA Faculty. (2016, April 29). Office Administration Symposium. *personal communication*. North York, Ontario, Canada: Seneca College.

Simunich, B. R. (2015). The Impact of Findability on Student Motivation, Self-Efficacy, and Perceptions of Online Course Quality. *American Journal of Distance Education*, 174-185.

Sloboda, J. D. (1996). The role of practice in the development of performing musicians. *British Journal of Psychology, Volume 87, Issue 2*, 287-309.

Smith, M. (2006). (Almost) Word for Word: As Voice Recognition Programs Improve, Students Reap the Benefits. *Technology & Learning, 27(3)*, 40.

Song, L. S. (2004). Improving online learning: Student perceptions of useful and challenging characteristics. *Internet and Higher Education*, 59-70.

Spratt, M. H. (2002). Autonomy & Motivation: Which comes first? *Language Teaching Research 6.3*, 245-266.

Stedman, M. B. (1929). A Study of the Prognosis of School Success in Typewriting. *Journal of Applied Psychology, 13*, 505-515.

Subramaniam, G. (2008). Confronting Asian Concerns in Engaging Learners to Online Education. *International Education Studies, 1(4)*, 10-18.

Szalma, J. L. (2014). On the Application of Motivation Theory to Human Factors/Ergonomics: Motivational Design Principles for Human-Technology Interation. *Human Factors, 46, 8*, 1453-1471.

Tabernero, C. &. (2011). Self-Efficacy & Intrinsic Motivation Guiding Environmental Behavior. *Environment & Behavior 43(5)*, 658-671.

Techopedia. (2018, September 01). *Touch Type*. Retrieved from Techopedia: https://www.techopedia.com/definition/9747/touch-typing

Typequick. (2017, March 13). Retrieved from Typequick Home Page: http://www.typequick.com/

Typequick Support. (2017, March 13). Retrieved from Typequick: http://www.typequick.com/support/27-using-ten-fingers

University of Virginia. (2017, April 8). *Institutional Review Board for Social and Behavorial Sciences*. Retrieved from Retention of Research Records and Destruction of Data: http://www.virginia.edu/vpr/irb/sbs/resources_guide_data_retention.html

Wadhwa, M. C. (2015). Can a Near Win Kindle Motivation? The Impact of Nearly Winning on Motivation for Unrelated Rewards. *Psychological Science, Vol 26, Issue 6*, 701-708.

Walker, R. Y. (1934). Motor Skills: The validity of serial morot tests for predicting typewriting proficiency. *Journal of General Psychology, 11,*, 173-186.

Yechiam, E. E. (2003). Melioration and the ransition from Touch-Typig Training to Everyday Use. *Human Factors, Vol. 45, No. 4,*, 671-684.

Young, J. C. (2013). Understanding Transfer as Personal Change: Concerns, Intentions, and Resistance. *New Directions for Adult and Continuing Education (137)*, 71-82.

Zhao, C. &. (2016). A Case Study of American and Chinese College Students' Motivation in Online Learning Environments. *Journal of Education and Learning 5(4)*, 104-112.