ETEC 500

Research Proposal

Relationships between Characteristics of Adult Learners and Academic Performance in Ontario

Secondary School Courses

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Abstract

Nearly 700,000 adults in Ontario do not have a secondary school diploma and 200,000 are

pursuing completion of their schooling (Government of Ontario, 2017). However, little research

has explored what characteristics impact success of these non-traditional secondary students in

online courses. This study explores relationships that exist between students' academic

performance and learner characteristics in the context of a large online school with

approximately 10,000 adult students in Ontario. Students will be given a Likert-type survey,

survey scores will be compared with student performance, and correlations will be determined

throughout the course. The results from this study may be used to further support course

development and student placement in online secondary school programs for adults.

Keywords: academic performance, adult learner, non-traditional students, online learning,

Ontario, secondary school

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Introduction

Nearly 700,000 adults between the ages of 25 and 64 in Ontario do not have a high

school diploma (Government of Ontario, 2017). Within this group, nearly 200,000 adults

participate in adult education programs (Government of Ontario, 2017). Many of these students

have multiple responsibilities, making it difficult to attend local classes and complete courses.

Online courses often fit the flexible scheduling needs of these learners. However, many of these

students are academically inhibited by their motivation, comfort level with technology, and

learning preferences. This study seeks to determine which factors inhibit the performance of

adult students within online secondary programs. The results of this study may help to determine

which supports may have the greatest impact if correctly applied.

Purpose of Study

The purpose of this study is to determine the relationships that exist between academic

performance and the following learner characteristics: motivation, comfort with technology, and

media preference. This study will apply to adult students in online Ontario Secondary School

courses. The researchers predict that learners who have greater intrinsic motivation will

demonstrate higher academic performance. They also predict that specific media preferences and

technology comfort levels will positively correlate with academic performance. Furthermore, the

researchers expect that specific forms of media and interaction will correlate with student

performance. By analyzing the correlation between learner characteristics and academic

performance at various checkpoints throughout the program, researchers may determine which support systems and course designs will best promote improved academic performance.

Theoretical Framework

The researchers reviewed materials between 2005 and 2018 that focused on the relationship between student success and student specific characteristics. The identified studies were predominantly correlational studies that used Likert scales to determine the correlation between student performance and a range of independent variables (Muilenberg & Berge, 2005; M.S. Kerr, M.C. Kerr & Rynearson, 2006; Johnson, Taasoobshirazi, Clark, Howell & Breen, 2016; Hung, Chou, Chen & Own, 2010). In some cases, factor analysis was also used to find correlations between independent variables to demonstrate underlying relationships (Muilenberg & Berge, 2005; Kerr et al., 2006).

Correlational research studies to date have not extended to include high school students and secondary adult education programs. In nearly all studies identified, the research population was composed of university students (Muilenberg & Berge, 2005; Demir & Yurdugül, 2015; Kerr et al., 2006; Johnson et al., 2016; Hung et al., 2010). Samples ranged in size from fewer than 100 students to nearly 1100 students. Research with larger samples used an informal snowball sampling technique to collect data (Muilenburg & Berge, 2005). Similarly, research with smaller sample sizes and sampling methods had significant margins of error in this preliminary research. With the expansion of online programs into secondary adult education, a need is presented for greater inquiry into the these students' needs.

Researchers have demonstrated that adult learners' confidence and perceptions of their

technology competency impact their academic success and is a barrier to completing online courses (Muilenberg & Berge, 2005; Hung et al., 2010; Kerr et al., 2006; Demir & Yurdugül, 2015). Computer and technology competency frequently factor in e-learner readiness models, as reviewed by Demir and Yurdugül (2015). Familiarity with software, ability to navigate digital text, and ability to research articles online also impact learner success (Hung et al., 2010). Kerr, M. S. et al. (2006) noted that as students became more experienced with online courses, their perception of technology competency improved.

Demir and Yurdugül's (2015) literature review found self-directed learning to be the second most significant characteristic for positive learner outcomes, while time management skills, self-efficacy, and motivation were also among the most consistently used measures of online learning readiness. Hung et al. (2010) identified learner control as an area requiring specific focus by teachers. Kerr M. S. et al. (2006) found that independent learning, including time management skills, correlated positively with self-efficacy. Motivation was shown to be a characteristic most associated with student success (Demir & Yurdugül, 2015). Other studies verified these findings and described how differences in extrinsic versus intrinsic motivation had higher correlation with positive outcomes (Hung et al., 2010; Demir & Yurdugül, 2015; Kerr et al., 2006).

Johnson et al. (2016) found that self-efficacy along with peer support contributed to motivation, which led to higher academic achievement by non-traditional students. Furthermore, researchers have indicated that online academic support has been an important factor for non-traditional learners (Hung et al., 2010; Johnson et al., 2016; Muilenberg & Berge, 2005). Muilenburg and Berge (2005) also identified lack of online social interaction—including student

collaboration, social context cues, and fear of isolation—as barriers for online adult learning.

Textual medium influenced student preference for course materials in that hard copy printed text was generally preferred over digital text (Mizrachi, 2015). Students selected printed text to better annotate, navigate, review, and ultimately understand more complex readings. Reduced eye strain and online distraction were also cited as justification for this choice (Mizrachi, 2015). However, Kretzschmar, Pleimling, Hosemann, Füssel, Bornkessel-Schlesewsky, and Schlesewsky (2013) found that learners' preferences toward digital or printed materials did not correlate with actual visual effort expended.

Description of Data Sources

The program researched included 20,000 students taking online Ontario secondary school courses. Of this program, there are roughly 10,000 adult students between 14 to 65 years old who will compose the population for this study. These adult students are considered non-traditional learners as they are older and may have struggled with education in the past.

The researchers will have access to academic performance data for the entire population and will have the ability to filter and manipulate this data using statistical tools. Including the entire population in this study will minimize issues with generalizability and population validity. The sampling of all students also counteracts low response rates, a common issue when using electronic surveys that can introduce nonresponse bias. Due to the large population, the sample will be appropriately represented even if some students do not complete the survey.

Description of Methods

The researchers will be using correlational research methods to find the relationships between learner characteristics and performance. The correlations discovered in the data will help to identify what characteristics influence student success and inform the online course design.

The research will be conducted in two phases. The first phase will commence when students begin their courses. Students will be asked to complete a short web-based survey of their preferences and characteristics (see Appendix A and B). Kerr's (2018) Test of Online Learning Success (TOOLS) informed the development of the researchers' survey questions. Kerr et al. undertook extensive research to identify these characteristics and was used by the current study's researchers to inform the design of their survey. Quantitative data will be collected using Likert-type questions. Students will be presented with a list of different skills and traits that relate to the following learner characteristics: motivation, comfort with technology, and media preferences. They will be asked to indicate their level of confidence on a scale ranging from 1 ("Not very confident") to 4 ("Very confident").

After 13 months, all students will have completed their courses and the second phase of data-collection will commence. In the second phase, student grades will be collected at 25%, 50%, 75%, and 100% course progression checkpoints from the program's student information system. These grades will be matched with each student's survey results for analysis as can be seen in Appendix C, which will allow the researchers to identify valid correlations.

In order to ensure reliability of the data obtained, statistical methods will be employed to account for course differences and student attrition. First, the researchers must address the

varying inherent difficulties in each courses. To account for this difference of difficulty, the researchers will be using analysis of variance (ANOVA) to remove the variability between different courses. Secondly, in order to account for attrition, cumulative grades at each checkpoint will be measured against the survey results. This will allow the researchers to include students who withdraw at later points within the 13 month time period. As such, student performance will be accurately measured between courses and will account for students who withdraw from courses.

Correlations will be measured at each checkpoints to find relationships between learner characteristics and student performance as variance from a mean score. Pearson product-moment correlations will be used to determine relationships between the dependent and independent variables. By analyzing correlations at each point, the researchers will be able to determine how specific student characteristics correlate with student performance at each stage in online courses.

Results and Conclusions

As this study has not yet been conducted, conclusive results are not available. Prior research has shown correlations among learner characteristics and academic outcome (Muilenberg & Berge, 2005; M.S. Kerr, M.C. Kerr & Rynearson, 2006; Johnson, Taasoobshirazi, Clark, Howell & Breen, 2016; Hung, Chou, Chen & Own, 2010). The researchers predict that there will be a relationship between self-reported learner characteristics and their resulting academic performance.

Adult learners' perceptions of their technology competency can impact success as lack of confidence is a barrier to completing an online course (Muilenberg & Berge, 2005; Hung et al., 2010; Kerr et al., 2006; Denir & Yurdugül, 2015). Thus, the researchers anticipate that specific learner characteristics, such as comfort with technology and learning preferences will be associated with success.

Self-efficacy, self-directed learning skills, and independent learning skills have a high correlation with positive academic outcome in online learning (Demir & Yurdugül, 2015; Hung et al., 2010; Johnson et al.; Kerr et al., 2006). The researchers predict that learners who identify strongly with intrinsic motivation will do well.

Limitations of this study include the effects of attrition on the study results. To minimize the impact of attrition, learner data will be analyzed as students pass through checkpoint stages in the course. However, data from students who drop out before the first checkpoint will not be gathered and correlated with scores. Further research could target these students to discover patterns in attrition.

An additional limitation is that these courses do not involve peer interaction as they are asynchronous and continuous registration. Muilenburg and Berge (2005) identified lack of online social interaction as a barrier for online adult learning. Johnson et al. (2016) also identified self-efficacy along with peer support as the most influential factors in the success of non-traditional students, which highlights another area for further research.

The study relies on learner self-reported and identified characteristics, which is a further limitation because these results may differ from actual learner characteristics. Participant bias will be minimized as respondents will be assured that survey results will not impact their

academic performance. This will encourage honest answers and reduce this possible limitation in the study. A confounding variable discovered through this research is the number of students who register for online courses but do not complete them. The researchers believe the cost of courses relative to income, age of students, and internal course barriers may be factors for further study focused on attrition.

Educational Significance

The Ontario Government has identified a need to better understand barriers facing adult learners (2017). It is important to address these barriers as the number of adults taking online courses is increasing (Johnson et al., 2016). Stakeholders agree that current systems do not provide enough guidance and support to students (Government of Ontario, 2017). This is problematic given the increasing complexity of jobs and needs of adult students (Government of Ontario, 2017). It is important that online education meets these needs so that students are able to acquire these in-demand knowledge and skills.

Studies to date have not analyzed the performance of non-traditional students in online secondary programs. It is important to look at relationships that exist among these students' self-identified characteristics and academic outcome. Correlating these factors may help to illuminate features that could better support non-traditional learners in pursuit of their secondary school diploma. With more research into barriers affecting non-traditional learners online, educators can design courses to better serve this population. With the large sample size supporting this study's external validity, it is hoped that the results may inform and influence the design of online secondary courses to meet the diverse needs of non-traditional students.

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Appendix A

Informed Consent Form
(access electronic form here)

Study name: Relationships between Characteristics of Adult Learners and Academic
                 Performance in Ontario Secondary School Courses

Dear student:

In Ontario, there are 200,000 adult students who, like you, are working to complete their
secondary school diploma. Many students take their courses online to complete their last few
courses. However, very little research has been done into the needs of these online students.

We are conducting a research study to address these needs by determining which self-reported
characteristics of students are most correlated with academic success. It is our hope that knowing
more about comfort level with technology, academic work habits, and learning preferences will
help teachers build better courses and provide supports for both you and other adult students.

This online secondary school program has given us permission to gather data for our study by
distributing a **web-based survey** to its entire student population. The program has also granted
students approval to participate in this study. We ask for your **voluntary participation** by
answering 30 short questions that will help us better understand your preferences, habits, and
comfort levels in online courses.

The survey should take between **10 and 15 minutes** and only needs to be completed once (no
further action is required). Please note that whether or not you decide to participate will have no
impact on your relationship with the researchers, staff, or performance within the program.

As part of this study, we will be using your survey responses as well as academic performance
measurements from your courses over the next 13 months. All personal information gathered
during this study—including names, answers, and whether or not students have
participated—will remain **strictly confidential** and will not be disclosed to any parties outside
the researchers conducting this study. Furthermore, your personal information will not be
disclosed in the results of this study—only aggregate results will be reported.

If you have any questions regarding this study, please contact our research team using the contact
information provided below. The results of the study will be made public on the program website
once they are available.

Thank you very much in advance for you input and participation in this study.

Sincerely,

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Appendix B

Online Learning Survey
(access electronic survey here)

*Required

Biographical Information

First Name*

_____

Last Name*

_____

Are you over 24 years old?*

○   Yes
○   No

Include your student number below*

Your student number will help us match your information with our records.

_____

Survey Questions

Determine your confidence with each skill or trait*

1 = Not very confident 4 =Very confident

Comfort with Technology				
	1	**2**	**3**	**4**
1. Learning new technologies	○	○	○	○
2. Sending and receiving e-mail	○	○	○	○
3. Attaching files to an e-mail message	○	○	○	○
4. Using an internet browser	○	○	○	○

	1	2	3	4
5. Using standard word processing software	○	○	○	○
6. Managing files on a computer	○	○	○	○
7. Downloading new software when necessary	○	○	○	○
8. Installing new software when necessary	○	○	○	○
9. Copying and pasting text using a computer	○	○	○	○

Feeling Motivated and Completing Assignments

	1	2	3	4
10. Making time for coursework	○	○	○	○
11. Setting and completing goals	○	○	○	○
12. Being self-disciplined while studying	○	○	○	○
13. Being self-motivated	○	○	○	○
14. Taking responsibility for your learning	○	○	○	○
15. Completing assignments by due dates	○	○	○	○
16. Learning by working independently	○	○	○	○
17. Independently improving assignments	○	○	○	○
18. In my coursework when I have the support of my teacher or other students	○	○	○	○
19. In my coursework when teachers provide immediate feedback on my completed assignments	○	○	○	○
20. Asking for help with coursework	○	○	○	○

Comfort with Different Media				
	1	**2**	**3**	**4**
21. Learning from video materials	○	○	○	○
22. Learning from recordings and other audio materials	○	○	○	○
23. Learning from digital texts (webpages, ebooks, etc.)	○	○	○	○
24. Learning from physical texts (books, articles, newspapers, etc.)	○	○	○	○
25. Learning from visual learning materials (charts, graphs, infographics, etc.)	○	○	○	○
26. Learning from interactive simulations	○	○	○	○
27. Learning in class	○	○	○	○
28. Learning in a hands on way	○	○	○	○
29. Learning within group settings	○	○	○	○

30. I require additional learning supports and assistive technologies:
○ Yes
○ No

Thank you for your participation.
Your answers will help students like you in future courses by allowing us to better understand the factors that influence student achievement in online courses.

Appendix C

Data Collection Process and Analysis

	Student Enrolment	Checkpoint 1	Checkpoint 2	Checkpoint 3	Checkpoint 4
Data Collection	Survey is taken by students	25% of course materials completed	50% of course materials completed	75% of course materials completed	100% of course materials completed
Scope of Analysis		Performance compared to survey results	Cumulative performance compared to survey results	Cumulative performance compared to survey results	Cumulative performance compared to survey results