

AN ATTEMPT TO PROFILE PERSISTENT ONLINE STUDENTS AND GRADUATES

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Randy Vincent Stach

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**Title**

An Attempt to Profile Persistent Online Students and Graduates

**By**

Randy Vincent Stach

The Supervisory Committee certifies that this *disquisition* complies with North Dakota State University's regulations and meets the accepted standards for the degree of

**MASTER OF SCIENCE**

SUPERVISORY COMMITTEE:

Dr. Thomas Hall

Chair

Dr. Myron Eighmy

Dr. Cindy Urness

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Approved:

11/8/17

Date

Dr. Chris Ray

Department Chair

## **ABSTRACT**

The purpose of this study was to determine whether the characteristics of online graduates, and characteristics of students who persist online with their coursework, could be identified. To date, there has been significant research identifying why students drop out or do not persist in their online education, but there is little data regarding why students are successful or persist online. A mixed methods approach was used incorporating both quantitative and qualitative research methods. First, student demographic information was analyzed to identify any patterns or trends of persistent online students. Second, a survey was utilized to collect data from current students and graduates from online programs. Third, qualitative data was collected through conducting phone interviews of online graduates who have graduated in the last five years. Conclusions were drawn from the research and advice for future research was shared to advance retention and completion initiatives for online learners.

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## CHAPTER 1. INTRODUCTION

In America today, a post-secondary degree is becoming a necessity for individuals to be successful in life and positively contribute to the society they live in. A post-secondary credential typically equates to a higher salary and a growing number of entry-level positions require completion of some career or technical training beyond their high school diploma (Lovato, 2013). On February 24, 2009, President Barack Obama stated at a Joint Session of Congress:

Tonight I ask every American to commit to at least one year or more of higher education or career training. This can be community college, a four-year school, vocational training, or an apprenticeship. But whatever the training may be, every American will need to get more than a high school diploma. (Lovato, 2013, p. 8)

This is an implication that to be a successful and contributing part of society people will need more than just a high school diploma. Since 1973, jobs that require at least some college education have exploded while opportunities for those with just a high school education have shrunk dramatically (Lovato, 2013).

As individuals choose to pursue a college education and the American dream, it is evident that some find themselves place bound, greatly restricted for time, or both. Most people in a position to be considered as older than average students looking to advance themselves are not in a position to leave their jobs and move to a college or university for 2-5 years in order to obtain a degree. For these individuals, taking online courses seems to be an attractive option. Goodman, Melkers, and Pallais (2016) concluded that online programs generate demand largely from mid-career Americans. This large demand from older employed individuals is consistent with the

possibility that the geographic and temporal flexibility of the online option are critical to its appeal.

Individuals find themselves enrolling in online courses and programs, not as the delivery method of choice, but as the delivery method of circumstance to elevate their education and current employment status. By this standard most individuals lack the necessary attributes required to successfully complete the online coursework. This leads to the importance of this study to identify typical characteristics or trends of online students who do persist with completing courses online.

The research in the field of online education has gone through a paradigm shift when it comes to the view of the distance student learner. Negative terms like “dropout” and “withdrawal” are no longer used, and even “retention” is controversial. The more frequently used term is “persistence”, in accordance with the shift in theoretical perspective towards a more constructive approach (Ekstrand, 2013). In addition to this paradigm shift is the approach to enhance a person’s strengths over identifying their weaknesses. This is similar to the approach of this study which is to identify trends of positive characteristics of students who are persisting with their online coursework or who have completed their online program’s coursework.

One of the programs for this study was the Architectural Drafting & Estimating (AD&E) online program at the North Dakota State College of Science (NDSCS) in Wahpeton, North Dakota. Since the online program’s inception in 2004, the retention of online students is low compared to the equivalent program that is taught on campus face-to-face at NDSCS. Over the years there have been students from many different backgrounds attempting the AD&E online program with less than a 50% completion rate. With the federal mandates that are looming regarding financial aid and performance based funding, it will be imperative for NDSCS, and all



colleges and universities, to address their online program completion rates. This study specifically worked with current students and past graduates of the Architectural Drafting & Estimating (AD&E) and the Health Information (HI) programs at NDSCS. For this study the AD&E and HI programs were reviewed to provide a broader picture of online student persistence or failure to persist in the online programs at NDSCS.

### **Problem Statement**

Persistence of online students and their completion rates are less than desirable at NDSCS and across the nation. The goal of this research study was to determine if the characteristics of online graduates, and characteristics of students who are persisting online, could be identified for the AD&E and HI programs at NDSCS. Besides the demographics of online students who are persisting, or have persisted through an online program, an attempt was made to identify common characteristics shared among a majority of online students through research and data collection. Past research has indicated a correlation between a student's ability to establish relationships online and their ability to progress online (Baxter, 2012). NDSCS students were surveyed to determine how often online students regularly engage in some sort of social media which was used to gauge their ability to communicate and establish relationships online. Lastly, because online education requires students to read and write more due to the overall nature of the delivery method, the standardized test scores of online students were researched and analyzed.

### **Purpose of the Study**

The purpose of this action research study was to determine whether the characteristics of online graduates, and the characteristics of online students who persist with their coursework, can be identified. If the characteristics and demographics can be statistically identified for online graduates and students who persist, they can be used to profile students. Once a profile has been

established for these online students, the profile can be used to identify those students most likely to persist in the online environment and progress toward program completion. Recruitment efforts can become more focused on targeting a specific type of student who will be statistically more apt to persist and complete an online program. The information may also be used to properly advise students as they progress through their online coursework. Additionally, the findings of this research could be used to set new admissions requirements for online programs relative to standardized test scores. Through these enhanced recruitment efforts, improved advising, and potential changes to admissions requirements, the goal will be increased retention and completion rates of future students enrolled in online programs.

### **Research Questions**

Despite the growth and popularity of online courses, students who enroll in them do not complete the courses successfully or at the same rate as students who enroll in traditional classroom courses (Layne, Boston, & Ice, 2015).

This study was guided by the following research questions:

Q1: What are the demographics of online graduates and students who persist online at NDSCS compared to the demographics of students who fail to persist online?

Q2: What are the personal characteristics of online graduates and students who persist online at NDSCS?

Q3: What is the self-confidence regarding computer technology of online graduates and students who persist online?

Q4: To what extent is online social interaction a factor for online graduates or students who persist online?

Q5: How often do online graduates or students who persist online engage in social media? (Facebook, Snap Chat, Instagram, etc.)

Q6: How do ACT Reading and Writing scores differ between students that have persisted online versus those that have not?

## **CHAPTER 2. LITERATURE REVIEW**

This chapter provides a review of the relevant literature and research related to identifying characteristics of online graduates and students who persist online. The chapter is broken down into sections that include: history and background of online; student attraction to online courses and programs; defining success and factors limiting success, gender as a factor; ethnicity as a factor; age as a factor; knowledge and use of technology as a factor; personal characteristics as factors; reading and writing preparedness as factors; online social interaction as a factor, and the conclusion for this chapter.

### **History and Background of Online**

Distance education in its basic form has been around for centuries. The history of online education goes back to the conception of the first computers in the 1970's, but the online education that we know of today began with the development of the Internet (Welsh, 2007). Online learning is also referred to as e-learning and is another form of distance education. Research in the use of the Internet for delivery of instruction within higher education began emerging in the 1990's (Welsh, 2007). With individuals taking advantage of the new delivery platform, growth of online enrollment exploded in all areas of higher education. Between 2002 and 2012 the number of students taking at least one online course increased from 1.6 million to 7.1 million, which represents a compound annual growth rate of 16.1 percent (Allen & Seaman, 2014). Over the same period of time, online enrollments as a percent of total enrollment in higher education increased from slightly less than ten percent to approximately 33.5 percent (Allen & Seaman, 2014). With this new delivery method and the large number of online enrollments comes new challenges for online educators.

## **Student Attraction to Online Courses and Programs**

Students are attracted to online programs because they offer a delivery format that is convenient, accessible, and flexible (Mupinga, Nora, & Yaw, 2006). Online classes provide the opportunity for individuals to manage their many obligations and responsibilities while pursuing a degree in higher education. Online courses are especially attractive to many community college students because of work and family obligations that limit attendance for traditional on-campus classes (Bambara, Harbour, Davies, & Athey, 2009). In their research, Allen and Seaman (2007) found that institutions cited improved student access as their top reason for offering online courses and programs.

The world we live in today seems to have people more connected and engaged with others than ever before and therefore the level of commitments and obligations have increased for individuals living in today's society. For some individuals, online education is their only option due to their life circumstances. In addition, the cost of education and raising a family today is quite expensive. Parents with small children utilize online education to reduce child care expenditures (Bambara, Harbour, Davies, & Athey, 2009).

### **Defining Persistence and Demographic Factors Influencing Persistence**

Persistence is the behavior of continuing action despite the presence of obstacles and is an important measure of higher education program effectiveness (Rovai, 2003). For the purpose of this research, persistence is defined as a student who completes an online course, continues in the online environment, and demonstrates progress toward graduation from an online program.

There are many factors that impact whether a student will be persistent online. Bean and Metzner (1985) found student characteristics such as age, ethnicity, gender, intellectual development, academic performance, and preparation prior to college can affect student

persistence. These students were primarily traditional students in face-to-face classes. This study investigated whether any of the above named characteristics impact the persistence of online students.

### **Age as a Factor**

Students in online cohorts are typically older than similar cohorts learning the same subject matter. Patterson and McFadden (2009) suggested that the higher dropout rate for older online students is possibly a result of an older student population with greater family obligations and job responsibilities. This is also supported by the survey research conducted by Allen and Seaman (2007) that reported there was evidence that online students are older, have additional job obligations and family responsibilities than students in face-to-face courses.

### **Gender and Ethnicity as Factors**

Research related to the impact gender and ethnicity has on student persistence in higher education is mixed. Patterson and McFadden (2009) stated that gender was not a significant factor for determining persistence at the master's degree level. The percentage of men dropping out was 19% compared to women at 22%. Another investigation found a relationship between learning styles, student engagement and gender that supported previous research that gender is a factor that should be considered in online courses (Garland, 2002).

In the same study of online students seeking a master's degree conducted by Patterson and McFadden (2009), ethnicity was a significant factor in retention. Their study indicated that the odds of a Black student dropping out was 7.3 times higher than a non-Black student. Although another study conducted by Aragon and Johnson (2008) showed no significant difference between white and non-white online student success. Further research is warranted to

better identify the demographic characteristics that could determine students' persistence toward course and/or degree completion.

### **Location as a Factor**

There has not been a study performed that this research could find regarding a student's geographical location as a factor. This study will review the home town locations of the students to determine if there is any correlation to student online persistence and their location. Will there be evidence that supports students being more persistent online if they live in smaller remote locations as compared to larger cities.

### **Personal Characteristics as Factors Influencing Persistence**

Online MBA students were six times more likely to drop out than campus MBA students (Patterson & McFadden, 2009). When retention rates are less than desirable, the efforts made toward improving retention have focused primarily on institutional degree programs rather than the characteristics of the students themselves (Anderson, 2011). This is demonstrated by institutions trying to improve the online course structure and course content without looking at the dynamics of the individuals enrolling in the courses.

Some basic characteristics identified of persistent online learners is their ability to work independently; maintain motivation in spite of conflicting commitments; maintain focus on personal and academic goals; and demonstrate computer proficiency. These are some qualities and life approaches that increase successful completion (Holder, 2007). Using the Test Of Online Learning Success (TOOLS), it was determined that successful online students are self-directed, independent, personally responsible for their learning, and have self-competence, proficient reading and writing skills, time management skills, and the motivation to learn (Kerr, Ryneearson, & Kerr, 2006).

According to Rovai (2003), persistence in online courses typically requires a high level of discipline and self-direction, and enough time each week to complete all assignments. A student must dedicate the necessary time to complete the work and be vigilant about staying on top of all course work and following the course schedule. This sort of dedication is essential to online student persistence.

Welsh (2007) tested eighteen different hypotheses related to online student persistence to determine statistically what characteristics would be significant predictors of online student success. The results of this quantitative research concluded that financial stability, formal and informal education experience, time management and study environment, extrinsic motivation, self-efficacy, number of previous online courses taken, computer confidence and computer skills are all predictors of successful or unsuccessful student completion in an online distance learning course (Welsh, 2007).

Flow (2007) concluded that students indicated personal characteristics more frequently determined success or failure than mechanical and technical, social, or educational and instructional aspects. This indicated that students typically took personal responsibility for their learning and not attribute problems to sources beyond their control. This was a very candid and mature response to a question directed toward their capabilities and experiences.

### **Knowledge and Use of Technology as a Factor**

Some first-time online learners struggle with overcoming the technology challenges related to online education (Layne, Boston, & Ice, 2015). These students find themselves unable to adapt to the use of technology required for an online education and fail to persist. Students are especially vulnerable when technology issues occurred in the beginning of the semester (Bambara, Harbour, Davies, & Athey, 2009). Students need to focus on the academic challenges



of a course without the added anxiety of technological issues in order to persist in the online environments created by institutions of higher education.

### **Reading and Writing Preparedness as Factors**

One identifying characteristic of students in the traditional classroom included student preparedness. Many times student preparedness has been correlated with standardized test scores such as the American College Testing (ACT) score in the areas of Reading, Writing, Mathematics, and Science. Students scoring low in any area would be identified as an “at risk” student. On the other hand, students scoring high in these areas are typically more successful at completing course work. Holder (2007) identified that student preparedness continues to be a predictor of student persistence in higher education online programs. Noble and Sawyer (2002) found that ACT Composite scores provided greater differentiation across levels of achievement than do high school GPAs in terms of students’ probable success during their first year in college. With online courses today being incredibly word based and asynchronous written communication, the intent of this research study will be to specifically analyze the ACT reading and writing scores and how they correlate to online student success.

### **Online Social Interaction as a Factor**

A study examining the experiences of 16 online students at the United Kingdom’s Open University suggests the ability to form online friendships is the key element to profiling a student identity which is robust and resilient enough to be persistent as a distance education student (Baxter, 2012). Further research found student-perceived written communication skills, comfort with sharing personal information, and social navigation to be three factors determining student’s social ability in online learning environments (Yang et al., 2006). Social navigation brings another aspect of student persistence into account. Social navigation is basically composed of

five or more elements: a starting point, a destination, the navigating agent, the route, and other agents with whom the navigating agent interacts. The interaction between the navigating agent and the other agents is what makes it “social” (Forsberg, 1998).

A student’s ability to work through an online course and interact with the instructor and other students requires a certain proficiency in social navigation. Yang (2006) found five factors of social ability and labeled them as perceived peers social presence; perceived written communication skills; perceived instructor social presence; comfort with sharing personal information; and social navigation. Moore and Anderson (2003) defined social presence as the ability of learners to project themselves both socially and emotionally through technology. Through a student’s social presence others would be able to know and understand the student’s personal characteristics, personality, and who they are as a person in the world. This ability for students to be able to project themselves into an online environment is critical if students are to build relationships with others in their online classes.

A centralized focus has come across from several different perspectives and places significant value on the ability of online students to socially interact within the online environment. For student persistence, this means it is more important to build learning communities than to rush into course-building (Hiltz 1998). Although it’s important to build a well-organized, and robust course, it is equally important, if not more important to consider the social aspects of your course while building it. Does the course have significant interaction between the students, and between the students and the instructor? Are there other means of social interaction introduced into the course? Baxter (2012) suggested that the feelings of exclusion precipitated by the inability to successfully form online friendships may be the reason, over academic ability, for why distance learners fail to progress in an online program.

## Conclusion

Online education has had a significant amount of trouble in the area of retention and completion rates. Higher education institutions are concerned with online student success; this is indicated by 41 percent of chief academic officers reporting they agreed that retaining students was a greater problem for online courses than for face-to-face courses (Allen & Seaman, 2014). Federal funding and financial aid support are being moved in the direction of performance-based funding centered on a program's completion rate and that raises some red flags for programs that are offered 100% online. With the goal in mind to address and improve completion rates, the focus of this research was centered on identifying characteristics of online graduates and students who persist with online coursework and progress toward program completion.

Some of the specific demographic criteria and characteristics that is reviewed in this study include, but are not limited to the following:

- Age
- Gender
- Ethnicity
- Population of home town
- Reading ACT scores
- Writing ACT scores
- If the student is a primary care-giver
- Technical skills with computers and software
- Time management skills
- Ability to work independently
- Available study environment

- Commitment for completing tasks
- Self-motivation
- Being goal orientated
- Ability to find financial resources for education
- Self-competency
- Good written communication skills
- Good reading skills
- Social presence
- Online interaction while taking courses
- Being part of a learning community
- Use of social media

Through this literature review it is clear that it is not just one or two common characteristics that are consistent among persistent online students, but instead it is a multitude of very complex characteristics that persistent students will likely possess. Identification was the first step in the process and then synthesizing the information and creating a profile for the persistent online student was the real challenge.

## **CHAPTER 3. METHODOLOGY**

Research has illustrated that a multitude of factors influence the persistence of online students as indicated in the literature review. The purpose of this study was to determine whether the characteristics of online graduates, and the characteristics of online students who persist with their coursework, can be identified. A mixed methods research design was used to answer the research questions proposed in this study.

### **Research Questions**

Q1: What are the demographics of online graduates and students who persist online at NDSCS compared to the demographics of students who fail to persist online?

Q2: What are the personal characteristics of online graduates and students who persist online at NDSCS?

Q3: What is the self-confidence regarding computer technology of online graduates and students who persist online?

Q4: To what extent is online social interaction a factor for online graduates or students who persist online?

Q5: How often do online graduates or students who persist online engage in social media? (Facebook, Snap Chat, Instagram, etc.)

Q6: How do ACT Reading and Writing scores differ between students that have persisted online versus those that have not?

### **Participants**

The population for this study was NDSCS online students currently enrolled in or graduated from the Architectural Drafting & Estimating (AD&E) and Health Information (HI) online programs. The breakdown of the population was 11 students that were enrolled in the

AD&E online program and 45 students enrolled in the HI online programs spring semester of 2017. In addition, 24 graduates of the AD&E program and 52 graduates of the HI program from the last five years were asked to complete a survey. Because of the small number of online students and graduates, the entire population was asked to complete the survey instrument and the results have been combined to provide an overall generalization of online student persistence. Current online students and graduates from the last five years in each program were asked to participate in the research study (survey and/or interview). The data was collected over the duration of the 2017 spring semester and did not include any student duplication. Information was collected on each student to identify independent variables (Gender, Age, Ethnicity, ACT Scores, etc.) in addition to various dependent variables such as a student's computer skills, time management skills, or how often they use social media, etc. It must be understood the results of the study was reliant on the willingness of the online students and graduates whose participation was optional. Because of this optional nature of the study, the online students and graduates that were surveyed or interviewed may only be those with positive feelings towards their online education experience. Although this may be true of the situation in the study, it should not unduly affect the overall goals of the research of providing insights into characteristics of online graduates or online students who persist.

### **Instruments**

In addition to researching the demographics and student ACT scores of graduates, current students, and non-completing students, there were two types of instruments used for this study. A 40 question survey instrument was used to collect data from students enrolled in the AD&E and HI online programs at NDSCS for the 2017 spring semester (Appendix B). A second 40 question survey, very similar to the first, was used to collect information from past graduates of

the AD&E and HI programs (Appendix C). Institutional Research Board (IRB) approval was obtained on February 16, 2017 to conduct the research using human subjects as described herein.

After collecting the data using the survey instruments, a qualitative phone interview was conducted to collect data from the past graduates of the AD&E and HI online programs over the past five years (Appendix D). Interviewing the graduates was intended to be the best method to collect the data needed for the study in order to obtain more in depth information with probing questions. The research was intending to obtain and utilize an existing list of interview questions, but an instrument that would be applicable to the study was not found so one was developed. The study piloted the interview process with some existing students. Through this pilot process the interview questions were tested and the results were analyzed for obtaining the intended data. The interview questions were modified as needed to obtain the data being sought after for the study. The intent of conducting the pilot interviews was to refine the questions and ensure students would properly understand the questions and be comfortable sharing their information during the interview. This helped to assure the reliability and validity of the interview questions before conducting the research interviews. After the qualitative information was obtained from the graduates the information was mapped and recorded for each graduate participant and placed in a spreadsheet to analyze responses collected for each question.

### **Research Design**

This was a mixed-methods research design and it incorporated both quantitative surveys for current students and graduates of the two online programs and a qualitative interview process for collecting data from the self-selecting online students who graduated in the past five years. This ended up being only three graduates total from the past five years who self-selected for the phone interview. It was originally intended to be a total of 15 graduates in order to be a

manageable number while still providing the necessary data for the study. Baxter (2012) conducted similar research based on 16 qualitative interviews in the Open University, UK. Although Baxter met individually with each participant in person, this research utilized phone interviews due to financial constraints.

The three students that were interviewed were self-selected during the initial survey process. They responded to a survey question that indicated they would be interested in being contacted for a follow-up phone interview. The number of students interviewed ended up being only three graduates total from the past five years. Due to the low number of students interviewed a lottery system was not required and it was determined that all three students would be interviewed to glean any information possible to support or contradict the other findings of this study.

During the interviews, pre-determined questions were used to identify the primary reasons the graduates attributed to their success and persistence. The design of the study was intended to provide appropriate information to address the study's research questions and reveal characteristics common among a majority of the students deemed as being persistent online students. Again, with the low number (3) of responses willing to participate in a phone interview the information is skewed and does not bring any significant or reliable information to the study.



## CHAPTER 4. RESULTS

The purpose of this research was to determine whether the characteristics of online graduates, and the characteristics of online students who persist with their coursework, can be identified. In this chapter the responses from the forty question survey instrument are examined as part of the mixed methods research design described in chapter three. The responses are grouped as they apply to the six research questions listed below that were proposed to guide this study:

Q1: What are the demographics of online graduates and students who persist online at NDSCS compared to the demographics of students who fail to persist online?

Q2: What are the personal characteristics of online graduates and students who persist online at NDSCS?

Q3: What is the self-confidence regarding computer technology of online graduates and students who persist online?

Q4: To what extent is online social interaction a factor for online graduates or students who persist online?

Q5: How often do online graduates or students who persist online engage in social media? (Facebook, Snap Chat, Instagram, etc.)

Q6: How do ACT Reading and Writing scores differ between students that have persisted online versus those that have not?

This chapter is broken down in segments to define the response rate, the population demographic data for persistent online students, the population demographic data for the online non-completer students, the sample demographic data, and the quantitative findings collected from the survey data of online graduates and current online students as they apply to each of the

research questions listed above. Lastly, there will also be a segment regarding the qualitative research conducted through follow-up phone interviews with three self-selected online graduates.

### **Response Rate**

The population for this study was 132 individuals which included 56 NDSCS online students currently enrolled in the Architectural Drafting & Estimating (AD&E) and Health Information (HI) online programs. There were 11 (20%) students currently enrolled in the AD&E online program and 45 (80%) students enrolled in the HI online program. In addition, 76 past graduates of the same two programs from the last five years were surveyed with 24 (32%) AD&E and 52 (68%) HI online graduates.

Responses were received from one of the 11 current AD&E students for a response rate of approximately 9% and 12 of the 45 current HI students for a response rate of approximately 27%. Survey responses were received from seven of the 24 AD&E graduates for a response rate of approximately 29% and 13 of the 52 HI graduates for a response rate of approximately 25%. The combined total of responses from all online students and graduates of both programs was 33 out of a possible 132 which is an overall response rate of 25%.

Because the total number of responses was only 33 from all areas the findings will not be categorized by program or by current online students versus online graduates, but instead generalized with all of the responses compiled together as persistent online students.

### **Population Demographic Data for Persistent Online Students**

The demographic variables collected for the population in this study included the online student's program, gender, age, and ethnicity. The breakdown for the students program of study is listed above with the response rates. The average age of the population of persistent online students being studied was 34.25 with 106 (79.7%) students identifying as being female and 27

(20.3%) identifying as being male. The population's ethnicity was subdivided as follows: 91.7% (122) were white; 3% (4) were Black; 3% (4) were Asian or Hawaiian/Pacific Islander, 0.8% (1) was Hispanic; and 1.5% (2) did not specify their ethnicity.

### **Population Demographic Data for Online Non-Completer Students**

The demographic variables collected for the population of non-completer students for this study included the online student's program, gender, age, and ethnicity. The breakdown for the non-completers by program of study was 254 (71.5%) students initially enrolled in the HI program and 101 (28.5%) students initially enrolled in the AD&E program who are not part of the persistent student population described above. The average age of the population of non-completer online students was 28.69 as of the date enrolled in their first online class. There were 249 (70.1%) of the students identifying as being female and 106 (29.9%) of the students identifying as being male. The population's ethnicity was subdivided as follows: 84.5% (300) were white; 7% (25) were Black; 2% (7) were Asian or Hawaiian/Pacific Islander, 1.7% (6) were Hispanic; 2.5% (9) were American Indian, and 2.3% (8) did not specify their ethnicity.

### **Sample Demographic Data**

The entire population of persistent students were invited to complete an online survey for this study spring 2017. Of the 132 students/graduates, 33 participated in the survey for a return rate of 25%. The students responding to the survey instrument form the sample for this study. The demographic variables collected from the sample in this study included the online student's program, gender, and age range. The sample consisted of 8 (24%) AD&E students and 25 (76%) HI students. There were 27 (82%) of the students who identified as being female; five (15%) who identified as being male; and one (3%) who identified as "other". The age ranges for the

sample of persistent online students were as follows: Eight (24%) 18-25 year olds, ten (30%) 26-35 year olds, nine (27%) 36-45 year olds, four (12%) 46-55 year olds, and two (6%) over age 55.

### **Findings Data**

The findings for this research are broken down as they apply to the six research questions with the responses collected through the student registration information and the survey instrument.

The first research question asked, “What are the demographics of online graduates and students who persist online at NDSCS compared to the demographics of students who fail to persist online?” Online persistent students are those students who have graduated from the program in the past five years or those students who have taken several courses in their respective program and are currently enrolled in the program spring 2017. Online non-completers are those students who were enrolled in a specific required first semester course and did not graduate or are no longer enrolled or taking classes in the program. The entry level course for the AD&E program was the CAD 120 Introduction to AutoCAD and the entry level course for the HI program was BOTE 171 Medical Terminology. Both courses are entry level courses and are required by all new students enrolled in their respective program.

The information collected for the online persistent students and online non-completers based on their registration information is categorized in the tables shown below based on program, age, gender, and ethnicity. Table 1 provides the breakdown by program for the persistent online students as compared to the non-completers. As can be seen in Table 1 the percentage of students who persist in an online learning environment are quite similar for the two programs under study.

Table 1

*Completers and non-completers broken down by program*

Breakdown by Program (N=488)	Total number of students in the program	Online Persistent Students	Online Non-Completers
Architectural Drafting & Estimating (AD&E)	137	36 (26.3%)	101 (73.7%)
Health Information (HI)	351	97 (27.6%)	254 (72.4%)
Total	488	133 (27.3%)	355 (72.7%)

Of the 488 students being analyzed for this study, the HI program had the higher number of individuals (351) as compared to the AD&E program (137). The percentage of persistent students in each program was relatively close (1.3%) with 27.6% for the HI program and 26.3% for the AD&E program.

Table 2 provides the breakdown for the average age when students are first enrolled into the program for the persistent online students as compared to the non-completers.

Table 2

*Average age of persistent students and non-completers.*

Breakdown by Age (N=488)	Online Persistent Students	Online Non-Completers
Average Age	34.25 years old	28.69 years old

There is a difference of more than five and a half years between the older persistent online students and the online non-completers.

Table 3 provides the breakdown of gender for the persistent online students as compared to the number of online non-completers. As illustrated in Table 3 female students tend to complete at a higher percentage than male students.

Table 3

*Completers and non-completers broken down by gender.*

Breakdown by Gender (N=488)	Total number of students	Online Persistent Students	Online Non-Completers
Female	355	106 (29.8%)	249 (70.2%)
Male	133	27 (20.3%)	106 (79.7%)
Total	488	133 (27.3%)	355 (72.7%)

The number of persistent online students who identify as being female who are persistent online students is a 9.6% increase over the students who identify as being male.

Table 4 provides the breakdown of ethnicity for the persistent online students as compared to the online non-completers. Of all the ethnic groups listed, the percentages indicated that Asian/Hawaiian/Pacific Islanders have the highest rate of persistence (36.4%) followed by Whites (28.9%). Other students “of color” are less likely to complete their online programs of study with American Indian having the lowest rate of persistence at 0.0% (zero out of nine students persisted online).

Table 4

*Completers and non-completers broken down by ethnicity*

Breakdown by ethnicity (N=488)	Total number of students	Online Persistent Students	Online Non-Completers
White	422	122 (28.9%)	300 (71.1%)
Black	29	4 (13.8%)	25 (86.2%)
Asian / Hawaiian /Pacific Islander	11	4 (36.4%)	7 (63.6%)
Hispanic	7	1 (14.3%)	6 (85.7%)
American Indian	9	0 (0.0%)	9 (100%)
Not Specified	10	2 (20.0%)	8 (80.0%)
Total	488	133 (27.3%)	355 (72.7%)

Table 5 provides a breakdown based on the population of the city and state the student listed for their primary residence upon registering for online classes their first semester.

For the demographic breakdown by population the percentages listed above indicate that students from a home town with a population less than 5,000 are more likely to be persistent. The average persistence rate is 27.3% and students living in a town with population of 1 to 2,499 was 32% and population of 2,500 to 4,999 was 40%.

Table 5

*Completers and non-completers broken down by home town population*

Breakdown by population (N=488)	Total number of students	Online Persistent Students	Online Non-Completers
1 to 2,499	150	48 (32.0%)	102 (68.0%)
2,500 to 4,999	35	14 (40.0%)	21 (60.0%)
5,000 to 9,999	67	12 (17.9%)	55 (82.1%)
10,000 to 24,999	57	17 (29.8%)	40 (70.2%)
25,000 to 100,000	97	22 (22.7%)	75 (77.3%)
over 100,000	82	20 (24.4%)	62 (75.6%)
Total	488	133 (27.3%)	355 (72.7%)

The second research question asked, “What are the personal characteristics of online graduates and students who persist online at NDSCS?” To answer this question there were 22 questions incorporated into the survey instrument to obtain the personal characteristics of the online graduates and students who persisted online at NDSCS. These questions were further subdivided into personal demographic data, personal circumstance, and personal characteristics. Table 6 shows the responses to the questions relating to personal demographic data.



Table 6

*Personal demographic data for persistent online students*

Question ( <i>N=33 for all questions</i> )	Yes	No	Not Applicable
Did you consider yourself “place bound” and unable to travel to NDSCS to take face-to-face classes?	25 (76%)	7 (21%)	1 (3%)
Did you take 12 credits or more per semester?	20 (61%)	13 (39%)	0 (0%)
Had you taken online courses from another college or university?	11 (33%)	22 (67%)	0 (0%)
Were you the primary care-giver for any children/adults while taking online classes?	12 (36%)	21 (64%)	0 (0%)

Of the 33 persistent online students, 25 (76%) of them considered themselves “place bound” and unable to travel to NDSCS to take classes. 20 (61%) of the persistent students acknowledged taking 12 or more credits per semester and 11 (33%) indicated they had taken online courses from another college or university. In addition, 12 (36%) indicated they were the primary care-giver for children/adults while taking online classes.

Table 7 provides follow up information to the question regarding if the students took 12 credits or more per semester. All persistent students responding to the survey took more than one class per semester; 11 persistent students (33%) were enrolled in two to three classes per semester and 22 persistent students (67%) were enrolled in more than three courses per semester.

Table 7

*Number of online courses taken by persistent online students*

Question ( <i>N</i> =33)	1 course	2-3 courses	More than 3 courses
How many online courses did you typically take each semester?	0 (0%)	11 (33%)	22 (67%)

Table 8 provides follow up information to the question regarding students who were primary care-givers while taking online classes. There were 12 out of 33 (36%) students who considered themselves primary care givers. Of these 12 students, three students had one individual in their care, three students had two individuals in their care, four students had three individuals in their care, and two students had four individuals in their care. No persistent students had more than four individuals in their care.

Table 8

*Number of dependents of persistent online students who are care givers*

Question ( <i>N</i> =12)	1	2	3	4	More than 4
If yes, how many children/adults were in your care?	3 (25%)	3 (25%)	4 (33%)	2 (17%)	0 (0%)

Tables 9, 10, 11, 12 and 16 show the results on a six-point Likert scale of how students felt about each question by rating their response from strongly agree (6 points), agree (5 points), somewhat agree (4 points), somewhat disagree (3 points) disagree (2 points), and strongly disagree (1 point). The mean was also calculated by totaling the points associated with each response and then dividing the total points by the number of responses to each question to determine the average score or “mean”. Calculating the mean provides an easy method to

determine the overall agreement or disagreement the students completing the survey have regarding each question. Table 9 shows the responses to the questions relating to personal circumstance.

Table 9

*Personal circumstances of persistent online students*

Question (N=33 for all questions)	Strongly agree (6)	Agree (5)	Somewhat agree (4)	Somewhat disagree (3)	Disagree (2)	Strongly Disagree (1)	Mean
I had a good study environment from which to complete my online course work.	7 (21%)	20 (61%)	5 (15%)	1 (3%)			5.00
I was able to commit the necessary time to be successful in online courses.	10 (30%)	16 (48%)	7 (21%)				5.09
I was able to maintain motivation in spite of conflicting commitments.	8 (24%)	16 (48%)	9 (27%)				4.97
I consider myself to have a strong support network.	12 (36%)	13 (39%)	5 (15%)	2 (6%)	1 (3%)		5.00
I struggled to find the financial resources required to complete my online education.	2 (6%)	5 (15%)	6 (18%)	3 (9%)	11 (33%)	6 (18%)	2.97

The results relating to personal circumstances indicate that a large majority of the students (82%) either agreed or strongly agreed that they had a good study environment from which to complete their coursework. Of the 33 persistent students, 78% either agreed or strongly agreed that they were able to commit the necessary time needed to complete their coursework.

Similarly, 72% either agreed or strongly agreed they were able to maintain motivation in spite of conflicting commitments. When answering the question considering if they felt they had a strong support network 75% either agreed or strongly agreed while only 15% (5) somewhat agreed, 6% (2) somewhat disagreed and 3% (1) persistent student disagreed. A majority (60%) of the students did not struggle to find financial resources required to complete their education, while 40% of the students did have some level of struggle to find financial resource required to complete their education.

The results relating to personal characteristics indicate that a majority of the students (79%) either agreed or strongly agreed that they have good time management skills. When answering the question considering if they work well independently without supervision or guidance 94% either agreed or strongly agreed and only one student (3%) somewhat agreed while another student (3%) disagreed that they could work well independently without supervision or guidance. The results relating to having a strong commitment for completing tasks indicate that 91% of students either agreed or strongly agreed. Similarly 94% of students either agreed or strongly agreed that they were highly motivated to complete the online program. Having a little lower response regarding if the students considering themselves to be goal orientated, 79% of the students either agreed or strongly agreed. The last question for personal characteristics asked the students if they consider themselves to be a good academic student based on their past educational experiences. The persistent students responded with 79% either agreed or strongly agreed with the statement and one student (3%) who strongly disagreed. Table 10 shows the responses to the questions related to personal characteristics.

Table 10

*Personal characteristics of persistent online students*

Question (N=33 for all questions)	Strongly agree (6)	Agree (5)	Somewhat agree (4)	Somewhat disagree (3)	Disagree (2)	Strongly Disagree (1)	Mean
I have good time management skills.	10 (30%)	16 (49%)	7 (21%)				5.09
I work well independently without supervision or guidance.	14 (42%)	17 (52%)	1 (3%)	1 (3%)			5.33
I have a strong commitment for completing tasks.	16 (49%)	14 (42%)	3 (9%)				5.39
I was highly motivated to complete the online program.	17 (52%)	14 (42%)	2 (6%)				5.45
I consider myself goal orientated.	14 (42%)	12 (37%)	7 (21%)				5.21
I consider myself a good academic student from my past educational experiences.	7 (21%)	19 (58%)	6 (18%)			1 (3%)	4.91

The third research question asked, “What is the self-confidence regarding computer technology of online graduates and students who persist online?” To answer this question there were three questions incorporated into the survey instrument to obtain the information regarding the self-confidence regarding computer technology of the online graduates and students who persisted online at NDSCS. Table 11 shows the responses to those three questions.

Table 11

*Self-confidence of persistent online students regarding computer technology*

Question ( <i>N=33 for all questions</i> )	Strongly agree (6)	Agree (5)	Somewhat agree (4)	Somewhat disagree (3)	Disagree (2)	Strongly Disagree (1)	Mean
I have good technical skills dealing with computers.	12 (36%)	13 (39%)	8 (24%)				5.12
I have confidence in my overall technical ability dealing with computer software.	10 (30%)	14 (42%)	9 (27%)				5.03
I use computers and/or electronic devices for communication with others.	17 (52%)	15 (45%)	1 (3%)				5.48

The results indicate that all students range from strongly agreeing to somewhat agreeing that they have self-confidence regarding computer technology. Specifically, 75% (25) students either agreed or strongly agree that they have good technical skills dealing with computers. Regarding computer software, 72% (24) students either agreed or strongly agreed that they have confidence in their overall technical ability dealing with computer software. Lastly, the results indicate a large majority of students use computers and/or electronic devices for communication with others with 97% (32) of the students who either agreed or strongly agreed.

The fourth research question asked, “To what extent is online social interaction a factor for online graduates or students who persist online?” To answer this research question there were seven questions incorporated into the survey instrument to obtain feedback related to online social interaction of the online graduates and students who persisted online at NDSCS. Table 12 shows the responses to those questions.

Table 12

*Online social interaction of online graduates and persistent students*

Question ( <i>N=33 for all questions</i> )	Strongly agree (6)	Agree (5)	Somewhat agree (4)	Somewhat disagree (3)	Disagree (2)	Strongly Disagree (1)	Mean
I expected a high-level of interaction with my online instructor.	5 (15%)	15 (45%)	9 (27%)	3 (9%)	1 (3%)		4.61
In most online classes, I experienced a high-level of interaction with my instructor.	6 (18%)	12 (36%)	10 (30%)	3 (9%)	2 (6%)		4.52
I expected a high level of interaction with other students while taking online courses.		7 (21%)	14 (42%)	7 (21%)	4 (12%)	1 (3%)	3.67
In most online classes, I experienced a high-level of interaction with other students.	1 (3%)	9 (27%)	14 (42%)	5 (15%)	4 (12%)		3.94
I went beyond the course requirements to interact with my instructors.	2 (6%)	6 (18%)	14 (42%)	10 (30%)	1 (3%)		3.94
I went beyond the course requirements to interact with other students.	1 (3%)	6 (18%)	10 (30%)	11 (33%)	3 (9%)	2 (6%)	3.55
I felt like I was part of a learning community through my online experience.	6 (18%)	12 (36%)	10 (30%)	4 (12%)	1 (3%)		4.55

Compared to the previous results, the results for online social interaction of online graduates and persistent students varied greatly with responses ranging from strongly agreeing to strongly disagreeing. Due to these varied responses the mean may serve as a better indicator of students overall agreement or disagreement with the question. The results indicated 60% of the

students either agreed or strongly agreed that they expected to have a high level of interaction with their online instructor; the mean for the same question was 4.61 on a 6 point scale.

Similarly 54% of the students either agreed or strongly agreed that they experienced a high level of interaction with their instructor; the mean was also slightly lower at 4.52. The student's expectations for a high level of interaction with other students while taking online courses had 21% of the students agreeing and a mean of 3.67. In turn, 30% of the students agreed or strongly agreed that they experienced a high level of interaction with other students and the mean was 3.94. Regarding the students' commitment to interacting with others, 24% of the students agreed or strongly agreed that they went beyond the course requirements to interact with their instructor with a mean response of 3.94. Likewise, 21% agreed or strongly agreed that they went beyond the course requirements to interact with other students with a mean response of 3.55. Lastly, 54% of the students agreed or strongly agreed that they felt like they were part of a learning community through their online experience and the mean response was 4.55.

The fifth research question asked, "How often do online graduates or students who persist online engage in social media? (Facebook, Snap Chat, Instagram, etc.)" To answer this research question there were five questions incorporated into the survey instrument to obtain feedback related to social media usage of the online graduates and students who persisted online at NDSCS. Table 13 shows the responses to the first of those five questions.

The results indicate a vast majority of students (70%) use social media on a daily basis; 12% using social media one to six times per week; and only 6% using social media less than once per week and 12% with no use of social media.



Table 13

*Frequency of persistent online student use of social media*

Question ( <i>N=33 for all questions</i> )	Never	Less than once per week	1 to 6 times per week	Daily
How often do you use social media? (Facebook, Twitter, Instagram, Snapchat, etc.)	4 (12%)	2 (6%)	4 (12%)	23 (70%)

Table 14 shows the results to the other four questions related to social media usage on a four-point Likert scale of how students felt about each question by rating their response from very likely (4 points), somewhat likely (3 points), somewhat unlikely (2 points), and very unlikely (1 point). The mean was also calculated by totaling the points associated with each response and then dividing the total number of points by the number of responses to each question to determine the average score or “mean”. Calculating the mean provides an easy method to determine the overall likeliness of the students completing the survey to engage in social media as pertaining to each question.

A large majority (73%) of persistent online students responded that they would be very likely to engage in social media at home. While there was a very mixed response with 51% of persistent online students responding they would be likely or very likely to engage in social media at work and 49% responding they would be unlikely or very unlikely to engage in social media at work. Again, a large majority (75%) of persistent online students responded that they would be very likely or somewhat likely to engage in social media outside of home or work. The response to the question regarding how likely it would be for them to meet new people through social media was evenly dispersed with nine students 48.5% responding very likely or somewhat likely and 51.5% responding somewhat unlikely or very unlikely.

Table 14

*Use of social media by persistent online students*

Question ( <i>N=33 for all questions</i> )	Very likely (4)	Somewhat likely (3)	Somewhat unlikely (2)	Very unlikely (1)	Mean
How likely would it be for you to engage in social media at home?	24 (73%)	5 (15%)		4 (12%)	3.48
How likely would it be for you to engage in social media at work?	6 (18%)	11 (33%)	8 (24%)	8 (24%)	2.45
How likely would it be for you to engage in social media outside of home or work?	11 (33%)	14 (42%)	3 (9%)	5 (15%)	2.94
How likely would it be for you to meet new people through social media?	9 (27%)	7 (21%)	9 (27%)	8 (24%)	2.52

The sixth research question asked, “How do ACT Reading and Writing scores differ between students that have persisted online versus those that have not?” To answer this research question data was collected through online student registration information for online graduates and students who persisted online and compared them to the non-completers of the same cohort groups. There were a total of 52 online graduates and students who persisted online that had their ACT Reading and Writing scores on file with NDSCS. There were 164 non-completers who had their Reading ACT scores on file with NDSCS and 166 non-completers who had their Writing ACT scores on file with NDSCS. The results of the data collected is shown in table 15.

The average ACT Reading score for online persistent students was found to be 21.75 and 21.68 for online non-completers. The average ACT Writing score for online persistent students was found to be 20.37 and 19.99 for online non-completers.

Table 15

*ACT Scores of persistent students and non-completers*

Breakdown for ACT Scores	Online Persistent Students	Online Non-Completers
Average ACT Reading Score	21.75 (N=52)	21.68 (N=164)
Average ACT Writing Score	20.37 (N=52)	19.99 (N=166)

Additional feedback was collected by incorporating two questions into the survey instrument to obtain feedback related to students' self-perception of their reading and writing skills of the online graduates and students who persisted online at NDSCS. Table 16 shows the responses to those questions.

Table 16

*Self-perception of reading and writing skills by persistent online students*

Question (N=33 for all questions)	Strongly agree (6)	Agree (5)	Somewhat agree (4)	Somewhat disagree (3)	Disagree (2)	Strongly Disagree (1)	Mean
I possess good reading skills.	13 (39%)	16 (49%)	4 (12%)				5.27
I possess good written communication skills.	10 (30%)	17 (52%)	6 (18%)				5.12

The results indicate 88% (29) persistent online students either agreed or strongly agreed that they possess good reading skills, while only 12% (4) students somewhat agreed with having good reading skills. Likewise 82% (27) persistent online students either agreed or strongly agreed that they possess good written communication skills, while only 18% (6) students somewhat agreed with having good written communication skills.

## Qualitative Findings

The qualitative findings for this research are very limited due to the low number of graduates completing the online survey and only three of the 20 graduates agreeing to participate in the follow-up phone interview. From the data that was collected from the phone interviews some of the findings align with the quantitative data and others do not. The top reason identified by two graduates for taking classes online versus face-to-face classes was being a primary caregiver to children or an adult. The third graduate stated the top reason was being “place bound”.

The phone interview questions regarding computers and software produced the following results: All three students had very limited computer education or training prior to taking online classes and the only software experience was familiarity with Microsoft Office or none at all. Even though their knowledge was limited regarding computers and software, all three graduates rated their confidence with computer technology and software from average to above average, one person stating they felt they would be able to figure it out and they did. When asked if they struggled with computer technology or software while taking online classes, two graduates said “yes” and one said “no”. The two students that did struggle said it was typically at the beginning of the classes and rated it as only some difficulty.

When graduates were asked “to what extent did your knowledge and use of social media help you to build relationships with your instructor and classmates online?” All three graduates responded similarly stating social media did not play a role in building relationships online. The phone interview yielded very positive results regarding the interaction within the online classes meeting their needs and expectations. All three students said their expectations were met or exceeded. All three graduates stated it was due to the required online discussions which helped them engage the other students; provide a sense of the personalities of the other students in class;

and made the students in the class feel closer due to the instructor's facilitation of discussions. One student also said their expectations were exceeded because the faculty were very responsive.

When asked about their level of motivation to complete the online course work each week, all three graduates stated they were very motivated for various reasons. All three graduates also stated they felt there was adequate time to complete the course work each week as long as they prioritized their work load (time management); started on the work right away without procrastinating; and that it was only personal circumstance that took them away from doing the work required. Two graduates responded they did not struggle to have the financial resources required to complete their online education and one graduate stated it was a struggle at times, but never felt it was beyond their reach.

The final question of the phone interview asked, "What was the biggest barrier that you had to overcome in order to persist online and graduate from the program". All three graduates gave a different response. One graduate stated, "Having to work full-time and raise a family at the same time as taking online classes." Another stated, "The biggest barrier was not having immediate or direct access to the instructor to answer questions or obtain help." The third graduate stated, "Self-motivation was sometimes a struggle and that motivation is huge in order to be successful online".

The phone interviews were interesting to visit with the various graduates, but due to the limited number of participants the data collected can only potentially support the quantitative findings and not present anything more beyond minimal support.

## **CHAPTER 5. CONCLUSIONS, DISCUSSION, AND RECOMMENDATIONS**

This chapter presents the conclusions of the study, discusses explanations for the findings and conclusions, and provides recommendations for future research. The conclusion presents the findings for each research question and discusses the inferences drawn from the results of this study. The discussion attempts to explain the findings and the conclusions that emerged from the study. Recommendations for future research are presented based on the results of the study.

### **Conclusions**

The first research question is regarding the demographics of online graduates and students who persist online at NDSCS compared to the demographics of students who fail to persist online. Based on the demographics related to academic program, there is very little difference between the percent of persistent online students in the Architectural Drafting & Estimating program (26.3%) compared to the Health Information program (27.6%). With only a 1.3% difference in retention between the two programs it can be concluded that the academic program is not a factor related to student persistence, both programs have a very low rate of persistence.

The findings for the age demographic revealed that the average age of persistent students (34.25 years old) exceeded the average age of the online non-completers (26.69 years old) by more than five and a half years. The conclusion would be that age is a factor related to online persistence and that older students are likely to persist online.

The findings for gender demographics indicated the percent of female persistent students (29.8%) was higher than the percent of male persistent students (20.3%) by 9.6%. The conclusion is that female students are likely to persist as compared to male students.

The findings related to ethnicity indicated that Asian /Hawaiian/Pacific Islanders have the highest rate of persistence (36.4%) with Whites being the next highest rate of persistence

(28.9%). Persistence rates for Black (13.8%), Hispanic (14.3%), and American Indian (0%) were all well below the average persistence rate of 27.2%. The conclusion is that Whites and Asian/Hawaiian/Pacific Islanders are likely to persist online compared to any other ethnicity, especially American Indian.

The research indicated for the demographic breakdown by population that students from a home town with a population less than 5,000 are more likely to be persistent. The average persistence rate is 27.3% and students living in a town with population of 1 to 2,499 was 32% and students living in a home town with population of 2,500 to 4,999 was 40%.

The second research question is regarding the personal characteristics of online graduates and students who persist online at NDSCS. These characteristics included if the students considered themselves “place bound” and unable to travel to NDSCS to take face-to-face classes. This was a very large factor with (76%) of the persistent students responding “Yes” to the question. Other survey questions revealed that 61% of the persistent online students were enrolled in 12 credits or more each semester with 67% of the students taking more than 3 courses online. Additionally, 33% of the students had taken online courses from another college or university. The responses to the question related to being a care-giver indicated 36% of the persistent online students were the primary care-giver for one to four children/adults being in their care while taking online classes. Conclusions are that a target audience for recruiting students likely to be persistent online would include students who consider themselves “place bound” and are looking to be a full time student taking 12 credits or more and may have taken classes online before. Another conclusion with 64% of persistent online students not being care-givers suggests that being a care-giver might not be advantageous for online persistence.

In the area categorized as personal circumstances, the study yielded the following findings:

1. 97% of persistent online students agreed to some extent that they had a good study environment from which to complete their online coursework.
2. All persistent students agreed to some extent that they were able to commit the necessary time to be successful in online courses and maintain motivations in spite of conflicting commitments.
3. 91% of persistent online students considered themselves to have a strong support network.
4. 40% of persistent online students struggled to find the financial resources required to complete their online education.

From these findings the following conclusions were drawn: An individual is likely to be a persistent online student if they: Have a good study environment from which to complete their online coursework; are able to commit the necessary time to their online coursework; are able to maintain motivation in spite of conflicting commitments; and have a strong support network. Another conclusion can be drawn that not being able to find the financial resources required to complete their online degree could be a leading factor of those students who are not persistent online.

In the area categorized as personal characteristics, the study yielded the following findings:

1. All persistent online students agree to some extent that they possess good time management skills, have a strong commitment for completing tasks, are highly motivated to complete their online program, and are goal orientated.



2. 97% of persistent online student agree to some extent that they work well independently without supervision or guidance and consider themselves to be a good academic student based on their past educational experiences.

From these findings the following conclusions were drawn: An individual is likely to be a persistent online student if they possess good time management skills, have a strong commitment for completing tasks, are highly motivated to complete their online program, are goal oriented, work well independently without supervision or guidance, and consider themselves to be a good academic student based on their past educational experience.

The study yielded the following findings for the third research question regarding student's self-confidence with computer technology: All online persistent students agreed to some extent that they have good technical skills dealing with computers; have confidence in their overall technical ability dealing with computer software; and use computers and/or electronic devices for communication with others. The conclusion is that to be a persistent online student, an individual must have self-confidence to some extent with computer technology.

The fourth research question asking to what extent is online social interaction a factor for online graduates or students who persist online yielded results that greatly varied. Some persistent online students agreed to some extent and some disagree to some extent on each of the survey questions related to online social interaction. From the varied responses, the conclusion is that online social interaction is not a factor in which to determine online student persistence.

The fifth research question asking how often online graduates or students who persist online engage in social media such as Facebook, Snap Chat, Instagram, etc. This study yielded the following findings:

1. 70% of persistent online students use social media on a daily basis with another 12% who use social media one to six times per week for a combined total of 82% engaging in social media at least weekly at a minimum.
2. 88% of persistent online students are either very likely or somewhat likely to engage in social media at home.
3. 75% of persistent online students are either very likely or somewhat likely to engage in social media outside of home or work.

The conclusion drawn from these findings is that an individual is likely to be a persistent online student if they engage in using social media at least once a week from their home or outside their home.

The sixth research question asked “How do ACT Reading and Writing scores differ between students that have persisted online versus those that have not?” This study indicated that the average ACT Reading score for online persistent students is 21.75 and 21.68 for online non-completers for a difference of 0.07. The average ACT Writing score for online persistent students is 20.37 and 19.99 for online non-completers for a difference of 0.38. With very little difference in the ACT scores between persistent online students and non-completers, the conclusion is that an online students reading or writing ACT scores are not a predictor of online student persistence.

### **Discussion**

In this study, the demographics of persistent online students and graduates were compared with the demographics of online non-completers. Additionally, instruments were used to collect data pertaining to identifying other personal demographic data, personal characteristics, and personal circumstances of persistent online students and graduates of an online program.

This work was done to provide statistical data from which a profile could be established to identify those students likely to persist in an online environment and progress toward program completion.

Not all demographics, characteristics, or personal circumstances were able to be identified, but a few were identified as a result of this study that may prove to be beneficial in recruiting and advising students who will persist in an online program. There is statistical data to support that the academic program has very little impact on whether a student is going to be persistent online or not. Given the two academic programs utilized for this study, Architectural Drafting & Estimating and Health Information, which are very different from each other and unique in their own ways, there does not seem to be any significance between student persistence in the two programs. Both programs had equally low persistence rates of 26.3% and 27.6% respectively.

Age, gender, and ethnicity are all demographics identified in this study to be a determining factor in student online persistence. Persistent students tend to be older with an average age of 34.25 years old compared to the online non-completer students having an average age of 28.69 years old. This could be simply because of reaching a higher level of maturity and being focused in knowing what they want to achieve as indicated in a couple of the phone interviews. Another aspect of maturity is knowing what it takes in the job market to be successful and applying themselves accordingly for their online education. Older students know they will be competing against younger professionals in the job market and will rely on having a better knowledge of the subject matter to secure a position in the workforce.

The research also revealed that female students are 9.6% more likely to be persistent online than male students. This contradicts the findings of Patterson and McFadden (2009)

which stated that gender was not a significant factor for determining persistence. Note one difference between the two studies is that Patterson and McFadden were determining persistence at a masters' degree level and this study was conducted with students at an associate degree level.

According to this study, ethnicity is also a factor in online student persistence with Asian/Hawaiian/Pacific Islander students (36.4%) and White students (28.9%) being statistically more apt to persist online than any other students "of color" (11.1%). This aligns with the Patterson and McFadden (2009) study that stated ethnicity was a significant factor for retention and contradicts the findings of Aragon and Johnson (2008) that showed no significant difference between white and non-white online student success.

The research indicated for the demographic breakdown by population that students from a home town with a population less than 5,000 are likely to be persistent. The average persistence rate identified in this study was 27.3%. Students who indicated a home town with population of 1 to 2,499 upon registering for online classes their first semester had a 32% persistence rate and students having a home town with population of 2,500 to 4,999 had a 40% persistence rate. At the time of this study no information could be found regarding a student's geographic location or home town statistics. The population of a student's home town could be utilized to target to a specific audience for online programs going forward.

When analyzing the personal demographic data for persistent online students the findings indicate a majority (76%) of the students consider themselves "place bound" and are enrolled as a full time student (61%) taking 12 or more credits and more than three courses at a time (67%). The conclusion drawn from these findings would indicate the profile for persistent online students would include those students who consider themselves to be "place bound" and willing

to be a full-time online student taking three or more classes each semester equating to 12 credits or more. Being a “place bound” individual makes online education very appealing.

The other item related to personal demographic data is whether or not the persistent online students are care-givers to children or adults. The findings of this study indicate students (64%) are likely to be persistent online if they are not care-givers to children or adults. Although some care-giver online students are persistent (36%), they are likely not to persist online due to their need to care for others. Being a care-giver may cause the online student to prioritize other things above their online studies which could lead to non-performance or lack of commitment to their online education. Therefore, being a non-care giving adult while taking classes online would be added to the profile of a persistent online student.

The personal circumstances for online students do play a role in their ability to be persistent in an online environment. Students should possess the following: a good support network, a good study environment for completing their online coursework, are able to commit the time necessary to be successful in their online courses, and maintain their motivation in spite of conflicting commitments are more apt to be persistent online. Personal characteristics for online students also play a role in their ability to be persistent in an online environment. Students are likely to persist online if they possess good time management skills, have a strong commitment for completing tasks, are highly motivated to complete their online program, are goal oriented, work well independently without supervision or guidance, and consider themselves to be a good academic student based on their past educational experience. All of these personal circumstances and characteristics are important factors in order for the students to persist online.

Another factor to consider when profiling a persistent online student is their self-confidence regarding computer technology. Students who have self-confidence relating to their

technical skills dealing with computers, good technical ability dealing with computer software, and use computers and/or electronic devices to communicate with others are likely to persist in an online environment. Being the online environment is based on the use of computer technology, students should feel confident and comfortable with this technology. Adding to this is the individual's use of social media. Whether this relates to the students use of technology to communicate with others, most persistent online students used social media either daily, or at least once a week, likely in their home.

After synthesizing and analyzing the data collected certain criteria can be used from this study to start the process for creating a profile for individuals who will be statistically more apt to be persistent in taking courses in an online environment. The profile would include White, Asian, Hawaiian, or Pacific Islander female students approximately 34 years old or older with no care-giving responsibilities to children or adults who consider themselves to be "place bound" and are willing to be a full time student taking 3 or more classes per semester for a total of 12 or more credits. A list of other factors for creating a profile of persistent online students includes:

1. Students have a good study environment from which to complete their online course work.
2. Students believe they will be able commit the necessary time to be successful in online courses.
3. Students believe they will be able to maintain motivation in spite of conflicting commitments and consider themselves to have a strong support network.
4. Students would agree to some extent that they have good time management skills and that they work well independently without supervision or guidance.

5. Students would agree to some extent that they have a strong commitment for completing tasks and are highly motivated to complete the online program.
6. Students would agree to some extent that they are goal orientated.
7. Students would agree to some extent that they consider themselves to be a good academic student based on past educational experiences.
8. Students would agree to some extent that they possess good technical skills dealing with computers and computer software and use computers and/or electronic devices for communication with others.
9. Students use social media at least once a week from their home or outside their home.
10. Students would agree to some extent that they possess good reading and written communication skills.

All of these factors would contribute to creating a profile for individuals who will be statistically more apt to be persistent in taking courses in an online environment. Once a profile has been established for these online students, the profile can be used to identify those students likely to persist in the online environment and progress toward program completion.

Recruitment efforts can become more focused on targeting these student demographics to attract students who will be statistically more apt to persist and complete an online program. The profile can also be used for entry level advising to verify if a student fits the criteria of personal circumstances and possesses the personal characteristics to be a persistent online student. The findings of this research study were not conclusive or statistically significant in order to set admissions requirements for online programs relative to standardized test scores.

Using this new profile to enhance recruitment efforts and target marketing along with implementing criteria for entry level advising to determine a student's likelihood for online persistence, NDSCS would hope to increase retention and completion rates for online programs.

### **Recommendations**

This study can be used as a baseline and the instruments from the study can be amended for data collection specific to the needs of the researcher when conducting future research. Due to the low number of responses it would be beneficial to have a study conducted using a larger population and sample to provide results with more statistical significance related to specific characteristics of the study. Another recommendation for future research is to survey not only the persistent online students, but the non-completers as well to determine their individual characteristics and personal circumstances. This study was lacking input from the online non-completers when trying to profile persistent online students. One area specifically to be addressed in the future is to determine the percentage of non-completers who struggled to find the financial resources required to complete their online education. This may provide insight into a factor that contributes largely to students' lack of persistence online.

Another area to be considered for future research is to determine if there is any correlation between students who consider themselves "place bound" and their motivation to complete the online program given they may not have any other options for continuing their education. Other factors to consider for future research could include the number of hours online students work while taking classes and if the number of credits students take online each semester impacts their persistence.



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## **APPENDIX A. DEMOGRAPHICS RESEARCH**

**Demographics research and database information for current online students and past graduates to be collected and analyzed:**

- Age
- Gender
- Ethnicity
- Home town, State
- Reading ACT score
- Writing ACT score

## APPENDIX B. CURRENT ONLINE STUDENT SURVEY

**Survey for current online students to assist in profiling persistent online students:**

### **Demographic information related to Research Question 1:**

1. What program are you currently enrolled in at NDSCS? (AD&E / HIT / MC)
2. What is your gender? (Male / Female)
3. What is your current age?  
(16-18 / 19-25 / 26-35 / 36-45 / 46-55 / Over 55)
4. What is the population of the city you live in or near?  
(1-1000, 1001-5000, 5001-10,000, greater than 10,000)
5. How far do you live from a city greater than 10,000?  
(0-15 minutes, 16-30 minutes, 31-60 minutes, 61-120 minutes, over 120 minutes)
6. Do you considered yourself place bound and unable to travel to NDSCS to take face-to-face classes? (Yes / No)
7. How many semesters have you taken online classes? (1-2 / 3 or more)
8. Are you taking 12 credits or more per semester? (Yes / No)
9. How many online courses do you typically take each semester? (1 / 2-3 / More than 3)
10. Have you taken online courses from another college or university? (Yes / No)
11. Are you the primary care-giver for any children/adults? (Yes / No)
12. If yes to #11, how many children/adults are in your care? (1 / 2 / 3 / 4 / more than 4)

**Rate the following statements:**

(6-Strongly Agree/ 5-Agree/ 4-Somewhat Agree/ 3-Somewhat Disagree/ 2-Disagree/ 1-Strongly Disagree)

**Personal characteristics related to Research Question 2:**

13. I have good time management skills.
14. I work well independently without supervision or guidance.
15. I have a good study environment from which to complete my online coursework.
16. I have a strong commitment for completing tasks.
17. I am highly motivated to complete the online program.
18. I consider myself goal orientated.
19. I am able to commit the necessary time to be successful in online courses.
20. I am able to maintain motivation in spite of conflicting commitments.
21. I consider myself to have a strong support network.
22. I struggle to find the financial resources required to complete my online education.
23. I consider myself a good academic student from my past educational experiences.
24. I possess good written communication skills.
25. I possess good reading skills.

**Personal characteristics related to Research Question 3:**

26. I have good technical skills dealing with computers.
27. I have confidence in my overall technical ability dealing with computer software.
28. I use computers and/or electronic devices for communication with others.

**Online interaction questions related to Research Question 4:**

29. I expect a high-level of interaction with my online instructor.
30. In most online classes, I experience a high-level of interaction with my instructor.

31. I expect a high level of interaction with other students while taking online courses.
32. In most online classes, I experience a high level of interaction with other students.
33. I go beyond the course requirements to interact with my instructors.
34. I go beyond the course requirements to interact with other students.
35. I feel like I am part of a learning community through my online experience.

**Social media information related to Research Question 5:**

36. How often do you use social media? (Facebook, Twitter, Instagram, Snapchat, etc.)

(Never / less than once per week/ 1 to 6 times per week/ daily

Rate the following questions regarding social media:

(4-very likely / 3- somewhat likely / 2 somewhat unlikely / 1 very unlikely)

37. How likely would it be for you to engage in social media at home?
38. How likely would it be for you to engage in social media at work?
39. How likely would it be for you to engage in social media outside of home or work?
40. How likely would it be for you to meet new people through social media?

## APPENDIX C. ONLINE GRADUATE SURVEY

### Survey for online graduates to assist in creating a student profile:

#### Demographic information related to Research Question 1:

1. What program did you graduate from at NDSCS? (AD&E / HIT / MC)
2. What is your gender? (Male / Female)
3. How old were you when you started taking online classes from NDSCS?  
(16-18 / 19-25 / 26-35 / 36-45 / 46-55 / Over 55)
4. What is the population of the city you lived in or near while taking online classes?  
(1-1000, 1001-5000, 5001-10,000, greater than 10,000)
5. How far did you live from a city greater than 10,000 while taking online classes?  
(0-15 minutes, 16-30 minutes, 31-60 minutes, 61-120 minutes, over 120 minutes)
6. Did you considered yourself place bound and unable to travel to NDSCS to take face-to-face classes? (Yes / No)
7. How many semesters, not including summers, did it take you to graduate from the online program? (4-6 / 6-8 / more than 8)
8. Did you take 12 credits or more per semester? (Yes / No)
9. How many online courses did you typically take each semester? (1 / 2-3 / More than 3)
10. Had you taken any online courses from another college or university? (Yes / No)
11. Were you the primary care-giver for any children/adults while taking online classes?  
(Yes / No)
12. If yes to #11, how many children/adults are in your care? (1 / 2 / 3 / 4 / more than 4)



**Rate the following statements:**

(6-Strongly Agree/ 5-Agree/ 4-Somewhat Agree/ 3-Somewhat Disagree/ 2-Disagree/ 1-Strongly Disagree)

**Personal characteristics related to Research Question 2:**

13. I have good time management skills.
14. I work well independently without supervision or guidance.
15. I had a good study environment from which to complete my online coursework.
16. I have a strong commitment for completing tasks.
17. I was highly motivated to complete the online program.
18. I consider myself goal orientated.
19. I was able to commit the necessary time to be successful in my online courses.
20. I was able to maintain motivation in spite of conflicting commitments.
21. I consider myself to have a strong support network.
22. I struggled to find the financial resources required to complete my online education.
23. I consider myself a good academic student from my past educational experiences.
24. I possess good written communication skills.
25. I possess good reading skills.

**Personal characteristics related to Research Question 3:**

26. I have good technical skills dealing with computers.
27. I have confidence in my overall technical ability dealing with computer software.
28. I use computers on a daily basis for communication with others.

**Online interaction questions related to Research Question 4:**

29. I expect a high-level of interaction with my online instructor.
30. In most online classes, I experienced a high-level of interaction with my instructors.

31. I expect a high level of interaction with other students while taking online courses.
32. In most online classes, I experienced a high level of interaction with other students.
33. I went beyond the course requirements to interact with my instructors.
34. I went beyond the course requirements to interact with other students.
35. I feel like I was part of a learning community through my online experience.

**Social Media questions related to Research Question 5:**

**Rate the following questions:**

36. How often do you use social media? (Facebook, Twitter, Instagram, Snapchat, etc.)  
(Never / less than once per week/ 1 to 6 times per week/ daily)

Rate the following questions regarding social media:

- (4-very likely / 3- somewhat likely / 2 somewhat unlikely / 1 very unlikely)
37. How likely would it be for you to engage in social media at home?
  38. How likely would it be for you to engage in social media at work?
  39. How likely would it be for you to engage in social media outside of home or work?
  40. How likely would it be for you to meet new people through social media?

## APPENDIX D. QUALITATIVE SURVEY FOR ONLINE GRADUATES

1. Select all the reasons why you took online classes versus face-to-face classes from the following list.

- Place bound unable to attend face-to-face
- Cannot relocate to Wahpeton, ND
- Primary caregiver
- Working full-time
- Online more efficient use of time
- Flexibility of online
- Enjoy using the technology for education
- Minimize social involvement with others
- Less expensive than full time on campus
- Other, \_\_\_\_\_
- Other, \_\_\_\_\_

2. Select the top reason for taking online classes versus face-to-face classes from the following list.

- Place bound unable to attend face-to-face
- Cannot relocate to Wahpeton, ND
- Primary caregiver
- Working full-time
- Online more efficient use of time
- Flexibility of online
- Enjoy using the technology for education
- Minimize social involvement with others
- Less expensive than full time on campus
- Other, \_\_\_\_\_
- Other, \_\_\_\_\_

3. What is your computer education or training prior to taking online classes?
4. List specific software experience you have had prior to taking online classes?
5. How would you rate your confidence in computer technology and software?  
(Very Strong / Above Average / Average / Below Average / Very Low)
6. Did you struggle with computer technology or software while taking online classes?
7. If yes for #6, when did the problems with computer technology or software occur?  
(Typically the beginning of classes / All throughout duration of classes / Sporadically)
8. If yes for #6, how severely did you struggle?  
(Extreme difficulty / Moderate difficulty / Some difficulty / Minor difficulty / NA)
9. To what extent did your knowledge and use of social media (FaceBook, Twitter, Instagram, etc.) help you to build relationships with your instructor and classmates online? Explain.
10. Did the amount of interaction within the online classes meet your needs and expectations? Explain.
11. Describe your level of motivation to complete your online course work each week?
12. Did you feel you had adequate time to complete the course work each week? Explain.
13. Did you struggle to have the financial resources required to complete your online education? Explain.
14. What was the biggest barrier that you had to overcome in order to persist online and graduate from the program?