Differences in Online Students Compared to In-Person Students in Accounting Classes

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ABSTRACT

In the current educational environment, it is both timely and appropriate to investigate if there is a difference in learning online compared to learning in person. Moreover, it is important to understand the effect such differences have on students taking in-person classes when compared to those who choose to take asynchronous online classes when in-person class alternatives are available. Our analysis of data collected from students in each type of course at three time periods reveals significant differences in the students' technical efficacy, level of frustration, and locus of control, among others, which help to explain, (in this case, explain better than their GPA) their performance in each course format.

Keywords: Online education, Self-efficacy, Frustration, Locus of Control, Lazy User, Structured Equation Modeling, GPA

INTRODUCTION

Most U.S. universities went online in March of 2020 to protect students from the Covid-19 coronavirus. At the same time, university systems across the country offered pass/fail as an option versus a letter grade for the course. This school year, there is more opposition to the policy. The College of Charleston decided to extend the deadline for withdrawing from a course instead of offering pass/fail. They experienced an increase of A's, B's, and C's when grades were compared to previous semesters. Some schools, such as North Dakota State University and the University of North Carolina at Chapel Hill, allowed students to declare pass/fail up to a November deadline but would not extend it (Flaherty, Nov. 30, 2020). The actions beg the question: Why would university systems offer a pass/fail option? Is there a difference between learning online compared to learning in person? How do differences in personal characteristics of students who chose to take an

asynchronous online class when an in-person class was also offered impact their performance when compared to students who take the in-person class?

A recent newspaper article reported, "Schools confront 'off the rails' numbers of failing grades" (Thompson, Dec. 7, 2020). She writes, "The first report cards of the school year are arriving with many more Fs than usual in a dismal sign of the struggles students are experiencing with distance learning." The article continues by listing reasons for the failures: students not completing all the work, spotty internet access, and Zoom cameras turned off during classes.

We believe there is a difference between taking a course online versus taking it in person. The question is, would those students have done better in person? The material is the same. The teacher is the same. Is there a difference between learning online compared to learning in person? Since the turn of the century, there has been enormous growth in online education (Bollinger and Halupa, 2012). With the impact of Covid-19, the movement toward online learning has accelerated (Aguilera-Hermida, 2020.)

We conducted a study before March 2020, that examined the differences between students who chose to take an asynchronous online course compared to students who chose to take the course from the same instructor in person. In all of the classes, students received letter grades - Pass/Fail was not an option. We found there were significant differences between the two groups of students. Factors that affected the student's final grade in the class included their GPA (grade point average), their feeling of self-efficacy, level of technical efficacy, technical frustration, locus of control, and lazy user characteristics. Our findings suggest asking students to take online courses when they prefer in-person classes is an additional hardship.

There have been a variety of studies that have looked at online education. Some studies looked at student satisfaction (Bollinger and Martindale, 2004), self-efficacy (Peechapol, Na-Songkhla, Sujiva, Luangsodsai, 2018), and students' internet self-efficacy and satisfaction with online education (Hamden et al., 2021). But we have not found a similar study of differences between online and in-person classes. McKeever (2019) suggests that online courses might be optimal for students who feel out of place in class (maybe because of cultural, religious, and other reasons).

To understand which individual characteristic differences explain student performance in online or in-person classes, we surveyed students in six accounting principles sections, three asynchronous online and three face-to-face, over two semesters. The in-person class sizes ranged from 46 to 118 students and the online classes ranged in size from 29 to 44 students. All were taught by the same instructor at a large, public, Southern university. Students selected an in-person or online course. All sections used the same web-based homework software assignments.

In Fall 2020, during advising for Spring 2021, the semester after everyone was sent home for Covid-19, the authors met with some students who reported excitement about continuing to have all courses online while other students withdrew, waiting for things to return to normal. One student was depressed and angry about not meeting face to face. Educators are scrambling to deal with all contingencies, especially since Scudellari (2020) predicts the future course of the virus means it will be around for another five years. And most predictions involving the virus include online education, though they also discuss the disparity in the availability of online access available to the poor compared to the wealthy (Basilaia and Kvavadze, 2020). This is important because the students at our university are like students everywhere. They are forced to take classes online even though they may prefer to learn face-to-face in person. For the Fall of 2021, the university administration called for face-to-face meetings with the possibility of going entirely online in the event of changed circumstances.

The university system announced on its website that they were shifting to fully remote instruction for the Fall 2020 semester. Because many students were stressed and required to take online courses, the university system offered them the chance to take any course Pass/Fail instead of a letter grade. But we noticed that many

students did well in an online class which led us to ask, is there a difference between a student who prefers online courses compared to one who prefers in-person classes?

LITERATURE REVIEW

Researchers remain unclear on whether online classes are appropriate and desirable. Xu and Jaggars (2011) found that community college students who take their first course online were negatively impacted. They also found significant differences in the students who chose to take the course online compared to those taking the course in person. Their study suggested that any difference one would normally find between students in a classroom is magnified when the course is online. There were differences in age, sex, race, and English as a second language. They also found a difference in students who took a computer literacy course before the online course compared to those who did not take a computer course. McLaren (2004) found that while online instruction can accomplish the teaching part and be an accredited method of fulfilling course objectives, not all students are equipped with the persistence factor. They found that students "who were more mature, highly motivated, independent, willing to ask questions, and well organized" (McLaren, 2004, p. 8) were more successful but the method of instruction can be used by all. However, they found that larger numbers of students dropped, disappeared from, or failed the online version of the course than from the in-person course.

Kirtman (2009) compared the learning outcomes of three online master's courses with three in-person courses and found mixed results. In-person students scored higher on the mid-term exam but there was no significant difference between the groups on the final exam. Additionally, online students were very positive about the customizable learning experience because they did not have to look for parking and they could focus on the parts they did not know, instead of spending time listening to parts they did understand. Jayaratne and Moore (2017), found that one of the benefits of online learning was the time flexibility and because of this, "it was not advisable to deliver classes online synchronously which required students to take the class online on a fixed schedule." Wagner et al. (2011) studied eleven online sections and nineteen in-person sections of a business software course. They found a significant difference in the course results of females (who scored higher) and males. Brown (2012) found that students said they preferred online courses, but grades were higher for traditional in-person sections. It appears that there are some differences between taking a course online and taking one in person.

Many studies have examined the characteristics of successful students in face-to-face and online settings. Grades and GPA have been widely used to predict student success in both learning environments. However, while past performance is a strong predictor of future performance, it fails to provide agency to either educators or students to understand, predict, or improve performance. Literature suggests that psychological factors have an impact on a student's choice of taking a course online or in-person, as well as their success in the course. Ihm et al. (2013) examined Korean dental school students' in-person classes and reported that higher self-efficacy was related to higher GPA grade scores. They found that in addition to GPA, students' locus of control and self-efficacy "were absolutely strong predictors of students' performance" (Ihm et al., 2013, p. 1618). O'Neill and Sai (2014) asked students why they *did not* take a psychology course online but elected to take it in person. One student responded, "I prefer going and sitting in a lecture room. I find I don't have the motivation to keep up to date with my work for an online class" (O'Neill and Sai, 2014, p. 9.)

Previous research on online learning focused on student characteristics. Boyd (2004) identified characteristics of successful online students and found they included a level of computer competence, time, physical workspace, and familial support. In addition, he identified personal traits such as being self-motivated and self-disciplined as important determinants of success in online courses. He wrote, "One possible reason for the higher attrition rates among distance education students is there may be only certain kinds of students under

certain conditions who can successfully learn via the online format" (Boyd, 2004, p. 2). Vella et al. (2015) found that specific traits in web-based students predicted end-of-course grades including age, gender, instructional mode (using Blackboard or Moodle, posting videos or discussion boards, etc.) course level, and whether the students were enrolled full-time or part-time. A study of online students by Artino and Stephens (2009) investigated the impact of the negative achievement emotions, boredom, and frustration, and found that lower levels of negative emotions were generally associated with higher grades. Artino (2010) followed this with a study of online or in-person learning. He found that students with higher levels of self-efficacy were more likely to take a course online. However, he also reports that students who are truly interested in the material may choose to take the course in person. Artino and Jones followed this with another online learning study (2012) on frustration effects and reported that emotions seem to be intertwined with the student's self-regulating learning traits. So, there appears to be a lot of research in support of the view that individual characteristics play a role in successful online learning.

From actual cases and studies of student online learning, we know that some people perform better in online courses than others. O'Neill's unknown student said it was motivation. McLaren (2004) mentioned persistence. Funk and Wagnall's Standard Desk Dictionary (1980) defines "persist" as "to continue firmly in some course or state, despite opposition or difficulties." Buzzetto-Hollywood et al. (2019) explored grit (persistence and perseverance) in online education and found that grittier students also reported more self-discipline and self-efficacy, but the study did not find a significant relationship between grit and success in an online course. However, there are other factors such as Frustration Tolerance that are similar to grit that makes a difference in online learning. Meindl et al, (2019) studied Frustration Tolerance and found a relationship between academic achievement and the ability to continue to work toward one's goal even though frustrating events occur to impede progress. Khanlarian and Singh (2015, p. 1) found "a stronger relationship between frustration and performance in online students." People who solved the problem did not report frustration while people who could not solve the problem, reported being frustrated.

THEORETICAL FOUNDATIONS OF PREDICTING STUDENT SUCCESS

Grade Point Average

Many scholars have tried to find a way to predict student success. A study of educational literature (York, Gibson, and Rankin, 2015) found that GPA was the most used measure to predict student success. Eskew and Faley (1988) examined students in a first college-level financial accounting course and developed a model to explain the final course grades. They found that SAT scores, high school grades, and previous accounting experience were significant in predicting the ending course grades. Tross et al. (2000) found that high school GPA and SAT scores were related to college GPA but also found that conscientiousness (a measure of homework completion, note-taking, and on-time submission) was more predictive of college GPA than their high school GPA was. Palocsay and Stevens report that in a predictive model, student GPA was the most important predictor of exam performance when using web-based homework (Palocsay and Stevens, 2008). A more recent study found that GPA is highly reliable as a measure of student performance but differs moderately depending on the students' area of study (Beatty et al, 2015). They reported that GPA can be used as an indicator of student performance on licensing exams, such as the CPA exam. The 2018 study by Tepper and Yourstone reported that a student's performance in introductory accounting is affected by GPA as well as the student's self-efficacy.

Self-Efficacy

Bandura believed that self-efficacy played a central part in a person's success. He wrote, "the strength of people's convictions in their effectiveness is likely to affect whether they will even try to cope with given situations" (1977, p. 193). The theory suggests that people receive feedback on their performance which causes them to reevaluate and try, or not try, again (Alqurashi, 2016). Self-efficacy has been studied so often that a "Bandura self-efficacy theory" Google Scholar search returns 38,800 results just since 2016. In one notable study, Williams and Williams (2010) used math self-efficacy to predict math class achievement in a recursive model of reciprocal determinism in 33 nations. Komarraju and Nadler (2013) found that students who report higher self-efficacy also report higher levels of performance. Alqurashi (2016) reported that people with high self-efficacy often display higher levels of confidence in their ability to use technology successfully.

Frustration

Bessier et al. (2002) studied "frustration in computer usage". Frustration is that feeling one has when progress towards a goal is impeded by an outside force such as a printer that won't print. Students may also be frustrated by homework software that counts an answer of "0" wrong because it wants "0.0" because the software requires a decimal place. But the study by Meindl et al. (2019) uses the term "frustration tolerance" meaning the amount of frustration one can take without quitting. They had participants spend five minutes trying to complete a mirror image tracing pattern on a computer that was rigged to fail. The student's frustration tolerance predicted college progress among those students.

Locus of Control

Rotter (1954) studied the locus of control or the degree to which people believe they have control over their lives and their actions. A person with an internal locus of control believes events in their lives have occurred as a result of their behavior while people with an external locus of control believe that events will occur no matter what they do to cause or prevent them. Rotter also believed people with an internal locus of control count on their drive and determination to get them where they want to go, but people with an external view believe that nothing they can do will change what is going to happen to them. Albert and Dahling (2016) found a significant relationship between locus of control and academic self-concept. Drago et al (2018) found a significant relationship between Locus of Control, Academic Self-Efficacy, and tutoring on a student's GPA. Hosseini et al. (2016) found a significant relationship between locus of control and academic achievement.

Lazy User

The lazy user was first described in a laboratory where mice that were familiar with their maze, started cutting corners to get to the food faster. In our context, the lazy user uses the least amount of effort to complete a task. The lazy user model of solution selection suggests a person tries to fulfill a need by selecting from the options available to him, the option that best fulfills a need with the least amount of effort. This theory is appropriate since students in the classes were asked to use web-based homework grading software and some of them attempted to game the system by checking answers and using hints and seeing how examples are worked without actually reading the chapter or doing the work. "The lazy user theory of solution selection tries to

explain how an individual (user) makes her selection of a solution to fulfill a need (user need) from a set of possible solutions (that fulfill the need). The set of possible solutions is a subset of universal solutions that are constrained (limited) by the user state (circumstances)" (Tetard and Collan, 2009).

Technical Efficacy

Technical efficacy is the strength of one's belief in an ability to use technology successfully. In this century, everyone is expected to know and use certain technologies, some of which are proprietary to a business. Decker (1999, p. 162) wrote:

> *"...employee self-efficacy perceptions of technological advancements are reflected in the performance and proficiency realized by the organization. Workplace performance and the employee's willingness to learn computer technologies and their related tasks are hindered by low self-efficacy levels. Consequently, attention to providing technical workforce preparation that transfers or results in self-efficacious computer technology interaction is a necessity."*

Decker found that people who had training, who have a computer at home, use a computer on the job, and are asked to train others have a higher level of belief in their technical abilities, known as technical efficacy. Although Swingle (2012) observed students and their level of computer self-efficacy as related to online course success and concluded there was **no correlation** (our emphasis) between academic success online and technical efficacy, other studies such as Hauser et al, (2012) and Saade and Kira, (2009) report mediating effects of technical self-efficacy in an online course.

METHODOLOGY

Our study investigated some differences in students who chose to take an asynchronous online class when an in-person class was also offered. Over two semesters, we surveyed 111 online accounting students and 257 in-person students who all had the same instructor. We found there were significant differences between the two groups. We also found that self-efficacy, locus of control, and frustration predict a student's final accounting course grade better than their GPA. We present evidence that highlights many differences during a semester between students who chose to take an online class and those who preferred to take it in person. Educators have known that different students respond to various teaching styles (Kaplan and Kies, 2013; Grasha and Yangarber-Hicks, 2000), so it is not surprising to find that students respond differently to courses offered in different formats. We present factors that were found to have a significant impact on student performance in an accounting principles class that was taken in-person by some students and online by others.

We began by separating the 111 online students from the 257 in-person students. There were six different assessment points. In chronological order, they were as follows: Online homework set #1 (the average of three homework assignments using online homework grading software), Test #1, Online homework set #2 (average of three assignments), Test #2, Online homework grading software set #3 (average of three assignments) and the final exam. While all students completed online homework, the in-person students took their tests in class while online students took their tests online. Each student completed the same survey after each test.

Our objective is to enhance our understanding of factors that contribute to a student's performance in a class, be it online or in-person. We also hope to find which, if any, characteristics are different between the two groups. There must be some reason other than convenience that students take classes online when they have a choice of methods. This study examined the ability of Lazy User, Frustration Tolerance, Locus of Control, Self-

Efficacy, and Technical Efficacy to predict a student's grades in an in-person accounting principles class compared with student grades in an online class with the same instructor.

SPSS was used to analyze the data. As shown in Table 1, four of the six assessment points evaluated were found to be significantly different between the online and the in-person students. Those four assessment points were as follows: the first set of homework grades, the first test, the second set of homework grades, and the final exam (third test) grades. The online group showed higher average Homework #1 and higher Test #1 scores, but the in-person group showed higher Homework #2 and higher Final Exam grades.

We asked students to complete this survey three times during the semester: at the beginning, the middle, and the end of the term. We divided the responses into the in-person group and the online group. Using SPSS, we tested to see if there were any significant differences between the two groups. A one-way ANOVA (analysis of variance) is a statistical test used to examine the difference in means of two independent variables. We tested to determine if there was a difference in responses between the online group and the in-person group. The results appear in Table 1. We first tested the GPA of the two groups and found no significant difference. But we did find differences in scores on Homework 1, Test 1, Homework 2, and the final exam. Then, we used structured equation modeling software to test for relationships between and among the constructs.

ANALYSIS OF DATA

The Independent Samples t-test looks at the means of two different groups to determine if there is statistical evidence to support the idea that the means of the two populations are significantly different. Using SPSS, we found there was no significant difference in the means of the GPA of the in-person group compared to the online group as shown in Table 1.

Table 1: Differences in In-Person Group and Online Group (GPA, Homework, Tests, and Exam)

Difference in Means: In-Person group compared to Online Group	Significance level (2-tailed) (Highlights indicate significance)	Mean: In-Person Group	Mean: Online Group
GPA (1=A, 2=B, etc.)	0.5250	3.13	3.22
Homework 1 (out of 100 points)	0.0250*	91.860	95.460
Test 1	0.0040*	76.374	80.931
Homework 2	0.0230*	90.020	85.950
Test 2	0.2060	76.374	74.444
Homework 3	0.1240	90.023	85.221
Final Exam	0.0410*	88.486	76.523

*significant difference

Next, we analyzed the survey responses. There were 64 questions in the survey, and it was administered three times. Therefore, we worked with 192 questions. We only show here the questions that produced

significantly different responses between the two groups. We first show the questions in Table 2 and then the differences in Table 3.

Table 2: Survey questions that produced significantly different responses.

Selected Survey Questions		
Self-Efficacy	#1	I can complete homework assignments successfully
	#2	When I work on accounting problems using web-based homework software, I can get the right answers.
Locus of Control	#5	Chance or luck plays an important part in my success when using the web-based homework software
	#6	Doing well in school is a matter of hard work. Luck has little or nothing to do with it.
	#7	Doing well on my homework using the software is a matter of hard work. Luck has little or nothing to do with it.
	#8	My problem-solving skills are better than those of other students in this class
Frustration	#1	I feel anxious when I run into a problem on the computer or have a problem with the web-based homework software.
	#2	I feel helpless when I encounter a problem on the computer or have a problem with the web-based homework software.
	#3	Frustrating experiences with the web-based homework software severely impacted my ability to get the assignment completed.
Usefulness	#1	Using web-based homework software enables me to finish the homework assignment faster than if I used paper
	#2	Web-based homework software has improved the quality of the work I do compared to paper homework
	#3	Web-based homework software gives me greater control over my work compared to paper homework
Technical Efficacy	#1	I tried to discover new functions in the web-based homework software (calculator, hints, etc.?)
	#2	If I heard about new information technology, I would look for ways to experiment with it
	#3	Using a computer is an efficient way for me to learn new things

Our constructs are Locus of Control, Self-Efficacy, Lazy User, Frustration and Technical Efficacy. Each construct was measured at three points in time – after test #1, after test #2 and after the final exam. We separated online students from in-person students. We show the full model with GPA included, then show GPA alone and finally, we show the full model without GPA.

Table 3 - Online Students: Measuring Significant Constructs' Reliability and Validity using SmartPLS based on Survey Questions

Construct	Cronbach's Alpha (Should be >.7)	Rho_A (Should be >.7)	Composite Reliability *Internal Consistency* (Should be >.7)	Average Variance Extracted (AVE) (Should be >.5)
Frust1	0.769	0.805	0.861	0.675
Frust2	0.760	0.801	0.859	0.672
Frust3	0.827	0.859	0.895	0.739
LOC1	0.695	0.695	0.814	0.522
LOC2	0.792	0.842	0.859	0.608
LOC3	0.805	0.854	0.865	0.619
Lazy1	0.667	0.668	0.818	0.600
Lazy2	0.715	0.731	0.840	0.637
Lazy3	0.756	0.806	0.858	0.671
SE1	0.772	0.786	0.897	0.814
SE2	0.750	0.758	0.889	0.800
SE3	0.826	0.828	0.920	0.852
Tech1	0.671	0.471	0.717	0.501
Tech2	0.705	0.277	0.742	0.516
Tech3	0.719	0.743	0.843	0.645

Table 4 – In-Person Students: Measuring Significant Constructs' Reliability and Validity using SmartPLS based on Survey Questions

Construct	Cronbach's Alpha Should be >.7	Rho_A Should be >.7	Composite Reliability	Average Variance Extracted (AVE) Should be >.5
Frust1	**0.789**	**0.819**	**0.875**	**0.701**
Frust2	**0.719**	**0.769**	**0.836**	**0.631**
Frust3	**0.818**	**0.830**	**0.891**	**0.732**
LOC1	0.743	0.746	0.839	0.565
LOC2	0.712	0.721	0.821	0.535
LOC3	0.756	0.775	0.843	0.575
Lazy1	**0.617**	**0.708**	**0.784**	**0.561**
Lazy2	**0.597**	**0.755**	**0.756**	**0.540**
Lazy3	**0.720**	**0.862**	**0.832**	**0.636**
SE1	0.682	0.686	0.862	0.758
SE2	0.758	0.770	0.892	0.805
SE3	0.826	0.829	0.920	0.852
Tech1	**0.661**	**-0.870**	**0.245**	**0.294**
Tech2	**0.667**	**-0.651**	**0.336**	**0.306**
Tech3	**0.737**	**-5.973**	**0.636**	**0.429**

Constructs are generally evaluated on certain measures: Cronbach's Alpha which should be greater than .7; Rho A which should be greater than .7; Composite Reliability (a measure of the quality of a construct) which should also be above .7 and the Average Variance Extracted which should be above .5, all of which are

presented in Table 3. All the questions show acceptable values (though red values are low, they improve by the third time they are asked). We found significant differences in these constructs between the two groups. Table 4 shows the results from the in-person students.

Based on these findings, we used Warp-PLS to create a structured equation model and ran it once with the online group's responses and again with the in-person group's responses. We found significant differences in the models.

Figure 1: In-Person PLS Full Model with GPA
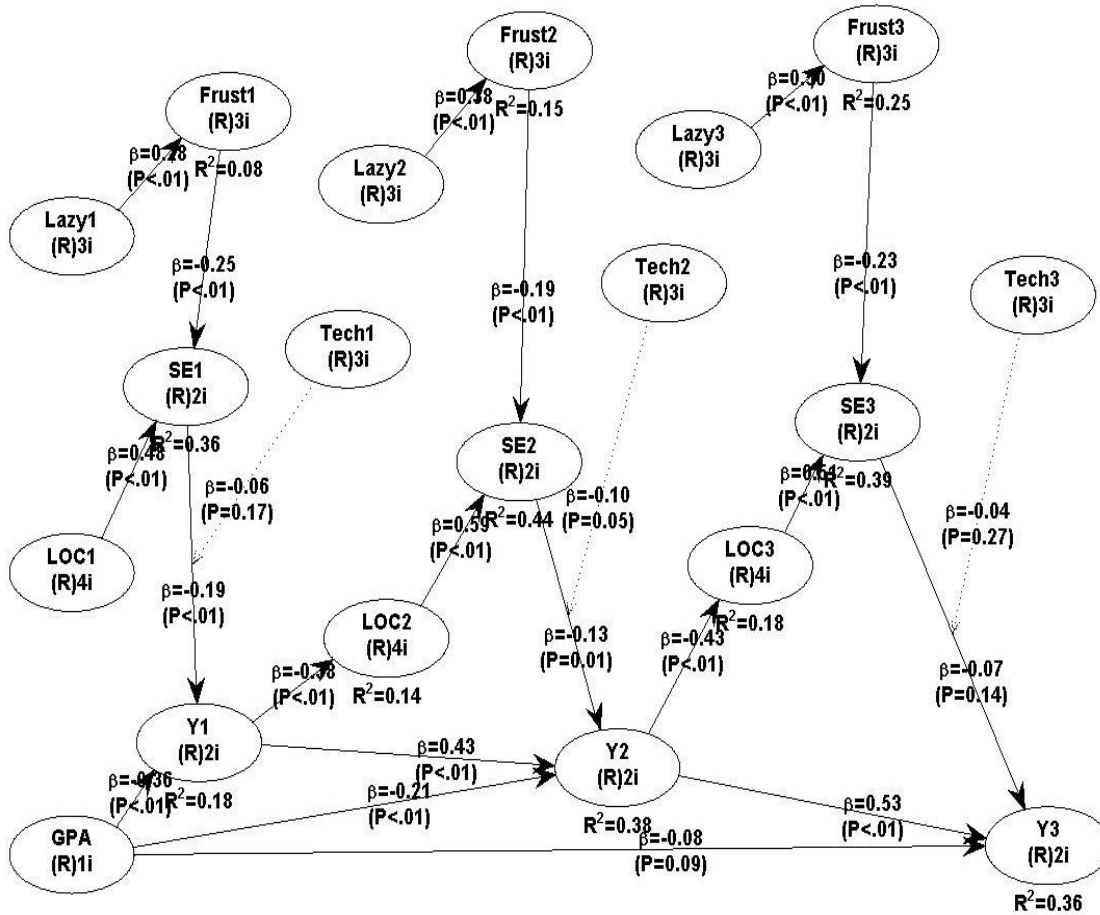
Figure 2: In-Person PLS Model only using GPA, Y1, and Y2 as predictors
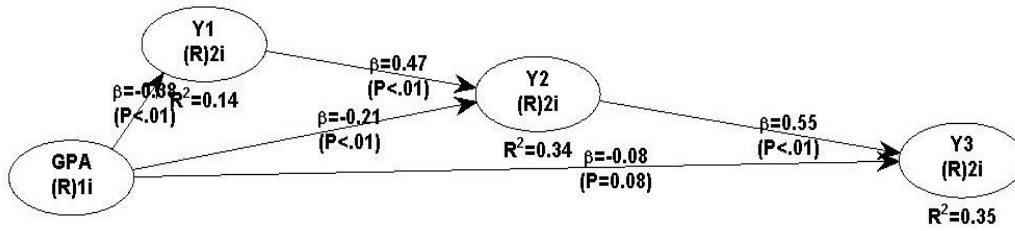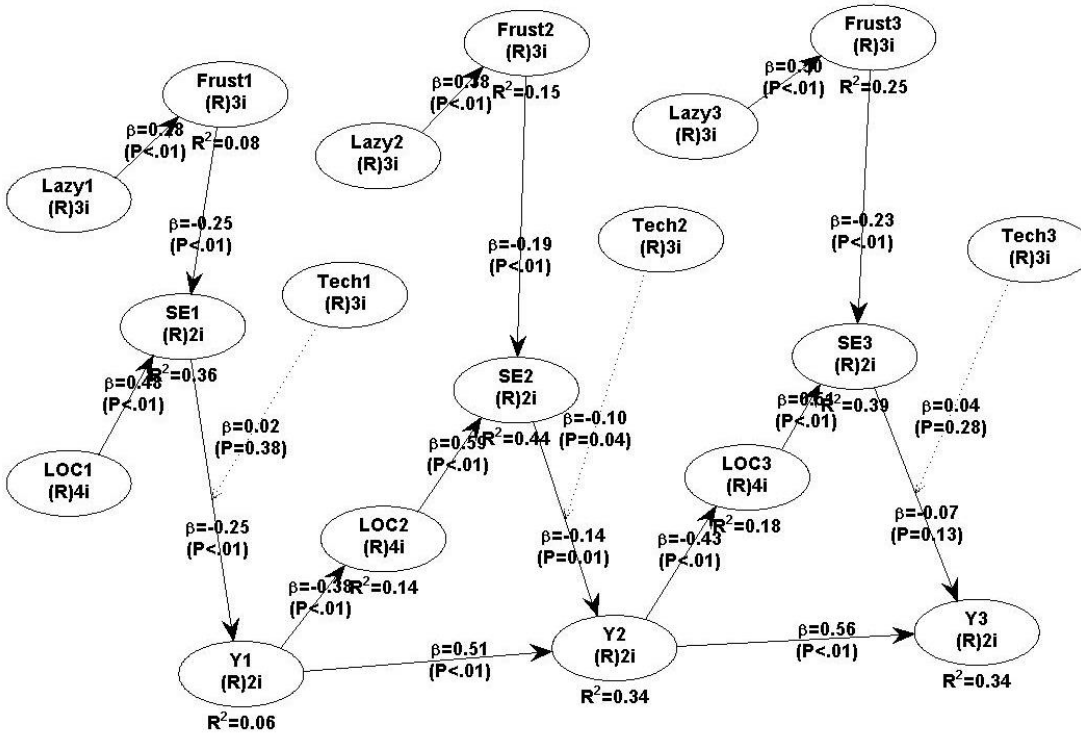

Figure 3: In-Person PLS Model without GPA

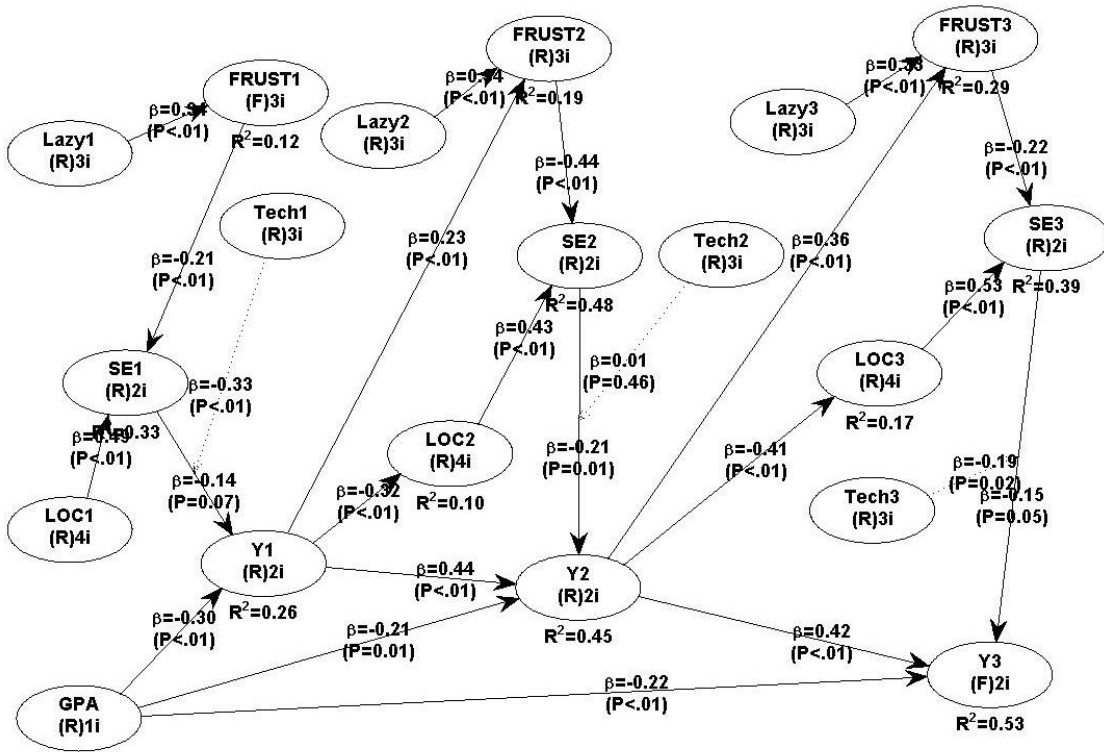# Figure 4: Online PLS Full Model with GPA

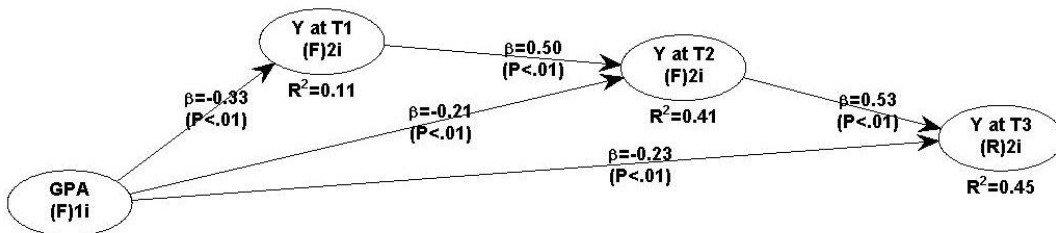# Figure 5: Online PLS Model only using GPA, Y1, and Y2 as predictors
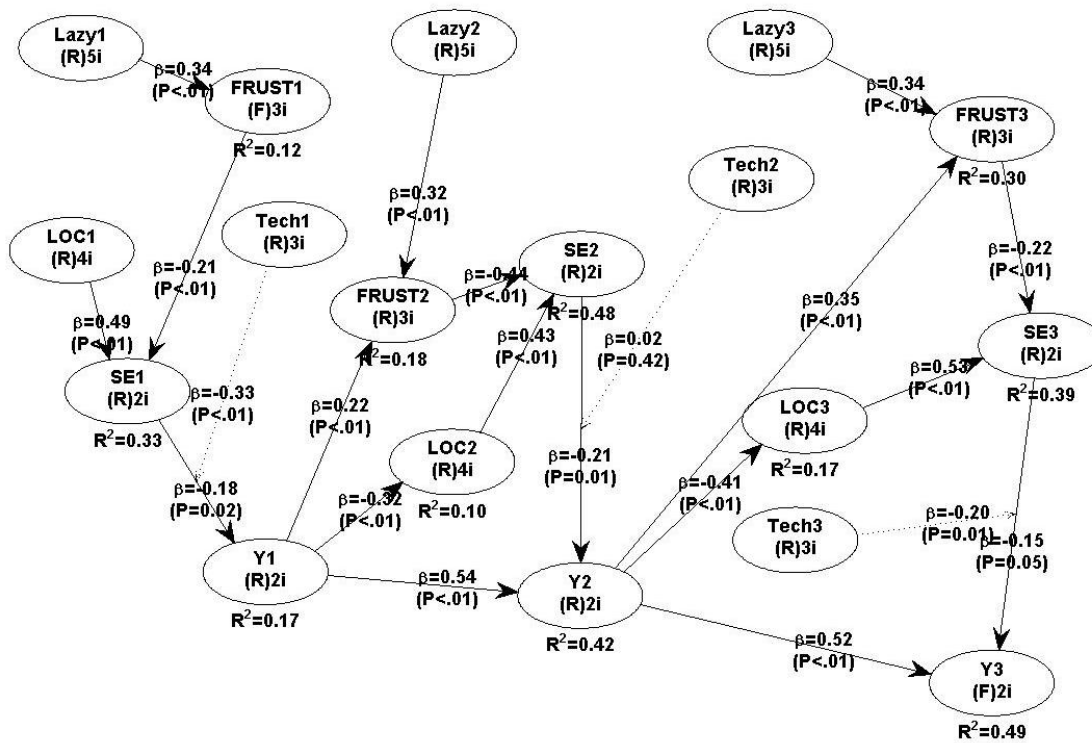
Figure 6: Online PLS Model without GPA

DISCUSSION

Why is there such a difference in the explanatory power of the models? Both models always show the links between Lazy User and Frustration as $p<.01$; links between Frustration and Self-Efficacy as $p<.01$; and the links between Locus of Control and Self-Efficacy as $p<.01$ as well. However, the in-person group shows the strongest relationship between Self-Efficacy and the Y-variable at time T-1 while the online group shows the strongest relationship between Self-Efficacy and the Y-variable at time T-2. At time T-3, the relationship between Self-efficacy and Y3 reports $P=.05$ for the online group but the in-person group reflects that $P=.14$ which is not significant and a little hard to explain. It suggests that the model is a better representation of the online group than the in-person group.

That leads to the only other unexplained construct, Technical-Efficacy, a moderator of Self-Efficacy. Decker (1999) found that performance in the workplace by employees required to use new technology is affected by low Self-Efficacy. We, too, found that Technical-Efficacy affected Self-Efficacy and wonder if asking students who are known to have low Self-Efficacy to learn a new technology while learning new material isn't a formula for failure? On the other hand, we must ask, was it the student's level of Self-Efficacy which prompted him or her to take an online course? (We acknowledge that some students would NOT have had a choice…. That they took the class which was offered during a particular time or because a roommate was taking it, but that question was not included in the questionnaire.) Thus, we would suggest more computer training before letting students take online courses. Even though all business majors must learn Excel before taking upper-level classes, as teachers, we still see students turning in spreadsheets with no formulas – just answers.

A moderating variable affects the relationship between two other variables by changing the strength or effect of the interaction of two variables. Technical Efficacy shows a significant relationship between Self-

Efficacy and the student's grades of P=.05 at time T-2 only in the in-person group. But the online group shows a significant relationship between Self-Efficacy and Technical-Efficacy at times T-1 (P<0.01) and T-3 (P<0.02).

If the models reflect a difference in the moderating effect of Technology, this makes sense. We know that education makes a difference in life. Why wouldn't a student's feelings about technology affect their use of online homework technology and their success in the class? We would not expect a student to go to an accounting class and understand while being taught in French, but we expect students to understand and use technology in every class. AACSB standards are calling for increased use of technology in data analytics. These models demonstrate that there could potentially be hurdles for students who are less trained in basic computer systems.

Our findings also created a model that explains a student's final grades better than GPA alone, but only for online students. For the in-person group, there is little difference in the R^2 of the model without their GPA and the model with their GPA. Is it possible that Self-Efficacy, Locus of Control, Frustration, and Lazy User are some of the main factors that make up GPA? The result is even stronger for the online group. The R^2 for the GPA alone is .45 but it grows to .49 using the factors without the GPA. Finally, the entire model predicts the final grade with an R^2 of .53 when all factors are included. (We used SmartPLS software to create a model and recreated it using WarpPLS. R-square values of 0.19 are weakly predictive while 0.33 is moderately predictive and 0.67 is substantially predictive (Hubona, 2010).

In June of 2020, the Charles Koch Foundation and *College Pulse* surveyed 5,000 full-time undergraduates from 215 different universities and reported that while most students believe their university did an adequate job of moving courses online during the pandemic, the majority of them thought it could have been better (Small, 2020). The article quotes Ryan Stowers of the Charles Koch Foundation: "Online learning has tremendous promise as a tool to help institutions scale high-quality education. This survey makes clear that while many students still prefer in-person learning, the pandemic is creating a renewed sense of urgency among both students and instructors to implement technologies that can facilitate more effective remote learning."

This suggests the university system may have been correct in allowing students to opt for the pass/fail in the spring of 2020, during the COVID-19 pandemic. During the fall of 2020, at some schools, students petitioned to be allowed to take one or more classes pass/fail. Within the system, a variety of approaches to pass/fail were adopted.

CONCLUSION

There are several limitations to this study. The survey was given several years ago and focused on finding differences in the students' use of homework-grading software. A future study should include a question that asks for the reason the student decided to take a course online. Another factor is that accounting is a difficult course for many students regardless of format or course modality. The university typically has a 25% D, W, or F rate for these classes.

We only used survey data from students who completed the course, so we assume we lost some important data from students who withdrew/dropped out. However, the results of our study provide evidence-based guidance in the future use of online education in the field of accounting.

This study uses theory to attempt to understand the significant relationships apparent in our findings – that student characteristics, including their feelings about their use of technology and their ability to use it, are significant indicators of their successful completion of an online course. Our data was collected before the COVID-19 pandemic, but the results lead us to believe that all parents unhappy with their children learning online probably have just cause. Not everyone is made to excel while taking an online course, which is what drove our research. We find there is a significant difference in the students who choose to take an online course

compared to students who choose to take an in-person class. Therefore, it seems appropriate for any university system to offer a pass/fail option during these frustrating, COVID-19, tension-producing times.

REFERENCES

Aguilera-Hermida, A. P. (2020). College students' use and acceptance of emergency online learning due to COVID-19. *International Journal of Educational Research Open, 1.*

Albert, M.A. and J.J. Dahling (2016). Learning goal orientation and locus of control interact to predict academic self-concept and academic performance in college students. *Personality and Individual Differences,* 97, 245-24

Alqurashi, E. (2016). Self-efficacy in Online Learning Environments: *A Literature Review,* vol. 9, no. 1, 45-51.

Artino, A.R. Jr. (2010). Online or face-to-face learning? Exploring the personal factors that predict students' choice of instructional format. *Internet and Higher Education*, vol. 13, 272-276.

Artino, A.R. Jr. and K.D. Jones, II (2012). Exploring the complex relations between achievement emotions and self-regulated learning behaviors in online learning, *The Internet and Higher Education* doi:10.1016/j.iheduc.2012.01.006.

Artino, A.R. Jr. and J.M. Stephens, (2009). Beyond Grades in Online Learning: Adaptive Profiles of Academic Self-Regulation Among Naval Academy Undergraduates, *Journal of Advanced Education*, 20(4), 568-601.

Bandura, A. (1977). Self-efficacy: Toward a Unifying Theory of Behavioral Change, *Psychological Review*, 84(2), 191-215.

Basilaia, G. and D. Kvavadze (2020). Transition to Online Education in Schools during a SARS-DoV-2 Coronavirus (COVID-19) Pandemic in Georgia. *Pedagogical Research*, 5(4), https://doi.org/10.29333/pr/7937

Beatty, A.S., P.T. Walmsley, P.R. Sackett, and N.R. Kuncel (2015). The Reliability of College Grades, *Educational Measurement: Issues and Practice*, 31(4), pp. 31-40.

Bessier, K., I. Ceaparu, J. Lazar, and J. Robinson (2002). Social and Psychological Influences on Computer User Frustration (Newhagen book chapter, 2002). URI http://hdl.handle.net/1903/6497

Bollinger, D. and C. Halupa (2012). Student perceptions of satisfaction and anxiety in an online doctoral program, *Distance Education*, 33(1), 81-98.

Bollinger, D. U., and Martindale, T. (2004). Key factors for determining student satisfaction in online courses. *International Journal on E-Learning*, 3(1), 61-67.

Boyd, D. (2004). The Characteristics of Successful Online Students, *New Horizons in Adult Education & Human Resource Development*, 18(2), 31-39).

Brown, J.L.M. (2012). Online Learning: A Comparison of Web-Based and Land-Based Courses, *Quarterly Review of Distance Education*, 13(1), 39-42.

Buzzetto-Hollywood, N., K. Quinn, W. Wang, and A. Hill (2019). Grit in Online Education, Journal of Education, *Society and Behavioral Science*, 30(4), 1-11.

Decker, C. A. (1999). Technical education transfer: perceptions of employee computer technology self-efficacy, *Computers in Human Behavior*, 15(2), 161-172.

Drago, A., D.C. Rheinheimer and T.N. Detweiler (2018). Effects of Locus of Control, Academic Self-Efficacy, and Tutoring on Academic Performance. *Journal of College Student Retention*, 19(4) 433-451.

Eskew, R.K. and R.H. Faley (1988). Some determinants of student performance in the first college-level financial accounting course, *Accounting Review*, 63(1), pp. 137-147.

Flaherty, C. (2020). Pass-Fail Hardball. Inside Higher Ed, viewed Dec. 2, 200).
https://www.insidehighered.com/news/2020/11/30/students-seek-pass-fail-options-again-fall-light-covid-19

Funk and Wagnalls (1980 ed.) The Standard Desk Dictionary, Lippincott and Crowell.

Grasha, A.F. and N. Yangarber-Hicks. (2000). Integrating Teaching Styles and Learning Styles with Instructional Technology, *College Teaching*, 48:1, 2-10.

Hamdan, K.M., A. M. Al-Bashaireh, Z. Zahran, A. Al-Daghestani, S.Al-Habashneh, and A.M. Shaheen, (2021). University students' interaction, internet self-efficacy, self-regulation, and satisfaction with online education during pandemic crises of COVID-19 (SARS-CoV-2). *International Journal of Educational Management*, 35(3).

Hauser, R., R. Paul, and J. Bradley (2012).Computer self-efficacy, anxiety, and learning in online versus face-to-face medium. *Journal of Information Technology Education: Research*, 11 (141-154).

Hosseini, S. N., Mirzaei Alavijeh, M., Karami Matin, B., Hamzeh, B., Ashtarian, H., & Jalilian, F. (2016). Locus of Control or Self-Esteem; Which One is the Best Predictor of Academic Achievement in Iranian College Students. *Iranian journal of psychiatry and behavioral sciences*, *10*(1), e2602. https://doi.org/10.17795/ijpbs-2602

Hubona, G. (2010). SmartPLS workshop, Jan. 5-6, 2010.

Ihm, J., G. Lee, K. Kim, K. Jang, and B. Jin. (2013). Who Succeeds at Dental School? Factors Predicting Students' Academic Performance in a Dental School in Republic of Korea. *Journal of Dental Education,* 77(12), 1616-1623.

Jayaratne, K.S.U. and G. Moore (2017). Perceptions of College Students, *NACTA Journal*, 61(40), 304-308.

Kaplan E. J. and D.A. Kies (2013). Teaching Styles and Learning Styles: Which Came First? *Journal of Instructional Psychology*. Mar. 1, 1995.

Khanlarian, C. and R. Singh (2015). Does Technology Affect Student Performance, *Global Perspectives on Accounting Education,* vol. 12, 1-22.

Kirtman, L. (2009). Online versus in-class courses: An examination of differences in learning outcomes, *Issues in teacher education*, 18(2), 103-116.

Komarraju, M. and D. Nadler (2013). Why do implicit beliefs, goals, and effort regulation matter? *Learning and Individual Differences*, 25 (67-72).

McKeever, B.W. (2019). Different Formats, Equal Outcomes? Comparing In-Person and Online Education in Public Relations, *Journal of Public Relations Education*. 5(2), 1-40.0

McLaren, C.H. (2004). A comparison of student persistence and performance in online and classroom business statistics experiences, *Decision Sciences Journal of Innovative Education*, 2(1), 1-10.

Meindl, P., A. Yu, B. M. Galla, A. Quirk, C. Haeck, and J.P. Goyer, C.W. Lejuez, S.K. D'Mello and A.L. Duckworth (2019). A brief behavioral measure of frustration tolerance predicts academic achievement immediately and two years later. *Emotion*, 19(6), 1081-1092.

O'Neill, D.K. and R.H. Sai, (2014). Why not? Examining college students' reasons for avoiding an online course, *Higher Education*, 68:1-14.

Palocsay, S.W. and S. P. Stevens (2008). A Study of the Effectiveness of Web-Based Homework in Teaching Undergraduate Business Statistics, *Decision Sciences Journal of Innovative Education,* 6(2), pp. 213-231.

Peechapol, C., J. Na-Songkhla, S. Sujiva, and A. Luangsodsai, (2018). An Exploration of Factors Influencing Self-Efficacy in Online Learning: A Systematic Review. International Journal of Emerging Technologies in Learning. Vol. 13, no. 9.

Rotter, J. B. (1954). Social Learning and Clinical Psychology. Prentice-Hall, Inc. Englewood Cliffs, N.J.

Saade, R.G. and D. Kira (2009). Computer anxiety in e-learning: The effect of computer self-efficacy. *Journal of Information Technology Education*, 8(177-19).

Scudellari, M. (2020). The Pandemic's Future. *Nature*, vol. 584, (p. 22-25).

Small (2020) https://wtop.com/education/2020/06/survey-most-college-students-unsatisfied-with-online-learning/, last viewed Feb. 28, 2021.

Swingle, N.C. (2012). Is the Online Generation Ready for Online Learning? A Study of Online Technologies Self-Efficacy Perceptions as Predictors of Academic Success in Virtual Education Programs. Revista Complutense de Educacion, 22 (1), 135-147.

Tepper, R.J. and S.A. Yourstone (2018). Beyond ACT & GPA: Self-efficacy as a non-cognitive predictor of academic success, *International Journal of Accounting & Information Management,* Vol. 26, no. 1, pp. 171-186.

Tetard, F. and M. Collan (2009). Lazy User Theory: A Dynamic Model to Understand User Selection of Products and Services, 2009 42nd Hawaii International Conference on System Sciences. DOI 10.1109/HICSS.2009.287

Thompson, C. (2020). Schools confront "off the rails" numbers of failing grades. *Greensboro News & Record*, December 7, 2020, p. A6.

Tross, S.A., J.P. Harper, L.W. Osher and L.M. Kneidinger (2000). Not Just the Usual Cast of Characteristics: Using Personality to Predict College Performance and Retention, *Journal of College Student Development*, 41(3), 323-334.

Vella, E.J., E.F. Turesky, and J. Hebert (2015). Predictors of academic success in web-based courses: age, GPA, and instruction mode, *Quality Assurance in Education*, 24(4), 586-600.

Wagner, S.C., S.J. Garippo and P. Lovaas, (2011). A Longitudinal Comparison of Online Versus Traditional Instruction, *Journal of Online Learning and Teaching*, 7(1), 68-71.

Xu, D., and S. Jaggars. (2011). The Effectiveness of Distance Education Across Virginia's Community Colleges: Evidence from Introductory College-Level Math and English Courses. *Educational Evaluation and Policy Analysis*, vol. 33(3) 360-377.

Williams, T. and K. Williams (2010). Self-efficacy and performance in mathematics: Reciprocal determinism in 33 nations. *Journal of Educational Psychology*, 102(2), 453-466.

York, T., C.E. Gibson, III and S. Rankin (2015). Defining and Measuring Academic Success, *Practical Assessment, Research & Evaluation*, 20(5), 1-20.