Journal of Information Systems Education

Volume 36
Issue 4
Fall 2025

Investigating the Factors That Engage Students to Be Successful in Hybrid Business Analytics Courses

Colleen Carraher-Wolverton, Guolin Lai, Jeremy T. Navarre, Dione Davis, and Patricia Lanier

Recommended Citation: Carraher-Wolverton, C., Lai, G., Navarre, J. T., Davis, D., & Lanier, P. (2025). Investigating the Factors That Engage Students to Be Successful in Hybrid Business Analytics Courses. *Journal of Information Systems Education*, 36(4), 417-431. https://doi.org/10.62273/CSVP4044

Article Link: https://jise.org/Volume36/n4/JISE2025v36n4pp417-431.html

Received:	February 1, 2025
First Decision:	March 16, 2025
Accepted:	May 22, 2025
Published:	December 15, 2025

ISSN: 2574-3872 (Online) 1055-3096 (Print)

Journal of Information Systems Education, 36(4), 417-431, Fall 2025
https://doi.org/10.62273/CSVP4044

Investigating the Factors That Engage Students to Be Successful in Hybrid Business Analytics Courses

Colleen Carraher-Wolverton
Guolin Lai
Jeremy T. Navarre
Dione Davis
Patricia Lanier
B.I. Moody III College of Business Administration
University of Louisiana at Lafayette
Lafayette, LA 70504, USA
wolverton@louisiana.edu, guolin.lai@louisiana.edu, jeremy.navarre@louisiana.edu,
dionne.davis@louisiana.edu, patricia.lanier@louisiana.edu

ABSTRACT

Business analytics is an emerging and prominent tool in many industries seeking to exploit the advantages of data-driven decision making. Simultaneously, educational institutions are developing and delivering business analytics offerings to equip business professionals with the tools necessary to implement business analytics in modern businesses. In addition to traditional educational delivery methods, these courses are increasingly delivered in online and hybrid formats, which promote efficiency, productivity, effectiveness, and quality. This research investigates students' success factors in hybrid business analytics courses. Specifically, the study seeks to determine the impact of computer self-efficacy (CSE) and math self-efficacy (MSE) on student engagement, course satisfaction, and course success in hybrid business analytics courses. Utilizing structural equation modeling (SEM) to analyze the responses of students enrolled in hybrid business analytics courses, the results indicate that computer self-efficacy leads to math self-efficacy. Additionally, math self-efficacy, rather than computer self-efficacy, impacts student engagement. Furthermore, student engagement predicts course satisfaction and student success in hybrid business analytics courses. As business schools continue to offer more hybrid courses, understanding the factors that influence a student's success and satisfaction with these challenging courses can be beneficial in developing and teaching these courses as well as assist in keeping students on track for graduation.

Keywords: Hybrid disciplines, Online education, Online learning, Business analytics

1. INTRODUCTION

Business analytics is an emerging and prominent tool in many industries seeking to exploit the advantages of data-driven decision making (Larson et al., 2021; Milovich et al., 2020). Simultaneously, educational institutions are developing and delivering business analytics offerings to equip business professionals with the tools necessary to implement business analytics in modern businesses (Larson et al., 2021; Milovich et al., 2020; Shahid & Mishra, 2024). Previous studies concluded that many opportunities may exist to improve business analytics courses to effectively and adequately serve business needs (Sircar, 2009; Turel & Kapoor, 2016; Wixom et al., 2011). The current study seeks to ascertain specific factors that contribute to students' acquisition of such skills and competencies via business analytics education.

Educational delivery formats can take one of three forms: (1) in-person, (2) hybrid online, and (3) pure online (Ahmed, 2010). Hybrid learning can be defined as the "combination of learning delivery methods which include face-to-face instruction and online presentation" (So & Brush, 2008, p. 321). Since the proliferation of online and hybrid education, researchers have sought to better understand the efficiency, productivity, effectiveness, and quality of these delivery formats. There exists scant research on student perceptions associated with success in business analytics courses via hybrid delivery. The current study fills this gap, providing researchers and practitioners with the requisite knowledge to design future studies and develop and implement educational offerings, respectively. As emphasized by Dincelli and Yayla (2024), adopting best practices borne from such research will foster continuous improvement in students' skills.

With the growth of business analytics in corporations and in the classroom, a greater level of understanding of the factors that impact student success in these educational courses is immensely important (Rana et al., 2022; Saxena et al., 2021). Many college students have historically expressed negative attitudes toward business analytics classes. These beliefs can hinder a student's engagement and performance in the course and diminish course satisfaction. Studies indicate that a student's negative association with analytical courses can typically be attributed to math phobia, statistical anxiety, or predispositions against statistics (Gal & Ginsburg, 1994; Garfield, 1995; Hogg, 1991; Rochelle & Dotterweich, 2007). Additionally, the delivery method of business analytics education may also impact student engagement, satisfaction, and performance, especially those courses delivered entirely or partially online.

Potential drawbacks of fully online courses have been reported in the literature (Nemanich et al., 2009; Riffell & Sibley, 2005). One key obstacle is the lack of face-to-face interaction between instructors and students (Unger et al., 2022). This in-person interface is even more important in delivering skills-based courses such as business analytics courses. Callister and Love (2016) found that students in skills-based courses exhibited diminished learning outcomes in online courses compared to students taking the course in person. Furthermore, most educators agree that fully online courses with an emphasis on statistics or quantitative methods present even greater challenges for students. Much of the current research involving student success in online learning considers only fully online courses and many research settings examine the self-paced or asynchronous online environment (Scaringella et al., 2022). Topics in the literature focus on the diffusion and adoption of online learning, the influence of course design and development, interactivity in online learning environments, technology affordances, pedagogy on students' learning experience, and academic success in online courses (Wolverton & Guidry-Hollier, 2022).

A potential solution to the lack of face-to-face interaction in skills-based online courses is the hybrid delivery format. The interest in hybrid online learning, also called blended learning, has been widely adopted in higher education. This approach combines the advantages of both in-person and online delivery formats to produce a better student learning experience (Darcy & Satpathy, 2023). The hybrid format gives students regular opportunities to meet with instructors and classmates in a classroom but also enables them to perform most other course activities online. Thus, in hybrid learning, there is a mixture of traditional, in-person classroom instruction, and online instruction.

For students majoring in business, hybrid learning has become a popular choice for business analytics courses. Webb et al. (2005) studied teaching with the case study format using online and hybrid approaches. They found that when implementing the case discussion format, a hybrid course model was superior to both the fully online and in-person instructional approaches. In fact, hybrid learning can retain high-quality learner-instructor interaction (Riffell & Sibley, 2005). When studying which factors impact success in online courses, Benigno and Trentin (2000) recommend that the evaluation of online courses be focused on two aspects: evaluating student learning and evaluating student performance. Still, more analyses are needed to identify the factors that specifically affect learners' success in problem-based learning courses like business analytics, particularly in the hybrid format (Owston et al., 2020; Sunarto et al., 2024). Given that business analytics courses are often considered intrinsically difficult for many students, it is important for researchers to isolate the key factors that can impact student success in these hybrid courses (Viberg et al., 2020). In hybrid business analytics courses, other factors can also impact students' learning experiences and learning performance. It is widely hypothesized that students' statistical performance is positively related to their mathematical competence (Abouchedid & Nasser, 2000; Bringula et al., 2021; Johnson & Kuennen, 2006; Lalonde & Gardner, 1993).

Within pedagogical literature, studies report different findings when evaluating the relationship between computer self-efficacy (CSE) and student satisfaction (Alqurashi, 2016). Some studies demonstrated no relationship between CSE and student satisfaction (Jan, 2015), while others found that CSE was a positive predictor of student satisfaction (Lim, 2001; Womble, 2007; Wu et al., 2010). Thus, further research is necessary to determine whether CSE impacts satisfaction and the impact of other important factors, such as student engagement.

Although student engagement has become a desired outcome in online education, researchers argue that online courses inherently impede student engagement (Carraher Wolverton, 2018; Robinson & Hullinger, 2008). Notably, research has repeatedly demonstrated the benefits of student engagement in the classroom (Schwarz & Zhu, 2015). Studies indicate that student engagement impacts satisfaction and commitment (Brodie et al., 2013; Francescucci & Rohani, 2019), group expectations, and level of satisfaction with student groups (Carraher Wolverton et al., 2020). Moreover, some researchers found student engagement is a prerequisite for learning (Chiu, 2022; Reeve, 2013). Therefore, course delivery of business analytics courses requires pedagogical strategies that will create as many student learning and engagement opportunities as possible (Adeel et al., 2023). This leads to the current study's research question: *What critical success factors are correlated with student success and course satisfaction in business analytics courses delivered via a hybrid format?*

While research has been conducted on the effectiveness of online teaching methods (Albert et al., 2021) and online teaching skills and competencies (Albrahim, 2020), the current study seeks to, instead, study how students' perceptions impact their level of engagement, final grade, and satisfaction with the course. Specifically, this research seeks to determine the impact of computer self-efficacy (CSE) and math self-efficacy (MSE) on student engagement, course satisfaction, and course success in hybrid business analytics courses.

In conjunction with previous studies, the current study contributes to a more holistic understanding of the sources of challenges with analytics courses and course delivery formats. A more holistic understanding of these phenomena will enable researchers, educators, and practitioners to facilitate better educational outcomes for society. The focus of this study is to identify the existence and strength of relationships between students' perceptions and educational outcomes. Specifically, utilizing structural equation modeling (SEM), the current study seeks to determine the impact of computer self-efficacy (CSE) and math self-efficacy (MSE) on student engagement, course satisfaction, and course grade in business analytics courses offered in a hybrid format.

In alignment with Cognitive Evaluation Theory (CET), which is a subtheory of self-determination theory, perceptions of competence (e.g., computer self-efficacy and math self-efficacy) enhance intrinsic motivation to perform actions (e.g., engagement) that fulfill the basic psychological need for competence (Ryan & Deci, 2000). Using the foundation of CET, the current study seeks to identify the relationships among students' computer self-efficacy, math self-efficacy, engagement, course satisfaction, and course performance in hybrid business analytics courses. Specifically, students' computer self-efficacy and math self-efficacy may influence their level and orientation of motivation, which, in turn, may impact engagement. Subsequently, students' engagement activities may explain their satisfaction and performance.

In the following section, the extant literature is reviewed, which includes a review of computer self-efficacy, math self-efficacy, student engagement, course success, and course satisfaction research. The abovementioned sections within the literature review support data selection and emphasize the contributions of this novel research. Next, a methodology section, which includes survey development and data collection procedures, is provided. The subsequent section, data analysis, provides an overview of the applied Structural Equation Model (SEM) employed in the analysis. Then, an explanation regarding the measurement model's creation and examination is provided, followed by the study's results. The paper is completed with two sections: discussion and conclusions.

2. LITERATURE REVIEW

2.1 Sources of Challenges in Online and Hybrid Courses

Researchers have long believed that higher education institutions must develop and expand online courses or even online degree programs to meet students' needs; furthermore, these institutions regard online courses and programs as an essential part of their long-term competitive strategies (Allen & Seaman, 2010; Oblinger et al., 2001). Students can benefit from online education by learning at their own pace in either synchronous or asynchronous learning environments, coupled with the availability of learning resources/materials at any time, and various learning support mechanisms enabled in the learning environment. In higher education, students demand online courses for various reasons (Carraher Wolverton & Zhu, 2021). A primary reason is that online courses provide flexible access to content and instruction and can be taken anytime and anywhere (Angiello, 2010; Coyner & McCann, 2004). Thus, online courses tend to be popular among working students and students with families (Allen & Seaman, 2007; Lyons, 2004). The COVID-19 pandemic accelerated the move to online education, given the governmental quarantine and social distancing mandates (Liguori & Winkler, 2020; Xie et al., 2020). To guarantee quality, rigorous online courses call for systematic analysis, design, development, implementation, and evaluation procedures. However, the unexpected nature of the global pandemic left institutions and faculty members with limited time to migrate from in-person courses to emergency remote teaching (Bozkurt & Sharma, 2020). Challenges are faced in the creation and delivery of online business analytics courses. To provide a more holistic understanding of the sources of challenges, previous research related to computer self-efficacy and math self-efficacy is explored. Also, a literature review of student engagement, course success, and course satisfaction is provided.

2.2 Computer Self-Efficacy

Computer self-efficacy has been found to be one student competency that explains student satisfaction and experience in an online learning environment (Xiao et al., 2020). Jeyaraj (2019) categorized stages of data as acquisition, preparation, analysis, visualization, and interpretation, all of which require masterful computer use. Bringula et al. (2021) found that adverse outcomes in online courses are a result of a lack of technology skills, primarily computer, online, and computer application literacy skills. Williams and Elmore (2021) noted that, among other challenges during the COVID-19 period, some students were adversely affected given the required use of and lack of previous exposure to computer programs such as Microsoft Excel, R, and Zoom. In addition, commonly used programs in business analytics courses, such as CPLEX, Hadoop, Hive, Microsoft Visual Basic, NoSQL, Pig, Python, SAS, SQL, Stata, Tableau, Spark, and Star schema, add significantly to the level of computer proficiency necessary for success (Paul & MacDonald, 2020). Notably, other researchers promote the use of additional analytic tools such as Microsoft Access, Teradata SQL, DataCamp, Tableau, Power Query, Power Pivot, and Microsoft Power BI (Zhang et al., 2020). Consequently, along with using software to access course materials and communicate with instructors and peers, online business analytics students are exposed to and expected to utilize one or more data analysis tools. Therefore, individual levels of computer self-efficacy may play a significant role in student engagement, course satisfaction, and course success.

Wood and Bandura (1989) define self-efficacy as "beliefs in one's capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet situational demands" (p. 408). Building on this definition, it follows that computer self-efficacy (CSE) measures one's judgment of their capability of computer use. Compeau and Higgins (1995) found that computer self-efficacy can exert a noteworthy influence on one's expectations of the outcomes of their computer use, their emotional reactions to computers (affect and anxiety), and their actual computer use. Currently, online courses are typically delivered in learning management systems (LMS), massive open online courses (MOOCs), and virtual learning environments (VLE) (Al-Azawei & Al-Masoudy, 2020). Researchers have concluded that CSE plays a significant role in not only reducing the existence and strength of the impact of anxiety on perceived ease of use of LMS, but also in having a strong and significant relationship with one's computer anxiety (Saadé & Kira, 2009). Additionally, research shows a positive relationship between computer self-efficacy and student satisfaction in LMS (Wei & and Chou, 2020; Womble, 2007; Wu et al., 2010).

Business analytics courses, whether delivered via hybrid or online format, will require students to proficiently access course materials, communicate with instructors and peers, and execute data analysis tasks. All these tasks may be affected by students' computer self-efficacy. Therefore, research of computer self-efficacy in the context of business analytics courses delivered fully or partially online is imperative and, notably, absent in the current literature.

2.3 Math Self-Efficacy

Math self-efficacy represents students' academic self-concept of their competence in learning new topics in math, performing successfully in math courses, and performing successfully on math exams (Bringula et al., 2021). Furthermore, Bringula et al. (2021) extend their findings to include students' perceptions of their mathematical abilities relative to others and historical achievements. Sircar (2009) emphasized the necessity for students to obtain quantitative literacy to improve managerial decision-making via business analytics roles in industry.

Therefore, it is imperative to explore and discover factors impacting students' math abilities or inabilities.

Bergqvist (2025) studied students' future-oriented perception of their math competence, overall confidence in math, fear of providing inaccurate answers in class, and assignment difficulty. The study found that math achievement more strongly predicted the specific math self-concept rather than that of more generalized self-efficacy. In addition, students' math self-concept beliefs strongly correlated with assignment anxiety and generalized math self-efficacy (Bergqvist, 2025). Anaya et al. (2022) found that women are underrepresented in science, technology, engineering, and math (STEM) fields, in part due to self-perceived math inability, leading to lower college STEM program enrollment. Notably, the lower self-perceived math ability did not result from actual math achievement (Anaya et al., 2022). In a similar study, Alpár et al. (2022) evaluated computer science students' past experiences, social environment, self-efficacy, self-confidence, math achievement, and math anxiety related to their perceptions of math. Whereas a lack of self-efficacy, unfavorable social environment, and math anxiety negatively impacted students' computer science coursework achievements, interest in the field, sense of achievement, job-related expectations, and favorable exam grades were found to be advantageous to coursework success (Alpár et al., 2022). Shone et al. (2023) studied the relationship between students' math perceptions and self-efficacy toward math achievement and found that students' math perception and self-efficacy accounted for 75.4% of the variation in students' math achievement.

While the literature includes works studying the impact of phenomena, such as self-efficacy, math perception, math anxiety, and prior math achievement, on variables such as course performance, course outcomes, and choice of entering a STEM program, few studies specifically evaluated the relationships of these variables for students enrolled in business analytics courses delivered via hybrid method.

2.4 Student Engagement

High dropout rates for online learning remain a challenge (Coussement et al., 2020). Improved levels of student engagement may reduce these rates. For example, data show that student engagement in the course LMS plays a significant role in students' satisfaction and academic performance. According to Henrie et al. (2015), student engagement refers to students' commitment, participation, and effortful involvement in their learning process in LMS. Thus, educators continue to look for ways to keep students engaged in LMS. There is ample evidence to support the notion that student engagement yields positive educational outcomes. Therefore, facilitating and promoting engagement is imperative in all instructional delivery formats. Facilitating and promoting engagement in online and hybrid courses is relatively more important and inherently more difficult.

Al-Azawei and Al-Masoudy (2020) found that students' engagement, including the number of clicks within an LMS, was a significant predictor of performance. Also, Adeel et al. (2023) concluded that engagement and final grades were positively correlated regardless of students' mode of attendance, online or in-person. Xiao et al. (2020) stated that, in lieu of other seemingly relevant competencies, cognitive engagement competence, which is associated with students' ability to figure out the appropriate mix of learning options, leads to satisfaction and positive course experience. More innovative instructional strategies and educational technology tools, such as gaming (Raju et al., 2021), video simulation (Stanley et al., 2018), and integration of social network systems such as WeChat in LMS (Teng & Wang, 2021), can positively impact student engagement in LMS. Responding to challenges identified during the COVID-19 pandemic, some educators utilized communication platforms such as Zoom, Slack, Microsoft Teams, Canvas, Google Forms, and Twitch to facilitate greater engagement with students (Williams & Elmore, 2021).

Other researchers evaluated students' self-regulated learning (SRL) strategies, which represent students' log data and engagement activities, to predict academic performance with approximately 88% accuracy (Ali & Hanna, 2022). Also, Hwang and Wao (2021) found that student engagement was an indicator of a student's learning experience and outcome. Considering the high level of both student self-discipline and student self-study demanded of students in online courses, Jenkins (2011) suggests that educators critically evaluate which courses are suitable for online delivery and what types of students will succeed in these online courses. The research argued that online courses are not for every student and not every course should be taught in an online environment. However, due to the increasing demand for online and hybrid courses, coupled with a growing quantity of fully online programs, educators must continue to examine ways to improve student engagement and the subsequent outcomes.

2.5 Course Success

Course success can be determined by relatively more objective and quantitative methods, such as quiz grades, exam grades, and final course grades, and relatively more subjective and indirect methods, such as assessment completion, engagement efforts, and course completion. Within the extant literature, both of the aforementioned methods are employed. Notably, other methods, such as semester grades converted to letter grades, cumulative grade point average, and semester grade point average, have been used to determine course success (Shone et al., 2023).

The evaluation of course success via relatively more objective and quantitative methods includes quiz grades, exam grades, and final course grades. Adeel et al. (2023) utilized individual grades to assess student achievement or success. Similarly, Al-Azawei and Al-Masoudy (2020) evaluated student success via average quiz scores. Ali and Hanna (2022) incorporated midterm exam grades, final exam grades, and overall final grades, which were then converted to letter grades representing levels of achievement: A = excellent, B = very good, C = good, D = pass, and F = fail. Owston et al. (2020) reported the use of assignments, tests, and a final exam. One study measured student success via three levels: student scores within the 0–50, 51–80, and 81–100 percentiles (Anaya et al., 2022). Although less prevalent in the literature, some studies utilized relatively more subjective and indirect methods to gauge student success. Sunarto et al. (2024) divided students' evaluation results into two measures, quantitative and qualitative analyses, as well as an evaluation of before learning (pretest) and after learning (posttest) results.

The evaluation of course success via relatively more subjective and indirect methods includes assessment completion, engagement actions, and course completion. In addition to utilizing average quiz scores to assess student success, Al-Azawei and Al-Masoudy (2020) included students' number of peer assessments completed and social integration in the learning community. Similarly, Ali and Hanna (2022) included course completion rate, which is the summed weight of the graded quizzes and assignments completed by students. Owston et al. (2020) found that students in hybrid courses exhibited a lower withdrawal rate than those in online courses. In addition to course success, whether measured directly or indirectly, course satisfaction is also an integral outcome of developing and delivering online and hybrid courses. Therefore, course satisfaction is a meaningful construct for a more thorough understanding of the hybrid delivery format for business analytics courses. Owston et al. (2020) reported that course redesign, or conversion from online to hybrid, may be advantageous for STEM courses in order to improve course satisfaction.

2.6 Course Satisfaction

Course satisfaction among students in hybrid learning environments has been hypothesized to be impacted by numerous sources, such as cognitive engagement competency, motivation, engagement, computer self-efficacy, and technology platforms designed for online learning (Adeel et al., 2023; Hwang & Wao, 2021; Xiao et al., 2020). Hwang and Wao (2021) posit that college student satisfaction is indicative of the quality of learning experiences and outcomes in higher education. Notably, student satisfaction can be divided into distinct categories to partial out various facets of student satisfaction: academic, social, overall satisfaction, and overall dissatisfaction (Hwang & Wao, 2021).

Utilizing the Student Satisfaction Survey (SSS) and the National Survey of Student Engagement (NSSE), Hwang and Wao (2021) concluded that evidence exists to support the notion that highly satisfied students are more engaged in educational activities relative to their less satisfied counterparts. Xiao et al. (2020) found that, in lieu of general and e-learning learning competencies and computer self-efficacy, students exclusively exhibiting cognitive engagement can be successful and satisfied in hybrid learning spaces.

In evaluating the difference between science, technology, engineering, and math (STEM) students and non-STEM students, Owston et al. (2020) found that non-STEM students reported a higher satisfaction rating than STEM students, although STEM students exhibited stronger performance. Lastly, the literature provides evidence that learning management systems (LMS) impact student satisfaction in hybrid courses. For example, Adeel et al. (2023) evaluated the use of the Echo360 technology, which enhances flexibility and accessibility in a hybrid course. The authors found that the Echo360 technology yielded increased satisfaction among students (Adeel et al., 2023).

The extant literature offers numerous hypotheses and findings regarding phenomena that impact or have no impact on student success and course satisfaction. However, gaps exist in the current body of knowledge, which the current study fills. Specifically, the current study determines the impact of computer self-efficacy (CSE) and math self-efficacy (MSE) on student engagement, course satisfaction, and course success in hybrid business analytics courses.

3. METHODOLOGY

3.1 Survey Development

We sought to examine the factors that impact student engagement on course performance in hybrid business analytics courses. Thus, based on the conceptualization of the concepts, items were created for all the constructs to be studied. We utilized an existing construct to measure math self-efficacy (Fast et al., 2010; Umarji et al., 2021). To measure student engagement (adapted from Schaufeli et al., 2002; Schwarz & Zhu, 2015), computer self-efficacy (adapted from Dang et al., 2016), and satisfaction (adapted from Bhattacherjee & Premkumar, 2004; Carraher Wolverton & Hirschheim, 2023; Chin & Lee, 2000), we adapted existing constructs. The construct names, references, and items for those constructs are summarized in the Appendix.

3.2 Data Collection

A survey was conducted to collect data for this study to test the proposed research model. We conducted an online survey with students at a university in the southeastern United States. In the hybrid classes, synchronous sessions were conducted by Zoom, whereas video tutorials created by Panopto enabled asynchronous sessions. At the end of the semester, an online survey was sent to the 282 students who were taking these business analytics courses. The data was examined to ensure a clean data set with no missing responses or discontinued responses (Aguinis et al., 2021; Kline, 2017). Responses that were incomplete or had been discontinued were removed. The survey was completed by 234 students, resulting in a response rate of 83%, which is higher than average (Wu et al., 2022). A majority of the respondents were female (55.6%), while 44.4% were male. Most of the students were 18-23 years old (64.8%), 19.7% were 24-29 years old, 12% were 30-39 years old, with the remaining 3.5% over 39 years old.

3.3 Data Analysis

With the latent constructs and items developed and the data collected, we selected to utilize Structural Equation Modeling (SEM) to empirically test the research model (Hair et al., 2019; Khan et al., 2019; Shiau et al., 2019). While many techniques of SEM exist, the two best-known approaches are the covariance-based methodology (found in software such as LISREL, AMOS, and EQS) and partial least squares (found in software such as PLS-Graph and SmartPLS). Scholars contend that PLS is a preferred method for exploratory research as the resulting parameter estimates are robust when dealing with artifacts that frequently occur with the utilization of new or revised measures (Hair et al., 2022). Therefore, SmartPLS was utilized for all quantitative analyses (Ringle et al., 2024). We followed Hair et al.'s (2019) established recommendations for analyzing and reporting data.

We will now present our measurement and structural models.

3.4 Measurement Model

The first step in a PLS analysis involves an examination of the measurement (or outer) model (Hair et al., 2019), as acceptable reliability and validity must first be established before analyzing the structural (inner) model (Henseler et al., 2016). Thus, our first step was the creation of a measurement model. We examined the indicator loadings to ensure they were above

https://doi.org/10.62273/CSVP4044

0.708 (Hair et al., 2019). Based on this analysis, three items that did not meet this criterion were removed from further analysis. All remaining items met this criterion and were retained.

We next analyzed the loadings and cross-loadings of all items to ensure that they each loaded on their respective constructs (Table 1). All items loaded strongly on their theorized constructs and on no other construct utilized in the model. Consequently, we included all the items.

We then evaluated the construct's reliability and convergent validity (see Table 2). Utilizing the item loadings, we calculated the internal consistency reliability (ICR) to evaluate the measure's reliability, finding that all the dimensions exceeded the .70 threshold (Hair et al., 2019) and were all above 0.791 (Table 2). We evaluated each dimension's average variance extracted (AVE) to estimate convergent validity. Utilizing the threshold value of 0.50 for AVE, our findings support convergent validity (Barclay et al., 1995; Hair et al., 2019).

	CSE_	GRADE	PMA_	SAT_	SENG-A_	SENG-D_	SENG-V_
CSE_1	0.810	0.098	0.188	0.186	0.13	0.223	0.179
CSE_2	0.939	-0.036	0.286	0.197	0.08	0.174	0.178
CSE_3	0.921	0.056	0.287	0.227	0.123	0.169	0.21
GRADE	0.04	1	0.147	0.272	0.164	0.321	0.209
PMA_1	0.233	0.149	0.902	0.417	0.319	0.351	0.413
PMA_2	0.234	0.17	0.905	0.38	0.328	0.332	0.391
PMA_3	0.274	0.097	0.919	0.421	0.338	0.317	0.44
PMA_4	0.311	0.126	0.925	0.398	0.284	0.31	0.442
SAT_1	0.182	0.303	0.425	0.968	0.587	0.759	0.659
SAT_2	0.227	0.262	0.438	0.959	0.575	0.741	0.659
SAT_3	0.247	0.212	0.402	0.932	0.587	0.707	0.635
SENG-A_1	0.09	0.131	0.297	0.417	0.763	0.466	0.472
SENG-A_2	0.124	0.132	0.255	0.349	0.752	0.396	0.438
SENG-A_3	0.083	0.165	0.262	0.595	0.808	0.664	0.61
SENG-A_4	0.089	0.072	0.265	0.502	0.773	0.46	0.461
SENG-D_1	0.172	0.312	0.345	0.637	0.518	0.873	0.549
SENG-D_2	0.196	0.286	0.302	0.729	0.632	0.939	0.584
SENG-D_3	0.198	0.28	0.333	0.737	0.628	0.916	0.636
SENG-V_1	0.124	0.222	0.419	0.583	0.466	0.498	0.867
SENG-V_2	0.217	0.153	0.413	0.559	0.519	0.522	0.843
SENG-V_4	0.185	0.175	0.377	0.589	0.543	0.568	0.856

Table 1. Cross Loadings

	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
CSE_	0.87	0.877	0.796
PMA_	0.933	0.934	0.833
SAT_	0.95	0.951	0.909
SENG-A_	0.778	0.791	0.598
SENG-D_	0.896	0.898	0.828
SENG-V_	0.818	0.83	0.649

Table 2. Internal Consistency Reliability (ICR) and Convergent Validity

	CSE_	GRADE	PMA_	SAT_	SENG-A_	SENG-D_	SENG-V_
CSE_							
GRADE	0.076						
PMA_	0.315	0.154					
SAT_	0.252	0.279	0.47				
SENG-A_	0.153	0.183	0.409	0.7			
SENG-D_	0.24	0.34	0.394	0.84	0.765		
SENG-V_	0.251	0.231	0.528	0.77	0.802	0.757	

Table 3. Discriminant Validity – HTMT

Type of Effect	Effect	Path Coefficient	T statistic	Remarks
Indirect Effect	CSE_ -> MSE -> SENG-	0.126	3.428**	Sig Indirect Effect
Direct Effect	CSE_ -> SENG-	0.084	1.28	No Sig Direct Effect
Conclusion: Full Mediation of MSE between CSE and SE exists				

Table 4. Mediation

We then assessed discriminant validity. The traditional metric of the Fornell-Larcker criterion has been found not to perform well, and recent research indicates that it is not suitable for discriminant validity analysis (Hair et al., 2019; Henseler et al., 2016). Instead, the heterotrait-monotrait (HTMT) ratio of the correlations is recommended to test for discriminant validity (Table 3). Using the more conservative threshold value of 0.85 (Hair et al., 2019; Henseler et al., 2016), the HTMT values indicate that discriminant validity has been established.

4. RESULTS

4.1 Interpretation of Path Coefficients

Our results (see Figure 1) indicate that although computer self-efficacy (CSE) does not directly impact student engagement ($\beta = 0.084$, $t = 1.280$, ns), CSE leads to math self-efficacy ($\beta = 0.289$, $t = 4.904$, $p < 0.001$). Moreover, math self-efficacy directly impacts student engagement ($\beta = 0.425$, $t = 6.882$, $p < 0.001$). Thus, MSE mediates the relationship between CSE and SE. These findings suggest that individuals who believe they are highly capable in their computer use are also more likely to believe they are highly capable in their math competency. Furthermore, individuals who are confident in their math ability are more likely to experience a pervasive and persistent state of mind that is characterized by vigor, dedication, and absorption in their course.

The study also concludes that student engagement predicts course satisfaction ($\beta = 0.796$, $t = 34.244$, $p < 0.001$) and the student's final grade in the course ($\beta = 0.273$, $t = 4.606$, $p < 0.001$). Therefore, students who experience a pervasive and persistent state of mind characterized by vigor, dedication, and absorption in the course will be more satisfied with the class and earn a higher grade.

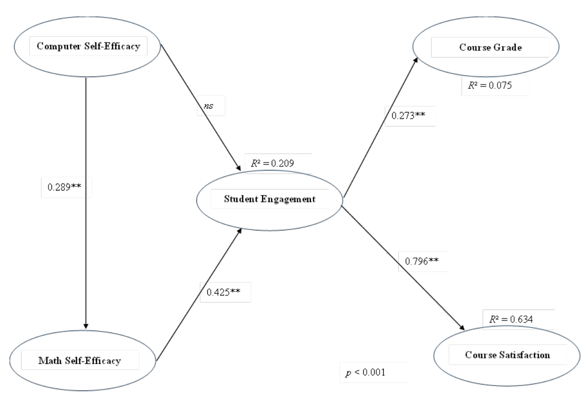

Figure 1. Results of Structural Equation Model

4.2 Comparison With Prior Studies

The current study shows that the direct path from CSE to student engagement is non-significant. Instead, the relationship between CSE and SE is mediated by MSE. While some previous research demonstrated a relationship between CSE and student engagement (Carraher Wolverton et al., 2020; Pellas, 2014), other studies found that CSE does not predict student engagement (Barrett, 2018). Therefore, this study contributes to the literature by demonstrating that MSE transmits the effect of CSE on student engagement in hybrid business analytics courses.

Just as the current study demonstrates, the existing literature presents MSE as a mediator. Some studies show that MSE mediates the relationship between support and engagement (Jung et al., 2023; Sağkal & Sönmez, 2022). However, other research indicates that MSE plays a moderating role between support and engagement (Gan & Peng, 2024). Thus, this study extends the literature by displaying how MSE mediates the relationship between CSE and engagement.

Although the current study demonstrated that the model explained 63.4% of satisfaction variance, previous research on the relationship between student engagement and satisfaction is inconclusive. While some studies find a positive relationship between student engagement outcomes and satisfaction (Hazzam & Wilkins, 2023; Yang et al., 2025), other research shows that the relationship between engagement and student satisfaction was not significant (Hazzam et al., 2024). The current study exhibits a strong positive relationship between student engagement and satisfaction in hybrid business analytics courses.

The current study found that the model explained only 7.5% of grade variance. Through a meta-analysis of existing studies, Lei et al. (2018) concluded that there is a moderately strong and positive relationship between student engagement and academic achievement. Although this study confirms that this relationship is present and statistically significant in hybrid business analytics courses, it suggests that other factors may predict course grades. For example, prior studies indicate that a student's level of participation in online and in-person course activities (Ali & Hanna, 2022; Lu et al., 2018; Park et al., 2019), such as participation in an online student discussion board activity (Talbott, 2020) were related to their final grade in the course. However, the researchers admit that these findings do not explain the cause of a student's motivation regarding their level of participation in these course activities (Park et al., 2019).

We will now discuss the implications of these findings.

5. DISCUSSION

This study provides new insights into the relationship between computer self-efficacy (CSE), math self-efficacy (MSE), student engagement, course success, and satisfaction in a hybrid business analytics context. Student computer self-efficacy is a predicting factor in both student satisfaction and experience in an online learning environment (Xiao et al., 2020). Specifically, adverse outcomes in online courses are usually the direct result of poor technology skills and computer application literacy skills (Bringula et al., 2021). Technical computer skills play a significant role in any online or hybrid class. Students use technology to access course content and interact with instructors and classmates. In quantitative or analytic courses, they also must be able to utilize statistical software for data analyses and problem solving. Our results indicate that both students' computer self-efficacy (CSE) and technology skills are predictive of their course performance in a hybrid course. These findings have both theoretical and practical implications. Given the growth in demand for and the intrinsic difficulty in business analytics courses, it is important for researchers to comprehend the circumstances impacting student success in alternative course formats.

5.1 Theoretical Implications

Cognition Evaluation Theory (CET) afforded a deeper understanding of the relationships presented in this study. This study found that while computer self-efficacy is significant, its relationship with student engagement occurs indirectly through math self-efficacy. This helps bridge the gap between contradictions from prior study results that observed a direct relationship between CSE and engagement (Carraher Wolverton et al., 2020; Pellas, 2014) and others that did not (Barrett, 2018). The results of this current study concluded that CSE must be complemented by MSE to drive student engagement.

Our results expand the existing knowledge of business analytics education by providing a greater understanding of some of these critical key factors. Traditionally, computer self-efficacy and math self-efficacy were considered disassociated; however, this study demonstrates their combined direct relationship and impact on a student's level of engagement, course satisfaction, and course success in hybrid business analytics courses. Recognizing these relationships can impact student success in both their coursework and in the growing business analytics market.

Even though the proposed model explained a 63.4% variance in course satisfaction, it only accounted for 7.5% of the variance in course grade. Low R^2 values are common in behavioral sciences and education mostly due to the influence of human performance and other external factors (Gupta et al., 2024; Miles & Shevlin, 2001; Newman & Newman, 2000). Other factors like prior GPA, time management skills, motivation, and self-regulated learning also make significant contributions to academic performance and outcomes (Broadbent & Poon, 2015; Credé et al., 2017; Richardson et al., 2012).

5.2 Practical Applications

Based on these results, educators should focus their attention on course development to provide students with more conducive instructional activities designed to enhance students' confidence in their own computer and math abilities. Self-efficacy improvements may not be a primary objective of business analytics courses, but they are foundational in promoting student engagement, course satisfaction, and course success. Instructors can set students up for success by providing opportunities for them to build their technology use and mathematical problem-solving confidence early in the course.

The results of this study have actionable implications for business analytics education. While developing students' computer skills is important, instructors should also consider additional strategies to improve math self-efficacy. This can be accomplished by incorporating low-stakes math practice quizzes, real-world analysis projects, and workshops on data interpretation and analysis of results. Specific course enhancements might include case studies and interactive modules that allow students to directly apply analytical tools. Tableau is a common data application that can be used in projects that mimic real-world scenarios. Additional analytic tools beyond Excel, such as Python and emerging artificial intelligence software, can reinforce data handling and analysis skills. These should be made available early in the course to aid in the final measures of student success. For example, instructors can use scaffolded math assignments that start with basic data analysis and interpretation and then gradually build to more complex problem-solving skill sets. Technology can also be used to create interactive tutorials, short video lessons to walk through specific formulas or calculations, and formative assessments that provide instant feedback to students. Instructors can incorporate math confidence check-ins after each unit or module to help students monitor their growth or need for additional technical assistance.

Instructors should also consider providing early diagnostic assessments to identify students with low computer and/or math self-efficacy who may be candidates for tutoring and/or mentoring. Instructors may also consider follow-up interventions like technical assistance office hours, small group review sessions, or peer-to-peer mentoring where stronger students can help guide weaker students through early assignments. Timely assistance is essential earlier in the course to prevent disengagement and build confidence and momentum.

In addition to improving MSE, course design should also consider student engagement. Incorporating collaborative group assignments, peer review activities, interactive discussion boards, and real-world team projects fosters a sense of community among students, which may increase their commitment to the course and their own success. Collaborative learning experiences enhance engagement by supporting and promoting shared accountability, social interaction, and deeper cognitive processing, especially in hybrid and online learning environments (Siddiqui et al., 2016).

Finally, educators can modernize their curricula to incorporate emerging technologies like artificial intelligence (Shahid & Mishra, 2024), blockchain (Milovich et al., 2020), and metaverse applications (Dincelli & Yayla, 2024) to align course content with current industry trends, enhance engagement and prepare student for a rapidly changing digital business environment (Jeyaraj, 2019; Larson et al., 2021; Turel & Kapoor, 2016).

Based on the findings of the study, a course design framework for hybrid business analytics courses should include the following: (1) early diagnostic assessments of student's math and computer skills/confidence, (2) embedded self-efficacy building modules, (3) collaborative peer projects/assignments, (4) scaffolded exposure to technology tools, programs, and platforms, and (5) real-world projects that require application of skills learned throughout the course.

5.3 Limitations

This study was conducted to identify the critical success factors for students taking business analytics courses delivered in a hybrid format. Since research participants were from a single business school, the generalizability of the study or external validity of the study may hence be limited. Future studies should be conducted utilizing a wider spectrum of participants from various business schools and across different cultures. Moreover, extensive demographic information was not collected for this study. We encourage researchers to include additional demographics in future studies. This study also investigated only two predicting factors: computer self-efficacy and math self-efficacy. It is possible that other factors like motivation, self-regulation, and learning environment quality might contribute to student engagement, course satisfaction, and course grades in these courses. For instance, other variables such as learning style, motivational mechanisms, quality of online learning environments, and support mechanisms readily available to students in hybrid settings may also influence these course outcomes. Furthermore, only quantitative data were collected for the study; qualitative data from students' written feedback and interviews could provide more insights to explore why students' computer self-efficacy and math self-efficacy together impact students' level of engagement in the course, their course satisfaction, and their course performance. Given the nature of the preliminary study, no control groups were included, which is consistent with common practices in preliminary educational research (Kember, 2003; Newman & Newman, 2000). We encourage future studies to incorporate control groups in order to strengthen causal interpretations.

6. CONCLUSIONS

As organizations increase their offerings for hybrid working models (Anderson, 2022; Samuel, 2022), preparing students for these environments becomes vital. Educators can better prepare students for this changing work environment by offering additional quality hybrid courses. This research focused on investigating the success factors for students in hybrid business analytics courses. Specifically, the study sought to determine the impact of computer self-efficacy (CSE) and math self-efficacy (MSE) on student engagement, course satisfaction, and course success in hybrid business analytics courses. This study determined that student success in hybrid business analytics courses is not solely dependent on their technological skill sets but also relies on domain-specific academic confidence, particularly math self-efficacy. This understanding provides new information to help students and faculty navigate the challenges of hybrid learning in business analytics. Utilizing some of the analytical tools recommended by instructors can bolster student math self-efficacy and, thus, improve course engagement, satisfaction, and success.

The results of this study demonstrate why students need to feel confident with using technology and their ability to handle course content. The premise of Cognitive Evaluation Theory is that students are more likely to be engaged and motivated when they feel capable. It is not enough for students to be computer savvy – they must also believe they can succeed. Confidence in both of these areas ensures students put forth more effort, remain engaged, and succeed.

Educators can improve student engagement, satisfaction, and academic performance by fostering both computer and math self-efficacy skills among their students. This can also be accomplished by updating course content to include emerging technologies, collaborative learning activities, and providing additional support like tutoring and/or mentoring.

Future research should include broader student success models. Next, this research can investigate how interventions that target math self-efficacy and its influence academic performance over time. It can also explore the differences between hybrid and online course modalities. Future studies should examine the relationships between self-efficacy, engagement, and performance that exist in fully online courses and settings. In addition, longitudinal studies that include control groups can be utilized to validate and extend the findings of this study. Next, experimental interventions can be used to test causality in improving engagement and self-efficacy. Finally, future research can examine variables that moderate or mediate the effects of self-efficacy, like prior math achievement, intrinsic motivation, and social belonging. By understanding how to engage students in hybrid business analytics courses, we can improve their satisfaction and academic success in these increasingly vital and relevant courses.

7. REFERENCES

Abouchedid, K., & Nasser, R. (2000). External and Internal Social Barriers in Stereotyping University Majors. *Current Research in Social Psychology*, 5(9), 151-169.

Adeel, Z., Mladjenovic, S. M., Smith, S. J., Sahi, P., Dhand, A., Williams-Habibi, S., Brown, K., & Moisse, K. (2023). Student Engagement Tracks With Success In-Person and Online in a Hybrid-Flexible Course. *The Canadian Journal for the Scholarship of Teaching and Learning*, 14(2). https://doi.org/10.5206/cjsotlrcacea.2023.2.14482

Aguinis, H., Hill, N. S., & Bailey, J. R. (2021). Best Practices in Data Collection and Preparation: Recommendations for Reviewers, Editors, and Authors. *Organizational Research Methods*, 24(4), 678-693. https://doi.org/10.1177/1094428119836485

Ahmed, H. M. S. (2010). Hybrid E-Learning Acceptance Model: Learner Perceptions. *Decision Sciences Journal of Innovative Education*, 8(2), 313-346. https://doi.org/10.1111/j.1540-4609.2010.00259.x

Al-Azawei, A., & Al-Masoudy, M. A. A. (2020). Predicting Learners' Performance in Virtual Learning Environment (VLE) Based on Demographic, Behavioral and Engagement Antecedents. *International Journal of Emerging Technologies in Learning*, 15(9), 60-75. https://doi.org/10.3991/ijet.v15i09.12691

Albert, S., Fulton, D., Ramanau, R., & Janes, A. (2021). Exploring Cross-Disciplinary Differences in Course Mode, Instructional Tools and Teaching Methods in Online Courses in Business & Management. *The International Journal of Management Education*, 19(3), 100532. https://doi.org/10.1016/j.ijme.2021.100532

Albrahim, F. A. (2020). Online Teaching Skills and Competencies. *Turkish Online Journal of Educational Technology-TOJET*, 19(1), 9-20.

Ali, A. D., & Hanna, W. K. (2022). Predicting Students' Achievement in a Hybrid Environment Through Self-Regulated Learning, Log Data, and Course Engagement: A Data Mining Approach. *Journal of Educational Computing Research*, 60(4), 960-985. https://doi.org/10.1177/07356331211056178

Allen, I. E., & Seaman, J. (2007). *Making the Grade: Online Education in the United States, 2006* (Southern ed.). Sloan Consortium.

Allen, I. E., & Seaman, J. (2010). *Learning on Demand: Online Education in the United States, 2009*. Sloan Consortium.

Alpár, G., Yeni, S., Aivaloglou, E., & Hermans, F. (2022, March 28-31). Can Math Be a Bottleneck? Exploring the Mathematics Perceptions of Computer Science Students. *2022 IEEE Global Engineering Education Conference* (EDUCON). https://doi.org/10.1109/EDUCON52537.2022.9766513

Alqurashi, E. (2016). Self-Efficacy in Online Learning Environments: A Literature Review. *Contemporary Issues in Education Research*, 9(1), 45-52. https://doi.org/10.19030/cier.v9i1.9549

Anaya, L., Frank, S., & Zamarro, G. (2022). Gender Gaps in Math Performance, Perceived Mathematical Ability and College STEM Education: The Role of Parental Occupation. *Education Economics*, 30(2), 113-128. https://doi.org/10.1080/09645292.2021.1974344

Anderson, S. (2022, April 28). *The Hybrid Work Model is on the Rise — Here's How to Find Work From Home Jobs*. Rolling Stone. https://www.rollingstone.com/product-recommendations/lifestyle/how-to-make-money-from-home-1300775/

Angiello, R. (2010). Study Looks at Online Learning vs. Traditional lnstruction. *Education Digest: Essential Readings Condensed for Quick Review*, 76(2), 56-59.

Barclay, D., Higgins, C., & Thompson, R. (1995). The Partial Least Squares (PLS) Approach to Casual Modeling: Personal Computer Adoption and Use as an Illustration. *Technology Studies*, 2(2), 285-309.

Barrett, B. P. (2018). *Computer Anxiety, Computer Self-Efficacy, and Computer Experience: Prediction of Performance aND Engagement IN Online College Students* [Doctoral dissertation, Capella University].

Benigno, V., & Trentin, G. (2000). The Evaluation of Online Courses. *Journal of Computer Assisted Learning*, 16(3), 259-270. https://doi.org/10.1046/j.1365-2729.2000.00137.x

Bergqvist, E. (2025). Relations Between Mathematics Self-Efficacy and Anxiety Beliefs: When Multicollinearity Matters. *The Journal of Experimental Education*, 93(3), 565-585. https://doi.org/10.1080/00220973.2024.2338545

Bhattacherjee, A., & Premkumar, G. (2004). Understanding Changes in Belief and Attitude Toward Information Technology Usage: A Theoretical Model and Longitudinal Test. *MIS Quarterly*, 28(2), 229-254. https://doi.org/10.2307/25148634

Bozkurt, A., & Sharma, R. C. (2020). Emergency Remote Teaching in a Time of Global Crisis Due to CoronaVirus Pandemic. *Asian Journal of Distance Education*, 15(1), i-vi.

Bringula, R., Reguyal, J. J., Tan, D. D., & Ulfa, S. (2021). Mathematics Self-Concept and Challenges of Learners in an Online Learning Environment During COVID-19 Pandemic. *Smart Learning Environments*, 8(1), 22. https://doi.org/10.1186/s40561-021-00168-5

Broadbent, J., & Poon, W. L. (2015). Self-Regulated Learning Strategies & Academic Achievement in Online Higher Education Learning Environments: A Systematic Review. *The Internet and Higher Education*, 27, 1-13. https://doi.org/10.1016/j.iheduc.2015.04.007

Brodie, R. J., Ilic, A., Juric, B., & Hollebeek, L. (2013). Consumer Engagement in a Virtual Brand Community: An Exploratory Analysis. *Journal of Business Research*, 66(1), 105-114. https://doi.org/10.1016/j.jbusres.2011.07.029

Callister, R. R., & Love, M. S. (2016). A Comparison of Learning Outcomes in Skills-Based Courses: Online Versus Face-To-Face Formats. *Decision Sciences Journal of Innovative Education*, 14(2), 243-256. https://doi.org/10.1111/dsji.12093

Carraher Wolverton, C. (2018). Utilizing Synchronous Discussions to Create an Engaged Classroom in Online Executive Education. *The International Journal of Management Education*, 16(2), 239-244. https://doi.org/10.1016/j.ijme.2018.03.001

Carraher Wolverton, C., Guidry-Hollier, B., & Lanier, P. A. (2020). The Impact of Computer Self Efficacy on Student Engagement and Group Satisfaction in Online Business Courses. *Electronic Journal of e-Learning*, 18(2), 175-188. https://doi.org/10.34190/EJEL.20.18.2.006

Carraher Wolverton, C., & Hirschheim, R. (2023). Utilizing Expectation Disconfirmation Theory to Develop a Higher-Order Model of Outsourcing Success Factors. *Journal of Systems and Information Technology*, 25(1), 1-29. https://doi.org/10.1108/JSIT-05-2022-0133

Carraher Wolverton, C., & Zhu, Z. (2021). Faculty Engagement in Online Education: Applying the Perceived Characteristics of Innovation to Explain Online Teaching Intention. *Electronic Journal of e-Learning*, 19(5), 388-400. https://doi.org/10.34190/ejel.19.5.2472

Chin, W., & Lee, M. (2000). A Proposed Model and Measurement Instrument for the Formation of IS Satisfaction: The Case of End-User Computing Satisfaction. *Proceedings of International Conference on Information Systems 2000*. Brisbane, Australia.

Chiu, T. K. F. (2022). Applying the Self-Determination Theory (SDT) to Explain Student Engagement in Online Learning During the COVID-19 Pandemic. *Journal of Research on Technology in Education*, 54(sup1), S14-S30. https://doi.org/10.1080/15391523.2021.1891998

Compeau, D. R., & Higgins, C. A. (1995). Computer Self-Efficacy: Development of a Measure and Initial Test. *MIS Quarterly*, 19(2), 189-211. https://doi.org/10.2307/249688

Coussement, K., Phan, M., De Caigny, A., Benoit, D. F., & Raes, A. (2020). Predicting Student Dropout in Subscription-Based Online Learning Environments: The Beneficial Impact of the Logit Leaf Model. *Decision Support Systems*, 135, 113325. https://doi.org/10.1016/j.dss.2020.113325

Coyner, S. C., & McCann, P. L. (2004). Advantages and Challenges of Teaching in an Electronic Environment: The Accommodate Model. *International Journal of Instructional Media*, 31(3), 223-228.

Credé, M., Tynan, M. C., & Harms, P. D. (2017). Much Ado About Grit: A Meta-Analytic Synthesis of the Grit Literature. *Journal of Personality and Social Psychology*, 113(3), 492-511. https://doi.org/10.1037/pspp0000102

Dang, Y. M., Zhang, Y. G., Ravindran, S., & Osmonbekov, T. (2016). Examining Student Satisfaction and Gender Differences in Technology-Supported, Blended Learning. *Journal of Information Systems Education*, 27(2), 119-130.

Darcy, D. P., & Satpathy, A. (2023). Teaching Tip: A Scalable Hybrid Introductory Analytics Course. *Journal of Information Systems Education*, 34(4), 360-369.

Dincelli, E., & Yayla, A. (2024). Teaching Case: Security and Privacy Implications of Virtual Reality Applications in the Metaverse: A Case of Development, Security, and Operations (DevSecOps). *Journal of Information Systems Education*, 35(3), 261-270. https://doi.org/10.62273/JMZA1065

Fast, L. A., Lewis, J. L., Bryant, M. J., Bocian, K. A., Cardullo, R. A., Rettig, M., & Hammond, K. A. (2010). Does Math Self-Efficacy Mediate the Effect of the Perceived Classroom Environment on Standardized Math Test Performance? *Journal of Educational Psychology*, 102(3), 729-740. https://doi.org/10.1037/a0018863

Francescucci, A., & Rohani, L. (2019). Exclusively Synchronous Online (VIRI) Learning: The Impact on Student Performance and Engagement Outcomes. *Journal of Marketing Education*, 41(1), 60-69. https://doi.org/10.1177/0273475318818864

Gal, I., & Ginsburg, L. (1994). The Role of Beliefs and Attitudes in Learning Statistics: Towards an Assessment Framework. *Journal of Statistics Education*, 2(2). https://doi.org/10.1080/10691898.1994.11910471

Gan, Y., & Peng, J. (2024). Effects of Teacher Support on Math Engagement Among Chinese College Students: A Mediated Moderation Model of Math Self-Efficacy and Intrinsic Value. *Children and Youth Services Review*, 156, 107369. https://doi.org/10.1016/j.childyouth.2023.107369

Garfield, J. (1995). How Students Learn Statistics. *International Statistical Review / Revue Internationale de Statistique*, 63(1), 25-34. https://doi.org/10.2307/1403775

Gupta, A., Stead, T. S., & Ganti, L. (2024, October 27). *Determining a Meaningful R-squared Value in Clinical Medicine*. https://doi.org/10.62186/001c.125154

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (3rd ed.). SAGE Publications. https://doi.org/10.1007/978-3-030-80519-7

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to Use and How to Report the Results of PLS-SEM. *European Business Review*, 31(1), 2-24. https://doi.org/10.1108/EBR-11-2018-0203

Hazzam, J., & Wilkins, S. (2023). The Influences of Lecturer Charismatic Leadership and Technology Use on Student Online Engagement, Learning Performance, and Satisfaction. *Computers & Education*, 200, 104809. https://doi.org/10.1016/j.compedu.2023.104809

Hazzam, J., Wilkins, S., Southall, C., & Ibrahim, B. (2024). The Influence of LinkedIn Group Community on Postgraduate Student Experience, Satisfaction and Grades. *Computers & Education*, 216, 105052. https://doi.org/10.1016/j.compedu.2024.105052

Henrie, C. R., Halverson, L. R., & Graham, C. R. (2015). Measuring Student Engagement in Technology-Mediated Learning: A Review. *Computers & Education*, 90, 36-53. https://doi.org/10.1016/j.compedu.2015.09.005

Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS Path Modeling in New Technology Research: Updated Guidelines. *Industrial Management & Data Systems*, 116(1), 2-20. https://doi.org/10.1108/IMDS-09-2015-0382

Hogg, R. V. (1991). Statistical Education: Improvements Are Badly Needed. *The American Statistician*, 45(4), 342-343. https://doi.org/10.1080/00031305.1991.10475832

Hwang, J., & Wao, F. (2021). College Student Satisfaction Typology and Its Relationship With Engagement Patterns. *Journal of College Student Development*, 62(1), 118-124. https://doi.org/10.1353/csd.2021.0009

Jan, S. K. (2015). The Relationships Between Academic Self-Efficacy, Computer Self-Efficacy, Prior Experience, and Satisfaction With Online Learning. *American Journal of Distance Education*, 29(1), 30-40. https://doi.org/10.1080/08923647.2015.994366

Jenkins, R. (2011, May 22). *Why Are So Many Students Still Failing Online?* The Chronicle of Higher Education. https://www.chronicle.com/article/why-are-so-many-students-still-failing-online/

Jeyaraj, A. (2019). Pedagogy for Business Analytics Courses. *Journal of Information Systems Education*, 30(2), 67-83.

Johnson, M., & Kuennen, E. (2006). Basic Math Skills and Performance in an Introductory Statistics Course. *Journal of Statistics Education*, 14(2). https://doi.org/10.1080/10691898.2006.11910581

Jung, Y., Ah, L. S., & and Fan, L. (2023). Teacher's Factors Affecting Students' Math Class Engagement: The Mediating Effect of Math Self-Efficacy. *Educational Psychology*, 43(8), 929-946. https://doi.org/10.1080/01443410.2023.2267809

Kember, D. (2003). To Control or Not to Control: The Question of Whether Experimental Designs Are Appropriate for Evaluating Teaching Innovations in Higher Education. *Assessment & Evaluation in Higher Education*, 28(1), 89-101. https://doi.org/10.1080/02602930301684

Khan, G. F., Sarstedt, M., Shiau, W.-L., Hair, J. F., Ringle, C. M., & Fritze, M. P. (2019). Methodological Research on Partial Least Squares Structural Equation Modeling (PLS-SEM). *Internet Research*, 29(3), 407-429. https://doi.org/10.1108/IntR-12-2017-0509

Kline, T. J. B. (2017). Sample Issues, Methodological Implications, and Best Practices. *Canadian Journal of Behavioural Science / Revue canadienne des sciences du comportement*, 49(2), 71-77. https://doi.org/10.1037/cbs0000054

Lalonde, R. N., & Gardner, R. C. (1993). Statistics as a Second Language? A Model for Predicting Performance in Psychology Students. *Canadian Journal of Behavioural Science / Revue canadienne des sciences du comportement*, 25(1), 108-125. https://doi.org/10.1037/h0078792

Larson, B. E., Sanders, M. A., & Bohler, J. A. (2021). Aligning the Technical and Soft Skills of Management Information Systems and Business Analytics Curricula to Supplement Accounting Education. *Information Systems Education Journal*, 19(6), 27-39.

Lei, H., Cui, Y., & Zhou, W. (2018). Relationships Between Student Engagement and Academic Achievement: A Meta-Analysis. *Social Behavior and Personality: an international journal*, 46(3), 517-528. https://doi.org/10.2224/sbp.7054

Liguori, E., & Winkler, C. (2020). From Offline to Online: Challenges and Opportunities for Entrepreneurship Education Following the COVID-19 Pandemic. *Entrepreneurship Education and Pedagogy*, 3(4), 346-351. https://doi.org/10.1177/2515127420916738

Lim, C. K. (2001). Computer Self-Efficacy, Academic Self-Concept, and Other Predictors of Satisfaction and Future Participation of Adult Distance Learners. *American Journal of Distance Education*, 15(2), 41-51. https://doi.org/10.1080/08923640109527083

Lu, O. H., Huang, A. Y., Huang, J. C., Lin, A. J., Ogata, H., & Yang, S. J. (2018). Applying Learning Analytics for the Early Prediction of Students' Academic Performance in Blended Learning. *Journal of Educational Technology & Society*, 21(2), 220-232.

Lyons, J. F. (2004). Teaching U.S. History Online: Problems and Prospects. *The History Teacher*, 37(4), 447-456. https://doi.org/10.2307/1555549

Miles, J., & Shevlin, M. (2001). *Applying Regression and Correlation: A Guide for Students and Researchers*. SAGE Publications Ltd.

Milovich, M., Nicholson, J. A., & Nicholson, D. B. (2020). Applied Learning of Emerging Technology: Using Business-Relevant Examples of Blockchain. *Journal of Information Systems Education*, 31(3), 187-195.

Nemanich, L., Banks, M., & Vera, D. (2009). Enhancing Knowledge Transfer in Classroom Versus Online Settings: The Interplay Among Instructor, Student, Content, and Context. *Decision Sciences Journal of Innovative Education*, 7(1), 123-148. https://doi.org/10.1111/j.1540-4609.2008.00208.x

Newman, I., & Newman, C. (2000). A Discussion of Low R-Squares: Concerns and Uses. *Educational research quarterly*, 24(2), 3.

Oblinger, D., Barone, C. A., & Hawkins, B. L. (2001). *Distributed Education and Its Challenges: An Overview*. American Council on Education.

Owston, R., York, D. N., Malhotra, T., & Sitthiworachart, J. (2020). Blended Learning in STEM and Non-STEM Courses: How Do Student Performance and Perceptions Compare? *Online Learning*, 24(3), 203-221. https://doi.org/10.24059/olj.v24i3.2151

Park, E., Martin, F., & Lambert, R. (2019). Examining Predictive Factors for Student Success in a Hybrid Learning Course. *Quarterly Review of Distance Education*, 20(2), 11-74.

Paul, J. A., & MacDonald, L. (2020). Analytics Curriculum for Undergraduate and Graduate Students. *Decision Sciences Journal of Innovative Education*, 18(1), 22-58. https://doi.org/10.1111/dsji.12196

Pellas, N. (2014). The Influence of Computer Self-Efficacy, Metacognitive Self-Regulation and Self-Esteem on Student Engagement in Online Learning Programs: Evidence from the Virtual World of Second Life. *Computers in Human Behavior*, 35, 157-170. https://doi.org/10.1016/j.chb.2014.02.048

Raju, R., Bhat, S., Bhat, S., D'Souza, R., & Singh, A. B. (2021, 01/31). Effective Usage of Gamification Techniques to Boost Student Engagement. *Journal of Engineering Education Transformations*, 34(SI), 713-717. https://doi.org/10.16920/jeet/2021/v34i0/157171

Rana, N. P., Sheshadri, C., K., D. Y., & Akter, S. (2022). Understanding Dark Side of Artificial Intelligence (AI) Integrated Business Analytics: Assessing Firm's Operational Inefficiency and Competitiveness. *European Journal of Information Systems*, 31(3), 364-387. https://doi.org/10.1080/0960085X.2021.1955628

Reeve, J. (2013). How Students Create Motivationally Supportive Learning Environments for Themselves: The Concept of Agentic Engagement. *Journal of Educational Psychology*, 105(3), 579-595. https://doi.org/10.1037/a0032690

Richardson, M., Abraham, C., & Bond, R. (2012). Psychological Correlates of University Students' Academic Performance: A Systematic Review and Meta-Analysis. *Psychological Bulletin*, 138(2), 353-387. https://doi.org/10.1037/a0026838

Riffell, S., & Sibley, D. (2005). Using Web-Based Instruction to Improve Large Undergraduate Biology Courses: An Evaluation of a Hybrid Course Format. *Computers & Education*, 44(3), 217-235. https://doi.org/10.1016/j.compedu.2004.01.005

Ringle, C. M., Wende, S., & Becker, J.-M. (2024). *SmartPLS 4*. Bönningstedt: SmartPLS.

Robinson, C. C., & Hullinger, H. (2008). New Benchmarks in Higher Education: Student Engagement in Online Learning. *Journal of Education for Business*, 84(2), 101-109. https://doi.org/10.3200/JOEB.84.2.101-109

Rochelle, C. F., & Dotterweich, D. (2007). Student Success in Business Statistics. *Journal of Economics and Finance Education*, 6(1), 19-24.

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions. *Contemporary Educational Psychology*, 25(1), 54-67. https://doi.org/10.1006/ceps.1999.1020

Saadé, R. G., & Kira, D. (2009). Computer Anxiety in E-Learning: The Effect of Computer Self-Efficacy. *Journal of Information Technology Education: Research*, 8(1), 177-191. https://doi.org/10.28945/3386

Sağkal, A. S., & Sönmez, M. T. (2022). The Effects of Perceived Parental Math Support on Middle School Students' Math Engagement: The Serial Multiple Mediation of Math Self-Efficacy and Math Enjoyment. *European Journal of Psychology of Education*, 37(2), 341-354. https://doi.org/10.1007/s10212-020-00518-w

Samuel, A. (2022, February 17). *Looking for a Remote Job? It's Time to Update Your Résumé*. The Wall Street Journal. https://www.wsj.com/lifestyle/careers/looking-for-remote-job-update-your-resume-11645046237

Saxena, N., John, S., & Deshpande, P. (2021). Application of Business Analytics in Corporate Enterprises: An Exploratory Study. *The IUP Journal of Business Strategy*, 18(3), 24-37.

Scaringella, L., Górska, A., Calderon, D., & Benitez, J. (2022). Should We Teach in Hybrid Mode or Fully Online? A Theory and Empirical Investigation on the Service–Profit Chain in MBAs. *Information & Management*, 59(1), 103573. https://doi.org/10.1016/j.im.2021.103573

Schaufeli, W. B., Salanova, M., González-romá, V., & Bakker, A. B. (2002). The Measurement of Engagement and Burnout: A Two Sample Confirmatory Factor Analytic Approach. *Journal of Happiness Studies*, 3(1), 71-92. https://doi.org/10.1023/A:1015630930326

Schwarz, C., & Zhu, Z. (2015). The Impact of Student Expectations in Using Instructional Tools on Student Engagement: A Look Through the Expectation Disconfirmation Theory Lens. *Journal of Information Systems Education*, 26(1), 47-58.

Shahid, A. R., & Mishra, S. (2024). A Framework for a Master's in Applied Artificial Intelligence Program in Computer and Information Systems Discipline. *Journal of Information Systems Education*, 35(4), 495-511. https://doi.org/10.62273/eqze3625

Shiau, W.-L., Sarstedt, M., & Hair, J. F. (2019). Internet Research Using Partial Least Squares Structural Equation Modeling (PLS-SEM). *Internet Research*, 29(3), 398-406. https://doi.org/10.1108/IntR-10-2018-0447

Shone, E. T., Weldemeskel, F. M., & Worku, B. N. (2023). The Role of Students' Mathematics Perception and Self-Efficacy Toward Their Mathematics Achievement. *Psychology in the Schools*, 61(1), 103-122. https://doi.org/10.1002/pits.23033

Siddiqui, N., Butler-Henderson, K., Eljiz, K., & Greenfield, D. (2016). *Many Brains Make Student Learning Lighter Work: Investigating Peer-to-Peer Synchronous Engagement to Engage the Postgraduate Online Student*. University of Tasmania. https://hdl.handle.net/102.100.100/509400

Sircar, S. (2009). Business Intelligence in the Business Curriculum. *Communications of the Association for Information Systems*, 24(1), 17. https://doi.org/10.17705/1CAIS.02417

So, H.-J., & Brush, T. A. (2008). Student Perceptions of Collaborative Learning, Social Presence and Satisfaction in a Blended Learning Environment: Relationships and Critical Factors. *Computers & Education*, 51(1), 318-336. https://doi.org/10.1016/j.compedu.2007.05.009

Stanley, M. J., Serratos, J., Matthew, W., Fernandez, D., & Dang, M. (2018). Integrating Video Simulation Scenarios Into Online Nursing Instruction. *Journal of Nursing Education*, 57(4), 245-249. https://doi.org/10.3928/01484834-20180322-11

Sunarto, M. D., Kartikasari, P., & Arisandi Sr, R. (2024). A Comparison of Students' Learning Outcomes in Advanced Mathematics Courses through Hybrid Learning. *Journal of Educators Online*, 21(1). https://doi.org/10.9743/JEO.2024.21.1.10

Talbott, F. R. (2020). *Exploring the Relationship Between Student Online Discussion-Board Activity and Student Grades* [Doctoral dissertation, Lindenwood University].

Teng, Y., & Wang, X. (2021). The Effect of Two Educational Technology Tools on Student Engagement in Chinese EFL Courses. *International Journal of Educational Technology in Higher Education*, 18(1), 27. https://doi.org/10.1186/s41239-021-00263-0

Turel, O., & Kapoor, B. (2016). A Business Analytics Maturity Perspective on the Gap Between Business Schools and Presumed Industry Needs. *Communications of the Association for Information Systems*, 39(1), 96-109. https://doi.org/10.17705/1CAIS.03906

Umarji, O., Dicke, A.-L., Safavian, N., Karabenick, S. A., & Eccles, J. S. (2021). Teachers Caring for Students and Students Caring for Math: The Development of Culturally and Linguistically Diverse Adolescents' Math Motivation. *Journal of School Psychology*, 84, 32-48. https://doi.org/10.1016/j.jsp.2020.12.004

Unger, S., Simpson, C., Lecher, A., & Goudreau, S. B. (2022). Student Perceptions of Hybrid Courses in Higher Education. *Online Learning*, 26(4), 424-448. https://doi.org/10.24059/olj.v26i4.2939

Viberg, O., Khalil, M., & Baars, M. (2020). Self-Regulated Learning and Learning Analytics in Online Learning Environments: A Review of Empirical Research. *Proceedings of the Tenth International Conference on Learning Analytics & Knowledge*. Frankfurt, Germany. https://doi.org/10.1145/3375462.3375483

Webb, H. W., Gill, G., & Poe, G. (2005). Teaching With the Case Method Online: Pure Versus Hybrid Approaches. *Decision Sciences Journal of Innovative Education*, 3(2), 223-250. https://doi.org/10.1111/j.1540-4609.2005.00068.x

Wei, H.-C., & Chou, C. (2020). Online Learning Performance and Satisfaction: Do Perceptions and Readiness Matter? *Distance Education*, 41(1), 48-69. https://doi.org/10.1080/01587919.2020.1724768

Williams, B., & Elmore, R. (2021). Teaching Business Analytics During the COVID-19 Pandemic: A Tale of Two Courses. *Communications of the Association for Information Systems*, 48(1), 1. https://doi.org/10.17705/1CAIS.04805

Wixom, B., Ariyachandra, T., Goul, M., Gray, P., Kulkarni, U., & Phillips-Wren, G. (2011). The Current State of Business Intelligence in Academia. *Communications of the Association for Information Systems*, 29(1), 16. https://doi.org/10.17705/1cais.02916

Wolverton, C., & Guidry-Hollier, B. (2022). Guidelines for Incorporating Active Learning Into the Design of Online Management Courses Utilizing the Successive Approximation Model (SAM). *International Journal of Education and Development using Information and Communication Technology*, 18(1), 264-274.

Womble, J. C. (2007). *E-Learning: The Relationship Among Learner Satisfaction, Self-Efficacy, and Usefulness*. Alliant International University.

Wood, R., & Bandura, A. (1989). Impact of Conceptions of Ability on Self-Regulatory Mechanisms and Complex Decision Making. *Journal of Personality and Social Psychology*, 56(3), 407-415. https://doi.org/10.1037/0022-3514.56.3.407

Wu, J.-H., Tennyson, R. D., & Hsia, T.-L. (2010). A Study of Student Satisfaction in a Blended E-Learning System Environment. *Computers & Education*, 55(1), 155-164. https://doi.org/10.1016/j.compedu.2009.12.012

Wu, M.-J., Zhao, K., & Fils-Aime, F. (2022). Response Rates of Online Surveys in Published Research: A Meta-Analysis. *Computers in Human Behavior Reports*, 7, 100206. https://doi.org/10.1016/j.chbr.2022.100206

Xiao, J., Sun-Lin, H.-Z., Lin, T.-H., Li, M., Pan, Z., & Cheng, H.-C. (2020). What Makes Learners a Good Fit for Hybrid Learning? Learning Competences as Predictors of Experience and Satisfaction in Hybrid Learning Space. *British Journal of Educational Technology*, 51(4), 1203-1219. https://doi.org/10.1111/bjet.12949

Xie, X., Keng, S., & Nah, F. F.-H. (2020). COVID-19 Pandemic – Online Education in the New Normal and the Next Normal. *Journal of Information Technology Case and Application Research*, 22(3), 175-187. https://doi.org/10.1080/15228053.2020.1824884

Yang, R., Santoso, W., Sameera, M., & Rahamathulla, M. (2025). How Do University Students' Personalities Affect Their Engagement, Satisfaction, and Stickiness Toward E-Learning? Evidence From Australia. *Interactive Learning*

Environments, 33(1), 678-700. https://doi.org/10.1080/10494820.2024.2354418

Zhang, L., Chen, F., & Wei, W. (2020). A Foundation Course in Business Analytics: Design And Implementation at Two Universities. *Journal of Information Systems Education*, 31(4), 244-259.

AUTHOR BIOGRAPHIES

Colleen Carraher-Wolverton is the Mr. & Mrs. E.P. "Pat" Nalley/BORSF Endowed Professor in Business Administration at the University of Louisiana at Lafayette. Her research interests include adoption of new technology, artificial intelligence and emerging technologies, outsourcing, health informatics, expectation disconfirmation theory, the future of work, student engagement in online learning, and creativity with IT. Previous work by Dr. Colleen Carraher-Wolverton has been published in top journals such as the *Journal of Information Technology*, *European Journal of Information Systems*, *Communications of the Association for Information Systems*, *Information Technology & People*, and *Information & Management*. She has won awards for her research, including the Research Excellence Award and the Outstanding Researcher of the Year Award. She is a Senior Editor at *The Data Base for Advances in Information Systems*. Prior to her career in academia, Colleen worked as an IT analyst for a Fortune 50 oil and gas company.

Guolin Lai is a master instructor at the Department of Management at the University of Louisiana at Lafayette. He teaches business statistics and introduction to MIS. His research focuses on how to leverage the affordances of technologies to enhance student learning.

Jeremy T. Navarre is an assistant professor of operations management and total quality management at the University of Louisiana at Lafayette. He received his Ph.D. in Business Administration from Embry-Riddle Aeronautical University. His work has appeared in peer-reviewed academic journals, including the *Journal of Air Transport Management*, *International Journal of Energy Sector Management*, *Journal of Applied Business and Economics*, and *Journal of Business and Economic Perspectives*.

Dione Davis holds a Ph.D. in Human Capital Development from the University of Southern Mississippi. With over 15 years of experience in higher education, her research and teaching focus on entrepreneurship, human capital, and social capital. Dr. Davis is also an entrepreneur and community advocate, leading initiatives that support economic empowerment and social impact.

Patricia Lanier is a professor of management at the B.I. Moody III College of Business Administration, at the University of Louisiana. Lanier earned her B.S. in Accounting from Tulane University, her M.B.A. from Baylor University, and her Doctorate in Management from Louisiana Tech University. She is a SPHR and SHRM – SCP certified human resources professional. Lanier currently holds the Professional Women's Association Professorship in Business Administration. Lanier has had her research published in numerous academic journals including the *Academy of Management Journal*, *Journal of Management History*, *Management Decision*, and *Personality and Individual Differences*. She currently serves on the Ellevate Louisiana Board of Directors, a state-wide, bi-partisan women's political policy organization. She has been a human resource and strategic management consultant for the past 30 years using her unique combination of practical knowledge and research to advance the work of many local businesses, municipalities, and non-profit organizations.

APPENDIX

Constructs and Items

Construct	Items	Sources
Math Self-Efficacy	• I'm sure that I can learn everything taught in math • I'm sure that I can complete the most challenging problems in my math class • Even if a new topic in math is difficult, I'm sure that I can learn it • I'm sure that I can figure out the answers to problems in math class	Umarji et al. (2021); Fast et al. (2010)
Computer Self-efficacy	• I enjoy using computers. • I am confident about using computers. • In general, I am comfortable with using computers and software applications.	Dang et al. (2016)
Student Engagement	Vigor • When I'm studying for this class, I feel mentally strong. • I can continue for a very long time when I am studying for this class. • When I study for this class, I feel like I am bursting with energy. • When studying for this class I feel strong and vigorous. Dedication • I find this course to be full of meaning and purpose. • This course inspires me. • I am enthusiastic about this course. Absorption • Time flies when I'm studying for this class. • When I am studying for this class, I forget everything else around me. • I feel happy when I am studying intensively for this class. • I can get carried away by my studies for this class.	Adapted from Schwarz and Zhu (2015); Schaufeli et al. (2002)
Course Satisfaction	• Overall, taking this class makes me feel: satisfied…dissatisfied • Overall, taking this class makes me feel: pleased…displeased • Overall, taking this class makes me feel: delighted…terrible	Carraher Wolverton and Hirschheim (2023); Bhattacherjee and Premkumar (2004); Chin and Lee (2000)

Information Systems & Computing Academic Professionals

STATEMENT OF PEER REVIEW INTEGRITY

All papers published in the ***Journal of Information Systems Education*** have undergone rigorous peer review. This includes an initial editor screening and double-blind refereeing by three or more expert referees.

ISSN: 2574-3872 (Online) 1055-3096 (Print)