

New Normal in Higher Education for the Post-COVID-19 World: Reimagining and Re-examining Factors for Student Success in Online Learning

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Abstract

As the novel coronavirus began to rapidly spread worldwide in March 2020, emergency transitions to the remote education processes were adopted in all institutions so as not to interrupt students' learning. In this study, we intended to investigate the extent to which factors of online course design and student learning impact students' success after online student characteristics are controlled. Online survey data were collected from 182 undergraduate and graduate students enrolled in at least one fully online course(s). The results revealed that a student's online learning experience was a critical factor in determining the students' attitudes when facing future online courses that were diverse and required autonomy, as well as the student's ability to adapt to challenges from online courses that might use multiple information and communication technology (ICT) tools. Moreover, time management, course design/structure and quality facilitation, and emotional presence were consistently found to be significant determinants of student's online learning success.

Keywords: New normal, online student success, course design and facilitation, emotional presence

Tseng, H., & Inman, C. (2024). New normal in higher education for the post-COVID-19 world: Reimagining and re-examining factors for student success in online learning. *Online Learning*, 29(2), pp. 213–240. <https://doi.org/10.24059/olj.v29i2.4629>

The COVID-19 outbreak disrupted the education system globally, causing many school and university closures, and forced educational systems to facilitate the large-scale adoption of online learning (Tang et al., 2021). Moreover, the rapid rise of online learning during the pandemic formed a new normal for education, though it will be in a perpetual state of flux (Cacayan et al., 2020). According to Cacayan et al. (2020), the new normal “is a state of which economy, society, school, and other concerns settle following a crisis like the COVID-19 pandemic” (p. 234). Even prior to the outbreak of COVID-19, the number of college students who enrolled and studied in online learning contexts was experiencing modest yet steady growth. According to the National Center for Education Statistics, 37.3 percent of college students were enrolled in at least one online course in 2019. Over the past few decades, online learning gradually became an alternative instructional modality of delivery to face-to-face learning (Paul & Jefferson, 2019) because of its accessibility, affordability, and flexibility (Dhawan, 2020). To ensure the quality of online education, many experimental studies have explored the impacts of effective practices and a variety of factors related to the quality of instructor (Martin et al., 2018), course design (Czerkawski & Lyman, 2016; Dunlap et al., 2016), and pedagogical practices (Chai et al., 2019; Gurley, 2018).

As the novel coronavirus began to rapidly spread worldwide in March 2020, emergency transitions to remote education processes were implemented in all institutions so as not to interrupt students’ learning. These changes brought more challenges to instructors who teach online students, especially for those with limited online teaching experience. In addition, though the massive shift to online learning contexts allows students to continue learning, it also exposed some students to diverse and “just in time” rapid learning experiences they had never previously faced that could potentially diminish their productivity and hinder their success. Thus, students’ online learning readiness and self-regulated learning skills have also been challenged (Hong et al., 2021; Rafique et al., 2021). For instance, Naji et al.’s study (2020) stated that students reported that they had less control over their learning and had difficulty managing time well during the pandemic.

In the online learning literature, a variety of learner characteristics and skill sets have been considered essential learning competencies, such as internet self-efficacy (Hung et al., 2010; Kuo et al., 2013), time management (Galindo-Domínguez & Bezanilla, 2021; Hensley et al., 2018; Zampetakis et al., 2010), and self-regulation (Kuo et al., 2020). According to Eastin and LaRose (2000), internet self-efficacy is referred as “the belief in one’s capabilities to organize and execute courses of Internet actions required to produce given attainments” (p. 1). In terms of time management, Claessens et al. (2007) defined it as “behaviours that aim at achieving an effective use of time while performing certain goal-directed activities” (p. 262).

While evidence-based research appears to strongly support online learning quality, little attention has been paid to the investigations of the relationship of these practices with students’ outcomes and student success. Moreover, researchers argue that there are significant needs to examine how well learning interaction or student learning experience, a throughput or process, can primarily indicate the quality of online courses and pedagogy (Joosten & Cusatis, 2019). System approach was referred to as “a term that means to do something systematically. In educational industry, to teach systematically teachers must consider input, process and output and decide objectives, contents, methods and assessment” (Salam, 2015, p. 1). At the broadest

level, the quality of education is described as the nature of the components in the input, process, and output of the education system that deliver services that fully meet the expectations, both explicit and implicit, of internal and external strategic stakeholders (Cheng and Tam, 1997). From the aspects of instructional design and student learning, the systems approach to evaluating student learning in online education stresses a comprehensive and integrated assessment framework that investigates interrelated parts of the educational process in order to improve student learning outcomes (Dick et al., 2015; González & Quiroz, 2019). This approach views online learning as a complex system with multiple components, including instructional design principles, technical tools, student participation and behaviors, and evaluation methods, all of which contribute to the learning process. With high-quality inputs in an online context (e.g., innovative learning technologies and well-designed course materials), it enables more effective throughput processes (e.g., personalized instruction and interactive learning experiences), which in turn, contribute to positive outputs, such as higher retention rates and improved learner outcomes. Moreover, this approach aligns instructional design components with a systematic perspective, emphasizing how each phase contributes to online student success (Eom & Ashill, 2016). By examining these components as a whole, the systems approach provides insights into how well an online learning environment promotes student achievement and a road map for specific improvements. Thus, this study adapted a system approach (see Figure 1) and integrated instructional design components to essentially reimagine and reexamine a variety of online learning characteristics and online learning factors that can influence online student success in this new normal era.

Purpose of the Study and Research Hypotheses

The purposes of this study were twofold. First, we attempted to investigate how students' online learning experience during COVID-19 would differ on the levels of online success according to their online learning characteristics, perceived online course design and facilitation, dialogue with instructors and students, and emotional presence. Second, we intended to investigate to the extent to which factors of online course design and facilitation, and dialogue with instructors and students, impact students' success in the online learning contexts after online student characteristics were controlled. The research hypotheses for this study were:

H1. Online students who had completed more online courses were more likely to have a higher level of online success compared to those who had less online learning experience.

H2. Online students who had higher motivation to visit their online courses frequently were more likely to have a higher level of online success compared to those who had not.

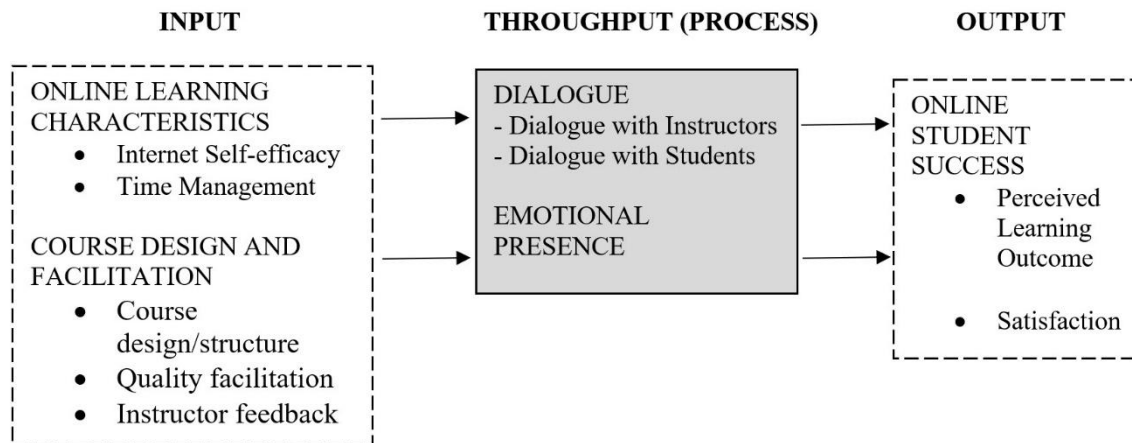
H3. After controlling for individual characteristics, variables associated with online learning characteristics (internet self-efficacy and time management), course design and facilitation (course design/structure, quality facilitation, and instructor feedback), and dialogue with instructors/students and emotional presence would have a positive effect on online students' perceived learning outcome.

H4. After controlling for individual characteristics, variables associated with online learning characteristics (internet self-efficacy and time management), course design and facilitation (course design/structure, quality facilitation, and instructor feedback), and

dialogue with instructors/students and emotional presence would have a positive effect on online students' learning satisfaction.

Figure 1

A System Approach to Online Student Success



Literature Review

In this study, online student success was measured by two key constructs: perceived learning outcome and satisfaction, which encompass both cognitive and affective dimensions of a student's educational experience. Students' perceived learning outcome refers to the extent to which a student believes they have achieved desired learning objectives and gained skills through learning materials. This represents the cognitive dimension of success. In Zhuofan et al.'s (2024) study, their findings indicated that positive correlations existed between students' perceived learning outcome and learning engagement. This suggested that students who perceive they are learning effectively are more likely to remain engaged, which can enhance their academic performance and contribute to future educational success (Honicke et al., 2023). Satisfaction reflects the affective dimension of success, and it refers to "the fulfillment of a student's need and perceptions of contentment with learner, instructor, course, program, and organizational related factors in the online learning environment" (Martin & Bolliger, 2022, p. 2). Further, "satisfaction is a multivariate condition with a variety of measures" such as program and course design, instructor behavior, social conditions, and learner characteristics (Wickersham & McGee, 2008, p. 75). Satisfied learners are more likely to succeed academically but correlation must exist between a student's expectation (perceived learning outcome) and the actual, lived experience in the online course (Noel-Levitz, 2004). Previous studies have demonstrated a correlation between student satisfaction and perceived learning outcome (Lin et al., 2023; Swan, 2001) and perceived online learning experience (Lin & Wang, 2024). Marks et al. (2005) found that perceived student learning outcome is a good predictor of student satisfaction in online learning.

Factors in Predicting Online Student Success

Previous Online Learning Experience

Previous studies that have taken students' experience of course completion into account discovered that it was a significant determinant of a student's online success (Hachey et al., 2012), perceived learning outcome (Asarta & Schmidt, 2020; Hachey et al., 2015), and perceived course quality (Hixon et al., 2016). For example, studying 1,566 online STEM students at an urban community college, Hachey et al. (2015) investigated how well prior online course experiences predicted future online STEM course outcomes. They coded students' prior online experience based on transcript data into four groups: (a) no prior online experience—no online course taken previously; (b) successful—successful completion of all prior online courses taken; (c) mixed success—completed some but not all prior online courses successfully; or (d) unsuccessful—failed to complete any prior online courses successfully. Their results revealed that students who successfully completed all prior online courses taken would also have significantly higher rates of successful online STEM course completion with a higher G.P.A.

Internet Self-Efficacy and Time Management

Ally (2008) defined online learning as “the use of the Internet to access learning material; to interact with the content, instructor, and other learners; and to obtain support during the learning process, in order to acquire knowledge, to construct personal meaning, and to grow from the learning experience” (p. 17). With the rapid advance of instructional technologies applied in active online learning, digital natives are being forced to adapt quickly to be familiar with information and communication technology (ICT) used in their online courses. In online learning research, internet self-efficacy is the most recognized learning characteristic an online student must carry to successfully participate in the online learning environment (Kuo et al., 2020; Hamdan et al., 2021; Kuo et al., 2013; Martin et al., 2020). In Kuo et al.'s (2020) study, a positive and significant correlation was found between online students' internet self-efficacy and learning performance, which implies that students who had strong self-belief in their capabilities in executing internet-related actions to accomplish learning tasks were more likely to achieve success in the online learning environment. Kuo and Belland (2016) conducted a quantitative study where 167 African-American working adults enrolled in six undergraduate-level online courses participated and completed the questionnaire. The results supported the potential impact of Internet self-efficacy on successful learning experience where a positive and significant relationship was revealed between Internet self-efficacy and satisfaction ($r = .573, p < .01$).

Broadly speaking, time management refers to “activities that imply an effective use of time that is deemed to facilitate productivity and alleviate stress” (Zampetakis et al., 2010, p. 24). Learning in an online delivery modality highly involves self-paced learning and often takes place within a given short period of time for students to achieve carefully planned and diverse objectives. Thus, time management plays a significant role for learning organization and efficiency and is a critical factor in successful academic endeavors (Pinxten et al., 2019; Neroni et al., 2019). Substantial empirical research has been conducted and revealed that online students' ability in time management is a vital factor of their learning success and satisfaction, including the current works of Gordanier et al. (2019). In their study, at-risk students were referred to the university's Student Success Center for additional academic support. The findings indicated that the early academic intervention had a strong effect on students' final performance

as services were provided for them to explore and improve time management strategies and study skills. Moreover, Hong et al. (2021) investigated the relationships between components of self-regulated online learning and students' procrastination disposition during the COVID-19 lockdown. The results revealed that students' procrastination disposition was significantly and negatively related to time management; in other words, students with higher time management skills would self-motivate to work on online tasks as scheduled and take actions to pursue learning goals to achieve consistently high performance.

Course Design/Structure, Quality Facilitation, and Instructor Feedback

Given the fact that a paradigm shift of learner-centered approaches, students are the center of learning and are required to hold more responsibilities for their own learning and to be more active and collaborative during the learning process. In addition to a teaching role, research identified several essential roles instructors should also take that promote effective and engaged learning including as a course designer and organizer, discussion and technology facilitator, and feedback provider (Hung & Chou, 2015; Martin et al., 2019; Martin et al., 2021), especially in online settings. A well-designed online course must be clearly structured and outlined for students to achieve desired learning outcomes. In terms of structure, Moore (1993) refers it as "the rigidity or flexibility of the programme's educational objectives, teaching strategies, and evaluation methods" (p. 26). To be able to focus more on facilitating and engaging students learning, it is necessary for online instructors to carefully prepare and plan their courses in advance including, but not limited to, logically sequencing content segments, meaningfully aligning content and activities with learning unit and learning objectives, and purposefully providing students with authentic and deep learning opportunities. Quality of course design and instructor facilitations are critical influences on online student success (Chu et al., 2021; Eom & Ashill, 2016; Martin et al., 2019). Eom and Ashill (2016) collected survey data from 372 participants who have completed at least one online course at a university, and the study intended to investigate to what extent does five independent variables (motivation, student self-regulation, dialogue, instructor, and course design) predict students' perceived learning outcomes and satisfaction. Their results indicated that course design had a positive and significant relationship with user satisfaction ($\beta = .34$) and perceived learning outcomes ($\beta = .25$).

In terms of quality facilitations, research has recognized it as one of the critical factors to the success of online courses and student learning (Caskurlu et al., 2021; Chu et al., 2021; Martin et al., 2020). According to Martin et al. (2019), online course facilitation broadly refers to "how, what, when, and why an online faculty member makes decisions and takes actions to help students meet the learning outcomes" (p. 36) and quality facilitations can promote students' critical thinking skills (Richardson et al., 2015; Seibert, 2021), sense of community (Conklin & Dikkers, 2021), and learning motivation (Chu et al., 2016; Waheed et al., 2016). When online instructors effectively use multiple strategies to humanize and engage in student learning, students can benefit by getting a head start on navigating the course content, developing a clear understanding of the course structure and learning goals, and even establishing an early connection with the instructor to know how to seek help. Instructors were encouraged to provide clear instructions and guidelines, regular and open communication (Gurley, 2018; Nielsen, 2015), and timely response and prompt feedback (Gopal et al., 2021; Martin et al., 2018; Martin et al., 2020) to assist in establishing teaching presence and instructor connectedness that led to higher learning motivation and achievement. These foundational elements of quality course

facilitation come before active learning and are categorized as input within the process. They assist instructors in designing clear guidelines, establishing course expectations, and fostering active learning to prepare students for participation and guarantee interaction in the initial phase of learning. Moreover, studies that examined the impact of instructors' feedback on online learning, particularly Abbasi et al. (2020), aimed to evaluate 1,255 health sciences students' perceptions and satisfaction towards e-learning during the COVID-19 lockdown. Their results revealed that more than 45% of the participants reported they highly appreciated e-learning for timely feedback from instructors. Waheed et al. (2016) noted that timely feedback can motivate students intrinsically in active learning, can help students save time, improving performance in future assessments. Instructor feedback can occur early in the course when students engage with preliminary tasks, such as an introductory assignment, diagnostic assessment, or formative evaluation. Feedback in this input phase sets expectations, identifies learning gaps, and provides students with a clear direction for improvement and engagement. When instructor feedback occurs as part of course setup, it contributes to the scaffolding and creates a supportive environment for learning (Tang et al., 2025).

Dialogue with Instructors/Students and Emotional Presence

Moore (1993) originally differentiated dialogue and interaction by defining dialogue as “an interaction or series of interaction having positive qualities that other interactions might not have” (p. 24). Moreover, Eom and Ashill (2016) referred to dialogue as “purposeful, constructive, meaningful interaction that is valued by each party” (p. 193). Online instructions are purposefully designed to engage students constructively and consistently, and to integrate team-based learning (Ku et al., 2013; Tseng et al., 2013) and problem-based learning approaches that provide rich opportunities for a deeply meaningful dialogue among students. Dialogue involves two-way communication between students and instructors taking place in students' learning process (throughput) that fosters trust, collaboration, and deeper understanding. This relational aspect of instruction supports emotional presence and cognitive engagement, distinguishing it from one-directional feedback. In addition, dialogue is an active engagement and interaction between students and instructors that can foster cognitive engagement in ways of open-mindedness and reflective thinking for reducing the students' transactional distance (Huang et al., 2016; Moore & Kearsley, 2012), which, in turn, improve their online learning achievement.

Emotions are considered an essential factor when building student-student and student-instructor relationships (Jiang & Koo, 2020; Telli et al., 2022), facilitating safe and engaging online learning atmospheres (Cleveland-Innes & Garrison, 2010; Parker, 2021), as well as having significant impacts on online learning success (Majeski et al., 2018). As part of throughput, emotional presence reflects the ongoing interaction and engagement dynamics among students, instructors, and course content that sustain motivation and engagement. In addition, it promotes a learning community that directly impacts student persistence and performance. Garrison et al. (2000, 2001) developed the Community of Inquiry (CoI) framework and identified three interdependent dimensions of presences: social presence, teaching presence, and cognitive presence that help educators and scholars understand the fundamental and critical components of successful online learning experiences (Akyol & Garrison, 2008; Arbaugh, 2008). To demonstrate the importance of emotion elements in interactive online learning environments, Cleveland-Innes and Campbell (2012) added emotional presence as an additional unique

dimension of presence to CoI and defined it as the “outward expression of emotion, affect, and feeling by individuals and among individuals in a community of inquiry, as they relate to and interact with the learning technology, course content, students, and the instructor” (p. 283). Jiang and Koo’s (2020) study used a multiple regression analysis to explore non-traditional graduate students’ perceived emotional presence and they found that emotional presence was able to significantly predict students’ satisfaction with online learning.

Methods

Participants

A total of 182 undergraduate and graduate students (with a response rate of 10.3%) participated, all of whom were enrolled in at least one fully online course during the fall semester of the 2021–2022 academic year. There were 134 female participants (73.6%) and 41 male participants (22.6%). See Table 1. The majority of the students ($n = 61$, 33.4%) reported being in the age range of 20 to 24, and 69 of them (38.5%) reported that they had completed one to five fully online courses in the past. Moreover, in terms of the frequency of visiting their online courses, 61 students (33.3%) indicated that they accessed Canvas six to ten times per week to work on course work.

Table 1

Demographic Information of Participants

Demographic variables	<i>n</i>	<i>f</i> (%)
Gender		
Female	134	(73.6%)
Male	41	(22.6%)
Prefer Not to Say	7	(3.8%)
Age		
Under 20	38	(21.3%)
20–24	61	(33.3%)
25–29	13	(7.1%)
30–39	32	(17.5%)
Over 40–49	38	(20.8%)
Class Level		
Freshman	37	(20.4%)
Sophomore	22	(12.2%)
Junior	36	(19.9%)
Senior	33	(19.2%)
Graduate Student	53	(29.3%)

Number of Online Courses Completed

None	32 (17.9%)
1–5	69 (38.5%)
6–10	46 (25.7%)
More than 10	32 (17.9%)

Frequency of visiting Course on Canvas per Week

1–5 times	57 (31.5%)
6–10 times	61 (33.3%)
11–15 times	31 (17.2%)
More than 16 times	32 (17.7%)

Instruments

Input Variables—Online Learning Characteristics

Internet self-efficacy. To measure students' confidence in using internet-based technology, an eight-item, 5-point Likert scale questionnaire developed by Eastin and LaRose (2000) was adapted for this study. Example questions include “I feel confident using the Internet to gather data” and “I feel confident turning to an online discussion group when help is needed.” In this study, Cronbach's Alpha of 0.928 indicated a strong internal consistency.

Time management. In this study, online students' time management skills were measured using three survey questions that are one of the six subscales in Barnard, Paton, and Lan's (2008) *Online Self-regulated Learning Questionnaire (OSLQ)*. All items were measured on a 5-point Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The questions in the survey included, for example, “I allocate extra studying time for my online courses because I know it is time-demanding” and “I try to schedule the same time every day or every week to study for my online courses, and I observe the schedule.” In this study, Cronbach's Alpha of 0.830 indicated an acceptable internal consistency.

Input Variables—Online Course Design and Facilitation

Course design/structure. Five questions (5-point Likert scale) related to course design and structure were adapted from Eom and Ashill's (2016) study that they based on four categories (Category 1: logical structure of the modules; Category 2: learning objectives; Category 3: assessment and measurement; Category 4: instructional materials) in the Quality Matters (QM) rubric standard. Example questions include “The course objectives and procedures of online classes were clearly communicated” and “The structure of the modules of online classes was well organized into logical and understandable components.” The scale displayed strong internal consistency ($\alpha = 0.912$) in this study.

Quality facilitation. Questions on quality facilitation (QF) were adapted from Chu et al.'s (2021) study that was developed to measure online students' perspectives on how well their instructors facilitate different course strategies in online teaching. All five survey items were measured using the 5-point Likert scale (1 = strongly disagree; 5 = strongly agree; $\alpha = 0.940$).

Example questions include “In general, the instructors in online classes provided timely and helpful feedback on assignments, exams, or projects” and “In general, the instructors in online classes were responsive to student concerns.”

Instructor feedback. Four questions were used to ask for students’ perceptions on the feedback they received from the instructors in their online learning experience. All four survey items were measured using the 5-point Likert scale ($\alpha = 0.944$). Example questions include “The instructor provided timely feedback on assignments, exams, or projects,” “The instructor was responsive to student concerns,” and “I felt as if the instructor cared about my individual learning in this course.”

Throughput (Process) Variables

Dialogue with instructors/students. We modified eight 5-point Likert scale questions developed by Eom and Ashill (2016) to measure dialogue with instructors and students. Example questions include “I had positive and constructive interactions with the instructor frequently in online classes,” “The level of positive and constructive interactions between the instructor and students was high in online classes,” and “In online classes, I learned more from my fellow students than in other classes at this university.” The scale displayed a strong level of internal consistency ($\alpha = .940$) in this study.

Emotional presence. Online students’ emotional presence was measured by a six-item survey (Cleveland-Innes & Campbell, 2012) using the 5-point Likert scale (1 = strongly disagree to 5 = strongly agree; $\alpha = 0.898$). Example questions include “I felt comfortable expressing emotion through the online medium” and “I found myself responding emotionally about ideas or learning activities in this course.”

Output Variables—Online Student Success

Perceived learning outcome. Students’ perceived learning outcome was measured by a five-item survey using the 5-point Likert scale (1 = strongly disagree to 5 = strongly agree; $\alpha = 0.637$). Example questions include “In online courses, I am pleased with what I learned” and “The learning activities promoted the achievement of student learning outcomes.”

Learning satisfaction. To measure how satisfied students were after studying in the online learning environment, we adapted a five-item, 5-point Likert scale (1 = strongly disagree to 5 = strongly agree; $\alpha = 0.783$) questionnaire developed and validated by Kuo et al. (2013). Example questions include “The online courses contributed to my professional development,” “I am satisfied with the level of interaction that happened in online courses,” and “In the future, I would be willing to take a fully online course again.” The reliability and content validity of the satisfaction scale were previously established, and Cronbach’s alpha values were $\alpha = 0.93$ (Kuo et al., 2013).

Data Collection and Analysis

Prior to the data collection process, this study was approved by the Institutional Review Board (IRB) at the university. In terms of the data collection procedures, all questionnaires were distributed in an online survey format and a survey invitation letter with consent was sent to

students enrolled in at least one fully online course after midterms week. All questionnaires were expected to take about 20 to 25 minutes for participants to complete.

To test Hypotheses 1 and 2, the multivariate analysis of variance (MANOVA) was conducted to determine whether there were significant differences in terms of online student success among students who had different online learning experiences and behaviors. For the MANOVA that yielded significant main effects at $p < 0.05$, F value was used to determine the variables contributing to the significance of the overall analysis.

To test the remaining hypotheses, two hierarchical multiple regression (HMR) analyses were conducted. First, students' individual characteristics were considered as a potential control variable in the regression and were entered into Block 1 of the research model. Next, two variables in online learning characteristics (internet self-efficacy and time management) and three variables in course design and facilitation (course design/structure, quality facilitation, and instructor feedback) were entered into Block 2. Latest, variables in students' learning process (throughput), dialogue (dialogue with instructors and dialogue with students), and emotional presence were added into Block 3. IBM SPSS AMOS 27.0 was used to conduct both MANOVA and HMR analyses.

Results

Results of MANOVA for Differences Among Students Learning Experience and Behavior in Online Student Success

There was a statistically significant difference in online student success based on number of online courses students had completed when participating in the study, $F(6, 348) = 2.756$, $p < .05$; Wilk's $\Lambda = .911$, partial $\eta^2 = .045$.

We can see in Table 2 that the number of online courses students had completed has a statistically significant effect on their *perceived learning outcome* ($F(3, 177) = 4.875$; $p < .003$; partial $\eta^2 = .077$) and *learning satisfaction* ($F(3, 177) = 4.991$; $p < .002$; partial $\eta^2 = .079$). Participants who had completed more than 10 online courses also had higher *perceived learning outcome* ($M = 4.00$, $SD = .64$) and *learning satisfaction* ($M = 3.79$, $SD = .61$).

Table 2

Multivariate Analysis of Variance (MANOVA) for Differences Among Number of Online Courses Taken in Online Student Success

Variable	Number of online courses had completed	Mean	SD	F	Partial η^2
Perceived Learning Outcome	None	3.47	.61	7.878**	.074
	1–5	3.43	.88		
	6–10	3.67	.62		
	More than 10	4.00	.64		
Learning Satisfaction	None	3.23	.81	9.458**	.079
	1–5	3.15	.90		
		3.37	.73		

6–10	3.79	.61
More than 10		

Note. ** $p < .01$

Moreover, there was a statistically significant difference in online student success based on how frequently students visited their online courses on Canvas, $F(6, 352) = 3.524, p < .002$; Wilk's $\Lambda = .890$, partial $\eta^2 = .057$.

We can see in Table 3 that how frequently online students visited their online course has a statistically significant effect on their *perceived learning outcome* ($F(3, 177) = 5.074; p < .002$; partial $\eta^2 = .074$) and *learning satisfaction* ($F(3, 177) = 6.125; p < .001$; partial $\eta^2 = .094$). The findings indicated that online students who were visiting their courses on Canvas more than 16 times reported the highest mean scores on both *perceived learning outcome* and *learning satisfaction* ($M = 3.95, SD = .49; M = 3.81, SD = .46$, respectively)

Table 3

Multivariate Analysis of Variance (MANOVA) for Differences among Frequency of Visiting Course on Canvas in Online Student Success

Variable	Frequency of visiting course (per week)	Mean	SD	F	Partial η^2
Perceived Learning Outcome	1–5 times	3.33	.88	5.074**	.074
	6–10 times	3.64	.64		
	11–15 times	3.58	.81		
	More than 16 times	3.95	.49		
Learning Satisfaction	1–5 times	3.06	.96	6.125**	.094
	6–10 times	3.30	.73		
	11–15 times	3.37	.85		
	More than 16 times	3.81	.46		

Note. ** $p < .01$

Hierarchical Multiple Regression Analysis of Perceived Learning Outcome

Two HMR analyses were conducted to assess how students' online learning characteristics, factors in course design and facilitation, and variables in students' learning process (throughput) predict their online learning success while controlling for students' individual characteristics. The model in Block 1 of the first HMR (see Table 4), which consisted of five control variables (i.e., gender, age, number of online courses taken, etc.), significantly explained 13.9% of the variance in students' perceived learning outcome, $F(5, 168) = 5.439, p < .001, R^2 = .139$. Two of the control variables, Canvas visits ($\beta = .230, p < .01$) and number of online courses ($\beta = .167, p < .05$), significantly contributed to perceived learning outcome.

Next, the results revealed that the second model predicted 66.0% of the variance in students' perceived learning outcome, $F(10, 163) = 31.688, p < .001, R^2 = .660$. Moreover, the change of R^2 between the models in Block 1 and Block 2 ($\Delta R^2 = .521, p < .001$) was also

statistically significant with the *time management* ($\beta = .116, p < .05$), *course design/structure* ($\beta = .361, p < .01$), and *quality facilitation* ($\beta = .330, p < .01$) as three significant predictors.

Finally, when variables in dialogue with instructors/students and emotional presence were added in Block 3, the overall model explained 69.7% of the variance of the perceived learning outcome, $F(13,160) = 28.285, p < .001, R^2 = .697$. *Course design/structure* ($\beta = .366, p < .01$) was found to be a consistent predictor of perceived learning outcome. The change in variance ($\Delta R^2 = .036, p < .001$) indicated a small increase of 3.6% in variability of perceived learning outcome that is accounted on emotional presence ($\beta = .209, p < .05$).

Table 4

Results of Hierarchical Multiple Regression Analyses of Perceived Learning Outcome

Variable	Block 1 β	Block 2 β	Block 3 β
Block 1			
Individual characteristics			
Gender (0 = Female)	-.042	-.048	.049
Age	.146	.122*	.119*
Class	.001	-.070	-.080
Canvas visit	.230**	.027	.013
Number of online courses	.167*	.044	.017
Block 2			
Online learning characteristics			
Internet self-efficacy		-.023	-.039
Time management		.116*	.083
Online course design and facilitation			
Course design/structure		.361**	.366**
Quality facilitation		.330**	.158
Instructor feedback		.068	.069
Block 3			
Dialogue with instructors/students			
Dialogue with instructors			.169
Dialogue with students			.110
			.209*
Emotional presence			
R^2	.139	.660	.697
F	5.439***		28.285***

<i>p</i> -value	.001***		.001***
ΔF	5.439***	31.688***	6.415***
ΔR^2	.139	.001***	.036
		50.004***	
		.521	

Note. $N = 173$, * $p < .05$, ** $p < .01$, *** $p < .001$

Hierarchical Multiple Regression Analysis of Online Learning Satisfaction

The second HMR analysis was undertaken to examine whether the set of independent online learning variables (online learning characteristics, course design and facilitation, and dialogue with instructors/students and emotional presence) could be used to predict students' satisfaction while controlling for individual characteristics. The first model significantly explained 16.2% of the variance, $F(5,168) = 6.603$, $p < .001$, $R^2 = .162$ (see Table 5). *Age*, *Canvas visit*, and *Number of online courses* were significant positive predictors of students' learning satisfaction ($\beta = .212$, $p < .05$; $\beta = .257$, $p < .01$; $\beta = .190$, $p < .05$, respectively). Next, the addition of *Internet self-efficacy*, *time management*, *course design/structure* ($\beta = .231$, $p < .05$), and *quality facilitation* ($\beta = .499$, $p < .01$) in Block 2 explained an additional 45.0% of variance to the overall model effect of $R^2 = .612$ ($F(10,163) = 25.707$, $p < .001$) in students' learning satisfaction.

Finally, when variables in dialogue with instructors/students and emotional presence were added in Block 3, the overall model explained 65.2% of the variance of the students' learning satisfaction, $F(13,160) = 23.110$, $p < .001$, $R^2 = .652$. *Course design/structure* ($\beta = .234$, $p < .01$) and *quality facilitation* ($\beta = .347$, $p < .01$) were found to be consistent and significant predictors of students' learning satisfaction. The change in variance ($\Delta R^2 = .040$, $p < .001$) indicated a small increase of 4.0% in variability of students' learning satisfaction that is accounted on emotional presence ($\beta = .283$, $p < .05$).

Table 5

Results of Hierarchical Multiple Regression Analyses of Online Learning Satisfaction

Variable	Block 1 β	Block 2 β	Block 3 β
<i>Block 1</i>			
<i>Individual characteristics</i>			
Gender (0 = Female)	-.038	.033	.034
Age	.212*	.181*	.178**
Class	-.070	-.129	-.138*
Canvas visit	.257**	.073	.061
Number of online courses	.190*	.057	.033

Block 2

Online student characteristics		.013	.000
Internet self-efficacy		.085	.057
Time management			
Online course design and facilitation		.231*	.234*
Course design/structure		.499**	.347*
Quality facilitation		-.039	-.039
Instructor feedback			
Block 3			
Dialogue with instructors/students	with		.153
Dialogue with instructors			.093
Dialogue with students			
			.283**
Emotional presence			
R^2	.162	.612	.652
F	6.603***	25.707***	23.110***
p -value	.001***	.001***	.001***
ΔF	6.603***	37.615***	6.220***
ΔR^2	.164	.448	.041

Note. $N = 173$, * $p < .05$, ** $p < .01$, *** $p < .001$

Discussion and Implications

With the aim to reimagine and reexamine influences of a variety of online learning characteristics and factors upon online student success in this new normal era, the results from two MANOVAs revealed that students who had more experience taking online classes, as well as students who frequently visited courses on Canvas, were more likely to have higher perceived learning outcomes and satisfaction. The hierarchical multiple regression analyses further supported Hypotheses 1 and 2 by confirming that *Canvas visit* and *number of online courses* were two significant predictors of online student success when five students' individual characteristics were entered into Block 1 of the research model. Those findings echoed Hachey et al.'s (2015) study as they explained that a student's first online learning experience was a critical factor in determining the students' attitudes when facing future online courses that were diverse and required autonomy, as well as the student's ability to adapt to challenges from online courses that might use multiple ICT tools.

Second, our study underscores the value of considering both online learning characteristics and course design and facilitation as two core input factors for the purpose of examining how students optimally achieve competencies in online learning. The results from two hierarchical multiple regression analyses partially supported Hypotheses 3 and 4. Our results revealed that *time management* could significantly predict online students' perceived learning

outcome in Block 2 (Table 5), which corresponded to Paul et al.'s (2012) study that students who had good time management skills did not have difficulty sustaining attention, which in turn led to their improved academic performance.

Course design/structure and *quality facilitation* were consistently found to be significant determinants of both factors of a student's online success (perceived learning outcome and learning satisfaction), which is consistent with previous findings (Chu et al., 2021; Eom & Ashill, 2016; Martin et al., 2020). It can be suggested that a well-structured course can provide students with a clear path for them to progress and maintain attention to the lesson. A solid alignment among learning objectives, instructional strategies, and instruction provided, and assessment frameworks in an online course is fundamental to students taking ownership of their learning (Lahdenperä et al., 2019). More importantly, it can help students achieve desired learning goals effectively and empower them to think critically (Reynders et al., 2020).

Quality facilitation was also found to be a significant predictor of online student success. That is, when instructors design and implement supportive pedagogies (i.e., warm welcome messages, clear instructions and guidance on navigating course content, well-managed discussions, structured and supportive feedback, etc.) in their courses, online students would have less anxiety in interactions with instructors and peers, and they would feel more comfortable conversing in course discussions (Caskurlu et al., 2021; Chu et al., 2021).

Finally, for the last regression model, *emotional presence* accounted for a small increased variance in student perceived learning outcome and learning satisfaction ($\Delta R^2 = .037$; $\Delta R^2 = .040$, respectively). With modern technology such as synchronous video conferencing, instant messaging, telecommunication, and online interactive documents, emotions play an important role in online learning especially when students are interacting with their instructors and peers for the first time (Tseng et al., 2020; Trigwell et al., 2012). Given the inherent importance of emotions in online learning, it is essential for educators to understand students' emotional needs and perceived emotional presence in course interactions, thus, we can plan in advance, facilitate a safe learning environment, and set the foundation for student success (Ben-Eliyahu, 2019; Majeski et al., 2018).

Practical Implications

To reimagine and reexamine how online students' success is associated with a variety of online learning factors, this study adopted a system approach and integrated it with instructional design components to gain insights into students' actual learning experience in this new normal era. The findings in this study provide significant implications for instructors and instructional designers when designing high-quality courses and implementing effective pedagogical strategies. First, there are strong needs for institutional administrators and instructors to put efforts and place emphasis on improving students' time management skills according to Paul et al.'s (2012) suggestions. As an online environment extends interactions with instructors, peers, and instructions virtually and informally with more depth and constructive meaning on learning, it is vital to prepare students with effective time management skills beforehand. For instance, the Instructional Design Professionals (Online@JSU) at Jacksonville State University has dedicated itself to proactively designing online orientation modules and workshops that assist students with the development of multiple academic skills for being successful online learners. From the

instructional design standpoints, we also encourage students to use tools such as online calendar reminders and the TO-DO list function on the learning management system for managing their learning tasks across multiple courses.

Moreover, our findings prompt decision-makers in course and curriculum development, and designers to provide multiple opportunities of professional development to enrich online course instructors' knowledge and capabilities in applying fundamental instructional design principles to build learner-centered and engaged online courses where students can enjoy learning and achieve their aligned learning outcomes. The Instructional Design Professionals (Online@JSU) at the authors' institution has developed multiple professional development pathways for faculty to learn in practical ways to design and implement supportive pedagogies (i.e., multiple ways of checking learning progress, problem-based learning activities, authentic assessments, etc.) in their teaching. For example, the authors' institution has developed a "Certified Online Instructor" course with leads to an online teaching certification at the institution. The course is offered on a consistent rotation throughout the academic year through different modalities, such as 100% online or hybrid. The certification signifies that an instructor who completes the course and earns the certification has basic working knowledge and practical skills in the basics of operating the institution's learning management system, in teaching online courses effectively, and in designing and building online courses using best practices. Additionally, the author's institution offers 100% online workshops, tutorials, and presentations throughout the academic year, and emails faculty each Monday with tips, recommendations, information, and brief (under three minutes) how-to videos.

When discussing the integrations in course designs, facilitations, and teaching strategies, the three principles that compose the Universal Design in Learning (UDL) framework must also be mentioned: (a) multiple means of representation, (b) multiple means of action and expression, and (c) multiple means of engagement (CAST, 2011). The UDL has been used as a proactive framework by instructors, trainers, designers to develop equitable and engaged instructions that support students for greater degrees of accessibility and diversity in learning (Celestini et al., 2021; Garrad & Nolan, 2022; Schreffler et al., 2019). By infusing UDL principles into online course design and facilitation, we can provide all students with equal opportunities to learn from well-designed, persistent, and inclusive online courses (Wright et al., 2023). We would suggest several equitable practices including, but not limited to, providing clear and consistent instruction to minimize threats and distractions, offering alternatives and multi-media approaches to deliver materials and for communication, and fostering learning connectedness by encouraging participation and collaborations.

Furthermore, with support from transparent educational technologies, online instructions offer students with more depth and constructive meaning of interactions and knowledge exchange. For instance, using Microsoft Teams to facilitate synchronous video-based communication might provide new ways for learning interaction and reflection and provide multiple ways for knowledge exchange. Research also reported that using video-based communication can improve social presence and online students were more willing to express their feelings (Lowenthal et al., 2017). Social annotation tools also have the potential to offer students opportunities for deeper construction of meaningful interactions and knowledge exchange. For example, with hypothes.is (<https://web.hypothes.is/>), a social annotation tool,

instructors and students read and annotate text together digitally by adding images, video clips, textual comments, and by asking questions and discussing the text together asynchronously. Another social annotation tool, Perusall (<https://www.perusall.com/>), performs similarly to hypothes.is. Research has shown that social annotation tools can help students perform better on in-class activities, improve academic performance due to meaningful engagement in online discussions, and encourage co-construction of knowledge between students and scaffolding of learning during reading and annotation activities (Miller et al., 2016; Tian, 2019).

Finally, it is vital for an online instructor to not only be an effective facilitator by adapting transformational learning strategies, but also to express emotional presence by developing a sense of attachment and trust (Tseng & Yeh, 2013; Tseng et al., 2019), showing online caring and excitement for student's success. Melrose et al. (2013) noted that teachers must "provide content and experiences that have the potential to trigger new insights and invite critical reflection" (p. 124). Students' learning attitudes can be influenced by the instructor's ability to offer supportive and personalized feedback, communication and organization skills, and openness to accept different perspectives, etc. Under no circumstance should a student feel isolation and psychological distance in an online learning context. In order to provide students with a transformative learning environment and to enrich emotional presence, instructors could (a) provide alternative processes of learning and encourage students to discover alternative solutions; (b) develop assessments for tracing and exploring changes to their original perspectives, such as learning journal and reflection papers; and (c) design engaging activities for students to express feelings and present interests in learning, including case studies, role plays, and simulations.

Conclusion

This study aims to contribute to the existing literature on online teaching and learning by investigating how students' online learning experience during COVID-19 would be on the levels of online success. From the number of online courses completed to the frequency of course visits on Canvas, and from course design/facilitation to emotional presence, several instructional design principles play crucial roles in shaping students' perceptions of their learning outcomes and satisfaction levels in online settings. Moving forward, institutional decision-makers, educators and instructional designers should consider these findings to enhance the design and facilitation of online courses, ultimately promoting better student engagement, motivation, and learning outcomes in online learning environments.

Limitations and Direction for the Future Studies

Although this study provides some contributions and implications to the literature on online learning, there are several potential limitations. First, a small sample size of 182 voluntary online undergraduate and graduate students from a single university with a low response rate could limit generalizability of our findings. Moreover, participants' perceptions on learning experience were collected from several retrospective self-report questionnaires when they had almost completed their online courses; thus, recall bias could also distort the results of this online study. Second, participants in this study were mostly female (73.6%) and undergraduate students (70.7%), which may have skewed the distribution of the results. Therefore, future studies should

recruit more balanced participants in terms of gender and class level and extend the research scope by collecting data across multiple institutions or nations.

In terms of our suggestions for future research, other factors on learning characteristics that might also affect online students' success, such as online learning readiness, emotional intelligence, and academic procrastination should be brought into account. Moreover, Berge (1995) categorizes instructor facilitation strategies into four functions: managerial, social, pedagogical, and technical. Therefore, future studies might also consider exploring to what extent do these four facilitation strategies impact students' success in online learning contexts. In addition, it is suggested to integrate objective measures such as exam scores, GPA, or standardized assessment to provide a more comprehensive evaluation of students' online learning competencies and learning outcomes.

Declaration

There is no conflict of interest known to the authors.

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