Student Empowerment / Preparedness: Key to Learning Effectiveness in Remote Teaching

Arshad Alam
Prairie View A&M University

Vikas Jain
University of Tampa

Mohammed T. Hussein
Prairie View A&M University

Despite significant investment in resources for online delivery of courses, many universities struggled to ensure quality learning experience for their students during Covid-19. This research analyzes the factors that have a bearing on learning effectiveness. Results of the study clearly establish the criticality of student preparedness to learning effectiveness. We posit that empowering students to take charge of their learning through preparedness of all major stakeholders (student, faculty, and university) would positively affect the learning outcome for students. Effective learning experience is best achieved when institutions focus their efforts on empowering students to take control of their learning as opposed to simply investing in resources to deliver courses remotely.

Keywords: learning effectiveness, student empowerment, student preparedness, remote teaching

INTRODUCTION

A growing number of institutions of higher learning offer online courses and it is estimated that nearly six million students were enrolled in distance education in 2015 and 29.7% of all students in higher education are taking at least one distance course (Allen & Seaman, 2017). The reasons for the growth in online courses are many. It meets the need of those who cannot attend traditional face-to face classes (Dos Santos, 2020), enhances flexibility in accessing the course content (Serhan, 2020) besides being more cost effective for educational institutions and students alike (Izumi et al. 2020). The onset of Covid-19 further accelerated the shift to online delivery of courses. Typically, online courses are defined as those with at least 80 % of the course content delivered online and asynchronously (Cheawjindakarn et al., 2012) while hybrid courses involve part synchronous and part asynchronous instruction delivery.

The Covid-19 pandemic was a disruptive event with the potential to transform higher education (Govindarajan & Srivastava, 2020). The speed at which the transition to hybrid/online learning was effected at many universities did not provide sufficient time either to students to prepare for remote learning or to instructors to equip themselves for remote delivery of courses (Almanthari et al., 2020). The universities in

US and elsewhere had to scramble to offer remote teaching across all courses without adequate training of faculty members or provision of adequate technological tools to them.

While some courses are easier to adapt for remote delivery, others do not lend themselves as easily to online format, such as those involving experiential component or labs (Adedoyin & Soykan, 2020). Many faculty members who had no experience in remote teaching (i.e., in the basics of virtual delivery, such as audio recording of lectures, holding of video sessions, online quizzes and exams) faced challenges with the new format (Gurung, 2021). Additionally, there have been problems of lack of access to software tools to enable video editing and compilation, facilitate writing on 'white boards' and for use in writing of mathematical equations (Aladsani, 2021).

Besides the technology related challenges faced by the students such as lack of proper laptop or lack of access to high-speed internet (Agustina & Cheng, 2020), the absence of physical interaction with faculty and fellow classmates contributed to their challenge. Students could not avail of faculty office hours, nor could they benefit from group study with classmates. Virtual interaction with faculty members was significantly different from the experience of in-person interaction (Ewing & Cooper, 2021) and proved to be of special concern to students who struggled academically.

Online and remote delivery of courses has been around for a while (Spring, 2016) and numerous studies have been conducted to determine the efficacy of online learning versus learning in a face-to-face environment. While some conclude that classroom learning is better than online learning (Coates et al., 2004; Gratton-Lavoie & Stanley, 2009; Trawick et al., 2010), others have found no significant differences in learning outcomes (Ary & Brune, 2011; Crain & Ragan, 2017). In an analysis of over 1000 studies from the period 1996 to 2008, Means et al. (2010) concluded that students in an online environment perform slightly better that those in face-to-face environment.

Despite having offered online courses in prior years, the transition to online/remote delivery of courses during the pandemic posed a challenge for many institutions. The hope that the learning experience of students would not be significantly impacted was not achieved (Maqableh & Alia, 2021). It brings into question the level of preparedness of all stakeholders in replicating the same learning experience in online/remote delivery as in case of in-person teaching. This study aims to uncover the driving factors of the learning experience of students in a remote or online mode. We use the level of preparedness of faculty, students, and associated resources, as explanatory variables to analyze learning experience of students. While multiple studies have analyzed learning effectiveness in an online or remote delivery environment (Neuhauser, 2002; Nguyen, 2015; Swan, 2003), not many studies have focused on learning effectiveness of students during a disruptive environment such as the current Covid-19 pandemic. Disruptive events tend to act like a stress test for all stakeholders and are likely to help identify the potential weaknesses in the system.

THEORETICAL UNDERPINNINGS AND MODEL DEVELOPMENT

Prior literature suggests that three major factors affect the efficacy of online delivery (Dillon & Gunawardena,1995; Leidner & Jarvenpaa,1993), namely, student characteristics, instructor characteristics, and technology. Selim (2007) also identified institutional support as a critical success factor besides the above three factors. Elaborating further, Selim (2007) classified the critical success factors (CSFs) for e-learning into four areas, namely, 1) instructors' characteristics (teaching style, attitude toward students, technology control, etc.), 2) students' characteristics (motivation, technical competency, perception of content and system, collaboration in interaction, etc.), 3) technology infrastructure (ease of access, internet speed, screen design, etc.), and 4) institution support (technical support, computer availability, learning material accessibility and printing, etc.). While not an exhaustive list, these factors have been identified as critical to learning experience in other studies also and are discussed below.

Student Preparedness

Online/remote learning presents several barriers to students, such as lack of social interaction, limited access to resources, delays in instructor feedback, technology dependence, limited technical and academic

skills and motivation (Muilenburg & Berge, 2005; Simonson et al., 2009). Multiple studies have identified student readiness or preparedness as being critical to their learning (Dray et al., 2011; Farid, 2014; Wladis et al., 2016). Students' own perceptions of their learning is critical as these can influence their decision to continue with the course (Carr, 2000) and affect satisfaction with the overall online learning experience. Unlike in-person learning, there are no regular class hours and even if classes are held in a synchronous mode, there is no assurance that students stay focused during the lecture. Informal feedback from numerous faculty members suggests that many students are prone to logging in to these synchronous classes for attendance purposes but do not actively listen to the lectures (Wilson et al., 2007). Further, as opposed to classroom instruction, online learning requires a significantly higher level of self-motivation and self-discipline. The remote delivery of instructions requires students to work independently and manage their time effectively to successfully navigate their courses (Wang et al., 2013).

During regular semesters, students have a choice to opt for online/remote courses or face-to-face learning whenever courses are offered in multiple formats. They may opt for the remote learning depending on their comfort level to take such courses remotely. However, during Covid-19 pandemic, the transition to online/remote delivery of instructions was neither pre-planned nor optional for students. This significantly affected the learning experience for those students who were not adequately prepared or who could not independently manage their learning as required for remote learning. Many of these students struggled during the period and clamored to return to campus for in-person learning. This highlights a key aspect of learning effectiveness in an online/remote delivery mode, that is, the level of student's preparedness to take charge of their learning.

The notion of an individual to work independently or take autonomous charge or control of his/her life is viewed as empowerment (Conger & Kanungo, 1988). Rappaport (1987) defines empowerment as a process by which people gain control over their lives. Empowerment focused initiatives help participants to become highly knowledgeable and skilled. Conger and Kanungo (1988) view empowerment as a motivational construct which should be perceived in the role of an enabler rather than as one of delegation. Further, they emphasize that the role of empowerment must be to provide support or resources to motivate participants to perform the assigned tasks efficiently. From this standpoint, empowering students to take charge of their learning during remote/online delivery of instructions becomes vital to learning outcomes and offers a suitable theoretical foundation to our study.

We, therefore, propose that Student Preparedness, which is a proxy for Student Empowerment and reflects the student's ability to take control of their learning and exhibit the requisite discipline to meet the course requirements positively affects Learning Effectiveness in an online/remote delivery of instruction.

Hypothesis 1: *Student Preparedness positively affects Learning Effectiveness.*

Faculty Preparedness

Faculty's impact on online learning is well established in scholarly literature (Kennette & Redd, 2015; Kim & Thayne, 2015). Being the sole 'face' of an online course, an instructor's importance is arguably even more pronounced in an online environment (Roddy et al., 2017). Through suitable modification of teaching style, timely feedback, and responsiveness, faculty can improve student engagement and motivation (Bolliger & Martindale, 2004).

While the role of faculty in potentially aiding students is clearly established in an online teaching environment, it is difficult for an instructor to ensure the desired degree of engagement or comprehension of the subject matter by the students. Even in a synchronous delivery mode, the dynamics of classroom, so critical to class management is seriously constrained at best, and largely non-existent at worst. Many faculty members struggled to replicate in-person learning experience for students (this was especially challenging for faculty members who lacked prior experience in remote teaching).

Whether faculty members are effective facilitators of learning depends on their level of preparedness to offer courses remotely and the institutional support provided to him to effectively deliver such courses. As a facilitator, faculty members empower students by providing them support to manage their learning independently. They impact learning by influencing student preparedness. This is unlike what exists in a

face-to-face environment where faculty members have a much greater degree of control and direct influence on learning.

Based on the above, we propose that Faculty Preparedness, which broadly refers to the level of proficiency in delivering the course remotely using appropriate technology and with the required adjustments in content and method of teaching, positively affects Student Preparedness.

Hypothesis 2: *Faculty Preparedness positively affects Student Preparedness.*

Technology Preparedness

Information technology and supporting tools proved to be highly valuable in supporting efforts of universities to switch to remote/online delivery of courses. The role of technology has been highlighted in prior research on online learning. Volery and Lord (2000) surveyed students registered for online course and identified technology as one of the critical success factors in online education. Besides the availability of synchronous and asynchronous delivery options, among the specific factors identified are reliability of network (Lopez & Nagelhout,1995), quality of interface and interface design (Trevitt,1995; Volery & Lord, 2000), ease of access and navigation, and overall functionality (Reeves & Harmon,1993; Volery & Lord, 2000).

The critical role of technology became even more pronounced during the pandemic. Universities that were proactive prior to the pandemic in establishing a good technology infrastructure were able to switch to remote delivery more smoothly. Many universities, however, had to scramble to put together a technology infrastructure to support remote delivery by signing up agreements with companies such as Zoom or WebEx. Considering the short time frame that was available to universities for transition to remote delivery, many ended up with a hodgepodge of IT solutions which many faculty members and students found challenging and frustrating to use.

While critically essential to remote delivery, technology per se cannot ensure learning. Much would depend on the student's own commitment and ability to learn and use it. Technology nevertheless is a facilitator and an enabler. Therefore, the technology preparedness of universities is an important determinant of how prepared students felt while learning remotely. We therefore propose that Technology Preparedness i.e., the availability and use of appropriate technology to deliver courses online has a bearing on Student Preparedness.

Hypothesis 3: *Technology Preparedness positively affects Student Preparedness.*

University Preparedness

Universities provide technical and overall support to an online program and their support can be critical to the success of online courses (Chantanarungpak, 2010; Selim, 2007). Universities are responsible for the determination of appropriate technology for the dissemination of courses and the testing of students which is critical in helping students effectively migrate from classroom instruction to remote learning. They can directly help students through detailed instructions, advising by staff and by addressing their concerns (Freeman & Urbaczewski, 2015). Further, institutions play an important role in determining the suitability of e-courses, building e-learning platforms and course maintenance (Papp, 2000). How effectively they perform these tasks impacts students' preparedness and enhances their learning potential.

Institutions thus help determine the overall eco-system for online courses, from availability of appropriate technology, to determining the suitability of courses for e-learning, to providing e-training and instructions to students, and offering targeted help to them terms of responding to their concerns etc. Beyond the personal attributes that students must possess to succeed in an online course, there is also a growing need for institutions offering courses to provide appropriate online-friendly academic scaffolding to support their students throughout their learning (Lee & Choi, 2011). This includes, but is not limited to, detailed orientation services and comprehensive library resources. University preparedness is critical to their ability to handle disruptive events and their ability to prepare the student body to have the same learning experience remotely as in a face-to-face environment.

We propose therefore that University Preparedness, which refers to the university's ability to organize resources and provide needed support to help students successfully complete a course remotely affects Student Preparedness.

Hypothesis 4: *University Preparedness positively affects Student Preparedness*

Learning Effectiveness

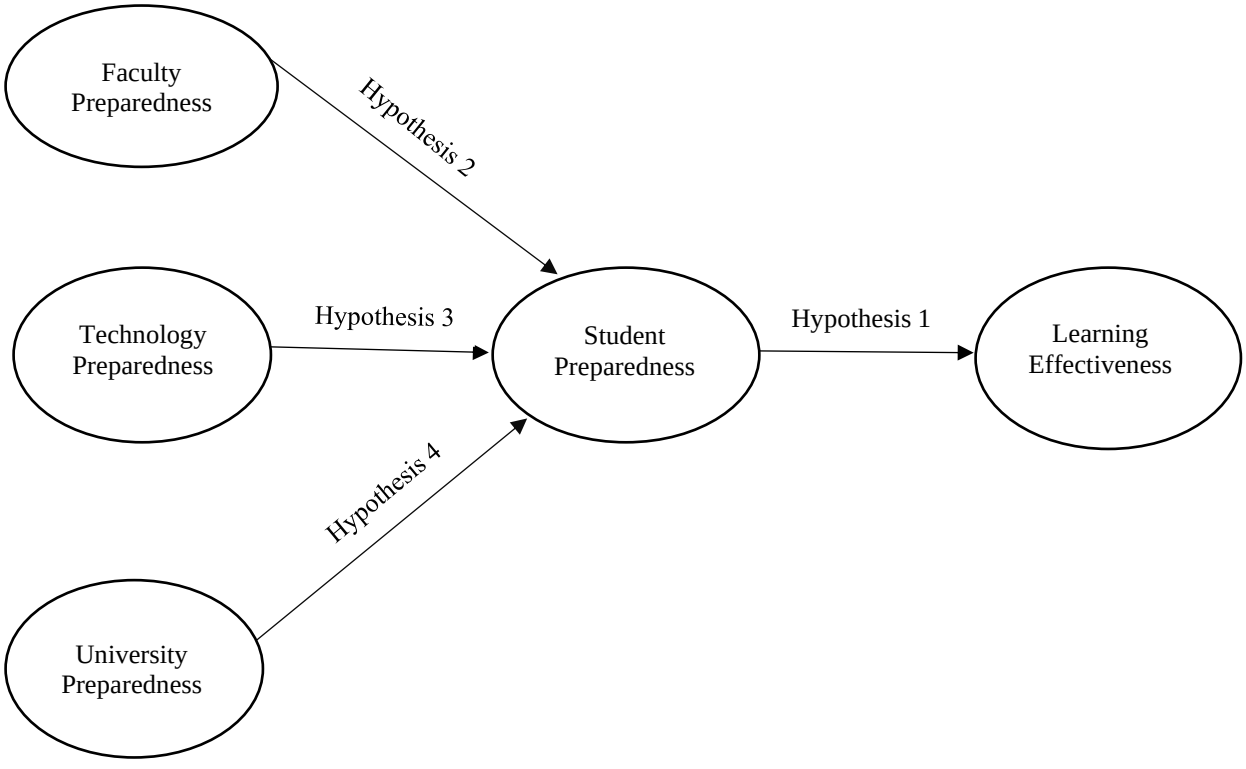
Learning effectiveness is a measure of students' happiness and their level of satisfaction with their learning. Faculty, university administration and technology resources are enabling factors which assist Student Preparedness which in turn affects their learning, more so when a disruptive event such as the current pandemic happens. To put it differently, while Student Preparedness directly impacts learning, the effect of faculty, university and technology resources on learning is indirect i.e., it is mediated through Student Preparedness. This leads us to the following hypothesis.

Hypothesis 5: *Student Preparedness mediates the relationship between Faculty Preparedness, Technology Preparedness, University Preparedness, and Learning Effectiveness.*

Model

Based on the discussion above, the relationship between the influencing variables and Learning Effectiveness, is depicted in the model below (Figure 1).

FIGURE 1
MODEL



Literature has identified a variety of factors to measure the efficacy of an online program. These range from students' grades, job placement, acceptance by accreditors, faculty satisfaction to student satisfaction etc. (Paul & Jefferson, 2019; Freeman & Urbaczewski, 2015). For this study, we decided to measure the

efficacy of online learning by the students' own perception of their learning or satisfaction with the course. Using measures such as grades have inherent limitations since there are many uncontrollable factors which impact grades. Use of other external metrics such as job placement etc., as a proxy for learning effectiveness suffer from the same infirmity- there are too many factors beyond the factors identified in the study. We propose therefore to use the student's own perception or satisfaction with learning as the dependent variable in the model.

SAMPLING AND DATA COLLECTION

Data was collected through an online survey administered at two leading south-east universities in USA in spring 2021 (survey instrument available on request). The survey instrument was pilot tested and factor analysis was used to verify the construct validity of the items. The survey was administered to students that have experienced both face-to-face and remote delivery of courses so that meaningful feedback can be obtained about their learning experiences. The online survey link was made available to members of faculty who then made the link available to the students in the class.

The respondents for this study included a mix of undergraduate and graduate students at the College of Business at the two universities. The sample consisted of students from different business disciplines (Accounting, Finance, MIS, Business Analytics, Supply Chain Management, Project Management, Marketing etc.). The mix of students from different business disciplines helped capture learning effectiveness perception across a broad spectrum of students with different academic background.

The total number of complete responses received was 388. Table 1 reports the descriptive statistics of the overall sample. Panel A presents the distribution of data across gender and courses. Panel B reports the summary statistics of different constructs used in the study.

TABLE 1
DESCRIPTIVE STATISTICS

Panel A				
	Number of Observations	Percent		
Sample Size	388			
Gender				
Male	168	43 %		
Female	213	55 %		
Other/not reported	7	2 %		
Major				
Accounting	49	12.63		
Finance	16	4.12		
Management Information System	29	7.47%		
Management	144	37.11%		
Marketing	40	10.31%		
Economics	10	2.58%		
International Business	19	4.90%		
Cyber Security	1	0.26%		
Business Analytics	17	4.38%		
Entrepreneurship	28	7.22%		
MBA/MS	13	3.35%		
Others	14	3.61%		
Not answered	8	2.06%		
Panel B				

	Number of Observations	Mean	Median	Std. Deviation
Faculty Preparedness	388	3.65	4	1.23
University Preparedness	388	3.33	4	1.29
Technology Preparedness	388	3.65	4	1.23
Student Preparedness	388	3.51	4	1.22
Learning Effectiveness	388	2.95	3	1.38

Data Analysis Software

Partial Least Squares (PLS) path modeling was employed using Smart PLS 3 software. PLS has been used extensively in academic research in different fields such as education (Campbell & Yates, 2011), marketing (Albers, 2009), social sciences (Jacobs et al., 2011), MIS (Chin et al., 1996) and operations management (Braunscheidel & Suresh, 2009; Cheung et al., 2010; Rosenzweig, 2009;) and has been shown to provide robust results even for small sample sizes (Henseler et al., 2009, Wetzels et al., 2009).

DATA ANALYSIS RESULTS

Common Method Variance

Data was checked for Common Method Bias. The occurrence of a VIF greater than 3.3 is indicative of collinearity and suggests that the model may contaminated by common method bias (Kock, 2015). All VIF values were much lower than 3.3 indicating that the model is free from common method bias.

Analysis

The model suggests that all the independent variables impact Student Preparedness which in turn impacts Learning Effectiveness (Figure 1). To test the mediating role of Student Preparedness, the 3-step regression procedure suggested by Baron and Kenny (1986) was employed. Tables 2A-C present the results of the Baron and Kenny test. Each of the influencing variables was first regressed against Student Preparedness and Learning Effectiveness separately. They were then regressed against Learning Effectiveness along with Student Preparedness. In all cases, the effect of the influencing variable on Learning Effectiveness was significantly reduced upon the addition of Student Preparedness. This affirms the mediating role of Student Preparedness.

TABLE 2A
BARON AND KENNY TEST

	Student Preparedness	Learning Effectiveness	Learning Effectiveness
Faculty Preparedness	0.657*** (17.217)	0.601*** (16.820)	0.177*** (3.462)
Student Preparedness			0.646*** (13.615)
R-Sq	0.431	0.361	0.598
Adj. R-Sq	0.430	0.360	0.595
N	388	388	388

***p<0.01; **p<0.05; *p<0.1, figures in parentheses are t-statistics

TABLE 2B
BARON AND KENNY TEST

	Student Preparedness	Learning Effectiveness	Learning Effectiveness
University Preparedness	0.681*** (22.487)	0.640*** (19.523)	0.227*** (4.681)
Student Preparedness			0.607*** (13.575)
R-Sq	0.464	0.410	0.607
Adj. R-Sq	0.462	0.409	0.605
N	388	388	388

***p<0.01; **p<0.05; *p<0.1, figures in parentheses are t-statistics

TABLE 2C
BARON AND KENNY TEST

	Student Preparedness	Learning Effectiveness	Learning Effectiveness
Technology Preparedness	0.648*** (19.657)	0.623*** (19.167)	0.232*** (5.541)
Student Preparedness			0.614*** (15.022)
R-Sq	0.420	0.389	0.612
Adj. R-Sq	0.418	0.387	0.610
N	388	388	388

***p<0.01; **p<0.05; *p<0.1, figures in parentheses are t-statistics

Measurement Model

Convergent reliability was tested using Cronbach's alpha and Composite reliability measures. For Cronbach's alpha, a value of 0.7 is considered acceptable. Similarly, for composite reliability a value of 0.7 is recommended. *As seen in Table 3, all Cronbach's alpha values were above 0.8 or higher. All Composite reliability values are above 0.9 indicating good reliability for each of the reflective constructs, namely, Faculty* Preparedness, *Technology* Preparedness, *University* Preparedness, *Student* Preparedness *and Learning Effectiveness.*

TABLE 3
RELIABILITY, AVE AND R-SQUARE VALUES

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)	R-Sq.
Faculty Preparedness	0.943	0.954	0.777	
Learning Effectiveness	0.954	0.965	0.846	0.58
Student Preparedness	0.914	0.936	0.746	0.532
Technology Preparedness	0.874	0.922	0.798	
University Preparedness	0.927	0.948	0.821	

Discriminant validity is the extent to which items of a construct discriminate from items constituting another construct. *Discriminant validity is established when each construct's average variance extracted (AVE) is higher than the squared correlation with any other latent variable. AVE values are reported in*

Table 3 while the correlation values are shown in Table 4. Since the AVE values are much higher than the square of the correlation values, it indicates that none of the constructs share a larger variance with another construct than with its own indicators. Discriminant validity is thus established.

TABLE 4
LATENT VARIABLE CORRELATIONS

	Faculty Preparedness	Learning Effectiveness	Student Preparedness	Technology Preparedness	University Preparedness
Faculty Preparedness	1	0.599	0.656	0.705	0.722
Learning Effectiveness	0.599	1	0.762	0.621	0.638
Student Preparedness	0.656	0.762	1	0.639	0.681
Technology Preparedness	0.705	0.621	0.639	1	0.762
University Preparedness	0.722	0.638	0.681	0.762	1

Having established the validity of the measurement model, we next evaluate the structural model.

Structural Model

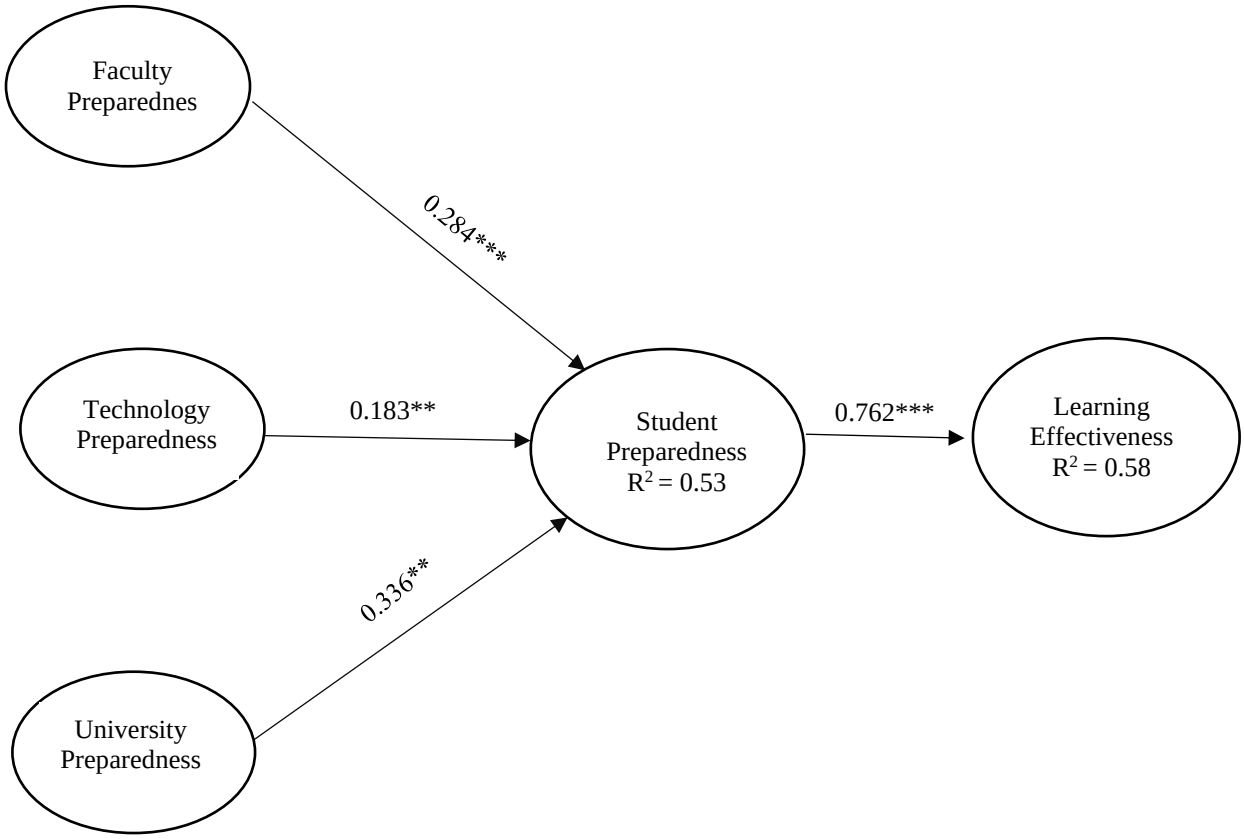
The standardized path coefficients associated with the structural model are provided in Figure 2. The model exhibits reasonable predictive ability as it explains 53.2 % of the variance in Student Preparedness and 58.0 % of the variance in Learning Effectiveness. The t-statistics for the structural model are given in Table 5.

TABLE 5
INNER MODEL T-STATISTICS

	T Statistics	
	Student Preparedness	Learning Effectiveness
Faculty Preparedness	3.937***	
Student Preparedness		30.042***
Technology Preparedness	2.403**	
University Preparedness	4.304***	

*** p<0.01; **p<0.05

FIGURE 2
STRUCTURAL MODEL



We had hypothesized that all the exogenous variables, namely, Faculty Preparedness, University Preparedness, and Technology Preparedness would be positively associated with Student Preparedness. The PLS results indicate that Faculty Preparedness has a positive and significant effect on Student Preparedness (*β=0.284, p≤0.01*) providing strong support for Hypothesis 2. Similarly, we found empirical support for Hypothesis 3 & Hypothesis 4 as Technology Preparedness (*β=0.183, p ≤ 0.05*) has a significant effect on Student Preparedness and so does University Preparedness (*β=0.336, p ≤ 0.01*)

To determine the existence of possible direct effects of Faculty Preparedness, University Preparedness, and Technology Preparedness on Learning Effectiveness in addition to their indirect effects through the mediating role of Student Preparedness, a modified model was developed (Figure 3). The modified model proposes that Faculty Preparedness, Technology Preparedness, and University Preparedness impact Learning Effectiveness both directly as well as through Student Preparedness. The results of PLS analyses of this model are presented in Tables 6 & 7.

FIGURE 3
MODIFIED MODEL

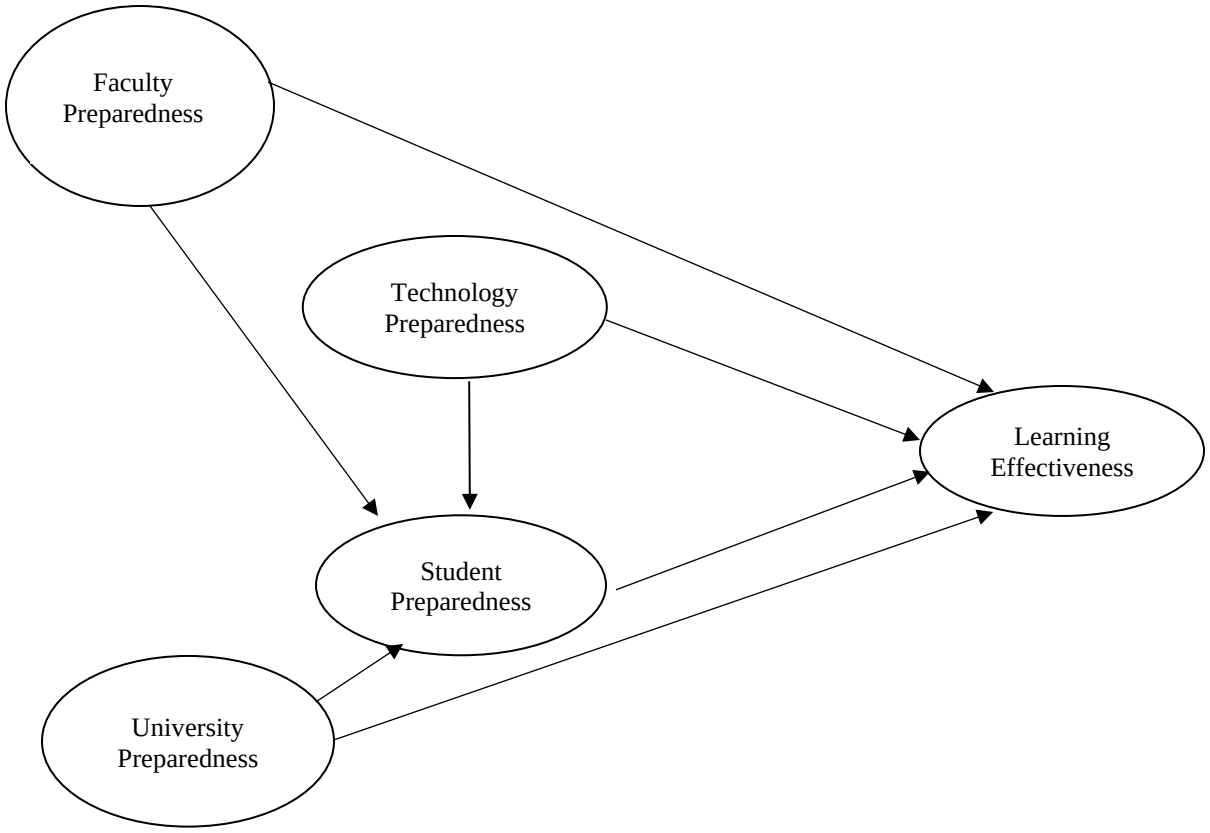


TABLE 6
RELIABILITY, AVE AND R-SQUARE VALUES

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)	R-Sq.
Faculty Preparedness	0.943	0.954	0.777	
Learning Effectiveness	0.954	0.965	0.846	0.618
Student Preparedness	0.914	0.936	0.746	0.532
Technology Preparedness	0.874	0.922	0.798	
University Preparedness	0.927	0.948	0.821	

TABLE 7
INNER MODEL T-STATISTICS

	T Statistics	
	Student Preparedness	Learning Effectiveness
Faculty Preparedness	4.058***	0.903
Student Preparedness		11.231*
Technology Preparedness	2.46***	2.481***
University Preparedness	4.484***	1.968*

***p<0.01; *p<0.10

The model exhibits reasonable predictive ability as it explains 53.8 % of the variance in Student Preparedness and 61.8 % of the variance in Learning Effectiveness (very similar to the results obtained earlier for the mediation model of Figure 1). The t-statistics for the direct effects of University Preparedness and Technology Preparedness on Learning Effectiveness indicate that the relationships are significant but that of Faculty Preparedness is not (Table 7). Interestingly and significantly, the path coefficient values of the influencing variables on Learning Effectiveness are significantly less than that on Student Preparedness. This attests to the validity of the model shown in Figure 1, that, it is primarily Student Preparedness which impacts Learning Effectiveness; the direct impact of other variables on Learning Effectiveness is either not significant as in the case of Faculty Preparedness or minimal as evidenced by the path coefficient values of the variables. The criticality of Student Preparedness as a determinant of Learning Effectiveness is thus clearly established.

Further evidence of the mediating role of Student Preparedness was obtained when all the influencing variables were regressed against Learning Effectiveness (not reported here). Only Student Preparedness and Technology Preparedness turned out to be significant at 1% level, University Preparedness and Faculty Preparedness turned out to be not significant.

DISCUSSION AND IMPLICATIONS

The objective of this paper was to study the learning experience of students during the Covid-19 pandemic and identify the factors that facilitate learning and aid and smoothen the transition to remote learning. The study clearly establishes the criticality of Student Preparedness to Learning Effectiveness. All influencing factors are essentially enablers of Student Preparedness. The PLS analysis on the alternate model which incorporates both direct and indirect effect of the influencing variables (University, Faculty, and Technology Preparedness) on Learning Effectiveness suggest that their direct effect is either not significant or its impact on Learning Effectiveness is minimal. A plausible explanation could be that the individual factors do not work in isolation but rather in conjunction with each other to generate a demonstrable effect. For instance, investing resources in Technology Preparedness without the attendant necessary investments in University Preparedness or Faculty Preparedness may not generate a measurable effect on Learning Effectiveness.

The students' own perception of learning, however, is rather low (mean score of 2.95). Prima facie, our findings suggests that the onus of improving learning lies on the students themselves. We would like to point out, however, that not all the responsibility for success and satisfaction with online learning lies with the students. Numerous research findings emphasize the importance of social interactions and feeling of community as tools to foster student engagement and success (Aragon, 2003; Garrison et al., 2000; Garrison & Arbaugh, 2007). Student engagement has been defined as "the time and effort students devote to activities that are empirically linked to desired outcomes of college and what institutions do to induce students to participate in these activities" (Kuh, 2009). Use of University, Technology and Faculty resources to facilitate and strengthen student engagement will thus be conducive to the overall learning process. Universities and faculty members have a responsibility to create an environment and a structure which facilitates higher interactivity among students, faculty, and other resources (library, teaching assistants,

etc.). The role of the institutions should be to provide and strengthen resources which allow students to leverage their intrinsic abilities and efforts. Multiple studies have also highlighted factors such as lack of technical and effective time management skills, and online self-efficacy as affecting student readiness (Dray et al., 2011; Farid, 2014; Mercado, 2008; Wladis et al., 2016). It devolves on the institution, therefore, to identify these shortcomings and address them.

Faculty members can help empower students by identifying those at the beginning of the semester who are ill-equipped for online study and by initiating corrective measures right at inception of courses. Empowerment, a word borrowed from political science, has relevance in fields of study beyond social and political science, including education. While engagement helps in empowering students, empowerment is a larger concept and refers to students taking charge and developing critical faculties. Going beyond engagement, which essentially relates to classroom participation, student empowerment requires that attention be devoted to students' capacity to make meaningful choices about the structuring of those learning experiences (Klemencic, 2017). The structuring of those learning experiences is what empowers students for learning. The critical component of empowerment is the notion of student 'agency' which refers to "students' capabilities to intervene and influence their learning environments" (Guo & Hoben, 2020). Unless efforts of universities and faculty who are delivering courses remotely are directed toward student empowerment, learning experience of students will fall short of students' expectations.

The PLS analysis confirms the mediating role of Student Preparedness (a proxy for student empowerment) between University Preparedness, Technology Preparedness, Faculty Preparedness and Learning Effectiveness and establishes Student Preparedness as the primary determinant of Learning Effectiveness.

The findings have implications for institutions of higher learning as they work toward ensuring learning effectiveness while offering of courses remotely, especially during disruptive events like the current pandemic. The pandemic was a novel situation, but it nevertheless provides a valuable lesson for successful delivery of remote/online courses in future. Institutions of higher learning are lacking in their effort to prepare students to take charge of their own learning. While universities have been proactive in providing the necessary infrastructure to support remote/online courses, such efforts are not sufficient to enhance the student's ability to take charge of their learning.

The empowerment of students for learning is the missing piece of the puzzle in the successful online delivery of courses. How to empower students for learning is a challenge that universities must address. The empowerment of students should be an ongoing process and not a one-time activity. There is widespread recognition among experts that institutions of higher learning will have to have a mix of in-person face to face, remote or blended, and online courses (Ali, 2020; Govindarajan & Srivastava, 2020) to meet the needs of future generations of students. In such a scenario, it is important that universities integrate activities at multiple levels - course, program, or school/college, that would prepare students to take charge of their learning independently. For instance, students might be required to take a minimum number of courses which are offered either remotely or online during their overall program even though the program itself might be in-person. Participation in online courses as opposed to in-person courses (where there is a greater reliance on faculty members) will help students develop skills to control their learning. At the course level, instructors can introduce activities and learning content that require independent work using appropriate technology. A focus on "problem-based learning, computer-supported collaborative learning, learning-by-design, project-based learning, games and simulations" (Klemencic, 2017) would greatly assist in the process. This will lessen students' dependency on teachers, engender looking at instructors as facilitators and viewing of themselves as prime drivers of their learning. Unless such a mindset change is engendered among students through carefully designed courses or programs, remote or online courses in future will continue to fall short of students' learning expectations. The impact of this lack of mindset change is likely to be felt even more in unique situations such as that presented by the current pandemic.

The challenge posed by Covid-19 has presented an opportunity to universities to reconsider in a fundamental way their educational model. While some may try to return to their pre-Covid methods, we submit that institutions need to accept blended learning with the attendant changes to empower students,

not as a constraint, but as an opportunity to reimagine education in all its dimensions - learning, teaching, and assessment (Jones & Sharma, 2020).

LIMITATIONS

The study has certain limitations. First, this study focused solely on business students. Its generalizability to other disciplines especially STEM majors may thus be limited. Second, the shutdown and transition from in-person classes to remote learning by the universities was sudden and unplanned and to that extent survey responses may have been affected. Further, Covid-19 pandemic had created anxiety among many including students with abrupt changes to their lives and courses. It is possible therefore that their responses to their satisfaction with remote learning may have been influenced by other factors.

REFERENCES

Adedoyin, O.B., & Soykan, E. (2020). Covid-19 pandemic and online learning: The challenges and opportunities. *Interactive Learning Environments*, pp. 1–13. https://doi.org/10.1080/10494820.2020.1813180

Agustina, P.Z.R., & Cheng, T.H. (2020). How Students' Perspectives about Online Learning Amid the COVID-19 Pandemic? *Studies in Learning and Teaching*, *1*(3), 133–139.

Aladsani, H.K. (2021). A narrative approach to university instructors' stories about promoting student engagement during COVID-19 emergency remote teaching in Saudi Arabia. *Journal of Research on Technology in Education*, pp. 1–17. https://doi.org/10.1080/15391523.2021.1922958

Albers, S. (2009). PLS and success factor studies in marketing. In V.E. Vinzi, W.W. Chin, J. Henseler, & H. Wang (Eds.), *Handbook of Partial Least Squares: Concepts, Methods, and Applications*, (pp. 409–425). Springer, Berlin.

Ali, W. (2020). Online and remote learning in higher education institutes: A necessity in light of COVID-19 pandemic. *Higher Education Studies*, *10*(3), 16–25.

Allen, I.E., & Seaman, J. (2017). *Distance education enrollment report 2017*. Digital Learning Compass. Retrieved from https://files.eric.ed.gov/fulltext/ED580868.pdf

Almanthari, A., Maulina, S., & Bruce, S. (2020). Secondary school mathematics teachers' views on e-learning implementation barriers during the COVID-19 pandemic: The case of Indonesia. *Eurasia Journal of Mathematics, Science and Technology Education*, *16*(7), em1860. https://doi.org/10.29333/ejmste/8240

Aragon, S. (2003). Creating social presence in online environments. *Encycl. Distance Online Learn*, *11*, 1–9. doi:10.4018/978-l-60566-198-5.ch280

Ary, E., & Brune, C. (2011). A Comparison of Student Learning Outcomes in Traditional and Online Personal Finance Courses. *Journal of Online Learning and Teaching*, *7*(4). Retrieved from http://jolt.merlot.org/vol7no4/brune_1211.pdf

Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–1182.

Bolliger, D.U., & Martindale, T. (2004). Key factors for determining student satisfaction in online courses. *Int. Journal of E-Learning*, *3*(1), 61–67.

Braunscheidel, M.J., & Suresh, N.C. (2009). The organizational antecedents of a firm's supply chain agility for risk mitigation and response. *Journal of Operations Management*, *27*(2) 119–140.

Campbell, A.M., & Yates, G.C.R. (2011). Want to be a country teacher? No, I am too metrocentric. *Journal of Research in Rural Education*, *26*(4) 1–12.

Carr, S. (2000). As Distance Learning Comes of Age, the Challenge Is Keeping the Students. *Chronicle of Higher Education*, *46*(23). Retrieved from https://www.chronicle.com/article/As-Distance-Education-Comes-of/14334

Chantanarungpak, K. (2010). *Development of success indicators of e-Learning system for higher education institutions in Thailand.* [Ph.D. thesis, Chulalongkorn University, Bangkok].
Cheawjindakarn, B., Suwannatthachote, P. & Theeraroungchaisri, A (2012). Critical Success Factors for Online Distance Learning in Higher. *Creative Education, 3*(8), 61–66. doi:10.4236/ce.2012.38b014
Cheung, M., Myers, M.B., & Mentzer, J.T. (2010). Does relationship learning lead to relationship value? A cross-national supply chain investigation. *Journal of Operations Management, 28*(6), 472–487.
Chin, W.W., Marcolin, B.L., & Newsted, P.R. (1996). A partial least squares latent variable modeling approach for measuring interaction effects: results from a Monte Carlo simulation study and voice mail/adoption study. In J.I. DeGross, S. Jarvenpaa, & A. Srinivasan (Eds.), *Proceedings of the Seventeenth International Conference on Information Systems* (pp. 21–41). ACM Press, New York, NY.
Coates, D., Humphreys, B.R., Kane, J., & Vachris, M.A. (2004). "No significant distance" between face-to-face and online instruction: Evidence from principles of economics. *Economics of Education Review*, *23*(5), 533–546.
Conger, J.A., & Kanungo, R.N. (1988). The empowerment process: Integrating theory and practice. *The Academy of Management Review, 13*(3), 471–482. https://doi.org/10.2307/258093
Crain, S., & Ragan, K. (2017). Online Versus Face-to-Face Course Learning Effectiveness: Measured Outcomes for Intermediate Financial Management. *Journal of Financial Education, 43*(2), 243–261.
Dillon, C.L., & Gunawardena, C.N. (1995). A framework for the evaluation of telecommunications-based distance education. In D. Stewart (Ed.), *Selected Papers from the 17th Congress of the International Council for Distance Education* (2, pp. 348–51). Open University, Milton Keynes.
Dos Santos, L.M. (2020). The Motivation and Experience of Distance Learning Engineering Programmes Students: A Study of Non-Traditional, Returning, Evening, and Adult Students. *International Journal of Education and Practice*, *8*(1), 134–148.
Dray, B.J., Lowenthal, P.R., Miszkiewicz, M.J., Ruiz-Primo, M.A., & Marczynski, K. (2011). Developing an instrument to assess student readiness for online learning: a validation study. *Distance Educ.*, *32*, 29–47. doi:10.1080/01587919. 2011.565496
Ewing, L.A., & Cooper, H.B. (2021). Technology-enabled remote learning during COVID-19: Perspectives of Australian teachers, students and parents. *Technology, Pedagogy and Education, 30*(1), 41–57.
Farid, A. (2014). Student online readiness assessment tools: A systematic review approach. *Electronic Journal of e-Learning*, *12*(4), 375–382.
Freeman, L., & Urbaczewski, A. (2015). Critical Success Factors for Online Education: Longitudinal Results on Program Satisfaction. *Proceedings of IAIM Conference at AIS Electronic Library*. Retrieved from http://aisel.aisnet.org/siged2015/1
Garrison, D., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *Internet Higher Education, 2*(2–3), 87–105. doi:10.1016/S1096-7516(00)00016-6
Garrison, D.R., & Arbaugh, J.B. (2007). Researching the community of inquiry framework: Review, issues, and future directions. *Internet and Higher Education, 10*, 157–172. http://dx.doi.org/10.1016/j.iheduc.2007.04.001
Govindarajan, V., & Srivastava, A. (2020). What the shift to virtual learning could mean for the future of higher ed. *Harvard Business Review, 31*.
Gratton-Lavoie, C., & Stanley, D. (2009). Teaching and Learning Principles of Microeconomics Online: An Empirical Assessment. *Journal of Economic Education, 40*, 3–25. doi:10.3200/JECE.40.1.003-025
Guo, F., & Hoben, J.L. (2020). The Impact of Student Empowerment and Engagement on Teaching in Higher Education: A Comparative Investigation of Canadian and Chinese Post-Secondary

Settings, Student Empowerment. In *Higher Education. Reflecting on Teaching Practice and Learner Engagement* (pp. 153–167). Publisher Logos Verlag.
Gurung, S. (2021). Challenges Faced by Teachers in Online Teaching During Covid-19 Pandemic. *The Online Journal of Distance Education and e-Learning*, *9*(1), 8–18.
Henseler, J., Ringle, C.M., & Sinkovics, R.R. (2009). The use of partial least squares path modeling in international marketing. In R.R. Sinkovics, & P.N. Ghauri (Eds.), *Advances in International Marketing* (pp. 277–320). Emerald, Bingley.
Izumi, T., Sukhwani, V., Surjan, A., & Shaw, R. (2021). Managing and responding to pandemics in higher educational institutions: initial learning from COVID-19. *International Journal of Disaster Resilience in the Built Environment*, *12*(1) 51–66.
Jacobs, N., Hagger, M.S., Streukens, S., De Bourdeaudhuij, I., & Claes, N. (2011). Testing an integrated model of the theory of planned behaviour and self-determination theory for different energy balance-related behaviours and intervention intensities. *British Journal of Health Psychology*, *16*(1), 113–134.
Jones, K. & Sharma, R.S. (2020). *On Reimagining a Future for Online Learning in the Post-COVID Era.* medium.com. http://dx.doi.org/10.2139/ssrn.3578310
Kennette, L.N., & Redd, B.R. (2015). Instructor presence helps bridge the gap between online and on-campus learning. *College Quarterly*, *18*(4).
Kim, Y., & Thayne, J. (2015). Effects of learner–instructor relationship-building strategies in online video instruction. *Distance Educ.*, *36*(1), 100–114. doi:10.1080/ 01587919.2015.1019965
Kuh, G.D. (2009). The national survey of student engagement: Conceptual and empirical foundations. *New Directions for Institutional Research*, *141*, 5–20; https://doi.org/10.1002/ir.283
Lee, Y., & Choi, J. (2011). A review of online course dropout research: Implications for practice and future research. *Educational Technology Research and Development*, *59*, 593–618. DOI:10.1007/s11423-010-9177-y
Leidner, D.E., & Jarvenpaa, S.L. (1993), The information age confronts education: Case studies on electronic classroom. *Information Systems Research*, *4*(1), 24–54 DOI:10.1287/isre.4.1.24
Lopez, S.E., & Nagelhout, E. (1995). Building a Model for Distance Collaboration in the Computer-Assisted Business Communication Classroom. *Business Communication Quarterly*, *58*(2), 15–20. doi:10.1177/108056999505800203
Maqableh, M., & Alia, M. (2021). Evaluation online learning of undergraduate students under lockdown amidst COVID-19 Pandemic: The online learning experience and students' satisfaction. *Children and Youth Services Review*, *128*(C). doi: 10.1016/j.childyouth.2021.106160
Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2010). *Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies*. U.S. Department of Education Office of Planning, Evaluation, and Policy Development Policy and Program Studies Service. Retrieved from www.ed.gov/about/offices/list/opepd/ppss/reports.htm
Mercado, C.A. (2008). Readiness assessment tool for an e-learning environment implementation. *Special Issue of the International Journal of the Computer, the Internet and Management*, *16*(SP3). Retrieved from http://www.elearningap.com/eLAP2008/ Proceedings/18_fullpaper_cecilia%20Mercado_Revised.pdf
Muilenburg, L.Y., & Berge, Z.L. (2005) Student barriers to online learning: A factor analytic study, *Distance Education*, *26*(1), 29–48. DOI: 10.1080/01587910500081269
Neuhauser, C. (2002). Learning style and effectiveness of online and face-to-face instruction. *The American Journal of Distance Education*, *16*(2), 99–113.
Nguyen, T. (2015). The effectiveness of online learning: Beyond no significant difference and future horizons. MERLOT *Journal of Online Learning and Teaching*, *11*(2), 309–319.
Papp, R. (2000). *Critical success factors for distance learning* [Paper presentation]. Americas Conference on Information Systems. Long Beach, California, USA. doi: 10.4236/ce.2012.38B014

Paul, J., & Jefferson, F. (2019). A Comparative Analysis of Student Performance in an Online vs. Face-to-Face Environmental Science Course From 2009 to 2016. *Frontiers in Computer Science*, *1*(7) 1–9. doi: 10.3389/fcomp.2019.00007

Rappaport, J. (1987). Terms of empowerment/exemplars of prevention: Toward a theory for community psychology. *American Journal of Community Psychology*, *15*(2), 121–148.

Reeves, T.C., & Harmon, S.W. (1993). *Systematic Evaluation Procedures for Instructional Hypermedia/Multimedia* [Paper presentation]. Annual Meeting of the American Educational Research Association, Atlanta, USA, April 14.

Reeves, T.C., & Harmon, S.W. (1993). *Systematic evaluation procedures for instructional hypermedia/ multimedia.* Paper presented at the Annual Meeting of the American Educational Research Association, Atlanta.

Roddy, C., Amiet, D.L., Chung, J., Holt, C., Shaw, L., Mckenzie, S., . . . Mundy, M.E. (2017). Applying Best Practice Online Learning, Teaching, and Support to Intensive Online Environments: An Integrative Review. *Frontiers in Education*, *2*(59). https://doi.org/10.3389/feduc.2017.00059

Rosenzweig, E.D. (2009). A contingent view of e-collaboration and performance in manufacturing. *Journal of Operations Management*, *27*(6), 462–478

Selim, H.M. (2007). Critical Success Factors for E-Learning Acceptance: Confirmatory Factor Models. *Computers & Education*, *49*(2), 396–413.

Serhan, D. (2020). Transitioning from face-to-face to remote learning: Students' attitudes and perceptions of using Zoom during COVID-19 pandemic. *International Journal of Technology in Education and Science*, *4*(4), 335–342.

Simonson, M., Smaldino, S., Albright, M., & Zvacek, S. (2009). *Teaching and learning at a distance: Foundations of distance education* (4th ed.). Boston: Allyn & Bacon

Spring, H. (2016). Online learning: The brave new world of massive open online courses and the role of the health librarian. *Health Information & Libraries Journal*, *33*(1), 84–88.

Swan, K. (2003). Learning effectiveness: what the research tells us. In J. Bourne & J.C. Moore (Eds.), *Elements of quality online education: Practice and direction* (pp.13–45). Needham, MA; Sloan Center for Online Education.

Trawick, M.W., Lile, S.E., & Howsen, R.M. (2010, Spring). Predicting performance for online students: Is it better to be home alone? *Journal of Applied Economics and Policy*, *29*, 34–46.

Trevitt, C. (1995). *Interactive Multimedia in University Teaching and Learning: Some Pointers to Help Promote Discussion of Design Criteria* [Paper presentation]. Computers in University Biological Education virtual conference CITI Liverpool, England, United Kingdom 1995. Retrieved January 12, 2022, from https://www.learntechlib.org/p/83431/

Volery, T., & Lord, D. (2000). Critical Success Factors in Online Education. *International Journal of Educational Management*, *14*(5), 216–223.

Wang, C.H., Shannon, D.M., & Ross, M.E. (2013). Students' characteristics, self-regulated learning, technology self-efficacy, and course outcomes in online learning. *Distance Education*, *34*, 302–323. doi:10.1080/01587919.2013. 835779

Wetzels, M., Odekerken-Schroder, G., & Van Oppen, C. (2009). Using PLS path modeling for assessing hierarchical construct models: guidelines and empirical illustration. *MIS Quarterly*, *33*(1), 177–195.

Wilson, B.M., Pollock, P.H., & Hamann, K. (2007). Does active learning enhance learner outcomes? Evidence from discussion participation in online classes. *Journal of Political Science Education*, *3*(2), 131–142.

Wladis, C., Conway, K.M., & Hachey, A.C. (2016). Assessing Readiness for Online Education-Research Models for Identifying Students at Risk. *Journal of Asynchronous Learning Networks*, *20*(3), 97–109. Retrieved January 12, 2022, from https://www.learntechlib.org/p/193379/