A DESCRIPTIVE PROFILE OF ONLINE FACULTY TRAINING PRACTICES IN THE ILLINOIS COMMUNITY COLLEGE SYSTEM

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ABSTRACT

This study investigated the existing training practices for online instructors in the Illinois community college system. As online learning continues to alter the educational landscape, online faculty need to be better prepared to support student success. A survey with questions based on best practices in online instructor training was distributed to the 48 community colleges and campuses in Illinois. The results of the study reveal that orientation and professional development programs are widely offered, yet only a limited number of programs and resources pertain to online pedagogy, teaching strategies, and assessment. There is also a lack of common standards for the format and content of professional training for online instructors. I discussed practical implications to improve professional training for online instructors and thus contribute to online student success.

Keywords: online instructors, professional training, community college, online training, online pedagogy

INTRODUCTION

Online education continues to grow as a learning option for students and colleges. From 2004 to 2014, postsecondary education showed a 60% increase in online enrollment, with nearly 2 million students enrolled nationally in online courses at public, two-year institutions in 2019 (National Center for Education Statistics, 2014, 2019). The number of college students taking at least one online course has been increasing for 14 years and about a third of all postsecondary education enrollments were in online courses as of 2016 (Seaman et al., 2018). In the state of Illinois, 16.2% of all community college courses are offered online, and one in five community college students are enrolled in at least one online course (Illinois Community College Board [ICCB], 2019). Due to disruptions caused by the pandemic in 2020, the availability and quality of online education became a pressing priority for many colleges and universities (Garrett et al., 2020; Marcus, 2020).

As online learning continues to alter the postsecondary education landscape, new issues confront instructors at community colleges. Teaching online requires different skills and competencies than teaching in face-to-face environments (Adnan et al., 2017). In order to best support student learning, retention, and degree completion, online instructors should be equipped with skills in course management, instruction, instructional design, and student engagement in the online setting (Bawa, 2016; Oomen-Early & Murphy, 2009; Yang & Cornelious, 2005). However, it is not clear how online instructors acquire these skills at their workplace, as many of them begin online teaching with little to no specific training (Vang et al., 2020). In the college setting, training for online instructors greatly varies by institution, and few states have implemented statewide guidance for providing professional training to support effective online teaching (Frass et al., 2017).

Despite the prevalence of online education and the emphasis on online course quality, limited studies have focused on the training practices to help college instructors teach online, especially for...
the community college system at scale (Shea, 2007). In this study, I provide a descriptive profile of the existing training practices for online instruction for Illinois community colleges. Given the insufficient literature on professional development for online instructors (Herman, 2012), I distributed a survey to collect information with the aim of describing the current online faculty training practices in the community college system in Illinois. This study serves as one of the first comprehensive overviews of training practices in a large community college system by identifying common practices in online faculty training and potential challenges, and by offering suggestions for community colleges to improve quality of online faculty training to support online student success.

LITERATURE REVIEW

Because online instruction is different from face-to-face instruction, it requires specific institutional support for online faculty. Institutions that are fully engaged with support strategies for online courses are better prepared to provide postsecondary access with mature online programs and a variety of online offerings (Allen & Seaman, 2007). However, the responsibilities to provide student supports and quality online instruction often entirely fall on online instructors, and there is little oversight for online instructional quality (Yang & Cornelious, 2005). Online faculty often receive little to no training on these aspects and the training that they receive is often based on traditional face-to-face classroom pedagogy (Ray, 2009; Yang et al., 2020). In fact, faculty commonly observed that there is a lack of institutional support for online instruction (Herman, 2012). In the community college sector, professional training for online instructors is complicated given their highly localized context and the large number of adjunct faculty (Brownell & Tanner, 2012; Elliott & Oliver, 2016; Wallin, 2007).

Technology as a Pedagogical Facilitator

Effective online course delivery requires more than simply repurposing or repackaging traditional course content (Fish & Wickersha, 2009). Instead, online instructors need to change their roles and responsibilities from a traditional lecturer to a facilitator of sharing information mediated by technology (Yang & Cornelious, 2005). Online instructors are often required to use technology more effectively, adapt pedagogical knowledge into a virtual environment, and use digital content and communication differently (Adnan et al., 2017). The intentional integration of technology and teaching can greatly benefit student learning. For colleges incorporating instructional design within a course, their online students perform better when compared to traditional face-to-face students (Garrett & Legon, 2019). Thus, professional training should support online instructors to both develop technology skills and learn about pedagogy and andragogy for effective teaching (Lane, 2013).

To develop a high-quality online class, instructors should be allowed enough time to develop and maintain course material, receive administrative support, and participate in training on technology-mediated teaching. In Kang’s (2012) study, 65% of online instructors indicated that insufficient technical support was a major concern since most training programs were voluntary and contained little pedagogical content. In another survey, three quarters of faculty reported that they had received over 30 hours or more of technology-based training but only one third received training on pedagogy (Puzziferro & Shelton, 2009). Largely because community colleges perceive this support as an unaffordable option, only about 35% of surveyed community colleges offered mandatory instructional design support to online instructors (Garrett & Legon, 2019).

Communication and Feedback Skills

In addition to technological support, quality training for online instructors should also include effective communication skills that greatly affect student success in the online setting, such as facilitating peer collaboration among students, encouraging active learning techniques, providing prompt feedback, and exploring diverse learning styles (Bolliger & Halupa, 2018). Regardless of class setting, student learning is improved when instruction is personalized and adapted to different learning styles (Murray & Pérez, 2015). Early research on online education found that course structure, communication, and course design heavily influenced student learning (Swan, 2003). In 2017, Adnan and colleagues reported that faculty competencies, including communication and interaction skills, are critical to online course design, engagement with students, and facilitation of deep learning. Online instructors often can more effectively support student learning and increase
student satisfaction rates if they are sufficiently trained to design courses, have access to instructional design and technical support, and provide proper feedback through assessment and communication (Adnan et al., 2017; Getzlaf et al., 2009).

Though timely feedback to students is important in both face-to-face and online courses, some types of informal feedback such as body language, conversations, and facial expressions are more difficult to convey in the online setting (Getzlaf et al., 2009). For asynchronistic online courses, student engagement and success can heavily depend on the instructor’s virtual feedback and communication upon intentional design (Getzlaf et al., 2009). To be a successful online instructor, faculty need to have the skills to determine student learning preferences, be able to integrate technology tools, apply appropriate instructional techniques, and design courses (Quezada et al., 2020; Swan, 2003). In some circumstances, instructors should not only know how to use technology but also be able to help adult learners with technology (Kleisch et al., 2017). Different student expectations require online instructors to adopt different ways of communicating in online courses to clarify key concepts, identify learning goals, and participate in the learning community (Huss & Eastep, 2015).

Professional Training and Its Delivery Approach

Professional training methods for online instructors have changed very little since the early 2000s, and ways to improve instructional and technical training have been largely neglected (Lackey, 2011). Lackey’s (2011) qualitative study revealed that online faculty preferred collaboration in training sessions and needed more assistance in technical and pedagogical skills. However, because of the lack of understanding at the administrative level in terms of the amount of time or resources required to effectively teach online, institutional resources allocated to training for online faculty have been limited. Zhen et al. (2008) surveyed faculty members to identify barriers that prohibited instructors from successfully teaching online and listed major concerns, including a lack of technological and institutional support, an absence of preparation time to develop online courses, a deficiency of standards in online courses, and a need for training to teach online.

In theory, structured training programs that systematically teach faculty to design, develop, and deliver online classes are the most recommended form of training (Adnan et al., 2017). In practice, training activities for online faculty often take the form of workshops, one-on-one trainings, short sessions less than two hours in length, and one-time trainings (Meyer & Murrell, 2014). Since nearly a third of all faculty are engaged in some type of online education instruction in a typical year (Luongo, 2018), the demand for professional training often exceeds what a community college can supply. Some colleges prepare online instructors by providing specific courses and programs, while other colleges inadequately prepare instructors to teach online or even fail to provide any relevant training opportunities (Frass et al., 2017). Thus, more research is needed to understand the current practices of professional training for online instructors and how the effectiveness of these practices further influences student outcomes in the online setting.

METHODS

Given the limited research on current practices and the effectiveness of online faculty training, it is important to translate research to guide evidence-based decision making in improving online faculty instruction and developing training program standards (Diehl, 2016; Wolf, 2006). In order to identify existing practices in professional training for online faculty, I constructed survey questions for this study and distributed the survey to online education professionals within the 48 Illinois community colleges. Aiming to provide an accurate profile of existing professional training practices, I was guided by the following research question: How do Illinois community colleges provide professional training for online faculty?

In the state of Illinois, the 48 public two-year colleges and campuses range in size from 1,000 to 30,000 students. They are geographically located across from the Wisconsin border, within the city of Chicago, and in rural communities in the Midwest. In 2018, Illinois community colleges offered 21,508 online courses, which accounted for 16.2% of all courses offered (ICCB, 2019). During the past decade, the number of community college students has increased 45.6%. In 2018, about a third of all Illinois community college students enrolled in some or all online courses (ICCB, 2019). The participants of the study include chief online education administrators at each of the 48 community colleges in Illinois, based
on their job function with primary responsibilities to design and provide online education for faculty. These 48 individuals are knowledgeable about online programs, and they can provide the most accurate and informational response to the survey questions.

The survey was designed with closed-ended questions that centered around areas of training for online instructors, including orientation, technology skills, and instructional design support. The survey instrument was developed based on best practices for online instructor training from the literature review (e.g., Shea, 2007; Yang & Cornelious, 2005). Respondents answered questions based on current practices that are present in their own college, and all responses were anonymously recorded.

In November 2019, individuals identified as the chief online education administrators at each of the 48 Illinois community colleges were invited via email to complete the survey through Qualtrics within one month. A follow-up reminder email was sent to these 48 individuals two weeks later. The survey closed in December 2019 with responses from 22 out of the 48 colleges. While it is estimated that web-based survey returns are 11% lower than other survey modes (Saleh & Bista, 2017), the response rate of 46% for the current study was acceptable. Descriptive statistics and tables were created to depict a profile of existing professional training practices for online instructors in Illinois community colleges.

It is worth noting that the study is subject to several limitations. First, the findings can be largely driven by responding participants, so the findings cannot be generalized to all Illinois community colleges. Future studies can collect more detailed institutional characteristics and increase response rate to capture the potential variations of online faculty training among different colleges. Second, due to varying organizational structures at individual colleges, responses from participants can vary depending on their specific job responsibilities and roles in online faculty training. Future research can use qualitative approaches to include key stakeholders (e.g., faculty, executive administrators) and explore their personal interpretations and experiences in professional training for online instruction. Finally, given the scope of the current study, I did not directly examine the relationship between effective professional training, effective online instruction, and student success in the online setting. Future research can focus on these topics and further provide practical implications for community college student success.

FINDINGS

Demographics

In the distributed survey, participants were asked to respond to a set of demographic questions. It was important to know the background and expertise levels of the survey participants to understand the functional area within individual colleges and the maturity and longevity of online training programs. As illustrated in Table 1, 58% of participants noted that training for online instructors had been offered at their institution for 11 to 16 years, with 26% offering programs for more than 17 years. Half of the respondents have been responsible for online training for over 11 years, with 20% for 5 to 10 years, and 30% for less than 5 years. Nearly two thirds of respondents listed their background as instructional design, followed by instructor/faculty (15%) and administration (15%). From the organizational structure perspective, 57% of respondents are

<table>
<thead>
<tr>
<th>Table 1. Demographics of Survey Participants</th>
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</thead>
<tbody>
<tr>
<td>Item</td>
</tr>
<tr>
<td>Person responsible for online faculty training and development at the college's background/experience area</td>
</tr>
<tr>
<td>Information Technology (IT)</td>
</tr>
<tr>
<td>Instructor/Faculty</td>
</tr>
<tr>
<td>Administration</td>
</tr>
<tr>
<td>Instructional Design</td>
</tr>
<tr>
<td>Area of college your department is found organizationally</td>
</tr>
<tr>
<td>Teaching and Learning Center</td>
</tr>
<tr>
<td>Information Technology</td>
</tr>
<tr>
<td>Separate Functional Area</td>
</tr>
<tr>
<td>Other</td>
</tr>
<tr>
<td>Years online training has been offered at the institution</td>
</tr>
<tr>
<td>None</td>
</tr>
<tr>
<td>1-2 years</td>
</tr>
<tr>
<td>5-10 years</td>
</tr>
<tr>
<td>11-16 years</td>
</tr>
<tr>
<td>17-20+ years</td>
</tr>
<tr>
<td>Years you have been responsible for online training at the institution</td>
</tr>
<tr>
<td>0-5 Years</td>
</tr>
<tr>
<td>5-10 years</td>
</tr>
<tr>
<td>11-16 years</td>
</tr>
<tr>
<td>17-20+ years</td>
</tr>
<tr>
<td>Percentage</td>
</tr>
<tr>
<td>0%</td>
</tr>
<tr>
<td>5%</td>
</tr>
<tr>
<td>11%</td>
</tr>
<tr>
<td>58%</td>
</tr>
<tr>
<td>26%</td>
</tr>
<tr>
<td>5%</td>
</tr>
<tr>
<td>15%</td>
</tr>
<tr>
<td>15%</td>
</tr>
<tr>
<td>65%</td>
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<tr>
<td>30%</td>
</tr>
<tr>
<td>20%</td>
</tr>
<tr>
<td>50%</td>
</tr>
<tr>
<td>0%</td>
</tr>
<tr>
<td>57%</td>
</tr>
<tr>
<td>14%</td>
</tr>
<tr>
<td>24%</td>
</tr>
</tbody>
</table>
umbrellaed by the Information Technology (IT) department. These demographic results indicate that the respondents should have sufficient working knowledge and experience in online instruction training, while a high proportion of respondents have a technical background.

The Prevalent Use of Orientation for Online Instructor Training

As indicated in Table 2, we found that it is common for the Illinois community colleges to offer initial orientation for online faculty. Specifically, 95% of the responding colleges provided a general new-hire orientation for online instructors to provide them with information about institutional policies, services, and resources. Meanwhile, 80% of the respondents listed a separate orientation that specifically includes instructional training concepts for online faculty. However, the orientation was a one-time experience for 88% of the responding colleges. These orientation sessions tend to be mandatory for instructors (75%), and 94% of the colleges have adjunct faculty participating as well. With its various formats (i.e., 50% as face-to-face and 94% available online), faculty orientation seems to be an accessible and prevalent tool for Illinois community colleges to engage new and online instructors.

A critical finding regarding orientation for online instructors pertains to the contents covered by the orientation programs: The majority of responding colleges (62%) noted that no classroom management information was covered in faculty orientation, and only 56% said they offered information about pedagogy or teaching strategies. The findings seem to indicate that not all colleges use orientation as the venue for instructors to receive training for online teaching. Orientation may be considered a mechanism to strictly deliver new-hire information or specific to a subject area rather than providing training that can sustainably support online faculty in the long term.

Training Content for Online Instructors

In terms of training content for online instructors, Table 3 shows the distribution of responses for various instructional components.

Table 3. Training Content for Online Instructors

<table>
<thead>
<tr>
<th>Item</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online technical support services provided to faculty</td>
<td>22</td>
<td>100%</td>
</tr>
<tr>
<td>Training to learn software changes or changes in delivery systems</td>
<td>22</td>
<td>100%</td>
</tr>
<tr>
<td>Strategies and instructional design components included in training</td>
<td>22</td>
<td>50%</td>
</tr>
<tr>
<td>Minimum instructional benchmarks/standards utilized during course design process</td>
<td>22</td>
<td>75%</td>
</tr>
<tr>
<td>Faculty design courses that they teach</td>
<td>22</td>
<td>75%</td>
</tr>
<tr>
<td>Professional Training includes:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information about pedagogy</td>
<td>22</td>
<td>50%</td>
</tr>
<tr>
<td>Course pacing strategies</td>
<td>22</td>
<td>50%</td>
</tr>
<tr>
<td>Strategies for student feedback</td>
<td>22</td>
<td>85%</td>
</tr>
<tr>
<td>Strategies for student interaction</td>
<td>22</td>
<td>85%</td>
</tr>
<tr>
<td>Strategies on teaching effectiveness assessment</td>
<td>22</td>
<td>50%</td>
</tr>
<tr>
<td>Course review or course assessment</td>
<td>22</td>
<td>75%</td>
</tr>
<tr>
<td>Types of instructor assessments other than student evaluation in courses</td>
<td>22</td>
<td>70%</td>
</tr>
</tbody>
</table>
instructors, as presented in Table 3, all respondents agree that technical support services were provided to faculty for them to learn new systems or software, but only half the colleges include teaching strategies and instructional design components in training. It is critical to point out that 75% of respondents believe there is minimum instructional benchmarks or standards utilized in the course design process. Specifically, 55% indicated that individual faculty were either continuously (45%) or frequently (10%) designing the courses that they teach, though 85% of the responding colleges have instructional design support available for online instructors either continuously (65%) or frequently (20%). About three quarters of the responding colleges provide course review or course assessment, as well as some form of instructor assessment other than student evaluation. Given the lack of benchmarks for the course design process, the survey results do not reveal if there is a misalignment between the information and technical support provided and what online instructors actually need to effectively develop a course.

In the training provided to online instructors, 85% of the respondents indicated that training covered instructional components, such as strategies to provide feedback to students and to enhance student interaction. However, only half of the respondents listed training content about pedagogy, course pacing, and teaching effectiveness assessment.

**Professional Development for Online Instructors**

In terms of long-term professional development for online instructors (see Table 4), the survey results indicate that all colleges provide continuing professional development beyond the initial orientation. All survey participants except for one felt that college administration supported online instructor training. However, the intensity and format of trainings seem to vary, including one-time internal or formal professional development workshops (65%), formal or informal conference opportunities (80%), and development resources available on a website or through the course management system (45%). Table 4 also shows other common resources available to online faculty, such as self-directed teaching resources (95%); peer support or online community support (85%); quality review of completed courses by peers, an instructional designer, or a committee (75%); and faculty assistance in transitioning traditional classroom course material to an online format (85%). However, only 30% of community college offer formal mentoring programs for online instructors, and fewer (22%) have a formal professional development center for online faculty on campus.

With respect to the content of professional development training, the majority of community colleges offer collaborative course design (85%) and training materials for faculty to learn about

**Table 4. Professional Development for Online Instructors**

<table>
<thead>
<tr>
<th>Item</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional development offered more than initial training to teach</td>
<td>21</td>
<td>100%</td>
</tr>
<tr>
<td>Format of online instructor trainings delivered</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workshop</td>
<td>7</td>
<td>35%</td>
</tr>
<tr>
<td>Traditional course</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>Online</td>
<td>12</td>
<td>60%</td>
</tr>
<tr>
<td>College administration supports online faculty training</td>
<td>20</td>
<td>95%</td>
</tr>
<tr>
<td>To learn about best practices or standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal or formal professional development workshops (&lt; 4 hours)</td>
<td>21</td>
<td>65%</td>
</tr>
<tr>
<td>Formal or informal conference opportunities</td>
<td>22</td>
<td>80%</td>
</tr>
<tr>
<td>Development resources available on website or through course management system</td>
<td>20</td>
<td>45%</td>
</tr>
<tr>
<td>Professional training resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-directed teaching resources available for faculty</td>
<td>21</td>
<td>95%</td>
</tr>
<tr>
<td>Peer support or online community support</td>
<td>20</td>
<td>85%</td>
</tr>
<tr>
<td>Formal mentoring program on campus</td>
<td>21</td>
<td>30%</td>
</tr>
<tr>
<td>Peer, instructional designer, or committee review of completed courses</td>
<td>22</td>
<td>75%</td>
</tr>
<tr>
<td>Faculty assistance in transitioning traditional classroom course material to an online format</td>
<td>22</td>
<td>85%</td>
</tr>
<tr>
<td>Formal professional development center for online faculty on campus</td>
<td>20</td>
<td>22%</td>
</tr>
<tr>
<td>Professional training content</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaborative course design training offered</td>
<td>22</td>
<td>85%</td>
</tr>
<tr>
<td>Training materials available to learn about online instruction</td>
<td>20</td>
<td>70%</td>
</tr>
<tr>
<td>Faculty choose to attend professional development based on subjects of interest</td>
<td>22</td>
<td>95%</td>
</tr>
<tr>
<td>Professional development experiences tailored or created for specific faculty or individual departments</td>
<td>22</td>
<td>55%</td>
</tr>
</tbody>
</table>
online instruction (70%). Almost all respondents (95%) indicated that these professional development opportunities allow faculty to enroll in development courses that interest them. However, only 55% of community colleges provide professional development experiences tailored or created for faculty in specific departments.

**DISCUSSION AND IMPLICATIONS**

Preparing faculty to teach online is an important component for student success in online programs. However, 38% of community college administrators reported that student demand for online course offerings exceeds what is currently available (Lokken, 2015). To support effective online instruction, professional development programs need to be designed to meet the needs of online instructors (Vaill & Testori, 2012). Exploring how training is provided to online faculty, this study surveyed all 48 community colleges and campuses in the Illinois Community College System to understand their current practices. A few findings emerged from the survey results, including practices of orientation, professional training content, and extended professional development across the responding colleges. The survey results primarily indicate that while new-hire orientation and extended professional development are common strategies colleges use to provide training for online instructors, there is high variation in terms of training content relevancy, training program standards, and community building. These findings offer practical implications for community colleges to provide training for online instructors.

*Ensure Content Relevancy in Professional Training*

While online technical support and training about learning management systems are widely available, trainings on pedagogy, class assessment, and discipline-specific content are limited. This is consistent with Fish and Wickersha’s (2009) finding that online instructors reported having more experiences with technology-based training than training on teaching strategies, pedagogy, or assessment. Prior research has indicated that it is essential for faculty to understand the relationship between pedagogy, course content, and technology in order to develop and instruct quality courses (Vaill & Testori, 2012).

More recent research has focused on how instructors’ social presence can increase online students’ satisfaction and knowledge gain (Richardson et al., 2017; Song et al., 2019). For example, Thomas et al. (2017) compared text and video feedback in asynchronous classes and found that video feedback better contributed to the social presence of the instructor. Effective faculty-student interaction, communication, and peer engagement can effectively increase student satisfaction and reduce the drop-out rate for students in online programs (Gravel, 2012; Willgeng & Johnson, 2009). Community college online faculty must be present in selecting course resources, designing course structure, and promoting student-to-student and student-to-faculty interactions to socially engage students (Gurley, 2018; Rios et al., 2018), and professional training content should cover this pivotal component. Further exploration of how communication strategies and student success are related is warranted in future research.

Additionally, the evaluation of teaching effectiveness seems to be largely overlooked in professional training for online instructors. In fact, professional training on technical support, student readiness, and instructor readiness to teach online are primary needs for online instructors to be successful (Oomen-Early & Murphy, 2009). While only about half of the responding colleges include training content on instructional design, it is not clear if there is any evaluation process of how an instructor accesses and efficiently utilizes these resources. The ability to convert professional training to quality course design and instruction requires evaluating student learning, student satisfaction, and faculty’s use of technology. This project did not delve deeply into the area of student learning outcomes, yet appropriate approaches of online teaching effectiveness assessment should be communicated in professional training sessions (Brinkley-Etkzorn, 2018; Sellnow-Richmond et al., 2020).

Finally, throughout the survey, the responses indicated that there was very little, if any, specific professional training for specialized types of instructors or departments. Professional training about online instruction was more of a “one-size-fits-all” approach and it was delivered generically. As indicated by Cochran and Benuto (2016), training and support addressing best practices in specific subject areas are critical to online teaching. For example,
online instructors teaching foreign languages often face unique technology challenges, such as character writing in a foreign language (Sun, 2011). To promote effective faculty-student communication using foreign languages or mathematical symbols in the online setting, discipline specific training in both technology and pedagogy is warranted.

Establish a Formal and Scalable Online Instruction Community

If training practices are going to be developed or modified, it is critical that administrators support the changes. My findings suggest that general administration should support online instruction across colleges. As faculty’s use of technology in online instruction is substantively impacted by institutional support, colleges should create a vision and plan for online learning that respects the value and experience for both students and faculty (Levy, 2003; Osika et al., 2009). These principles will guide implementation of multifaceted interventions to support online faculty’s teaching effectiveness (Mohr & Shelton, 2017).

However, my study finds that informal mentoring was occurring, but formalized programs were rarely in place. Because online instructors indicated the need to gather with colleagues informally through online or face-to-face interactions, mentoring beyond the initial orientation was considered to be an effective method of informal professional training (Kidwell et al., 2004; Lackey, 2011). Thus, one possible approach to establish a formal and scalable online instruction community is through mentoring programs, which allow for more reflection, interaction, and an enhanced learning environment for online faculty (Meyer & Murrell, 2014; Vaill & Testori, 2012; Wolf, 2006). Based on the success of this approach of knowledge sharing, strategic efforts should be implemented to ensure that mentoring structures are introduced into the training processes for online instructors.

Identify Online Instruction Training Program Standards

While online programs flourish when a college provides financial, developmental, and other resources (Wolf, 2006), statewide or institutional standards for online instruction training programs should be identified, adopted, and systematically implemented to ensure the quality and consistency of online education. For example, comprehensive online instructor training can start with the new-hire orientation. Though initial orientation programs may not holistically provide training on pedagogy, instructional design, and assessment of teaching effectiveness, they can provide an initial introduction to training practices, procedures, and the learning environment for online faculty.

Another way to revamp orientation programs is to enroll online instructors in an extended professional training program that includes topics on course design, pedagogy, technology skills, and teaching strategies (Frankel et al., 2020; Roman et al., 2010). Continued layers of professional training should be provided to help instructors build their skills over time, with scaffolding to ensure online instructors’ ongoing development toward teaching effectiveness. Variations may be multiweek programs prior or during online teaching, online weekly tips, and access to teaching resources beyond the initial orientation (Meyer & Murrell, 2014). On a regular basis, colleges should seek feedback from online instructors and course designers to evaluate professional training content and update resources. Limited by its scope, the current study does not identify elements for a set of universal training program standards, and conversations need to occur in the Illinois system or at individual colleges, given their specific contexts of online education.

CONCLUSION

In sum, by collecting responses from chief online education administrators in Illinois community colleges, this study identified common practices of professional training for online faculty. Moving forward, community colleges should evaluate their online faculty training programs and (a) ensure content relevancy in course design, technology support, and discipline-specific pedagogy; (b) build a formal community to engage and support online instructors, and (c) adopt universal standards and ensure consistent quality of professional training for online instructors.

Because of the historical lack of understanding at the administrative level in terms of the time and resources required to effectively teach online, institutional resources allocated to training for online faculty have been limited (Lackey, 2011). Due to the COVID-19 pandemic in 2020, colleges were forced to rely upon online instruction to ensure a safe learning environment (Dhawan, 2020). The
challenges related to the pandemic reaffirmed for faculty and administrators that the online instruction transformation process is more than switching platforms (Cochran & Benuto, 2016; O’Keefe et al., 2020). The existing variations in training practices, however, can adversely affect instructional quality and student learning (Yang & Cornelious, 2005). As community colleges aim to respond swiftly to all the unexpected changes, they should continue to scrutinize online education equity and institutional accountability to mitigate the pandemic-related negative effects on student success (Blankenberger & Williams, 2020; Hu, 2020). If the pandemic unintentionally catalyzes systematic changes in online education, this study serves as a starting point to collect initial information on the existing practices of professional training for online faculty in Illinois community colleges and contributes to improving online instructor training and supporting student success.
REFERENCES


EFFECT OF STUDENT SATISFACTION ON ELEARNING QUALITY AND LEARNING OUTCOME AMONG MALAYSIAN UNDERGRADUATE NURSING STUDENTS

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Nooreiny Maarof, Segi University

ABSTRACT

Elearning has become an important and ubiquitous instructional tool across a broad range of programs in institutions of higher education. This is evident today in nursing education where elearning in a blended approach provides both enormous and flexible opportunities for working nurses to further their education and to engage in continuous professional development for life-long learning. We conducted a pilot study to test the feasibility of participant recruitment, data collection, and online survey in an elearning education program in Malaysia. The conceptual framework developed for the study was based on DeLone and McLean (2003) Information Systems Success Model to examine any mediation effect of student satisfaction on elearning quality and learning outcome among nursing undergraduates in a local elearning program. We used the Partial Least Squares approach to analyze the possible effects on the relationships among the variables studied. The exploration process to determine the feasibility of the preliminary online survey helping to contribute to the main study to be conducted in an elearning nursing context. The findings revealed that there were significant relationships between the dimensions of system quality and service quality with student satisfaction and learning outcome. The results showed that there was a mediating effect of student satisfaction on the relationship between elearning quality and learning outcome. The study emphasizes the importance of an initial understanding of the learning environmental needs of learners to provide a credible and meaningful learning experience for working nurses in elearning nursing programs.

Keywords: elearning quality, learning outcomes, mediation, nurses, student satisfaction

INTRODUCTION

The nursing profession requires nurses to be equipped with the required knowledge, skills, and attitude to integrate nursing practice into healthcare (Sowtali, 2019). The integration of technology in a flexible learning mode has attracted many working adults to enroll in higher education. Similarly, in nursing education, the enrolment in bachelor’s degree programs in the elearning mode has been encouraging (Rouleau, 2017). Such opportunities in education not only enhances professional development but also addresses the requirement of lifelong learning needs for nurses. In light of this technological transformation in higher education in the form of the elearning approach, it is important to determine how factors of elearning quality influence student satisfaction and assist in predicting elearning outcomes in nursing undergraduate programs.
In Malaysia, various studies on elearning approaches have been conducted in the health sciences fields such as medical science, biomedical science, nutrition and dietetic, and optometry (Azhari & Ming, 2015). However, there are limited studies on nursing education and thus there is a critical need to examine the possible effects of elearning approaches in the context of local nursing education. Al-Shorbaji et al. (2015) proposed that studies need to be conducted on the outcomes of elearning education among low- and medium-income countries. As such, this fits the context for a study on a medium-income country such as Malaysia.

In their meta-analysis of online learning in nursing education, Voutilainen et al. (2017) asserted that no generalization with regards to elearning can be made to nursing education. Thus far, the direction of the effect of elearning on learning outcome seems broad and varied. They suggested that further studies should investigate factors that may cause variation in learning outcomes among nursing students in online education. Another meta-analysis reported a lack of studies on the effects of elearning in comparison to didactic learning in nursing education (Lahti et al., 2014). Button et al. (2014) concurred with the critical need to evaluate the impact, effectiveness, and user perception of elearning approaches in nursing education.

The Ministry of Higher Education Malaysia (2017) reported that out of a total of 354,673 students enrolled at private higher education institutions, only 119,873 (33%) of the students had successfully graduated within the stipulated program duration. Similarly, the delayed graduation and attrition rate for online undergraduate programs remain high in many countries (Bawa, 2016; Fraser et al., 2018). For example, the literature on nursing education reveals that the attrition rate of nursing students is high, as much as 50% in some nursing bachelor programs (Merkley, 2016; Roos et al., 2016). In Iran, the percentage of prolonged graduation among students in Nursing Science was nearly 20% (Tagharrobi et al., 2013). Tinto (1982) predicted that the dropout rate of students from higher education was at 45% and seemed to have remained constant over the past 100 years. It can be inferred that the challenge to retain students in online learning nursing programs seems to be greater for institutions of higher education.

With the high increase in offerings on elearning for nursing education in Malaysia, it is therefore important to investigate the efficacy of elearning nursing programs in a local context. The preceding reviews on elearning situations in institutions of higher education show an alarming attrition rate and delayed graduation among students enrolled in nursing bachelor programs. In addition, little is known about nursing students’ needs and level of satisfaction in elearning or online learning environments. Previous studies account for the need to examine further the relationship of elearning quality and learner satisfaction (Decelle, 2016; Tabari Khomeiran et al., 2006; Zhao, 2016), and how these factors may affect learning outcomes (Kim & Kim, 2015; Pintrich & de Groot, 1990) among working nurses in elearning programs.

It needs to be highlighted that it is uncommon to see publications of pilot studies in journals in the past. But in recent years, an increasing number of pilot or preliminary studies have been published in many nursing and health science related fields (Lancaster, 2015; Morin, 2013). A majority of researchers support the benefits of sharing the findings of pilot or initial studies that could facilitate collaboration projects of similar research areas in other disciplines. The advantages of pilot studies include cost effectiveness in terms of time, human energy, and public resources saving (Eldridge et al., 2016), as well as preventing duplication of efforts (Fraser et al., 2018) and avoiding possible negative impacts on human subjects (Doody & Doody, 2015).

**METHOD AND INSTRUMENT**

We employed a cross-sectional quantitative survey approach in this pilot study. The collected data were analyzed via correlation analysis and multiple regression analysis using Partial Least Squares (PLS) to investigate the direct and indirect effects of elearning on nursing education outcomes.
relationships among the variables of eLearning quality, student satisfaction, and eLearning outcome in a nursing baccalaureate degree program in Malaysia. The research model depicted in Figure 1 is a conceptual framework developed based on DeLone and McLean Information System Success Model, or D&M IS Success model (DeLone & McLean, 2003), with the main purpose of examining the relationship between eLearning quality (comprising system quality, information quality, and service quality) and student learning outcome and also the effect or influence learner satisfaction has on these relationships.

The D&M IS Success model was developed in 1992 and has been used in more than 300 studies to date. From 1993 to 2002, a total of 285 journal papers and 16 empirical studies supported the relationship among the information systems success dimensions of the D&M IS Success model (DeLone & McLean, 2003). In approximately two decades, Marjanovic et al. (2016) reported that the D&M IS Success model has been continuously used as a foundation for numerous studies and was referenced up to 3,164 times. Many researchers attest to the high impact of the quality dimensions in the D&M IS Success model on higher education settings in developing success in eLearning (Mahmoodi et al., 2017; Ojo, 2017; Van Cauter et al., 2017).

The original D&M IS Success model initiated in 1992 consists of six dimensions: (a) quality of the system, (b) quality of the information, (c) use of the system, (d) user satisfaction, (e) individual impact, and (f) organizational impact (DeLone & McLean, 2003). The D&M IS Success model is widely used to assess the success of e-commerce systems in respect to customers’ and providers’ perspectives. It was then revised by DeLone and McLean in 2003 to address aspects in trainer and user perspectives and variances in cultural beliefs. The six original dimensions were retained adding the dimension “intention to use” to the system and replacing the “individual impact” and “organizational impact” dimensions with “net benefits.” In the past decade, various evidence supports the credibility of the D&M IS Success model in the adoption of its multidependent measures. The D&M IS Success model has been modified by other researchers to evaluate online learning systems at the program level that facilitate learning, course content delivery, communication, and online-based activities. The model has been validated and is widely used in numerous studies related to information systems. Various studies support the use of the constructs of D&M IS Success model as an effective applicable framework to investigate the success of information systems in hospitals (Bossen et al., 2013; Cho et al., 2015), learning management systems in universities (Ajoye & Nwagwu, 2014; Lin, 2017), and virtual education systems involving eLearning or online learning (Chuo et al., 2015; Holsapple & Lee-Post, 2006; Mahmoodi et al., 2017).

In the model we developed for this study, the dependent variable eLearning outcome, or net benefit, is the outcome concept displayed on the right side of the model. This variable is identified as the extent to which the eLearning program contributes to the success of learners in achieving individual learning outcomes. To the left of the model, eLearning quality (system quality, information quality, and service quality) is connected to student satisfaction by a one-way arrow indicating its direct effect on the student satisfaction variable.

System quality refers to the desired characteristics of the eLearning system at a technical level that comprise the utility features of the system such as easy-to-use, user-friendly, stable, secure, fast, and interactive. The second feature of eLearning quality is information quality, which is defined as the desired characteristic outputs of an eLearning system such as the systematic organization of course information and effective presentation of the right length that is clearly written, useful, and up to date. Service quality refers to the desirable characteristics of student-faculty interactions such as promptness, responsiveness, fairness, knowledgeability, and faculty availability. Finally, user satisfaction (or student satisfaction) relates to the level of satisfaction perceived by the learners using the eLearning system. The focus of our study is therefore the relationship among eLearning quality (system quality, information quality, and service quality), student satisfaction (user satisfaction), and eLearning outcome (net benefit on individual impact). The study examined perceived satisfaction of the eLearning system from the perspective of the undergraduate nursing students. The nature or frequency of the usage dimension is excluded as a variable of study because use of the eLearning system is mandatory for all students enrolled in the
Based on the conceptual framework of the study, the direct influence between elearning quality (system quality, information quality, and service quality) and student satisfaction and elearning outcome were measured. Student satisfaction is identified as a mediator variable that may influence the relationship between elearning quality and elearning outcome. The following are the hypotheses posited for the study:

**Ha1:** There is a statistically significant effect of system quality on student satisfaction.

**Ha2:** There is a statistically significant effect of information quality on student satisfaction.

**Ha3:** There is a statistically significant effect of service quality on student satisfaction.

**Ha4:** There is a statistically significant effect of student satisfaction on elearning outcome.

**Ha5:** Student satisfaction is a mediating variable in the relationship between system quality and elearning outcome.

**Ha6:** Student satisfaction is a mediating variable in the relationship between information quality and elearning outcome.

**Ha7:** Student satisfaction is a mediating variable in the relationship between service quality and elearning outcome.

A sample of 30 subjects from a local private university were selected for the pilot study. The subjects were full-time nursing students in an elearning 2-year undergraduate nursing program (RN-BSN nursing candidates). The recommended minimum sample size for pilot studies is 12 subjects within a single center, which allows for estimating average values and variability while providing valuable preliminary information for subsequent studies (Moore et al., 2011). In addition to the preliminary findings, the main focus of the pilot study was on the feasibility of recruiting participants, the data collection procedure involving an online survey process, and determining the internal reliability of the instrument for the main study. Hence, power calculation and confidence intervals for sample size were not considered in the pilot study.

Based on the principles of the D&M IS Success model, we adapted a self-administered questionnaire based on the elearning success model (Holsapple & Lee-Post, 2006) with permission from the researchers. The elearning course evaluation survey consists of 25 items on a 5-point Likert scale ranging from strongly agree to strongly disagree. The overall rating for each dimension was calculated by averaging the participants’ ratings on the corresponding items of the survey. A mean score of the average ratings for each dimension was then expressed in percentage form to indicate the highest perception of success rating possible for the dimension.

A panel of six content experts, including four nursing faculty who were involved in elearning teaching and another two elearning support staff, were selected to evaluate the item relevancy of the elearning success questionnaire using the Content Validity Index (CVI). The results of the I-CVI score ranged from 0.83 to 1.00 for each item validating the relevancy of the tool for the study (Polit & Beck, 2006). Minor amendments for a few identified items in the elearning Course Evaluation Survey were conducted based on the comments provided by the panel of experts to ensure the clarity of the items for respondents. The internal consistency index obtained for the elearning Course Evaluation Survey was at Cronbach’s Alpha 0.942. A reliability score of 0.80 or higher is considered a strong internal consistency coefficient for a survey questionnaire (Grove et al., 2015; Grove & Gray, 2018). As a result, no revisions were made for the main study instrument.

**RESULTS AND DISCUSSION**

To analyze the data, we employed the partial least squares structural equation modeling (PLS-SEM) approach via the SmartPLS version 3.0 software. PLS-SEM is a variance-based approach used to predict the relationships among constructs and to explore the mediating effect on the relationship between constructs (Hair et al., 2011). Table 1 displays the factor loadings and average variance extracted (AVE) to evaluate the convergent validity and composite reliability (CR) of the reflective constructs (system quality, information quality, service quality, student satisfaction, and elearning outcome).

According to the PLS algorithm, since the indicator loadings exceed the recommended values of 0.70, all the items (See Figure 2) were retained
Heterotrait-Monotrait (HTMT) criterion. Based on the Fornell and Larcker (1981) assessment, all constructs of the model exhibited sufficient discriminant validity in which the square root of AVE was greater than the correlations for all reflective constructs. In addition, the HTMT results showed that all the values fulfilled the criterion of less than 0.90 (Gold et al., 2001). These findings show that the five constructs met the internal consistency and convergent and discriminant validity requirements for the study. These findings are consistent with past literature based on the DeLone and McLean model (Holsapple & Lee-Post, 2006; Lee-Post, 2009; Ojo, 2017).

In Table 2, three out of four relationships were found to have a t-value of ≥ 2.647 at 0.05 level of significance. The predictors of system quality (β = 0.564, p < 0.05) and service quality (β = 0.633, p < 0.01) were positively related with student satisfaction and explained 80.7% of the variance in student satisfaction. In addition, the influence of student satisfaction (β = 0.87, p < 0.05) on elearning outcome indicated that student satisfaction is positively correlated with elearning outcome and explains 75.8% of the variance in elearning outcome. The R2 value of 0.758, which is above the 0.75 value as recommended by Hair et al. (2017), indicates a substantial model. It was observed that service quality (0.761) and system quality (0.592) showed a large effect and moderate effect respectively in producing the R2 for student satisfaction (0.807).

On the other hand, information quality did not show a significant effect (p > .05). Therefore, H1, H3, and H4, but not H2, are supported. The findings are congruent with past studies where system quality (Delone & McLean, 2003; Eom, 2012; Holsapple & Lee-Post, 2006) and service quality (Delone & McLean, 2003; Holsapple & Lee-Post, 2006) are each significantly related to student satisfaction. The study highlighted the importance of elearning system support in terms of its usability, feasibility, and effectiveness in using the system and the pivotal roles of facilitators in learning. Interaction between facilitator-student and peer support are factors that contribute to elearning success. This study, however, was unable to demonstrate a significant link between information quality and student satisfaction. The findings on the nonsignificant effect of information quality on student satisfaction

Table 1. Measurement Model for the Effect of Student Satisfaction on the Relationship Between eLearning Quality and eLearning Outcome

<table>
<thead>
<tr>
<th>Construct</th>
<th>Items</th>
<th>Loadings</th>
<th>Cronbach's alpha</th>
<th>AVE</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td>System quality</td>
<td>E1</td>
<td>0.953</td>
<td>0.943</td>
<td>0.785</td>
<td>0.956</td>
</tr>
<tr>
<td></td>
<td>E2</td>
<td>0.951</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>E3</td>
<td>0.908</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>E4</td>
<td>0.799</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>E5</td>
<td>0.758</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>E6</td>
<td>0.928</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information quality</td>
<td>E7</td>
<td>0.877</td>
<td>0.959</td>
<td>0.831</td>
<td>0.967</td>
</tr>
<tr>
<td></td>
<td>E8</td>
<td>0.932</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>E9</td>
<td>0.951</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>E10</td>
<td>0.931</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>E11</td>
<td>0.902</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>E12</td>
<td>0.875</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service quality</td>
<td>E13</td>
<td>0.782</td>
<td>0.891</td>
<td>0.697</td>
<td>0.920</td>
</tr>
<tr>
<td></td>
<td>E14</td>
<td>0.898</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>E15</td>
<td>0.852</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>E16</td>
<td>0.837</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>E17</td>
<td>0.801</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student satisfaction</td>
<td>E18</td>
<td>0.890</td>
<td>0.952</td>
<td>0.874</td>
<td>0.965</td>
</tr>
<tr>
<td></td>
<td>E19</td>
<td>0.947</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>E20</td>
<td>0.950</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>E21</td>
<td>0.951</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>eLearning outcome</td>
<td>E22</td>
<td>0.902</td>
<td>0.894</td>
<td>0.762</td>
<td>0.927</td>
</tr>
<tr>
<td></td>
<td>E23</td>
<td>0.772</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>E24</td>
<td>0.902</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>E25</td>
<td>0.907</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2. The PLS Algorithm Results


do not seem to support the findings from other studies (Delone & McLean, 2003; Eom, 2012; Holsapple & Lee-Pos, 2006; Wu & Wang, 2006). This could be explained by the different needs and expectations of nursing graduates who are from diverse cultural and educational backgrounds in Malaysia compared to other developed countries. The amount and depth of information or resources required may be influenced by the degree of self-regulated behavior of the students. To address this, the faculty could design instructional methods incorporating resources that help stimulate learners to adopt self-regulated learning and be independent to explore new resources to support their studies.

Furthermore, the predictive relevance of the model was examined using the blindfolding procedure. The Q2 values for student satisfaction (0.570) and elearning outcome (0.445) were greater than 0.35, indicating that the model has a large predictive power of the endogenous construct. Also, the q2 effect size (0.260) for both system quality and service quality were moderate, while student satisfaction (0.445) was shown to have a substantial q2 effect size to the endogenous construct in the structural model (Hair et al., 2011). These indicate that system quality and service quality have a medium relative predictive relevance for student satisfaction, whereas student satisfaction shows a large relative predictive relevance for elearning outcome. In conclusion, the findings of the study suggest that the influence in relationships among system quality, service quality, and student satisfaction are accurate predictors of the model.

To address hypotheses H5, H6, and H7, we conducted mediation analysis using bootstrapping analysis. Table 3 depicts the indirect effects ($\beta = 0.490$ and $\beta = 0.551$) and significant at t-values of 2.647 and 4.609. The indirect effects 95% Boot Confidence Interval Bias Corrected: (LL = 0.117, UL = 0.861) and (LL = 0.343, UL = 0.787), which does not include a zero in between the values and indicates a mediation effect in the model (Preacher & Hayes, 2008).

Based on the results, we found that the mediation effect of student satisfaction on the relationship between system quality and service quality on elearning outcome was statistically significant. Hence, H5 and H7 are supported but not H6. The findings are consistent with DeLone and McLean (2003) and Lee and Lee (2008) on the significant mediating effect of user satisfaction on the relationship between system quality and net

### Table 2. Hypothesis Testing for the Relationship of System Quality, Information Quality, and Service Quality on Student Satisfaction and eLearning Outcome

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Relationship</th>
<th>Std. Beta</th>
<th>Std. Error</th>
<th>t-values</th>
<th>Decision</th>
<th>R2</th>
<th>f2</th>
<th>Q2</th>
<th>q2</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>System quality $\rightarrow$ student satisfaction</td>
<td>0.564</td>
<td>0.516</td>
<td>2.647*</td>
<td>Supported</td>
<td>0.807</td>
<td>0.592</td>
<td>0.570</td>
<td>0.260</td>
</tr>
<tr>
<td>H2</td>
<td>Information quality $\rightarrow$ student satisfaction</td>
<td>-0.289</td>
<td>-0.288</td>
<td>1.658</td>
<td>Not supported</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>H3</td>
<td>Service quality $\rightarrow$ student satisfaction</td>
<td>0.633</td>
<td>0.652</td>
<td>4.609**</td>
<td>Supported</td>
<td>0.807</td>
<td>0.761</td>
<td>0.570</td>
<td>0.260</td>
</tr>
<tr>
<td>H4</td>
<td>Student satisfaction $\rightarrow$ elearning outcome</td>
<td>0.870</td>
<td>0.851</td>
<td>10.697*</td>
<td>Supported</td>
<td>0.758</td>
<td>3.124</td>
<td>0.445</td>
<td>0.445</td>
</tr>
</tbody>
</table>

Note: **p<0.01, *p<0.05

### Table 3. Hypothesis Testing on Mediating Effect for the Relationship Between System Quality, Information Quality, and Service Quality on eLearning Outcome

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Relationship</th>
<th>Std. Beta</th>
<th>Std. Error</th>
<th>t-values</th>
<th>Confidence Interval (BC) LL UL</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>H5</td>
<td>System quality $\rightarrow$ student satisfaction $\rightarrow$ elearning outcome</td>
<td>0.490</td>
<td>0.449</td>
<td>2.647*</td>
<td>0.117, 0.861</td>
<td>Supported</td>
</tr>
<tr>
<td>H6</td>
<td>Information quality $\rightarrow$ student satisfaction $\rightarrow$ elearning outcome</td>
<td>-0.251</td>
<td>-0.243</td>
<td>1.658</td>
<td>-0.562, 0.057</td>
<td>Not supported</td>
</tr>
<tr>
<td>H7</td>
<td>Service quality $\rightarrow$ student satisfaction $\rightarrow$ elearning outcome</td>
<td>0.551</td>
<td>0.553</td>
<td>4.609*</td>
<td>0.343, 0.787</td>
<td>Supported</td>
</tr>
</tbody>
</table>

Note: *p<0.05, **p<0.01, BC=Bias Corrected, UL=Upper Level, LL=Lower Level
benefits (elearning outcome). These results suggest that student satisfaction is a mediator between the influence of service quality and system quality on learning outcome. This indicates that elearning quality could improve perception in achieving better learning outcomes when satisfaction is increased. Most students recognize the quality of elearning tools and the prompt response and feedback from facilitators. Therefore, it is essential to improve on the features and functions of the elearning platform and to further strengthen the interaction and communication between faculty and student through elearning education. However, the results contradict the findings of Petter et al. (2013), who found that information quality is a key predictor of net benefits through mediating effect of student satisfaction. A final structural model for the study is presented in Figure 3.

As tested in the pilot study, the online survey was able to access participants and was convenient for data collection within a short period of time that involves a large sample size from different geographic areas. Information and data collected were automatically transformed to a spreadsheet similar to an Excel document. The data were then transferred directly to SPSS software followed by Smart PLS software for data analysis.

Based on the pilot study process, three incomplete surveys on demographic data were received. Three participants did not indicate their age and two others did not respond to the CGPA score. In view of these, all items for the main study will be set to a compulsory mode for respondents before they could proceed to the next section. This is to ensure that all data collected will be complete without any missing information.

CONCLUSION

This preliminary study found that elearning quality (system quality and service quality) correlated with student satisfaction (user satisfaction) and indirectly influenced elearning outcome (net benefit) through a mediator variable (user satisfaction). The findings revealed that quality related to system and service support in an elearning environment can have an influential effect on user satisfaction among nursing undergraduates. This in turn, can lead to greater success for students in their undergraduate studies. Student satisfaction is also reported as a significant mediator in the relationship between system quality and service quality and elearning outcome.

The pilot study demonstrated the feasibility of the study in elearning nursing education context through an online survey. It is also evident that the D&M IS Success model is an effective framework to determine the quality factors that could impact student satisfaction and eventually learning outcomes. The pilot study and sharing of its process and outcomes can contribute to strengthening the main study regardless of the disciplines of the study. In the near future, we plan to explore further an extended D&M model with other possible predictors that may positively influence student satisfaction and elearning outcomes among working nursing students in Malaysia.

ACKNOWLEDGEMENTS

The pilot study is part of a PhD project. We would like to thank the private international universities and the Asia-e university in Malaysia for their cooperation in supporting the study.

DECLARATION OF INTEREST STATEMENT

We declare that we have no financial or personal relationship(s) that may have inappropriately influenced us in writing this article.

CONTRIBUTION OF AUTHORS

The main author, Chang Woan Ching, was involved in designing the study, acquiring and analyzing the data, and drafting the manuscript, while the second author, Professor Dr Nooreiny Maarof was involved in critical analysis, evaluation, and revision of the intellectual content of the manuscript and its overall presentation.
REFERENCES


INCREASING PEDAGOGICAL TRAINING FOR ONLINE FACULTY: THE IMPORTANCE OF DEVELOPING CULTURALLY RESPONSIVE PRACTICES

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ABSTRACT

Universities are increasingly moving classes to online environments and compelling programs to rethink how content traditionally taught face-to-face courses could be moved to an online environment. This trend is particularly challenging for both novice and experienced faculty, as diverse student bodies make it necessary for faculty to engage in more meaningful, culturally responsive ways to teach students. Thus, as universities increase their online courses, faculty and instructors are confronted with the challenge of providing this cultural responsiveness in an online environment. Using faculty interviews, we examined the need for an increased focus on professional development for online faculty, and we highlight the need for strengthening the development of pedagogical strategies around cultural responsiveness for faculty teaching online and transitioning courses to online environments.

Keywords: culturally responsive teaching, online education, higher education, faculty development

INTRODUCTION

All professions recognize the need for continuous development in their field to keep pace with an increasingly changing and diverse world. In higher education, one increasingly popular trend is the move towards distance education or online learning environments. Universities are moving more classes to online environments and compelling programs to rethink how content traditionally taught face-to-face could be shifted to an online environment. Moreover, despite a decline in on campus enrollment, the number of students taking online courses at public institutions has steadily increased over the last decade (Allen and Seaman, 2016). In some cases, to support student demands for online learning, institutions are allocating resources to invest in departments, centers, and programs aimed specifically at improving best practices and the quality of online teaching (Herman, 2012; Mohr, 2016). Yet, with an array of professional development options available to faculty, many of them still feel ill-prepared to teach online (Lackey, 2011), which results in a lower quality experience for students.

With the increase of faculty teaching online comes the inevitable decrease in the opportunity and ability of faculty to connect with their students. The research also indicates that students’ perceptions of their instructor’s presence significantly affects both student self-efficacy and student learning satisfaction (Russo & Benson, 2005). Understanding faculty voices can mitigate many of the challenges in providing an enriching professional development experience (Baran & Correia, 2016; Golden, 2016; McMutry, 2016). As a result, universities will want to be proactive and provide their faculty with not only professional development for teaching online, but also equip them with the tools to effectively connect with students in online spaces. One potential area of focus is helping faculty develop a culturally responsive approach to the content and instruction in their online environments. Using faculty interviews, this research examined the need for increased focus on professional development.
for online faculty and highlighted the need for strengthening the development of pedagogical strategies. Cultural responsiveness is explored as an approach to support faculty teaching in and transitioning courses to online environments.

The Importance of Professional Development for Faculty Teaching Online

Faculty enter online teaching with varying skill levels in using online tools, technology, and facilitation techniques for the online environment (Anderson, 2015; Elliott et al., 2015; Grover et al., 2016). As a result, institutions may have various levels of support that can be used in different ways to support faculty. Some institutions have instructional design staff or teams who partner with faculty to develop and design all online course content without faculty needing to understand online design or pedagogy (McGee et al., 2017). Other institutions expect faculty to teach a course online that they did not develop, influence, or organize. As a result, faculty may not feel satisfied and connected to the content (Bollinger et al., 2014). Still other institutions expect their faculty to come into the institution with the online expertise to teach content and develop independently or in concert with a course developer course materials as well as create exams or other assessments of students’ learning (Frankel, 2015). The amount of training or professional development (PD) may be based on skill level, challenges, ongoing needs, or any number of additional factors. Many of these challenges can be addressed through comprehensive professional development training mindful of faculty perspectives, needs, and the customs of the institution.

The most common PD training offerings are geared towards novice online faculty so they understand how to navigate the online environment and fit into the role of an online teacher (Herring et al., 2016; Kearns, 2015). These PD offerings are heavily centered on getting the faculty up to speed on the learning management system, teaching faculty technological skills for functioning as an online instructor, and transitioning the instructor role from face-to-face teaching to a new educational environment (Anderson et al., 2013; Henry, 2014). As faculty mature in skills and training over time, PD instruction may not be differentiated to account for experience and expertise (Rhode et al., 2017). Yet throughout their tenure teaching online, faculty continue to seek professional development to meet their specific needs and appreciate support systems that will advance their instructional skills over time (Aust, et al., 2015; Elliott et al., 2015).

When considering PD as a way to support faculty, well-crafted offerings may require administrators and faculty developers to consider a continuum of online faculty skill level that includes faculty’s prior experience, challenges, and ongoing needs (McLoughlin & Northcote, 2017; Mohr, 2016; Mueller et al., 2013). Faculty development includes a range of activities that institutions use to assist faculty roles (Baker et al., 2018). Research indicates that experienced online faculty generally want to explore and expand their understanding of pedagogy to increase student engagement, improve collaboration, and improve their knowledge of multimedia tools beyond basic functions and strategies (Hale, 2012; Kennedy, 2015). However, universities need to develop more than just formal professional development and discover informal methods for engaging faculty who often spend less time on campus.

Various informal support systems for online faculty are found in most institutions. Some examples of informal support cited in the research include faculty having opportunities to connect with their peers in other academic departments and building a community of practice to support their needs (Mueller et al., 2013; Wenger-Trayner et al., 2014). These informal systems help mitigate some of the challenges of online teaching and help faculty navigate the online teaching experience. However, the research indicates that such social networks
and informal support systems have limited benefits because they do not address sustained challenges faced by online faculty in practice (Kearnes, 2015). Professional development training can be offered as a formal support and when combined with other informal supports, it provides a holistic, sustainable opportunity to meet online faculty needs (McLoughlin & Northcote, 2017).

Faculty training and professional development is necessary as different technology, pedagogy, and content are being introduced to meet student learning outcomes. Even in the current climate of tightening budgets resulting in shrinking support for professional development, it is imperative that institutions invest their limited resources in the faculty development initiatives that will produce the greatest gains (Elliot et al., 2015). Hill et al. (2007) stated that for faculty development to be effective, universities must “address the principles and practices of teaching at the individual, departmental, curricular, and institutional levels, facilitating communication within and across departments” (p. 17). Research provides some insight on the desires of faculty for PD workshops. They want training that supports and encourages personal and professional growth, covers topics that are relevant to faculty needs, and provides the opportunity to network with colleagues (Steinert et al., 2010).

One of the aims of designing professional development sessions is to offer new knowledge and help in areas where faculty have a need. Programs that fail to incorporate faculty needs will fall short of achieving meaningful outcomes (Frankel, 2015). When planning for these supports at an institutional level, faculty professional developers and administrators have many considerations to consider such as faculty skill levels and their learning needs, challenges, and ongoing needs (Mohr, 2016). Research indicates that faculty prefer personalized instruction to the extent that their motivation to participate in professional development is contingent upon their involvement in the decisions about how and what they want to learn (Grover et al., 2016). One particular pedagogical skill that K–12 teachers are using, and higher education faculty can benefit from, particularly online faculty, is the development of a culturally responsive approach to teaching. Culturally responsive teaching goes a step further and asks faculty to consider a student’s experiences and understanding in their teaching practices to amplify student motivation and thus provide a framework to instruction to improve outcomes.

Understanding Cultural Responsiveness

Cultural responsiveness derives its foundations from “critical consciousness,” a mindset stemming from liberation for oppressed populations. Brazilian philosopher Paulo Freire coined the term and developed the idea in the 1970s. Freire (2007) used the term conscientizazao (Spanish for “consciousness”) to describe the multidimensional process of reflection and action as a tool to challenge inequitable social structures and systems that perpetuate injustice, oppression, and exploitation—specifically those within the education system. Accordingly, Freire challenged the “banking model” of education in which the all-knowing teacher treats students as mere receptacles void of personal critique, inquiry, and insight. Since the original use of the term, Freire’s conceptualization of critical consciousness has been examined (Giroux, 1983), expounded upon (Diemer & Blustein, 2006), and critiqued by scholars in an attempt to deconstruct its key components (Jemal, 2017). The literature suggests that critical consciousness, a foundation of cultural responsiveness, is both a process and an outcome incorporating critical reflection, dialogue, sociopolitical efficacy, and action (Godfrey & Grayman, 2014; Jemal, 2017). Therefore, without learning how to be intentional in their process, faculty may potentially miss the opportunity to authentically engage their students.

Critical reflection refers to one’s ability to critically analyze the relationships between individual social realities and broader social, political, and economic institutions that maintain structural oppression. For members of marginalized groups and communities this means actively thinking about the interconnection of history, policy, and law. It is with this understanding that faculty can develop processes for incorporating critical reflection, dialogue, sociopolitical efficacy, and action. Within this context, “dialogue” refers to group conversations about the meaning of injustice, inequity, and oppression. More specifically, dialogue is centered on both “divergent” and “convergent” experiences with the aim of illuminating multiple perspectives of a topic (Seider et al., 2017). “Sociopolitical efficacy” refers to an individual’s
perceived capability to be a change agent, while “action” refers to an individual’s orientation toward agency and sociopolitical action to effect change. Without the sociopolitical efficacy, it is often difficult for action to occur. Examples of action include leadership roles in social movements, voting, and community organizing (Watts et al., 2011; Watts & Flanagan, 2007). Utilizing these purposeful processes can lead faculty to an increased level of cultural competency, an important factor in being culturally responsive.

Cultural competency is regarded as an essential component of promoting social equity in the delivery of services and is the manner in which issues of diversity are responded to and addressed in agencies (Lopez-Littleton & Blessett, 2015; Reger et al., 2008; Rice, 2008). Lonner (2007) described cultural competency as a continuum without fixed endpoints, meaning that there is neither an exact bottom nor an exact top for total cultural incompetence. If one was to operationalize cultural competency, it would be how effectively an individual appreciates or respects people from other cultures and is capable of applying appropriate behaviors and considerations in cross-cultural situations (Borrego et al., 2012; Rice, 2008). Wu and Martinez (2006) identified six principles and recommendations for cultural competency implementation: (a) community representation and feedback at all stages of implementation; (b) cultural competency integration into all systems of the organization, particularly quality improvement efforts; (c) ensuring that changes are manageable, measurable, and sustainable; (d) making the case for implementation policies; (e) commitment from leadership; and (f) ongoing staff training. In educational settings, the potential for cultural conflict resulting from diverging values requires educators to be mindful of how their practice and decisions impact their students. Therefore, educators are responsible for creating an environment where subcultures can collaborate synergistically. Applying cultural competency to classroom spaces is an important practice and skill that instructors will want to develop through high quality PD.

Implementing Culturally Responsive Practices to Online Courses

As the diversity of higher education classes continues to increase, faculty will want PD that can support their ability to connect with their students (Aust, et al., 2015; Elliott et al., 2015). This is particularly prudent for faculty teaching in an online environment, where connections with students can be more challenging to develop. Culturally responsive pedagogy (CRP) is a widely regarded body of literature in response to equipping teachers to effectively serve students of different cultures. CRP or culturally responsive teaching is a multi-theoretical framework that draws together and extends noted concepts regarding strategies for improving the learning outcomes of culturally diverse students. The concepts making up CRP include cultural congruence (Au & Kawakami, 1994), caring (Noddings & Shore, 1984; Valenzuela, 1999), hidden curriculum theory (Wren, 1999), cultural synchronicity (Irvine, 1989), and cultural relevance (Ladson-Billings, 1994, 1995). Developing this awareness also aligns well with the literature that suggests that faculty’s needs and skills will have to develop as they grow in the profession (McLoughlin & Northcote, 2017; Mohr, 2016).

Gay (2002) described culturally responsive teaching as using the cultural characteristics, experiences, and perspectives of diverse students as a means for adequately teaching them. Gay further argued that teachers must become skilled at recognizing, acknowledging, and capitalizing on the multidimensionality of their student’s various cultural identities. This sentiment is important for faculty teaching adults online because they bring a layered prior self to the course that must be respected, challenged, and developed throughout the course. Gay went on to emphasize that this knowledge supports all aspects of instructional planning. Proficiency in doing this work includes significant on-the-job training facilitated by the children themselves and the support of school leaders who recognize the importance of doing this work well. The task for teachers is to become available, willing, and receptive to student voices and then to respond appropriately to the students. Research highlights that experienced online faculty desire to broaden their understanding of pedagogy around student engagement (Hale, 2012; Kennedy, 2015), and, therefore, providing PD in this area aligns well with the current needs of faculty at various types of institutions and levels within the profession.
Faculty also want PD that encourages personal and professional growth (Steinert, et al., 2010) and culturally responsive pedagogy that provides an opportunity for both. Howard (2003) claimed that culturally relevant pedagogy challenges teachers to acknowledge how deficit-based notions about diverse students continue to permeate traditional school thinking, practices, and placements. Further, CRP prompts teachers to critique their own ways of thinking to ensure they do not reinforce prejudicial behavior. Culturally relevant pedagogy recognizes the explicit connection between culture and learning and sees students’ cultural capital as an asset (Durden, 2008). In higher education, using the culturally relevant frame will increase the likelihood that educators will be better equipped, in the way that Gay (2002) suggested, to confront the challenges that come along with institutions that are becoming increasingly diverse.

Higher education faculty face challenges with designing and delivering online teaching that demonstrates their ability to be inclusive and address the cultural diversity of their students (Woodley et al., 2017). Ensuring that culturally responsive practices are included in an online environment first requires instructors to be deliberately aware of the need for a supportive and inclusive environment for students. Being able to understand this need, and then make considerations on design and teaching, is one key consideration in the future of forward-thinking online teachers and course designers. Similar to face-to-face course formats, thoughtful professional development for educators of online courses leads to better prepared, higher quality educators. Sallee’s (2010) findings suggested that for participants in effective professional development, there is a statistically significant correlation between professional development and high student achievement. Likewise, Liu et al. (2011) found similar results generated from a study including 40 educators in five states in the United States. Therefore, engaging faculty in high-quality professional development on any topic increases educator self-efficacy and strongly impacts students’ performance in the classroom (Lee et al., 2013).

Understanding what culture is and then interpreting how to be responsive in online teaching practice has layers of challenges with implementation. There are a significant number of cultural differences that are nuanced and multifaceted and need to be factored into online instruction. There is no all-encompassing way of addressing the range of cultural implications that can affect practice. However, a baseline of considerations can be developed and considered to include several cultural markers such as the relationship expectations between students and teacher, technological access and dependability, design interpretations (e.g., the use of certain colors may mean nothing in one country but be significant in another country), and confusion with communication and symbols (Rogers et al., 2007). Other considerations may include how some cultures emphasize individual achievement and responsibility (e.g., the United States) while others like China and Korea support collective and group achievement and responsibility (Wang, 2008). There are also technical considerations that come along with the use of a learning management system (LMS). An LMS is used to deliver online courses but there is a limited ability to organize or deliver online courses that is based on the tools available within the system. The subtle interplay and overlap between pedagogical, content, and technological knowledge for online faculty as they gain experience, highlights the complexities of teaching online and doing it in a culturally responsive manner.

METHODS

We utilized a case study research design for this study because a case study is best for investigating and developing an in-depth understanding of the needs of a specific case that can be either an event, problem, program, or person (Yin, 2014), or a situation where differing points of view are recognized and subjective views of reality are accepted (Creswell, 2014; Stake, 1995). More specifically, we employed a descriptive case study process with the hopes of understanding and discovering connections, themes, and patterns related to online faculty PD needs (Creswell, 2014; Yin, 2014). This approach allowed faculty to share their experiences and perspectives on the need for having their voices heard in developing PD and identifying various types of PD that they need. We used two primary sources of data collection: semistructured interviews and a survey administered to participants who have completed a professional development training.
To best understand faculty perceptions, semistructured interviews were conducted with the participants, a common method for data collection in case studies (Hancock & Algozzine, 2017). The interview questions focused on faculty perceptions of professional development related to online teaching, the challenges of teaching online, areas of training and support in online teaching, the exploration of other training content, and the support the participants perceived as useful for online teaching.

The selected research design allowed us to capture the voices and views of teaching faculty that are important in shaping the future of training for faculty teaching online. Many of the studies that described faculty voices in the design of professional development used a qualitative approach to identify best practices (Henry, 2014; Mohr, 2016), to understand what format and delivery options work best for faculty at a particular institution (Grover et al., 2016; Schmidt et al., 2016; Slinger-Friedman et al., 2014), and to understand how to train faculty on pedagogy (Alexiou-Ray & Bentley, 2015; Henry, 2014; Kennedy, 2015; Zulegler, 2013).

The site for this study was a four-year public institution in the Midwest with approximately 450 faculty members (including adjuncts). We employed purposeful sampling and thus data collection was bounded within faculty who had taught in an online environment for a minimum of three years and had participated (or planned to participate) in professional development over the next two school years. This approach yielded 49 survey participants and 15 interviews. Additionally, faculty participants for this study included only faculty who teach fully online courses and have taught a minimum of six courses online. Training at the institution is currently offered with a “one size fits all” approach without any training distinctions for the courses that faculty teach.

Each interview was collected through semistructured interviews with the online faculty conducted in person or by phone. For analysis, we utilized general terms and themes related to faculty professional development, including but not limited to content, pedagogy, technology, and the learning management system. From these broad categories, we narrowed categories and sub-categories were then developed.

At the time of this study, we worked as staff at the institution. While we did not have a personal relationship with any of the participants, and moreover had not previously met them, they were approachable and eager to share feedback on their professional development needs. We were careful to not allow any participant bias and remained focused on the interview questions to stay on track without creating a conversation (Harding, 2013).

**FINDINGS**

Examining faculty perspectives of their experiences with professional development can help PD developers and administrators improve online teaching practices and increase their comfort in the online environment. Our research captured faculty perceptions through semistructured interviews to gain insight on faculty experience with professional development and increasing access to pedagogical development, including faculty responsiveness to all types of students.

The final data reflect thoughtful insights that connect faculty perspectives to online teaching challenges and successes. In their responses to the interview questions, faculty offered perspectives related to improvements with their online teaching practices, their observations of fellow faculty, and their experiences with institutional PD in general. Table 1 outlines faculty’s experience with PD (N=57), and the results indicated that 56% participated in PD related to technology or the LMS, 26% participated in PD related to pedagogy, and 16% participated in PD in content related topics.

Learning to use the LMS and the technology used in an online environment is critical to the success of faculty, and therefore it is understandable

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<th>Answer</th>
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<td>Content related topics (PD specifically for the type of course content you teach, i.e., Science, Math, Business, History, Art, etc.)</td>
<td>15.79%</td>
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<tr>
<td>Pedagogy related topics (PD on best practices, strategies, or learning theories, etc.)</td>
<td>26.32%</td>
<td>15</td>
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<tr>
<td>Technology related topics (Web 2.0, Google docs, Twitter, Skype, etc)</td>
<td>26.32%</td>
<td>15</td>
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<tr>
<td>A Learning Management System (LMS), e.g., Blackboard, Moodle, D2L, etc.</td>
<td>29.82%</td>
<td>17</td>
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<td>Other (please describe)</td>
<td>1.75%</td>
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that 56% of the faculty focused their PD in this area. However, with over a quarter of the faculty focusing on pedagogy, our research sought to understand faculty needs with respect to pedagogy and learn how to better meet their needs through professional development for engaging and connecting with students. The following provides feedback from faculty on their feelings towards the PD available to them through their university. From this data, we identified a need for culturally responsive teaching practices along with other desires for pedagogical related topics as indicated.

Brian, a full-time faculty member who admitted that he does not come to campus every day, shared more details about aligning PD to faculty’s need given his limited time to join trainings on campus:

In general it’s just ... you need to make it easy for faculty no matter what. And PD should be customized to give faculty the specific help or skills they need most. Like I would be inclined to attend PD about engagement or culture and diversity in online environments, not technology basics.

Even for an experienced online instructor, PD at some level can be beneficial. Yet, another faculty member, Charles, shared that PD has not necessarily been relevant to him as an advanced faculty member because his needs were slightly different at this point, as he shared:

(In the beginning) I was probably an eager faculty member so I was more willing to go to any kind (of PD) even though I was experienced ... although training didn’t feel like it was necessarily helpful to me ... my main challenge has always been connecting with the diversity and expectation of students online. Where are the classes on that?

One faculty member in particular, Erica, felt that PD explaining how to teach online was overdone. Rather than learning how to facilitate, she stated there would be more value in understanding how to “design and build online courses that truly engaged all her students.” Faculty participants also mentioned the idea of having informal PD through conversations and communities of practice. Sue said the following statement about her informal PD experiences:

I think we need to exploit existing communities of practice more. So, divisions, departments, people teaching the same class can collaborate. These are existing, really practical, communities of practice. And, that’s where the learning takes place, you know because it’s those neurons firing and those synapses connecting ... that’s what makes lasting learning and you need a social context to do that. In these spaces we can focus less on the technical aspects and more on learning to connect with each other and how to better connect with our students.

The feedback highlighted here is consistent with other faculty in the study. Each of them struggled with the misalignment of their needs and the training offered, as all of them wanted to participate in PD that helped them further engage students and develop methods, like cultural responsiveness, that would allow them to better connect with the diversity of the students, particularly in online spaces. It was clear that all faculty felt like the PD provided to them has value depending on your career level. Nevertheless, there was a sentiment that most of the trainings did not go deep enough and truly stretch their pedagogy. This faculty feedback offers some clear takeaways for universities and their departments that provide online professional development.

KEY TAKEAWAYS AND RECOMMENDATIONS

These findings highlight three important pieces of information that are salient to our research:

1. The first key takeaway is that even after faculty have experience teaching in online platforms, they still have a lot of areas of deficit and want support in areas they believe will help them continue to improve their practice. This provides an opportunity for universities to rethink how they offer online professional development regardless of faculty years of teaching experience. Knowing that faculty will both want and need on-going professional development, universities may consider creating policies to mandate regular training. Additionally, they can even consider incentivizing faculty to provide some of the training, increasing both a sense of community and ownership of collective growth. King and Aperstein (2015) asserted that faculty need ongoing
support to ensure that they can use the most appropriate technology and maintain a contemporary knowledge of current teaching practices. Both of these approaches would ensure that faculty are getting the on-going support they desire and require.

2. Another area where teachers expressed a need for deeper knowledge was on engaging a diverse student population online. This leads to the next key takeaway: There should be more opportunities provided by universities to create training on developing progressive online learning environments. The participant faculty desired an increased understanding of the implementation of learning activities to diminish challenges associated with cultural differences. From this outcome, online trainers and instructional technology developers can ascertain that there is a need for increased training content that is connected to student engagement. In these trainings, faculty can learn, but also develop and share, best practices on culturally responsive pedagogy, student engagement, instructional design, and other areas key for developing a progressive learning environment. Zuleger (2013) discussed several areas of pedagogical support required for faculty to overcome the differences in the online environment. One area is creating learning environments where students’ culture is represented in the design and creation of the learning space, and they feel connected to the faculty, learning content, and their classmates. Consequently, this highlights an imperative pedagogical development area for universities in giving weight to the importance of aligning course designs with the foundations of culturally responsiveness.

3. One of the benefits of teaching online courses is that faculty do not need to be on campus or even come to campus as frequently as other faculty. The final key takeaway is that universities must diversify professional development offerings (both formal and informal) because online faculty often miss opportunities to participate in on-campus faculty professional development. Accordingly, many faculty who teach in online programs encounter challenges when navigating the merging of teaching and the available technology support. Faculty participate in a wide variety of PD offerings and desire access to them, even if the subject of the PD was not explicitly designed to address the needs of advanced faculty. While full-time faculty working on campus noted that they could easily participate in on-ground PD or workshops, they also appeared to have more asynchronous PD offerings. Similarly, adjunct faculty noted the need to have more PD offerings that were asynchronous to fit their schedules. Additionally, both on-ground and adjunct faculty stated that they enjoyed informal PD opportunities like peer-to-peer discussions, mentoring, and consulting with an instructional designer. Hence, training and instructional design departments may have to consider and provide multiple modes of PD offerings if they want to increase opportunities for participation and skill development.

The participants in this study expressed the need for PD training to be offered utilizing various delivery modes and to allow access at times when convenient for them. Flexibility is needed for both part-time and full-time professors, and, as Elliott et al. (2015) highlights, to ensure universities meet the needs of faculty who are not connected to campus, training programs must provide flexibility with varying content and multiple modes of delivery including synchronous, asynchronous, tutorials, and webinars. This was particularly accurate for the advanced faculty in our research. The level of support felt by faculty can be bolstered by an institution’s willingness to create formal and informal support opportunities having the ultimate goal of developing faculty to best serve students.

CONCLUSIONS
Over the years as universities have gotten less funding from state legislatures and as the price of attending college in traditional higher education institutions has increased, this has led the way for universities to grow their online offerings. As the proportion of students attending universities through online spaces increases, the
needs of online students must become more of a priority. Thus, the needs of online faculty must also be prioritized and nurtured. This is the case for both new and advanced faculty. With both groups, the need to develop culturally responsive practices is the foundation of developing online courses and programs that meet the needs of a variety of learners entering universities today and in the future. Consequently, it is incumbent upon university faculty, charged with shaping future leaders, researchers, and policymakers, to create educational spaces that are relevant and responsive to students’ lived experiences.
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ABSTRACT

The present study operationalizes perceived positive regard in the form of a practical measure that can be applied in distance delivery settings. We collected data by surveying distance students at our university. The questions pertained to the quality of learning and the positive regard of the instructor as perceived by the students. Analytical methods included principal components analysis (PCA) to confirm that each group of questions was measuring a common construct, and correlation (Pearson's r) of the constructs. We found that the affect measure was valid and that it was positively correlated with student learning outcomes.

Keywords: positive regard, distance education, exploratory study, principal components analysis

INTRODUCTION

Student-instructor interactions are an important component in education. These interactions could be in the form of the traditional face-to-face (FTF) settings or through synchronous and/or asynchronous communication technology. Instructor feedback, such as showing support and encouraging students, has been shown to positively influence student learning outcomes (SLO) (Cung et al., 2018; Hoey, 2017; Inayat et al., 2013; Keržič et al., 2019; Kuo et al., 2013; Lin et al., 2017; Picciano, 2002).

According to Smith-Gratto (2014), four types of feedback can be differentiated: immediate, delayed, motivational, and student generated. Immediate feedback is provided as the students work through the course content and is typically formative and ungraded. Delayed feedback, by contrast, is usually delivered after grading assignments and therefore is easy to provide in online settings. For example, Alvarez et al. (2011) identified four types of online feedback for written assignments: corrective feedback, epistemic feedback, suggestive feedback, and epistemic plus suggestive feedback. In contrast, motivational feedback relates to improving student performance or effort by using a smile or a nod during FTF instruction. Finally, student generated feedback is provided either as visible performance or through questions raised by other students and thus points from the student to the teacher. Furthermore, there are comprehensive studies and collections of best practices for how to provide feedback in online environments (see e.g., Espasa & Meneses, 2010; Leibold & Schwarz, 2015).

Positive regard as addressed in this paper is covered much less frequently in the literature. It is a form of student emotional support (i.e., immediate motivational feedback) exhibited by an instructor in different ways and is dependent on the medium of instruction. In traditional FTF settings, instructors will show their positive regard or care for students through immediate feedback that students directly experience, such as a nod, a smile, a word of encouragement, and other direct-learning emotional supports. In online settings this show of positive regard is not as clearly and directly observable since the instructors and the students are not present in one physical location and they could be using synchronous (e.g., live conferencing or chats) and/or asynchronous means of communication (recordings, quizzes, discussion boards, etc.).
While there are several tools that are designed to foster instructor-student interaction, such as discussion boards, email, blogs, video conferencing, and other learning modules that are usually part of many Learning Management Systems, (such as blackboard or Moodle), simply measuring the tools degree of use as they influence SLO has yielded mixed results in earlier studies (Hoey, 2017). Some studies that compared FTF to online course delivery found that online students perceived their learning to be of a lesser quality, felt they were treated with less respect, and had an overall low rating of their online course experience (Bergstrand & Savage, 2013). These results are not surprising because it is not the tools but the way that instructors use them that impacts student behavior and the student course experience. For example, Mazzolini and Maddison (2003) and (2007) examined the effects of instructor postings in online discussions on student participation and perception. They found that frequent postings by instructors usually do not lead to more student postings but tend to shorten online discussions. However, these studies also found that frequent postings from instructors influenced students’ evaluation of the courses in a positive way. They concluded that when students perceive engagement and expertise from their instructor, this affects their level of participation and their overall perception of the online course.

Previous research has explored the relationship between positive regard and SLO in both FTF and online settings (Harder & Abuhamdieh, 2015). This study found that instructors’ positive regard is positively related to the student perception of the overall course. The study relied on secondary data (SIR or Student Instructional Review) that is usually collected at the end of a semester with standard questions related to the quality of instruction, student-instructor interactions, and students’ perceived learning in the course. The study found that positive regard in distance learning classes is perceived as a separate dimension in the student learning experience from all other factors related to the quality of the instructor and instruction. The study also called for future investigation into instructor behaviors that could be relevant to positive regard and developing specific scales that measure positive regard in distance or online courses.

The present study seeks to build on the above findings by asking the following research questions:

**RQ1:** How can perceived positive regard be operationalized in a survey?

**RQ2:** When specifically addressed in a survey, what positive regard relationship with and effect on SLO in distance/online courses can be identified?

**LITERATURE REVIEW**

Student-instructor interactions and their relationships to and effects on SLO began to be examined soon after online courses began to be offered in the early 2000s. For example, Picciano (2002) examined several factors in an online course related to students’ class performance, such as student interaction/participation, student perception of social presence, and the student learning experience. The study found a strong positive relationship between student-instructor interaction in the course and student learning quality and quantity. The study had mixed results when it examined the measures of student-to-student interaction in the class and student performance.

Several more recent studies examined the same variables and relationships and mostly found positive relationships between student-instructor interactions and SLO (Alsharif & Yongyue, 2014; Arbaugh, 2014; Cung et al., 2018; Ekwunife-Orakwue & Teng, 2014; Harder & Abuhamdieh, 2015; Hoey, 2017; Inayat et al., 2013; Keržič et al., 2019; Kuo et al., 2013; Lin et al., 2017). Inayat et al. (2013) conducted a case study that investigated collaborative practices such as group- and teamwork, fast instructor feedback, and course support material on student learning experience, and they found that these factors contributed positively to SLO.

Most recently, studies of student-instructor interaction and SLO in distance settings have largely taken three perspectives: (a) measuring frequency and content of discussion board postings, (b) general predictive models of SLO, including student-instructor interaction, and (c) patterns of student interaction with all course content, including instructors and fellow students. Studies that looked at the frequency of and content in postings on online discussion boards include Cho & Tobias (2016), Hoey (2017), and Parks-Stamm et al. (2017). Other studies sought to find best predictors of SLO (Arbaugh, 2014; Kuo et al., 2013).
Finally, many explored it from student-instructor, student-student, and student technology/content interactions perspectives (Alcott, 2017; Alsharif & Yongyue, 2014; Cung et al., 2018; Ekwunife-Orakwue & Teng, 2014; Hsiao et al., 2019; Lin et al., 2017).

Cho and Tobias (2016) is an example of the first perspective. They examined online discussions as they relate to student learning from the perspectives of community of inquiry, student time spent on discussion boards, student satisfaction, and student achievement. One of the researchers offered the same online class for three consecutive semesters under three different scenarios: the first had no online discussions, the second had discussions between students without instructor participation, and the third had students and the instructor actively engaged in online discussions. The study did not find any significant differences in effects on SLO from the three scenarios, although it did find significant differences in social presence.

Two studies present good examples from the second perspective. Kuo et al. (2013) sought to identify predictors to student satisfaction in online courses. They examined several factors, with student-instructor and student-content interactions and internet self-efficacy being the strongest predictors of student satisfaction. This is a logical finding as more student interactions with the instructor and the content will lead to more satisfied students. On the other hand, student-student interactions and independent academic achievement, or self-regulated learning, were not good predictors of student satisfaction. Arbaugh (2014) found similar results, with instructor teaching presence and student social presence being the strongest predictors of SLO. These studies present important considerations for designing online courses; however, they do not provide instructor specific factors (such as professional competency) or communication factors (such as messaging about late work, offering constructive criticism) that could influence SLO.

Several studies covered the third perspective and examined instructor-student interactions and their effect on SLO. Cung et al. (2018) explored the effect of students meeting the instructor in a physical classroom and increasing instructor email communications in an online course on SLO. The study results indicated an increase in SLO as a result of student-instructor interactions in both settings. Hsiao et al. (2019) investigated patterns of online search and lookup behaviors and their impact on short- and long-term SLO in a flipped classroom setting. They did find that some distinct patterns of search and lookup impacted long-term SLO’s but not short term.

In summary, previous studies suggest a high relevance of instructor-student interaction, but most refer only to the presence and the intensity of such interaction, while either omitting the role of positive regard or incorporating it into a broader concept.

CONCEPTUAL FRAMEWORK

Based on the literature review and our research questions on positive regard and its relationship with and effect on SLO, we used the conceptual framework for this study as depicted in Figure 1.

The independent variable AFFECT captures the four dimensions of positive regard suggested by (Nolan, 2007): individual instructor feedback to students (INDIVIDUAL), instructor professional competency (PROF COMP), instructor communication support (SUPPORT), and instructor demeanor (ENGAGING). Referring to RQ1, we incorporated the dimensions using the following set of 14 Likert-scaled (1–7) items in the survey, hypothesizing:

**H1: All positive regard-related factors load on one principal component—AFFECT.**

Positive regard items based on Nolan’s four dimensions are:

1. Instructor gives personalized feedback (INDIVIDUAL)
2. I have an opportunity to share my background (INDIVIDUAL)
3. Instructor will probe to find out my thinking (INDIVIDUAL)
4. Instructor is aware of current trends in field (PROF COMP)
5. Instructor is authoritative in subject area of course (PROF COMP)
6. Instructor is competent in using tech tools (PROF COMP)
7. Instructor will contact me if I am behind in class (SUPPORT)
8. Instructor goes beyond required level of help (SUPPORT)
9. Instructor is available whenever needed (SUPPORT)  
10. Constructive criticism, not just negative feedback (SUPPORT)  
11. Conveys inclusiveness in syllabus and contact (ENGAGING)  
12. Accepting of diverse opinions in subject area (ENGAGING)  
13. Values a variety of perspectives (ENGAGING)  
14. Responds to questions in nonjudgmental way (ENGAGING)  

In addition to AFFECT as the principal independent variable, student social media habits and whether they perceive a class as challenging were added as moderating variables, because both aspects might change the strength of the impact that positive regard has on SLO. Social media habits are measured by the number of social media sites/apps checked daily and how important students felt social media acknowledgment is to them. Students were asked directly about the degree to which the course has challenged them.  

Finally, SLO serves as the dependent variable. While many of the aforementioned studies measured SLO by the GPA or student satisfaction, this study examined perceived SLO by asking students about their perceptions of subject matter appreciation, whether they feel they achieved the class learning objectives, whether they performed work related to the subject, and how motivated they were towards working on the class assignments. we hypothesized:  

(H2): AFFECT (as the principal component for all positive regard factors) is positively related to self-reported SLO.  

METHODOLOGY  
General Approach  
We used an anonymous, self-report survey with 24 items to collect data from students at our university who had completed a distance class within the past year (see Table 1 for the items per category). The list of 4,902 email addresses in Excel was provided by the university’s director of distance education. No sampling approach was used; the entire population of the target audience was solicited. We entered the survey questions into a Qualtrics form as fill-in, category, or sliding Likert-scaled items, and made sure that every anonymity feature of Qualtrics was used.  

Data Collection and Cleaning  
Each of the subjects was sent a link to the survey embedded in an email. The email explained the nature of the research, provided our contact information, and assured the anonymity of the survey. An initial mass emailing went out in July 2019 to 4,902 potential subjects. After two weeks, 262 had responded. Additional mailings to the entire population went out in August and September, with an introductory paragraph asking recipients to ignore the reminder if they had already taken the survey. At the end of September, the survey was turned off after 475 had responded. We exported the raw response data from Qualtrics to an Excel file, which was visually inspected for missing data and other indicators that a response might not be usable. Qualtrics itself had added fields for: date, time started, time finished, elapsed time, and whether the survey was completed. Any survey that was not completed or remained open for an inordinate time was eliminated. Multiple missing fields was also grounds for exclusion of a survey response from the analysis. After excluding the incomplete responses, 429 usable data points remained, and these records were saved in a final Excel file.  

Analysis  
We used SPSS for PC v.26 to analyze of our data. SPSS for PC is able to import data directly from an Excel workbook, so no intermediary steps were needed once data cleaning in Excel had been completed. In addition to basic descriptive statistics (see Table 1), we utilized Principal Component Analysis (PCA) and correlation as primary procedures. Referring to RQ1, we hoped PCA would confirm H1, that all questions about positive instructor behaviors loaded consistently on one component (AFFECT) and that questions pertaining to self-reported learning outcomes loaded on a separate component. Except for demographics, all other questions concerned either whether the course was challenging (one question) or the respondent’s use of social media (two questions). Correlations were computed between the resulting principal factors to test H2 and answer RQ2.
RESULTS

Using SPSS, the Principal Components method was selected with component cutoff at Eigenvalue = 1. No specific number of components was forced. Given that the resulting components were expected to be correlated, Promax rotation was selected. Measures of suitability of data for factor analysis were specified (KMO and Bartlett’s Test—see Table 2).

Table 3 shows that PCA identified four main components, out of which component 3 and 4 contained the questions from the categories for the moderating variables CHALLENGE (component 3) and SOCIAL (component 4), and component 2 contained the questions belonging to the OUTCOME category (SLO). All other factors loaded on component 1 (AFFECT) that thus aggregates all questions of the categories representing the four dimensions of Positive Regard as operationalized according to Nolan (2007).

To determine the correlation between the Independent and Dependent Variables, we computed a single index for each. To do this, all the items contributing to the IV were averaged (scaling was the same for all) with the result being the computed variable AFFECT. According to the operationalization of positive regard according to Nolan’s (2007) four dimensions as outlined above, fourteen variables contributed equally to the computed IV. Since these factor loadings were high for all independent variable components (Perceived Positive Regard; .566–.960), an average score was computed that revealed a ranking order of these independent variables: Engaging Demeanor—AVG = 904.25 (Rank 1), Communication of Support—AVG = 843.50 (Rank 2), Interest as an Individual—AVG = 804.67 (Rank 3), and Professional Competence—AVG = 618.67 (Rank 4). We followed a similar process to compute a single Dependent Variable, which was labeled OUTCOME. For the two moderator variables, one was a single item (CHALLEN) and the other two were combined into a computed variable labeled SOCIAL.

We ran two regression models—one using only AFFECT to predict OUTCOME, and the other using AFFECT, CHALLEN, and SOCIAL to predict OUTCOME. The resultant R was identical for both runs, indicating that the two moderators added little to the ability to predict OUTCOME. We computed coefficients of regression [r] for each pair of dimensions, which is shown below.

DISCUSSION

This study aims to answer two questions:

RQ1: How can perceived positive regard be operationalized in a survey?

RQ2: When specifically addressed in a survey, what positive regard relationship with SLO in distance/online courses can be identified?

To answer the first question, we developed a specific survey scale that measures each of the four dimensions of Positive Regard as identified by Nolan (2007). The factor analysis in Table 3 shows that all the questions developed to measure the four dimensions of PR loaded on one component that we call AFFECT. This variable captures the essence of the four dimensions identified by Nolan (2007), which include how the instructor shows interest in students as individuals, how the instructor demonstrates their passion towards the subject matter by showing professional competency, how the instructor communicates support to students, and how the instructor exhibits to the class engaging behavior through engaging demeanor. The AFFECT factor is essentially the show of respect, understanding, support and genuine concern for student success in an online class. Based on that, we accept H1: All positive regard-related factors load on one principal component AFFECT.

The second question asks about the relationship between AFFECT and student learning outcomes (SLO) in online classes. Table 4 shows the correlation matrix between the four components developed in this study and SLO (named OUTCOME). The Pearson correlation coefficient between AFFECT and OUTCOME is .755 with .000 p-value, demonstrating a significant positive correlation between these two variables. Based on this result we accept H2: AFFECT (as the principal component for all positive regard factors) is positively related to self-reported SLO. This finding affirms earlier studies that demonstrated positive relationship and effect of student-instructor interactions on SLO (Cung et al., 2018; Keržič et al., 2019; Lin et al., 2017).

We included two moderating variables in this study that were expected to have a moderating effect on the relationship between AFFECT and SLO. The first is whether students perceived the course
to be challenging. The correlation matrix in Table 4 shows a weak positive relationship at .21, albeit significant (p-value .000), between CHALLEN and SLO. The challenging course perception loaded as an individual factor, component 3, so this indicates that it is a uniquely measured variable. We assumed that if the course is perceived to be challenging, higher positive regard expected from the instructor will influence their SLO; however, the data did not support this assumption. This finding contradicts earlier studies that found challenging classes to have positive effect on SLO (Frye, 2020; Guo et al., 2018).

The second moderating variable was measured in two ways: whether students placed high weight on social media feedback, and how often they visited social media sites. These two measures were combined into one component SOCIAL. As Table 5 shows, there is no relationship between social media habits and SLO. We surmised that if students placed high weight on positive feedback from social media friends or acquaintances, they would expect the same from their class instructor, which would influence their SLO. The data did not support this assumption, and this contradicts earlier studies that found positive effect of using social media in a classroom to enhance learning course material (Erarslan, 2019; Fischbach & Zarzosa, 2018; Sharma, 2019), while other studies found that student social media use habits had a negative impact on their learning outcomes (Gok, 2016; Leyrer-Jackson & Wilson, 2018; Shen, 2019).

The data analysis also showed a ranking order of the relationship between the individual components of the independent variable PR and the SLO, where instructor engaging demeanor is found to be the most important perceived factor that is positively related to SLO. This finding is very important for instructors who wish to communicate an engaging demeanor in an online setting. Instructors should exhibit inclusiveness towards students by not dismissing comments or disparaging opinions. They also should accept diverse opinions, whether they are coming from students who are performing well in class or who are underperforming. Finally, instructors’ response should be constructive, helpful, and nonjudgmental.

The second most important variable is communication of support. Instructors should take the initiative when a student is late on an assignment by initiating a contact about it first, being able to help over and beyond what the syllabus states, and offering constructive criticism when evaluating student work. Instructor availability online is also an important factor, where students know they can reach out anytime and receive quick response. The third factor in rank is instructors’ show interest of the student as an individual by personalizing feedback about course work and asking students to share information about themselves that is of interest to the class.

The last rank factor relates to the instructors’ demonstration of professional competency. Instructors can show that through being aware of current trends in their fields and manifesting authority and competency in the subject matter. Taken together, these variables will show highest PR towards students and is expected to have a positive impact on their education.

CONCLUSIONS AND IMPLICATIONS FOR FURTHER RESEARCH

It has been demonstrated through the results and analysis that H1 (all fourteen questions relating to the Independent Variable) is supported. A useful scale for ascertaining perceived positive regard in distance courses was developed based on Nolan’s (2007) four dimensions of Positive Regard (PR), which was a synthesis of prior PR research and of open-ended survey responses from classroom teachers. Fourteen of the twenty-four survey questions were based on Nolan’s work and were all intended to ascertain the degree of positive regard that students perceived while taking the class on which they based their survey responses. This is an important contribution to the literature since distance learning is so prevalent in higher education and has gained even more popularity and importance with the widespread global pandemic of COVID-19.

The regression table also shows that the H2 (Perceived Positive Regard will positively impact Student Learning Outcomes) is supported. Perceived Positive Regard (PPR), also referred to as Positive Regard, has been shown in many studies to be important for achieving learning objectives in traditional classroom settings, so it was not surprising that a strong positive relationship was found. Formulating a workable, grounded scale for measuring PPR in actual distance courses using
an online survey tool is the principal contribution of our study studying and improving distance teaching practices.

The intended moderator variables (Challenging Course, Social Media Use) were added by us. We felt that if certain factors had a significant impact on learning outcomes as well, this would be good to know. It appears from our results that there was no strong effect, but future research may revisit these constructs using keener or more relevant measures of the attributes.

We suggest future research into instructor behaviors, characteristics, or pedagogical styles that may be related to Perceived Positive Regard. The scale developed here should be most helpful in such studies. With instructional delivery moving ever more toward the distance mode, understanding the impact of teaching practices and teacher behaviors is critical. It is also of great importance to understand differential perceptions of instructor behaviors and characteristics based on gender, ethnicity, age, or other individual learner attributes.

Additional research on this topic would benefit from ascertaining and controlling for the actual delivery methods used in the distance courses being studied. In the current study, it can be reasonably assumed that most classes that respondents had taken prior to answering the survey were taught primarily through asynchronous mechanisms (email, post hoc feedback, self-guided learning modules, and the like). Such techniques are consistently used at our university with little synchronous contact. In recent semesters however, and particularly since the current pandemic-driven move to all distance modality, instructors are engaging in much higher levels of real-time interaction (Skype, Zoom, specific tools in a Learning Management System, and so on). Since this would be expected to impact students’ perception of instructor affect, it should be a factor in future research and conclusions.

As in every field of endeavor, quality is strategically important. Schools, school districts, and institutions of higher education record, measure, and analyze student learning outcomes. The practice of assessment itself is a subject of high interest in the educational literature. Metrics and the underlying theory relating to the continuous assessment of teaching practices can be the beneficiaries of this study.
Table 1. Descriptive Statistics

<table>
<thead>
<tr>
<th>Var. Name</th>
<th>Description</th>
<th>Category per Model</th>
<th>Mean</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE</td>
<td>Age of respondent</td>
<td>BIO</td>
<td>34.28</td>
<td>18–65</td>
</tr>
<tr>
<td>GPA</td>
<td>Self-reported overall GPA</td>
<td>BIO</td>
<td>3.47</td>
<td>1.0–4.0</td>
</tr>
<tr>
<td>LEVEL</td>
<td>Academic level (FR, SO, JR, SR, GR)</td>
<td>BIO</td>
<td>3.99</td>
<td>1–5</td>
</tr>
<tr>
<td>APPREC</td>
<td>My level of appreciation for the subject increased</td>
<td>OUTCOME (DV)</td>
<td>4.97</td>
<td>1–7</td>
</tr>
<tr>
<td>OBJ</td>
<td>I achieved the stated learning objectives</td>
<td>OUTCOME (DV)</td>
<td>5.38</td>
<td>1–7</td>
</tr>
<tr>
<td>CONF</td>
<td>Increased confidence in ability to do related work</td>
<td>OUTCOME (DV)</td>
<td>5.22</td>
<td>1–7</td>
</tr>
<tr>
<td>MOTIV</td>
<td>I felt motivated to do my best work</td>
<td>OUTCOME (DV)</td>
<td>5.24</td>
<td>1–7</td>
</tr>
<tr>
<td>DIFF_SM</td>
<td>How many forms of daily social media used daily</td>
<td>SOCIAL</td>
<td>2.28</td>
<td>0–10</td>
</tr>
<tr>
<td>ACKNOWL</td>
<td>How important is acknowledgement if I post to social media</td>
<td>SOCIAL</td>
<td>4.27</td>
<td>1–11</td>
</tr>
<tr>
<td>CHALLEN</td>
<td>How challenging was this class for me</td>
<td>CHALLENGE</td>
<td>7.72</td>
<td>1–10</td>
</tr>
<tr>
<td>PERS_FB</td>
<td>Instructor gives personalized feedback</td>
<td>INDIVIDUAL (IV)</td>
<td>4.95</td>
<td>1–7</td>
</tr>
<tr>
<td>SHARE</td>
<td>I have an opportunity to share my background</td>
<td>INDIVIDUAL (IV)</td>
<td>5.45</td>
<td>1–7</td>
</tr>
<tr>
<td>PROBES</td>
<td>Instructor will probe to find out my thinking</td>
<td>INDIVIDUAL (IV)</td>
<td>4.57</td>
<td>1–7</td>
</tr>
<tr>
<td>CURRENT</td>
<td>Instructor is aware of current trends in the field</td>
<td>PROF COMP (IV)</td>
<td>5.63</td>
<td>1–7</td>
</tr>
<tr>
<td>AUTH</td>
<td>Instructor is authoritative in subject area of the course</td>
<td>PROF COMP (IV)</td>
<td>5.78</td>
<td>1–7</td>
</tr>
<tr>
<td>TECH</td>
<td>Instructor is competent in using tech tools</td>
<td>PROF COMP (IV)</td>
<td>5.78</td>
<td>1–7</td>
</tr>
<tr>
<td>CONTACT</td>
<td>Instructor will contact me if I am behind in class</td>
<td>SUPPORT (IV)</td>
<td>4.42</td>
<td>1–7</td>
</tr>
<tr>
<td>BEYOND</td>
<td>Instructor goes beyond required level of help</td>
<td>SUPPORT (IV)</td>
<td>4.81</td>
<td>1–7</td>
</tr>
<tr>
<td>AVAIL</td>
<td>Instructor is available whenever needed</td>
<td>SUPPORT (IV)</td>
<td>5.11</td>
<td>1–7</td>
</tr>
<tr>
<td>CONCRIT</td>
<td>Constructive criticism, not just negative feedback</td>
<td>SUPPORT (IV)</td>
<td>5.19</td>
<td>1–7</td>
</tr>
<tr>
<td>INCLUSN</td>
<td>Conveys inclusiveness in syllabus and contact</td>
<td>ENGAGING (IV)</td>
<td>5.51</td>
<td>1–7</td>
</tr>
<tr>
<td>DIVERSITY</td>
<td>Accepting of diverse opinions in subject area</td>
<td>ENGAGING (IV)</td>
<td>5.60</td>
<td>1–7</td>
</tr>
<tr>
<td>PERSPCTV</td>
<td>Values a variety of perspectives</td>
<td>ENGAGING (IV)</td>
<td>5.55</td>
<td>1–7</td>
</tr>
<tr>
<td>NON_JUDG</td>
<td>Responds to questions in nonjudgmental way</td>
<td>ENGAGING (IV)</td>
<td>5.56</td>
<td>1–7</td>
</tr>
</tbody>
</table>


Table 2. Measures of Suitability of Data for Factor Analysis

<table>
<thead>
<tr>
<th>Kaiser-Meyer-Olkin Measure of Sampling Adequacy</th>
<th>Bartlett’s Test of Sphericity</th>
<th>Approx. Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>.961*</td>
<td>8060.526</td>
<td>210</td>
</tr>
<tr>
<td></td>
<td>.000**</td>
<td></td>
</tr>
</tbody>
</table>

* close to 1.0 is generally accepted
** less than .05 is generally accepted

Table 3. Factor Loadings Using Pattern Matrix*

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Component 1</th>
<th>Component 2</th>
<th>Component 3</th>
<th>Component 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPREC</td>
<td>.040</td>
<td>.881</td>
<td>.066</td>
<td>.018</td>
</tr>
<tr>
<td>OBJ</td>
<td>.070</td>
<td>.898</td>
<td>-.118</td>
<td>-.042</td>
</tr>
<tr>
<td>CONF</td>
<td>.080</td>
<td>.887</td>
<td>-.046</td>
<td>.059</td>
</tr>
<tr>
<td>MOTIV</td>
<td>-.034</td>
<td>.911</td>
<td>.065</td>
<td>-.022</td>
</tr>
<tr>
<td>DIFF_SM</td>
<td>.049</td>
<td>.041</td>
<td>-.272</td>
<td>.721</td>
</tr>
<tr>
<td>ACKNOWLEDG</td>
<td>-.027</td>
<td>-.033</td>
<td>.245</td>
<td>.791</td>
</tr>
<tr>
<td>CHALLENGE</td>
<td>-.021</td>
<td>-.010</td>
<td>.917</td>
<td>.001</td>
</tr>
<tr>
<td>PERS_FB</td>
<td>.791</td>
<td>.112</td>
<td>-.002</td>
<td>-.006</td>
</tr>
<tr>
<td>SHARE</td>
<td>.781</td>
<td>.024</td>
<td>-.064</td>
<td>-.029</td>
</tr>
<tr>
<td>PROBES</td>
<td>.842</td>
<td>.018</td>
<td>.009</td>
<td>.061</td>
</tr>
<tr>
<td>CURRENT</td>
<td>.650</td>
<td>.203</td>
<td>.134</td>
<td>.008</td>
</tr>
<tr>
<td>AUTH</td>
<td>.566</td>
<td>.088</td>
<td>.317</td>
<td>-.003</td>
</tr>
<tr>
<td>TECH</td>
<td>.640</td>
<td>.153</td>
<td>.067</td>
<td>-.085</td>
</tr>
<tr>
<td>CONTACT</td>
<td>.767</td>
<td>-.080</td>
<td>.008</td>
<td>.118</td>
</tr>
<tr>
<td>BEYOND</td>
<td>.834</td>
<td>-.008</td>
<td>.070</td>
<td>.023</td>
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<td>AVAL</td>
<td>.902</td>
<td>-.098</td>
<td>.069</td>
<td>-.083</td>
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<td>CONCRIT</td>
<td>.871</td>
<td>.053</td>
<td>.021</td>
<td>.005</td>
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<td>.002</td>
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<td>.909</td>
<td>-.008</td>
<td>-.080</td>
<td>-.003</td>
</tr>
<tr>
<td>PERSPECTV</td>
<td>.960</td>
<td>-.057</td>
<td>-.074</td>
<td>-.031</td>
</tr>
<tr>
<td>NON_JUDG</td>
<td>.853</td>
<td>.084</td>
<td>-.069</td>
<td>.020</td>
</tr>
</tbody>
</table>

*Pattern Matrix isolates item’s unique contribution to the component.

Table 4. Correlation Results*

<table>
<thead>
<tr>
<th>OUTCOME</th>
<th>AFFECT</th>
<th>SOCIAL</th>
<th>CHALLENGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUTCOME</td>
<td>1.000</td>
<td>.755 / .000</td>
<td>-.022 / .331</td>
</tr>
<tr>
<td>AFFECT</td>
<td>.755 / .000</td>
<td>1.000</td>
<td>-.006 / .455</td>
</tr>
<tr>
<td>SOCIAL</td>
<td>-.022 / .331</td>
<td>-.006 / .455</td>
<td>1.000</td>
</tr>
<tr>
<td>CHALLENGE</td>
<td>.201 / .000</td>
<td>.241 / .000</td>
<td>-.005 / .461</td>
</tr>
</tbody>
</table>

* The first number represents the Pearson correlation coefficient \( r \) and the second indicates level of significance [one tail t-test]
Table 5. Independent Variables Rank

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Average score</th>
<th>Rank</th>
</tr>
</thead>
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<tr>
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EFFECTIVE PRACTICES IN FACILITATING NONTRADITIONAL ADULT LEARNERS’ DISSERTATION WRITING IN AN ONLINE DOCTORAL PROGRAM

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ABSTRACT

To address the challenges nontraditional adult doctoral learners face in completing dissertations online, we reflect on the effective practices utilized in an online doctoral-level educational leadership program at a public university in the United States. This paper focused on two major topics: 1) how to prepare students to write a dissertation through coursework based on the Competency-based Education (CBE) theory; and 2) how to build relationships between mentors and students writing dissertations based on the Community of Inquiry (CoI) framework. The theoretically founded practices based on CBE and CoI must be utilized in building an interactive, collaborative online learning community.

Keywords: competency-based education, dissertation writing, online learning

INTRODUCTION

According to the andragogy theory (Knowles, 1970, 1985), adults’ learning is self-directed and intrinsically motivated, and adults are eager to understand the rationale behind learning. As a major theoretical framework of adult education, the andragogy learning theory highly values adult learners’ life experiences and believes it is learners’ prior experiences that provide a foundation for their learning. Also, adult learners normally have immediate needs to apply their learning to fulfill their social roles and to solve practical problems (Holton et al., 2001). In the higher education programs serving nontraditional adult learners, it is imperative that adult learners’ learning characteristics are well understood so that appropriate and effective andragogical educational practices can be provided in teaching and mentoring. This becomes especially challenging when learning takes place online, where face-to-face interaction is absent.

In recent years, the way education is delivered has transformed dramatically with the increasing popularity of internet and digital technologies (e.g., email, instant messaging, Interactive video conferencing, mobile/smartphones, and social networks) (Cook & Sonnenberg, 2014; Friedman & Moody, 2021). With the exponential growth of online technology usages and activities, there has been a rapid growth in online course enrollment in higher education. Data from the Babson Survey Research Group showed that more than 6.3 million students in the United States took at least one online course in fall 2016 (Seaman et al., 2018). U.S. public colleges and universities had a 7.3% increase in online course enrollment between fall 2015 and fall 2016, and private nonprofit schools had an increase of 7.1%. In the state of Texas, among 53 doctoral-level educational leadership programs at public universities, 40 (75.4%) are either 100% online, fully online (86%–99%), or hybrid/blended/electronic (Texas Higher Education Coordinating Board, 2018).

For many doctoral programs in higher education, one of the challenges they face is that many students end up at the all-but-dissertation (ABD) stage,
leading to attrition issues. According to the Council of Graduate Schools (2017), approximately 50% of doctoral students fail to complete their terminal degrees. Online doctoral students have been shown to have a higher risk of degree noncompletion than their counterparts in traditional programs (Cross, 2014; Ehrenberg et al., 2009; Johnson et al., 2000; Terrell et al., 2016). One major obstacle has been the transition from coursework to writing and completing the dissertation (Fiore et al., 2019). The Council of Graduate Schools (1977, cited in Bargar & Duncan, 1982) defined the main purpose of doctoral training as being “to prepare a student for a lifetime of intellectual inquiry that manifests itself in creative scholarship and research” (p. 1). In theory, the dissertation offers the training that enables students to transition from “student” to “independent scholar,” but in reality, it has remained a major challenge for doctoral programs to find the best way to foster students’ transitions to becoming independent researchers (Lovitts, 2008). Faculty need training, external supports, and prolonged experience in developing online teaching skills in mentoring dissertation research (Mcgee et al., 2017) because hardship and ambiguity have been commonly reported surrounding the dissertation process from the student perspective (Gardner, 2010).

Given the characteristics of nontraditional adult learners and the challenges online learners face in completing dissertations, this paper was written from the dissertation chair/faculty perspective and reflects on effective practices that could help facilitate nontraditional students’ dissertation writing in an online program. The program examined in this paper is a 100% online educational leadership doctoral program at a doctorate-granting, public university in Texas. All students in this program are nontraditional adult learners who hold full-time leadership positions in K–12 educational systems in Texas while enrolled in the program. Benefiting from the flexibility of learning without geographic and temporal limitations, students are able to take courses and complete their dissertations online in either a synchronous or asynchronous manner. With a high enrollment of approximately 300 doctoral students, both faculty and students face challenges in dissertation writing/mentoring and in improving students’ terminal degree completion rate. We focused on the following questions: 1) How can we prepare students for their dissertation research through the courses we teach? Particularly, how can we enhance the instructional effectiveness of research methods courses? 2) What are the relationship-building practices that could help improve dissertation mentoring effectiveness in working with doctoral students online?

It is our hope that the practices discussed in this paper will reveal options that could be implemented to facilitate online, nontraditional adult doctoral learners’ dissertation writing in higher education. We discuss two theoretical frameworks below to lay the theoretical foundations, followed by descriptions of best practices that are theoretically based yet pragmatic. Through reflecting on the practices used in our daily online teaching job, we hope to inspire more discussion about how to support nontraditional doctoral learners’ dissertation writing in the online learning environment.

THEORETICAL FRAMEWORKS

Competency-Based Education (CBE)

According to Competency-Based Education (CBE), in designing educational courses or programs, students’ learning outcomes are established first, instructional pedagogy is aligned with the learning outcomes in the design process, student success is measured with a structured methodology, and curriculum adjustments are made after the outcomes are evaluated (Gervais, 2016; Le et al., 2014; Priest et al., 2012; Spady, 1977). Johnstone and Soares (2014) proposed five principles for successful CBE model implementation: (1) the degree reflects robust and valid competencies; (2) students are able to learn at a variable pace and are supported in learning; (3) effective learning resources are available anytime and are reusable; (4) the process for mapping competencies to courses, learning outcomes, and assessments is explicit; and (5) assessments are secure and reliable. It is believed that with successful implementation of those five principles, CBE could succeed in enhancing students’ knowledge mastery and skills application in the real world. Rivenbark and Jacobson (2014) further noted that a successful mission-based CBE program should be well-balanced between theoretical, conceptual knowledge and practical skill acquisition. Well-
designed competencies should increase skills without sacrificing academic rigor.

In fostering doctoral learners’ dissertation writing, a strong collaborative community is the key (Peters et al., 2015). From the whole-system design perspective, they pointed out that a series of components should be included in a program to meet the anticipated competencies of the program. Peters et al. utilized multiple strategies to help with the “abrupt” transition from coursework to dissertation writing in the early dissertation writing process. For example, weekly collaborations between faculty and students were utilized to establish a collaborative learning community where mutually agreed upon goals were reached to advance the dissertation; weekly peer meetings were arranged for students to share ideas and concerns with one another to create a safe space in the collaborative community; and additional structured partnerships between faculty and students were established to allow faculty to share personal experiences to provide psychological support for doctoral students in dealing with anxiety and feelings of abruptness and unsettledness. Another important piece of the collaborative community was the role methodologists play in dissertation writing (Peters et al., 2015). Methodologists were proactively integrated into the program as full dissertation partners. Instead of functioning as an “enhancement or add-on,” methodologists played a fundamental role in helping students connect dissertation research questions with appropriate research tools. All components in this program were well-aligned with the CBE rationale in building an effective, collaborative community to foster students’ dissertation writing.

Community of Inquiry (CoI)

The Community of Inquiry (CoI) framework (Garrison et al., 2000) is one of the major theories about how to structure the learning process in an online environment. In the CoI framework, three elements are interrelated: cognitive presence, teaching presence, and social presence. Cognitive presence is “the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse” (Garrison et al., 2001, p. 11). Teaching presence is “the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes (p. 5). Social presence was defined as “the ability of participants to identify with the community, communicate purposefully in a trusting environment, and develop interpersonal relationships by way of projecting their individual personalities” (Garrison, 2009, p. 352). Lipman (2003) posited that CoI is “thoroughly social and communal, a method for integrating emotive experience, mental acts, thinking skills, and informal fallacies into a concerted approach to the improvement of reasoning and judgement” (p. 18). Cleveland-Innes and Campbell (2012) further emphasized emotive experience in online learning and defined emotional presence 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). For midcareer adult online learners, social support from family, friends, and peers was found to be predictive of their academic self-regulation (Williams et al., 2019).

While it is important to incorporate cognitive, learning, and social presences in online programs, the role emotion plays in the daily instructional practices should be highlighted in online teaching and mentoring. Emotional presence and relationship building are essential for building a successful online learning community to create a safe environment for students to learn. For example, a cohort experience and a face-to-face orientation were found to be critical to the sense of community among online doctoral students (Byrd, 2016). In a one-to-one online math coaching program using text-based chat and a shared digital whiteboard, emotional presence was found to be essential and distinctive in students’ learning process (Stenbom, Hrastinski, & Cleveland-Innes, 2016). In another online assignment where students read, researched, and viewed videos about the homeless population, students’ emotional responses were found to be fundamental to their deep learning and lasting knowledge acquisition (Williams, 2017). It was noted that emotions encountered in completing this assignment connected students, particularly adult students, to their real-life experiences. Williams recommended authentic learning design, generalizability, and experiential
teaching for incorporating emotional presence into online course design.

**PRACTICE ONE: PREPARING STUDENTS FOR DISSERTATION IN COURSEWORK**

While doctoral learners’ transition to dissertation writing could be fostered through a collaborative mentoring process at the early dissertation stage as discussed above (Peters et al., 2015), we believe it is important to equip students with the competencies needed for the dissertation during the coursework stage. Given such, it becomes critical to utilize CBE rationales in our fully online doctoral program to identify and incorporate the essential knowledge and skills into the program/course design. Aligned with the CBE rationale, the first practice discussed here uses an online statistics course design as an example to show how to prepare online adult learners during the coursework stage.

Past research has questioned the effectiveness of online statistics teaching due to the abstract nature of this subject (Larwin & Larwin, 2011; Lu & Lemonde, 2013). It was claimed that online statistics teaching barely produced comparable learning outcomes to those of face-to-face teaching, especially among lower-performing students. In this situation, it becomes the central focus of doctoral programs to offer quality online statistics courses where students can learn and acquire the expected dissertation competency. The sequence of course content, communication modes, and assignment structures should be considered (Baldwin, 2017), and effective instructional strategies (e.g., curriculum and instructional styles and pedagogical means) should be incorporated into the design to guide the development of course content, student engagement, and learning activities (Bonk & Dennen, 2003). Instruction regarding reflection should also be incorporated into the course design to enhance the breadth and depth of higher order learning in a blended course (McDonald et al., 2014).

In the online, doctoral-level educational leadership program discussed in this paper, the online, doctoral-level introductory statistics course covers fundamental statistical concepts and focuses on the application of statistical tests in research. The course’s ultimate goals are that students gain fundamental statistics knowledge, understand quantitative research design, and, most importantly, apply their knowledge base to actual data analysis for their dissertation. After identifying such an anticipated competency for students’ dissertation writing, the instructor laid out the specific knowledge and skills the students were expected to master for their dissertation writing, which included basic concepts about quantitative research design and variables, descriptive statistics, correlation and simple regression, independent samples t-test, dependent samples t-test, one-way ANOVA with post hoc test, and chi-square. IBM SPSS software was also utilized in this course so the students could acquire practical skills for their dissertation research. Each course module was then carefully designed to ensure that the students acquired the knowledge mastery and skills regarding the concepts identified above. Each unit included three components (i.e., study materials, quiz, and miniproject assignment), and students were required to complete each in order. Under study materials, multiple lectures on PowerPoint were presented in 5- to 15-minute short videos to cover various topics. Lectures on big topics were broken down into a series of shorter episodes to ensure that the lectures could fit into nontraditional students’ schedules. In each module, quizzes were used to enhance the students’ conceptual learning of statistics, and miniproject assignments were used to develop the students’ data-related skills using IBM SPSS. Meanwhile, optional weekly synchronous Q&A sessions were conducted via Zoom to provide “face-to-face” communication for clarification, feedback, or lectures in the hope of enhancing immediacy by building a sense of an online learning community (Tsai, et al., 2008; Williams, 2010).

In a qualitative study, 15 students were asked to answer five open-ended reflection questions (Yang, 2017) about how they perceived the effectiveness of the instructional strategies and course design features of this course (Jiang et al., 2019). The five reflection questions were:

1. What was the most effective instructional strategy (such as PowerPoint with lectures, documents, miniproject assignments, weekly Q&A sessions) that helped you learn?
2. How do you perceive the instructional strategies adopted or the course design in this online course?
3. Were there any other instructional strategies that were not adopted in this course that you used on your own?

4. Were the learning activities helpful for you to learn the concepts/materials? What kind of activity (activities) did you find the most helpful?

5. Do you have any other comments for the course? Please be specific.

Content analysis revealed that students preferred PowerPoint presentations with lecture recordings and synchronous Q&A sessions. More importantly, students valued the cohesiveness of the course design and the umbrella design encompassing PowerPoint, Q&A sessions, supplemental documents, the miniproject assignment, and quizzes. All strategies were perceived by students to be closely related and to build their data analysis skills. For example, a student stated that they liked how the course design “was the spiraling of concepts from one lesson to the next. We continued to use the terminology and strategies week to week. Each week in IBM SPSS built upon a previous week.” When asked to reflect on their learning experiences, students said they enjoyed the opportunity to play around with real data in their coursework. While learning theory is the cornerstone of learning, CBE could help bridge the gap between academics and working fields by transforming knowledge into concrete skills that learners need to master and implement in the real world. A student shared,

The learning activities were especially helpful. The assignments that we completed each week helped me to apply the concepts. The practice with the IBM SPSS program was very beneficial and actually enjoyable. When I completed a weekly assignment, I felt a great sense of accomplishment and understanding. Although I am not sure I recognize every time I should use a particular test, I am much more confident than I was when I began this course.

It is evident that students gained self-efficacy and became more confident in using the skills they learned in this course for future work. Students’ feedback about this CBE-oriented course design makes us realize that adult learners heartily value the direct impact of classroom learning when the course design empowers them to apply what they learn to solving real-world problems (Holton et al., 2001). A student simply pointed out that we need to “work on the dissertation throughout the online courses.”

Based on the practice used in this online statistics course in the doctoral-level educational leadership program discussed in this paper, our belief is that a competency-based course design could be the key starting point in preparing students for the transition to independent research. In a course where modules are built upon the anticipated competencies required for students’ future projects and where course learning activities are well-aligned with the needed outcomes, students will be more likely to move towards their dissertation writing goals with confidence. In this case, the capability and confidence students built from the coursework could be readily transferred to their dissertation writing, making them less likely to get intimidated by their dissertation research projects (Johnstone & Soares, 2014).

PRACTICE TWO: RELATIONSHIP BUILDING IN DISSERTATION WRITING

Past research on the CoI framework suggested the importance of the emotional component in online learning (Cleveland-Innes & Campbell, 2012; Stenbom, Hrastinski, & Cleveland-Innes, 2016; William, 2017) and age was found to be significant to online learning (Akyol et al., 2010; Shea & Bidjerano, 2009). In this paper, we would like to further argue that, given the characteristics of online, nontraditional adult learners, more attention should be paid to emotional presence and relationship building in mentoring learners in dissertation writing. Since older learners may have a different perception of learning because of their prior work and life experiences, andragogical strategies should be reconsidered to help nontraditional adult learners with the dissertation.

There are many different approaches to writing a dissertation and no one approach is necessarily better than another. This holds especially true for nontraditional adult learners who work full time in a leadership position in K–12. Learners in our doctoral program all present with different backgrounds, learning styles, capacities, and skill sets. For students with a clear dissertation idea in mind, the chair’s standard guidance quickly
leads them to identify the problem and lay out the methodological details of the study, but for others with only remotely appropriate research ideas, more effort is needed from both the student and the mentor. Students’ intrinsic motivation for taking the initiative in this case sets successful learners apart from their counterparts (Joyner, et al., 2018). Students’ successful dissertation completion is highly contingent on and affected by an individual student’s competence and dedication to the process. Learners who possess excellent writing and communication skills are usually the best at taking direction from their chairs and making suggested revisions throughout the dissertation process; those who do not choose to take direction from the chair are the ones who make the process the most difficult.

In this online doctoral program, students hold school leadership positions, and at times may be more resistant to taking instructional directives from mentors. It is worth noting that students’ emotional states could get in their way during the dissertation writing stage. Learners sometimes feel frustrated, exhausted, and angered by their slow progress. It is not uncommon for chairs to work with learners who may no longer be willing to listen or grasp their advisor’s words of wisdom. The quality of the dissertation becomes less of concern to such students than reaching the finish line.

The experiences and observations mentioned above led us to one key question: What are the best practices that could help students make progress with the dissertation? In the online statistics course discussed above, synchronous communication via Zoom conferencing created a welcoming tone for the students and personalized their online learning experiences. Similarly, relationship building was found to be a critical component in dissertation writing (Jiang & Koo, 2020). In a qualitative study, 35 doctoral students in the online educational leadership program were asked three open-ended questions regarding their online learning experiences: Question 1 asked about students’ overall online learning experiences and whether they were satisfied and why, question 2 asked about the challenges students faced in their online learning, and question 3 focused on what they needed for a better online learning experience.

Students’ responses showed their recognition and appreciation of the connection they had with their instructor and peers. One student stated, “I am grateful for my advisor [who] also served as my dissertation chair. Dr. A was always responsive, answered emails promptly and did not hesitate to call me when necessary. Three reasons: convenience, responsive professors, clear expectations.” Such a statement indicates that students need a close connection with their chair and it highlights the importance of relationship building in creating a collaborative online learning community. When asked about the challenges they faced in online learning/mentoring, some students showed their disappointment due to a lack of connection or sense of belonging to the program. They conveyed strong messages about the need to get connected to their chair and peers for either educational resources or simply for psychological support. For example, a student suggested “more face to face interaction” and a “once a year meet and greet” with faculty: “A schedule of expected communication between professor and student . . . at a minimum of monthly [meetings].” More than that, students expressed their need for more connection with the program and the university as a whole. Some wanted “more interaction with fellow classmates” and expressed a need to “connect students to other university information and discussions.” On-site connections were noted by quite a few students: “Meeting professors and other students in person or have a set day for a video conference for part of the learning.”

From the students’ responses above, we determined that there is a great need to get students and advisors connected and working in collaboration through different venues, including asynchronous and synchronous online communication. From the mentor perspective, it was evident that a strong learner-chair relationship is the key that would keep the learner-chair connection open to guarantee effective and efficient communication in facilitating dissertation work. No matter whether it is in-person, face-to-face communication, video conferencing, or telephonic interaction, the keys are to make connections, build a relationship, and keep communication open so learners feel safe and confident in their dissertation writing (Smith et al., 2017). The learner and the chair must function as two individuals in a “collaborative relationship who aim to resolve an educational issue” (Stenbom,
In addition to providing expectations and guidelines revolving around appropriate engagement and participation to enhance students’ comfort “in exchanging constructive, collegial ideas with others” (Reio & Crim, 2013, p. 31), a relationship of inquiry should be established between an advisor and advisee when face-to-face communication is lacking in the online learning environment (Stenbom, Hrastinski, & Cleveland-Innes, 2016). Relationship building is the key in creating an authentic learning experiences for online learners.

DISCUSSIONS AND IMPLICATIONS

While the dissertation writing process is certainly not new, the mode by which online learners complete the process has taken on a new blueprint. The research-based best practices presented above show great potential to provide effective online teaching and mentoring practices in working with nontraditional students in higher education. To facilitate the work of nontraditional, online dissertation students, our first thought is to apply CBE theory in creating a doctoral program that prepares students for the dissertation challenge. The pedagogical strategies that should be focused on in course design first include establishing anticipated learning outcomes, aligning instructional pedagogy with the identified competencies and skills, and making curriculum and instruction adjustments based upon student feedback. It is critical to map the anticipated competencies to the course learning outcomes to ensure course design success through objective assessments (Gyll & Ragland, 2018; Nodine, 2016). Furthermore, it is important to make students aware of the course alignment so they understand that the knowledge and skills learned in the course are applicable in the real world so that students’ learning interest, self-efficacy, and learning effectiveness can be enhanced.

Secondly, building relationship with students is the key starting point in working with them in the online learning environment. Reflecting on the practices used in teaching and mentoring dissertation students, and the feedback collected from students, we believe emotional, psychological support could be the magic missing piece to online learning and mentoring. On top of the teaching, cognitive, and social presence elements of the CoI framework (Garrison et al., 2000), it was evident how critical the emotional component is in the dissertation process. As Cleveland-Innes and Campbell (2012) proposed, the exchange of emotion, affect, and feeling between the chair and the student may be indispensable to the success of dissertation mentoring online. In the online learning environment, psychological support should be the first issue addressed before proceeding to the dissertation work per se. Given that, individualized, one-on-one chair-student interaction should be provided to address the challenges nontraditional dissertation students face in the online setting.

There are several specific practices that can be beneficial to nontraditional online dissertation students:

1. In the proposal writing stage, respect students’ different learning styles to meet their individualized needs. Some students prefer meeting face-to-face while others are comfortable with receiving written feedback. Chairs should do their best to meet individualized student needs and embrace different learning styles.

2. Regardless of the format of the communication, focus on establishing a great sense of trust, flexibility, and belongingness in the learner-chair relationship.

3. In the data collection stage, keep the communication channel open so that strong-willed students can be directed to follow the proposed design without deviation and conduct research within the ethical parameters.

4. In the post–data collection stage, make sure to continue weekly communication via phone, online, and in person. Learner-chair interactions and the frequency of those interactions normally are the deciding factors in students’ completion of the dissertation process.

5. Build a supportive community where students are wholly supported by strong, nurturing committee members. We must understand that the dissertation is vastly unpredictable, unparalleled in rigor, and contingent on many factors. Therefore, it is
important to establish a good, coherent bond among the learner, chair, and committee members.

6. Focus on the long-term student-chair relationship. Students who establish strong bonds with their chairs are more likely to successfully complete their dissertations. Sometimes a close relationship with the chair postgraduation enables them to pursue a teaching job in higher education.

CONCLUSIONS
The move from face-to-face classroom instruction to online instruction has changed teaching and how students learn. To ensure nontraditional students’ preparedness for the dissertation and future challenges, we must embrace the theoretically founded practices put before us that have been shown to be successful and use CBE for structuring an effective program. Additionally, CoI guidance must be utilized when building an interactive, collaborative learning community in an online learning environment. By sharing the time-tested strategies that we have utilized in the process of leading learners through the dissertation, it is our hope to shed light on ways to enhance online educators’ teaching and mentoring competencies in higher education.

LIMITATIONS AND FUTURE RESEARCH
This paper focused on nontraditional adult dissertation students in the educational field; therefore, the discussion and conclusions might be limited in their implications for other majors and populations in higher education. Future studies could examine different student bodies, such as those who learn in different settings with different cultures (i.e., low SES, rural, or marginalized populations), regardless of being traditional or nontraditional. After all, taking advantage of technology and the internet and finding ways to maximize their advantages for educational purposes should be goals for all educators.
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TEXT-BASED VERSUS VIDEO DISCUSSIONS TO PROMOTE A SENSE OF COMMUNITY: AN INTERNATIONAL MIXED-METHODS STUDY

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ABSTRACT

Creating an engaging online course where students feel part of an online community can be challenging even for the most experienced online educator. Online discussions are a common tool used to connect students in online courses, but it is often limited to text-based posts. This international research study compared the use of text-based versus video-based discussions in online courses to ascertain students’ perceptions of social presence. A mixed-methods design using a modified Social Presence, Likert-scale survey and open-ended questions was utilized to evaluate students’ perceptions. The results showed that while students preferred text-based to video-based discussions, students perceived more social presence when using video-based discussions.

Keywords: online learning, online discussions, video-based discussions, text-based discussions, community of learners

INTRODUCTION

Enrollment in online programs, both in the United States and Canada, continues to increase. In the United States online education has increased for the fourteenth straight year with over 3.2 million students enrolled exclusively in online classes (National Center for Education Statistics, 2018; Seaman et al., 2018). Canada saw online course registrations grow approximately 10% from 2018 to 2019 while the total number of course registrations remained unchanged (Canadian Digital Learning Research Association, 2019). At the same time, online education has a 20% higher attrition rate than face-to-face programs. This attrition has been attributed to a lack of engagement leading to students feeling isolated (Purarjomandlangrudi et al., 2016; Stott, 2016). Furthermore, the pandemic has moved many more students into the online environment as many colleges across both the United States and Canada were forced to quickly move their classes online. It is currently unknown when full face-to-face instruction will resume. As enrollments in online education continue to grow and the future of higher education course delivery remains unknown, it is imperative that educators design courses that are engaging and provide collaboration among students as well as faculty.

Traditionally, online faculty have relied on text-based discussion forums to stimulate student collaboration and engagement. These forums usually require that students respond to a question with an initial reply and then a minimum of two
replies to two other students. While this method of discussion would be an appropriate exchange for a live classroom discussion, this is not always the case online. In fact, research has demonstrated that text-based discussions often do not promote genuine communication (Clark et al., 2015; Cummins et al., 2016; Denison & Shurts, 2019). An alternative to text-based discussion forums is video discussion. The purpose of this international study was to compare the sense of community experienced by online students taking part in text-based versus video-based discussions.

LITERATURE REVIEW

As online learning environments grew, less attention was given to student engagement and retention (Sorenson & Donovan, 2017). To ensure that online learning can help address this problem, educators were tasked with pursuing strategies that would increase peer-to-peer, faculty-to-peer and student-to-peer engagement with a goal of increasing retention. Research shows that the more engaged students are, the better they perform academically (Kuh, 2009; Stone & Springer, 2016). Cooke (2016) regarded student engagement as the level of interest students show toward the subject matter and the degree of interaction with course content, faculty, and peers. Moreover, research indicates that engagement can be increased through the development of an online community (Martin et al., 2018).

Text-Based Discussions

One way of creating a community of learners, while also increasing satisfaction and achievement, is thought to be active participation in discussion boards. Several studies, however, demonstrated that this is not necessarily so. Cho and Tobias (2016) discovered that participation in discussion forums did not affect course satisfaction or achievement. Selhorst et al. (2017) also learned that online discussions can lead to fatigue and result in lower student satisfaction and performance. These studies support the idea that text-based discussions may not be the best way to engage students and create a community of learners.

Video-Based Discussions

Several studies have investigated the use of video responses in discussion boards in lieu of text-based discussion to see if these, along with other factors, could increase student course engagement. These studies have demonstrated varied results while also using a variety of technologies for these video discussions. There are few studies on the use of video discussions and fewer still being replicated using one method. Cummins et al. (2016) used VoiceThread to study student perceptions and participation patterns related to asynchronous video discussion in an interprofessional graduate health sciences course. VoiceThread is a cloud-based, interactive, collaboration and sharing tool that enables students to build online presentations by adding images, documents, videos, and other media to which other users can add comments for discussion. Students were encouraged to use video posts versus audio or text. When asked which mode they preferred, 40% selected video, 30% chose audio, while 20% preferred text. Data from 10 student interviews and surveys indicated that student perceptions of social and teaching presence were significantly higher when using video posts. Students also indicated that the ability to view their classmates permitted them to get to know one another. On the other hand, they did note that preparation for video discussions required a greater time commitment than other methods. Faculty noted that it took some time for them and students to learn how to use VoiceThread. Additionally, one challenge noted was that while text-based posts are easily viewed and read, video posts take longer to access and view (Cummins et al., 2016).

Using a different video-based platform, Clark et al. (2015) compared video with text-based discussions in an online teacher education course. The technology used for the video discussion was Google+ and was placed within the LMS. Based on data from interviews and surveys for the 16 participants, the researchers found that video discussions were more effective in creating social and teaching presence than text-based discussions. Participants stated that the video discussions gave them the ability to see the faces of classmates and promote feelings of connectivity while lowering feelings of isolation (Clark et al., 2015).

Denson and Shurts (2019), conducted a pilot study comparing sixteen RN-BSN students’ communication satisfaction with video discussion responses as opposed to text-based discussions. Using surveys, the researchers discovered that the students rated video discussions significantly higher
than text-based discussions for communication that was positive, accurate, and free flowing. A statistical significance did not exist for the difference in student satisfaction when comparing video and text-based discussions on their ability to assist them in meeting course objectives or teacher presence. Similar to the study by Clark et al. (2015), student comments revealed that the students enjoyed the ability of seeing classmates in their online classes when using video discussions (Denson, & Shurts, 2019).

Swartzwelder et al. (2019) investigated the use of text-based versus video discussions in a graduate nursing ethics course with 130 participants. The exact platform for the video discussions was not offered. In contrast to the findings by Clark et al. (2015) and Cummins et al. (2016), the researchers discovered that students sensed higher levels of engagement and interactivity with text-based than video discussions. Students found text-based discussions to be easier to complete and receive feedback than video discussions. The researchers attributed this to a lack of experience with the video-based discussion technology (Swartzwelder et al., 2019).

The mixed findings regarding the use of video-based discussions indicates the need for further research. This research study sought to compare a sense of community experienced by online students using text compared with video discussions. We wished to expand upon previous studies by increasing the sample size and utilizing an international population.

THEORETICAL FRAMEWORK

The theoretical framework used for this study was the Community of Inquiry (CoI) as described by Garrison, Anderson, and Archer (2000). The CoI framework consists of three components considered essential to the online environment: cognitive presence, social presence, and teaching presence. Cognitive presence refers to exchanging ideas and being able to apply what is learned in the course. Social presence focuses on students’ ability to collaborate with classmates authentically. Lastly, teaching presence is required to ensure the first two elements are met. When all three elements are met, a student’s online experience is enriched. For the purpose of this research, we focused on the second element, social presence.

RESEARCH DESIGN/METHODS

Online graduate students from a large private university in the United States and online undergraduate students from an urban college in Canada were invited to participate in this study. Institutional Review Board (IRB) approval from both institutions was obtained prior to collecting data. A convergent mixed methods design was used to elicit both quantitative and qualitative data. See figure 1 for the research design.

The students completed a series of discussions using either text or video-based responses. The first discussion was text based and the second discussion was video based. For the third discussion, students were given the option of either text or video. While the discussion topics and platform utilized differed based on the course content, the guidelines and rubrics remained the same. During the last week of the course, after all discussions were completed, students were invited to take a survey, which included quantitative data as well as open-ended qualitative questions. All answers were anonymous, and the students provided consent prior to starting the survey.

The first part of the survey included demographic questions and questions to ascertain the students’ comfort level and preference with text-based and video-based discussions. To elicit the students’ perceptions of social presence,
we utilized a Likert-style survey. The Social Presence Scale developed by Gunawardena and Zittle (1997) is a 14-question Likert-style survey that has a reliability of .88. The Social Presence Scale was modified and used by Spears (2012) to compare social presence in online and face-to-face discussion. The reliability for the modified scale used in Spears’ study was 0.72 for face-to-face courses and .76 for online courses. In this current study, the six questions from Spears’ modified version were used to compare social presence with text-based and video discussions. In the study by Spears (2012), questions were also utilized from the Collaborative Learning, Social Presence, and Satisfaction Questionnaire developed by So and Brush (2008). Reliability for the collaborative learning subscale was .85 (So & Brush, 2008). Spears (2012) further established the reliability of their version of this subscale as 0.84 for face-to-face courses and 0.88 for online courses. Two of the following questions from the Collaborative Learning subscale were added to our questionnaire:

1. I actively exchanged my ideas with group class members.
2. Collaborative learning in my group discussions was effective.

Additionally, open-ended questions were asked to further understand the students’ perception of social presence with online discussions. See Appendix A for the full survey.

RESULTS

Study Sample
A total of 205 students completed the survey. Of the 205 students, 186 were graduate students and 19 were undergraduate students. The majority of the students were female (92.68%) and fell in the age range of 23–39. See Table 1 for the demographics of the sample.

Quantitative Results
Descriptive statistics were utilized to ascertain the students’ comfort level with text-based and video-based discussions and their perception as to which discussion format best facilitated peer-to-peer connection. On the survey, the students were asked to reflect on their preferences and comfort level with text-based and video-based discussions prior to the start of the course. Most of the students reported that they preferred text-based discussions (72.2%), while only 4.39% preferred video-based discussions and 23.41% had no preference. Additionally, 81.46% of the students reported feeling “comfortable” or “very comfortable” with text-based discussions, whereas only 34.82% reported feeling “comfortable” or “very comfortable” with video-based discussions. See Table 2 for data on students’ comfort level.

Table 1. Demographic Data (N=205)

<table>
<thead>
<tr>
<th>Degree Program</th>
<th>Undergraduate</th>
<th>Graduate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>19</td>
<td>186</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17-22</td>
<td>8</td>
<td>3.90%</td>
</tr>
<tr>
<td>23-29</td>
<td>73</td>
<td>35.61%</td>
</tr>
<tr>
<td>30-39</td>
<td>79</td>
<td>38.54%</td>
</tr>
<tr>
<td>40-49</td>
<td>24</td>
<td>11.71%</td>
</tr>
<tr>
<td>50-59</td>
<td>16</td>
<td>7.80%</td>
</tr>
<tr>
<td>60 or older</td>
<td>5</td>
<td>2.44%</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>190</td>
<td>92.68%</td>
</tr>
<tr>
<td>Male</td>
<td>13</td>
<td>6.34%</td>
</tr>
<tr>
<td>Prefer Not to Respond</td>
<td>1</td>
<td>0.49%</td>
</tr>
<tr>
<td>Transgender</td>
<td>1</td>
<td>0.49%</td>
</tr>
</tbody>
</table>

Table 2. Comfort Level with Discussion Types Prior to the Start of the Course

<table>
<thead>
<tr>
<th></th>
<th>Text-Based</th>
<th>Video-Based</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Comfortable</td>
<td>4</td>
<td>1.95%</td>
</tr>
<tr>
<td>Somewhat Comfortable</td>
<td>34</td>
<td>16.59%</td>
</tr>
<tr>
<td>Comfortable</td>
<td>77</td>
<td>37.56%</td>
</tr>
<tr>
<td>Very Comfortable</td>
<td>90</td>
<td>43.90%</td>
</tr>
</tbody>
</table>

As described in the research design, the students were given a choice for the last discussion and could use either a text or video format. A total of 131 (63.9%) students selected a text-based response, whereas 74 students (36.1%) selected a video-based response. However, when asked on the survey which discussion format made them feel most connected to their peers, the majority of students (60.49%) selected video-based discussions. Descriptive and inferential statistics, specifically a paired t-test, were used to analyze the results from the survey. For the Likert-scale survey, the students were asked to reflect on discussion
assignments from the course and then indicate the extent to which they strongly agreed (5) to strongly disagreed (1) with each phrase as it relates to text-based discussions and video-based discussions. In Table 3, the means for each question, along with t values and significance, can be found. Overall, a statistically significant difference between text-based and video-based discussions was found with questions 1, 2, 4, and 6. The students were more comfortable conversing and participating in the text-based discussions; however, they felt the text-based discussions were more impersonal and they were able to form distinct impressions of their peers with video-based discussions.

Qualitative Results

First and second cycle coding was used to analyze the qualitative comments from the survey. After obtaining a list of codes during first cycle coding, pattern coding was used to combine similar codes and identify themes.

**Text-based discussions.** In the survey, the students were asked if they felt more connected to their peers with either text-based or video-based discussions, followed by open-ended questions to allow them to elaborate. The students were also asked why they selected a text-based or video-based response for their final discussion. The themes related to text-based discussion that emerged were: (1) The students felt they were able to express themselves more in writing, (2) The students were uncomfortable being on video, and (3) The students felt text-based discussions were more convenient.

For the first theme, the students felt they were able to express themselves more in writing. They expressed that there was no time limit with the written response; therefore, they were more thoroughly able to explore points of view. Additionally, the students felt there was more “back and forth” with their peers, which increased their feelings of connectiveness. For example, one student commented, “I feel I am able to give more information and express my ideas more thoroughly not having the time limit that video discussions have.” Another student echoed this comment, “I express myself better in writing; I also have difficulty expressing myself in video discussions that have very short time limits such as only 3 minutes.”

The students who preferred text-based discussions also felt uncomfortable being on video. One student shared, “I get really nervous when I am being recorded and I don’t always remember what I want to say until after the fact.” Additionally, many students commented that they felt like they were being judged when on camera, or they worried that they would be judged. One student commented, “I feel like people can discuss their viewpoints without feeling judged someone is looking at them.” The students were also nervous about having their kids in the background, what they looked like, or the setting where they recorded.

Lastly, many students who preferred text-based discussions felt that this medium was much more convenient. The students liked that with a text-based discussion they could reply at any time (e.g., in the middle of the night) and anywhere. For example, one student commented, “I chose text-

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Table 3. Modified Social Presence Scale Means and t-scores

<table>
<thead>
<tr>
<th>Question</th>
<th>Text-Based Mean</th>
<th>Video-Based Mean</th>
<th>t</th>
<th>Significance (two-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Communication in the course discussions was impersonal.</td>
<td>2.66</td>
<td>2.26</td>
<td>5.224</td>
<td>.000</td>
</tr>
<tr>
<td>2. I felt comfortable conversing in the course discussions.</td>
<td>4.25</td>
<td>3.66</td>
<td>7.081</td>
<td>.000</td>
</tr>
<tr>
<td>3. The course discussions enabled me to form a sense of an online community.</td>
<td>3.56</td>
<td>3.73</td>
<td>-1.878</td>
<td>.062</td>
</tr>
<tr>
<td>4. I felt comfortable participating in the course discussions.</td>
<td>4.29</td>
<td>3.76</td>
<td>6.845</td>
<td>.000</td>
</tr>
<tr>
<td>5. I felt that my point of view was acknowledged by other students in the course discussions.</td>
<td>4.14</td>
<td>4.09</td>
<td>1.118</td>
<td>.265</td>
</tr>
<tr>
<td>6. I was able to form distinct impressions of some of the students in the course through discussions.</td>
<td>3.70</td>
<td>4.03</td>
<td>-4.886</td>
<td>.000</td>
</tr>
<tr>
<td>7. I actively exchanged my ideas with group class members in the discussions.</td>
<td>4.06</td>
<td>4.03</td>
<td>.521</td>
<td>.603</td>
</tr>
<tr>
<td>8. Collaborative learning in my group discussions was effective.</td>
<td>3.99</td>
<td>3.96</td>
<td>.503</td>
<td>.616</td>
</tr>
</tbody>
</table>

---
based for the reason of convenience: I could work on the post and reply while at work or in a coffee shop without having to worry about recording myself. Although I definitely felt that the video format was more personal.” Also, the students felt that they had to record and rerecord the video post to get it “perfect,” so it was easier and more convenient to write out their posts. One student echoed this in their comment, “Video discussion takes me a whole lot longer in order to get the ‘perfect’ video where I touch upon everything I would like to. A lot of retakes = a lot more time to get an assignment done.”

**Video-based discussions.** Several themes also emerged when coding the qualitative data related to video-based discussions, including (1) The students felt video-based discussions were more authentic, and (2) The students felt video-based discussions were easier and more enjoyable to participate in.

Many students felt that the video discussions felt more authentic. For example, one student commented that “it [video discussions] made the classmate experience seem real.” The students also commented that video discussions were beneficial as hearing their peers and seeing facial reactions helped to interpret tone that cannot be ascertained in written responses. One student commented, “It is nice to be able to read body language and hear tones associated with the points being made.” Another student echoed this response, “I see their facial expressions, interest, tone of voice, etc. All those things communicate and engage me in a way that written text discussions lack.”

A second theme to emerge was that students who preferred video discussion felt it was easier and more enjoyable than text-based discussions. One student commented that “It was easier to prepare and was more enjoyable to engage in.” The students felt that they could easily respond anywhere, as opposed to having to write and edit a lengthy discussion board post. In this way, it felt less impersonal and formal compared to text-based discussion. Another student echoed this point, “It felt easier to express my thoughts and ideas through video discussion, responses felt more discursive than just simply responding. I felt a little less formal while still professional.”

**Summary**

Both quantitative and qualitative data were gathered and analyzed in this study. The students reported that at the beginning of the course they felt most comfortable with text-based discussions. While the majority of students selected a text-based response for the last discussion, many students felt more connected to their peers with the video-based format. After analyzing the qualitative findings, it was found that students who preferred text-based discussions thought it was more convenient, easier to express themselves, and they felt uncomfortable being on video. The students who preferred video-based discussions reported that it felt more “authentic” and they had a better connection with their peers.

**DISCUSSION**

The data analysis was utilized to answer the following two research questions:

1. Do online students perceive that text-based or video discussions enhance social presence?
2. Do students in an online course prefer text-based or video discussion?

**Perception of Social Presence**

Ultimately, while the students commented that they felt nervous about being judged with video discussions, over half of the students (60%) felt that this medium promoted connection more than text-based discussions. This finding aligns with the qualitative comments. Additionally, these results are similar to those of Cummins et al. (2016) and Clark et al. (2015) who found a statistical significance in the level of social presence for video discussions versus text-based discussions. The students in this study felt that the video discussions allowed them to get to know their peers better because they were hearing their voices, seeing their faces, and getting a glimpse into their personal lives by seeing their surroundings in the videos. Additionally, the video responses allowed the students to observe body language and interpret tone better. Denson and Shurts (2019) similarly indicated that students found the ability to see classmates as a positive for this type of discussion format. The students in the Denson and Shurts’ study rated video discussions higher than text-based for communication that was positive, accurate, and free flowing (2019).

**Preference**

While the quantitative and qualitative data
illustrated the importance of video discussions to increase social presence, students still preferred text-based discussions. When the students were given a choice to either participate in a discussion board using text or video, 64% chose text. When analyzing the comments, it was clear that those students who preferred text-based discussions worried about seeing themselves on camera. They felt that their peers would be judging their appearance or surroundings and not focusing on what they were saying.

Similarly, one other study found that learners preferred text-based to video-based discussions (Swartzwelder et al., 2019). Students in this investigation commented that the text-based discussions were easier for them to complete than video discussions. They also found it easier to ask classmates for clarification using text as opposed to video. On the hand, Cummins et al. (2016) found a preference for video-based over text-based discussions. Interestingly, they also noted that students commented that text-based posts were easier to be viewed and read than video posts and that video posts took longer to listen to. Denson and Shurts (2019) did not find a statistically significant difference between preferences for text or video discussions in their research.

These findings bring to light two recommendations about differentiated assessment. Faculty should use differentiated assessment in their classrooms. It is evident through this research that not every student expresses themselves best in writing or verbally. Faculty need to allow students to express themselves in multiple ways throughout the term; therefore, a mix of text-based and video-based discussions in one course is beneficial.

Instructor Feedback

Even though the intention of this research was to identify student perceptions of social presence in an online course through the use of video-based discussions, it is also important to note the instructors’ experiences in the study. The instructors experienced a greater connection with their online students through the use of video-based discussions. In addition, the use of video-based discussions resulted in mixed instructor perspectives regarding the workload in providing feedback to the students.

Connection. Using video-based discussions as an alternative way to communicate provides both the students and the instructor with visual and auditory feedback that is often lacking in text-based discussion boards. Since most communication is nonverbal, including gestures, movements, posture, and facial expressions, this information cannot be gleaned from text-based communication in an online course. Video-based discussions, especially when used at the beginning of the course as an introductory exercise, helps in humanizing the experience and builds connections for the instructor between the student and their work and their progress within the course. Previous studies have confirmed that video-based communication helps foster a personal connection between the instructor and the students that ultimately has an impact on a student’s success in the online environment (Joyner et al., 2014). Using multiple means of engagement can help to support the development of a connection between both the student and the instructor along with the greater learning community.

Challenges. It should also be noted that instructors participating in this study shared different perspectives with respect to the effort involved in evaluating video responses in discussion boards. Some instructors communicated that evaluating and participating in video posts consumed more time than text-based posts. This challenge was also highlighted by researchers when comparing the evaluation of text-based versus video-based discussions (Cummins et al., 2016). In reviewing the video posts, instructors may need to review the post several times to extract key points or confirm understanding, whereas text-based responses may only be skimmed to achieve the same result. Also, if instructors choose to participate in engaging students in the discussion board using video, they will need to create a script or key points to guide their speech for the video and be cognizant of time constraints within the video software. However, other instructors communicated the opposite experience, and felt video posts were easier to evaluate since it was more convenient for them to listen than to skim through the text-based response. These experiences further support the need for differentiated assessment and multiple means of engagement in online courses to allow for differing preferences in both students and instructors to find ways to engage and collaborate in the online environment.
Implication for Education

The timeliness of this study could not be overlooked as the education world was turned upside down in the face of the COVID-19 pandemic. With all face-to-face instruction forced online, faculty and students were asked to quickly transition to an unfamiliar learning environment. With many schools converting courses in the matter of a few weeks, implementing strategies for engagement may not have taken priority. Though the future of in-person instruction is still unknown, it will be imperative to take online student engagement and social presence into consideration when building the online classrooms of the future.

The connection that a student feels when sitting in a classroom with their peers is not easy to capture. The results of the current study show that students report an authenticity and increased engagement when participating in a video-based discussion. This may influence educators to rely more heavily on tools such as video-based introductory discussion boards or virtual office hours using video technology to maintain that connection that an in-person classroom offers. Providing students time to adjust to this new way of learning and being understanding that not all students may feel comfortable turning on their cameras will be a distinct barrier in the online learning environment.

Setting clear expectations with each video-based assignment will set the tone of the responses from the students. Perfection is not expected, and students should not feel the need to read from a script, as this undermines the purpose of using a video-based discussion. Instructors may find it helpful to start off the discussion with a video of their own, setting an example of what a video-based discussion post should look like. Being clear in the instructions and grading rubric that these discussion boards should be informal and spoken in a conversational tone will lead the student away from the typical format of a post.

Choosing the right technology to facilitate this video-based discussion will also be an important decision instructors will face. This may depend on the learning management system in use, the experience of the instructor, or the budget of the institution for integrating new technologies into the online classroom. With some technologies being more user friendly than others, it may be a trial-and-error process for the instructor to find the technology that fits best with their instructional style or the purpose of the assignment. Instructors may find it important to evaluate at the end of a course whether barriers to engagement in a video-based discussion existed because of students feeling uncomfortable in front of a camera or due to a lack of experience using a new technology. If the latter is the case, providing additional instruction or tutorials on using the technology will be important.

This leads into the perception instructors may have that the younger generation of students will feel more comfortable using a video-based learning technology because of their prevalent use of social media. It should not be assumed that those who post pictures on social media would be more comfortable showing their faces in a video-based learning technology. Instructors must not make judgments or base instructional decisions on the age of their students until the technology and design of assignments is tested with multiple cohorts. Social presence in a classroom will not be cultivated in the same way as on social media, and it will be the responsibility of the instructor to build an environment where the students feel comfortable sharing in the same way they would on a social media platform.

With the ever-changing educational landscape, consideration should be taken because many students did not start their college-level program expecting to complete their degree requirements in the online environment. Those who did choose to continue their education in the online environment may have very little experience learning in an asynchronous classroom. The use of video-based discussions may be a useful bridge from a traditional in-person classroom to the world of online learning, but only if there is buy-in from the students. Creating guidelines on how to use new technology, setting online learning expectations, and cultivating a safe learning environment will be essential when attempting to create an engaging online classroom.

Limitations

There are several limitations with this study. While the small sample size of 205 participants can be considered a limitation, it is the largest study to date that compares video-based and text-based discussions. Furthermore, this study included
participants who were mostly from a graduate nursing program; therefore, future studies should include students from various disciplines and levels of education. This would provide insight as to how social presence is perceived from a more diverse population.

This study also used three different types of video-based technology depending on which one faculty selected for their courses. Thus, a confounding factor may be the relative ease or difficulty of using one technology over another as experienced by learners. This may have affected the subject’s interpretation of their experience of the video-based software discussion board. The subjects’ comfort level as well as the instruction provided on software use should be considered limitations to the study.

CONCLUSION

As online education in North America continues to grow and colleges are forced to move courses from in-person to online, it is important for educators and researchers to understand the factors affecting students’ perceptions of presence and community as it relates to their learning success. While the students in this study felt video-based discussion boards promoted the ability to form connections with their learning community, they ultimately preferred the use of text-based communications for a variety of reasons. These results support the use of differentiated assessment and universal design by instructors to allow for multiple means of participation and engagement.

Ongoing research on students’ perspectives of social presence through the use of video tools would be helpful. With the changing educational environment and the increased use of video tools, student perspectives and preferences may change over time. Also, research into instructor perspectives would be interesting to understand what modalities are used in practice and what concerns instructors have with respect to the use of video.
References


APPENDIX A

Social Presence Survey: Please reflect on the discussion assignments this quarter and then indicate the extent to which you agree or disagree with each phrase as it relates to text-based discussions and video discussions.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Text-Based Discussions</th>
<th>Video Discussions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication in the course was impersonal.</td>
<td>SD/D/U/A/SA</td>
<td>SD/D/U/A/SA</td>
</tr>
<tr>
<td>I felt comfortable conversing in the course.</td>
<td>SD/D/U/A/SA</td>
<td>SD/D/U/A/SA</td>
</tr>
<tr>
<td>The course discussions enabled me to form a sense of the community.</td>
<td>SD/D/U/A/SA</td>
<td>SD/D/U/A/SA</td>
</tr>
<tr>
<td>I felt comfortable participating in the course discussions.</td>
<td>SD/D/U/A/SA</td>
<td>SD/D/U/A/SA</td>
</tr>
<tr>
<td>I felt that my point of view was acknowledged by other students in the courses.</td>
<td>SD/D/U/A/SA</td>
<td>SD/D/U/A/SA</td>
</tr>
<tr>
<td>I was able to form distinct impressions of some of the students in the course.</td>
<td>SD/D/U/A/SA</td>
<td>SD/D/U/A/SA</td>
</tr>
<tr>
<td>I actively exchanged my ideas with group class members.</td>
<td>SD/D/U/A/SA</td>
<td>SD/D/U/A/SA</td>
</tr>
<tr>
<td>Collaborative learning in my group discussions was effective.</td>
<td>SD/D/U/A/SA</td>
<td>SD/D/U/A/SA</td>
</tr>
</tbody>
</table>

SD = Strongly Disagree; D = Disagree; U = Uncertain; A = Agree; SA = Strongly Agree
APPENDIX B

**Directions:** Thank you for agreeing to participate in the research study titled, “The Use of Text-Based versus Video Discussions to Promote the Sense of Community in the Online Learning Environment: An International Mixed-Methods Study.” Please complete the following survey, which includes both Likert-style questions and open-ended questions. All results are anonymous. Thank you for your participation!

**Demographic Questions:**
Please indicate which course you are currently enrolled in. When taking the survey, please be sure to reflect on your experience in the identified course.

Please indicate your field of study.

Please indicate your current age.

17–22
23–29
30–39
40–49
50–59
60 or older

Please indicate your gender.

Male
Female
Non-Binary/Third Gender
Prefer Not to Say

How many online courses have you completed before this course?

0
1
2–4
>5

How would you rate your comfort level with online discussions?

Not comfortable
Somewhat comfortable
Comfortable
Very comfortable

Before taking this course, did you prefer text-based or video discussions?

Test-Based Discussions
Video Discussions
No Preference

Social Presence Survey: Please reflect on the discussion assignments this quarter and then indicate the extent to which you agree or disagree with each phrase as it relates to text-based discussions and video discussions.

**Open Ended Questions:**
For the last discussion assignment, you were given a choice for how to respond, text or video. Which did you select?

Text-Based
Video

Why did you select this method of responding for your last discussion?

Which discussion format, text-based or video, did you feel best enhanced the sense of an online community in the course?

Text-Based
Video

Why did you feel this discussion format enhanced the sense of an online community?

Thank you for taking the time to complete this survey!
HOW ONLINE BUSINESS SCHOOL INSTRUCTORS ADDRESS ACADEMIC INTEGRITY VIOLATIONS

Darrin Nelson, Embry-Riddle Aeronautical University

ABSTRACT

While online learning has dramatically increased over the past few years, so have opportunities for students to cheat, plagiarize, or commit other academic integrity violations in the online learning environment. Some online instructors effectively address these issues, while others do not. The purpose of this qualitative case study was to explore how online business school instructors address academic integrity violations. To examine in what manner academic integrity issues were being addressed in the online classroom, 12 teachers at a university located in Florida were interviewed to obtain their perspective and instructional practices regarding academic integrity online. Results indicate all participants believe it is their job to prevent academic integrity violations; however, only two instructors have reported it through school administrators, with many participants deciding to address the issue in their own classroom and not report it outside to school leadership for help addressing the issue. The importance of this study shows that most online instructors are doing what they believe is their best to address integrity violations; however, they may be promoting it by not reporting it outside of the classroom to school administration.

Keywords: instructor responsibilities, cheating and plagiarism prevention, reporting academic integrity violations, classroom management

INTRODUCTION

Teaching online can be challenging, especially when communicating academic integrity violations to students and school administration. When plagiarism, cheating, or other academic integrity circumstances arise, how it is addressed and reported can be just as important as identifying it. Many faculty members keep academic integrity issues within the boundaries of their own course. When this occurs, it does not provide school administrators a firm understanding of the cheating and plagiarism issues within their own schools, because teachers do not share outside of the classroom what is going on inside it (Garza Mitchell & Parnther, 2018). Teachers do not always report cheating, and up to 47% of them ignore it because of the administrative work required and procedures involved in pursuing cheating and plagiarism issues (Madara & Namango, 2016). This simply means the time to fill out the paperwork and pursue the issue with school administration may not be worth the teacher’s time from their perspective.

The course of action taken by instructors and the school administration to address cheating and plagiarism violations and to what degree to pursue them can set the tone for future academic integrity violations committed by a student. Sometimes just being caught and the teacher or school administration letting the student know an academic integrity issue has been found can have a positive impact on a student’s future decisions. In some cases it is enough to discourage them from ever doing it again, while sometimes a punishment administered by the instructor or school administration is required to stop it. Acknowledgment of the violation or being caught and punished for it, if needed, can both impact a students’ future decision to knowingly
commit academic integrity violations (Wang & Murnighan, 2017).

Individuals who raise concerns about misconduct can make a valuable contribution to their respective fields and society (Satalker & Shaw, 2018). Actively looking for, addressing with students, and reporting academic integrity issues is time consuming, administratively challenging, and can be confrontational; however, it is still an important element in the realm of teaching online business classes.

The purpose of this qualitative case study was to explore how online business school instructors address academic integrity violations. To effectively research the problem, interviews were conducted on 12 active online business school faculty members teaching at an accredited university in Florida that offers bachelor’s and master’s degree programs online.

A qualitative case study design was used to understand how instructor teaching practices, traits, and behavior impacts student academic integrity actions in the online classroom. Structured interview questions were designed to gather data on 12 instructors currently teaching online business courses. The inquiries focused on identifying and understanding the different methods, or lack of methods, used by instructors to comprehend the influence online teacher’s actions have on preventing or promoting academic dishonesty. The results from this study may serve as the foundation for assisting online instructors to utilize effective strategies and motivational tools to address the prevention of plagiarism and cheating in the online classroom.

For this study cheating is defined as academic misconduct in order to obtain fraudulent academic benefits (Bretag, 2016), and plagiarism is defined as presenting words, ideas, or images of another as one’s own without giving credit to the original author (American Psychological Association, 2020). Both of these words will be used interchangeably in this paper to describe academic integrity violations.

LITERATURE REVIEW

How academic integrity violations are handled after they are discovered can be an essential part of the academic experience for the student and instructor. It can determine both academic and professional futures for the pupil and teacher (DiVall & Schlesselman, 2016). The course of action taken by the school administration to address cheating and plagiarism violations and to what degree they pursue it can set the tone for future academic integrity violations. When more stern penalties are applied to academic integrity infractions, the students will generally refrain from violating school policies and procedures. The lighter the consequences or nonenforcement of the rules will usually result in a higher rate of integrity violations (Forsha, 2017).

Punishment gets significant attention from organizations and can impact future decisions by people associated with academic integrity issues. A strict reprimand for rules violations not only impacts those punished but can also create passionate and negative actions from associated stakeholders inside and outside of the school (Wang & Murnighan, 2017). The methods to address cheating and plagiarism that are frequently used include identifying the problem, prosecuting violators, awarding penalties, giving warnings, placing sanctions, expelling from the university or college, writing reflection assignments, or doing nothing at all (McGrail & McGrail, 2015).

Some schools turn academic integrity violations over to student appointed disciplinary (judicial) boards in which the students on the disciplinary board set the punishment for other students. The board reviews the incident, allows the defendant to state their case, and then the board makes a decision based on the degree of the violation and school policies (Student Rights & Responsibilities, 2021). These types of actions hold students accountable to other students. Student disciplinary boards also gain a profound amount of respect and personal accountability on behalf of the school’s student body (Schwartz, 2015).

Donathan et al. (2017) explained that minimizing inappropriate behavior in the online environment starts with the teacher’s explanation of their expectations and what is in the syllabus and posting announcements, graded feedback, and general comments within the content of the online course. More importantly, how these expectations are carried out and enforced impacts the classroom environment as much as anything else. Hearn et al. (2017) argued that when academic material is compromised and used unethically, and nothing is done to rectify the problem, then academic assessment tools are damaged.
Some instructors do not believe it is their responsibility to watch students and prevent them from doing something wrong, but only to punish them when they do it. Not all teachers agree or care about how to prevent academic dishonesty, as individual characteristics or organizational culture can drive this mindset (Tierney & Sabharwal, 2017). Stowe (2017) reasoned that the intention to report student plagiarism remains an individual decision made by the instructor and does not appear to be influenced by the learning institution. A study by Madara and Namango (2016) found some faculty seldom discuss rules or consequences of academic integrity violations with their students, with 10% reporting that they do not believe any prevention methods should be practiced in a university level course.

No penalties for academic integrity violations also factors into its occurrence. Dishonesty is sometimes factored on cost benefits, and when the benefits of cheating and plagiarism outweigh the punishment, academic dishonesty increases (Yaniv & Siniver, 2016). Research results on academic dishonesty reveal some learning institutions are having difficulty dealing with the issue of cheating and plagiarism, and so they ignore the problem rather than address it (Brimble, 2016).

The instructor’s role in preventing academic integrity violations is essential and represents the methods teachers use to create a quality online atmosphere that supports and sustains productive classroom environments (Richardson et al. & Mueller, 2015). The environment or setting created by the instructor also impacts a student’s decisions to cheat or plagiarize. A study by Isakov and Tripathy (2017) found that when the conditions to cheat were available more students did so. When the instructor eliminated the conditions, such as using plagiarism checkers or new test questions each term, it limited the temptation and opportunity, and then cheating declined or was eliminated.

Upholding academic integrity online is the ultimate means of protecting students while building ethical core values that can be carried with them throughout a lifetime (Cifuentes & Janney, 2016). However, creating a moral culture is complex and involves many elements to shape student behavior, ethical reasoning, and honorable desires. This means the best way to build a culture of academic integrity is to lead by example (Robinson & Glanzer, 2017).

There are always consequences for integrity violations or falsifying something. If one falsifies a résumé they can get fired, if medical research results are falsified on purpose it can impact a patient’s health, if there is falsification on a grant application then future funding may be jeopardized, and falsification in business, depending on its severity, may be punishable by a prison term (Kiviniemi, 2015). When a student cheats or plagiarizes in an online classroom, they are missing out on an opportunity to learn and grow by working through an academic problem themselves instead of relying on other people’s work to be successful (DiVall & Schlesselman, 2016). Academic integrity can be a good forecaster for later dishonest decisions in professional practice (Hermkens & Luca, 2016).

Academic integrity can be a double-sided argument, as those who are appointed to promote it, such as teachers, administrators, and researchers, can be committing it themselves by failing to prevent it (Simola, 2017). When an instructor is absent from the classroom, they miss the opportunity to protect students’ integrity, as by not averting cheating and plagiarism on the teacher’s part is ultimately promoting it to the students (Cifuentes & Janney, 2016).

A study by Greenberger et al. (2016) found that 75% of plagiarism occurred in an online environment due to unintentionally poor paraphrasing and incorrectly citing sources. In many cases, instructors took less time looking into the cause of plagiarism (accidental or intentional) and more time prosecuting the student. Holbeck et al. (2015) observed that some online instructors follow institutional policies on plagiarism exactly to the letter of the law, while others use plagiarism incidents as a teaching moment rather than a chance to punish the student.

College instructors know their institutions have formal policies on cheating and plagiarism, but few read them, try to understand them, or enforce them because there is a dispute among scholars on who should enforce the policies and what the consequences should be for violating them (Eaton, 2017). Teaching values to students is a struggle in the classroom, but any wrongdoing or misstep by a student must be addressed and used as an educational opportunity regardless of the justification, culture, or attitude of the student (Kaptein, 2017).
METHOD
To examine instructor practices in the online classroom, 12 teachers at a university in Florida with a large eLearning component were interviewed to obtain their perspective and instructional practices regarding the issue of preventing and reporting online academic integrity violations. A qualitative research design was best suited for this type of study because the purpose of the study was to examine a teacher’s effectiveness and the results of actions that contribute to or prevent plagiarism and/or cheating in the online business classroom. A qualitative study design enabled me to describe a complex personal and interpersonal occurrence that could not be portrayed with quantitative research’s single-dimensional scales (Krathwohl, 2009).

Another reason I selected a qualitative approach is because it uses in-depth interviewing with structured questions, which produces a variety of unscripted answers, versus the measurements and calculations of answers used in quantitative studies (Patterson & Malpass, 2015). Interviews for the proposed 12 subjects enabled me to retrieve an instructor’s perspective and insight from their own thoughts on academic integrity, how they prevent it or unintentionally promote it, and how they address cheating and plagiarism after it is discovered. The different answers were best explained in the written word rather than numerical values (Leppink, 2017).

The framework used for this study was grounded theory. This consists of collecting data from questions asked during an interview, compiling the data, and identifying reoccurring themes, concepts, and topics that emerge from the answers. After this is done, the information collected from the interviews is categorized and coded. Grounded theory differs from other models of research, in which the researcher selects an existing theoretical framework and then collects data with the intention of confirming if the theory does or does not apply to the phenomenon being studied. With grounded theory, coding is a practice of content analysis (the formulation of an idea) to find the underlining issue among all of the data collected. Using the grounded theory during the analysis of the interview answers, I was able to see that the interviewees were using words and phrases that highlight important issues related to the study’s purpose (Allan, 2003; Glaser & Strauss, 1967). The themes, concepts, and topics that emerged from the study question answers are presented in the results section of this paper.

Population and Sample
To research professor teaching effectiveness online, it was necessary to select individual instructors who are currently teaching at an accredited university delivering online business courses to a diverse population of students from a variety of cultures and backgrounds. Faculty members from a Florida based accredited university that is centered on students pursuing business and managerial related degree programs were used for this population sample.

The targeted population size was 12 current online faculty members in good standing with the university, from various backgrounds, with diverse education degrees, and having mixed genders. The sample size of 12 teachers reflected previous studies on a similar topic and the sample size used by other researchers (Fish, 2016; Prieto-Rodriguez et al. 2016). Participants were selected based on their direct involvement as university instructors, having taught at least two online courses at the university. Those who fit the criteria were invited by email to participate. IRB approval was gained prior to commencing the study.

I sought to reach data saturation at a sample size when categories or themes were saturated, because new or additional data no longer introduced different insights or properties related to the research study (Creswell, 2014). Guest et al. (2006) found that data saturation is achieved upon the completion of 12 interviews for qualitative studies, and this was also confirmed as an adequate number from a recent dissertation on a similar subject (Errico, 2016). Data saturation was met for this research study at 12 participants and no additional interviews or research were needed or conducted.

Materials/Instrumentation
The interviews were conducted with questions designed to gather information that aligned with the proposed purpose of the study (The interview questions are included in the Appendix). A time window was developed for each interview at approximately 30 minutes to ensure constancy through the data collection process. Interview questions were written in simple language that was easy to comprehend with limited professional terminology to ensure the participant’s
comprehension. Participants were encouraged to share their honest opinions, attitudes, teaching styles, and practices in regard to academic integrity and how they address it in their online course rooms and prevent violations of it.

A semistructured interviewing method was used because it enabled those being interviewed to express their teaching viewpoints, beliefs, and perspectives (Brinkmann & Kvale, 2015). The semistructured interview process allows for questions to be prepared ahead of time, with the study outcomes viewed as reliable, and it enables the interviewees to address the questions based on their own experiences (Mojtahed et al. 2014). Semistructured interviews produce reliable and comparable data that can be used with observations to allow the researcher to cultivate a deep understanding of the research topic (Bernard, 1988).

I considered examining each instructor’s classroom to gather information on instructor feedback, their interaction with the students, and their academic integrity prevention methods, and then comparing the data with the interview questions but I ultimately dropped the idea. Obtaining permission through the selected university, gaining IRB approval, and possibly violating the Family Educational Rights and Privacy Act (FERPA) were all time-consuming issues that would have needed to be addressed with no assurance of compliance or approval from all the parties involved. The data collected from this study were based solely on interview question responses.

A panel of experienced online professors (experts) was used to review and validate the interview questions to make sure they were comprehensible and concise. The members of the panel were provided with a copy of the study’s purpose statement, the research questions, and the interview questions. Members of the panel were asked to identify weaknesses in the interview questions or the methods in which data was obtained from each study participant’s online course. The panel members were asked to address any weakness in the data collection process to ensure effectiveness and accuracy related to the study’s purpose.

Study Procedures

The names and contact information for the participants were obtained by selecting faculty members currently active and in good standing at the chosen school. When responses from the email invitations were received, another email was sent out to schedule the interview. Once an agreed upon time for the interview was established, an informed consent form was sent for the participant to sign. Consent forms were signed with a wet or official school digital signature before any interviews were conducted.

After data collection, the axial coding method was used to identify major and minor issues and then categories to link the properties and dimensions of the collected data. After initial analysis, the collected data was further analyzed to uncover key elements, motives, and factors about the instructors teaching effectiveness. A word phrase was assigned for each category, with short phrases or sentences used to help analyze the data, along with themes that emerged as the data was read and analyzed (Creswell, 2014).

I considered writing a qualitative codebook that would have contained predetermined codes useful for coding data and emerging themes developing through the study. The codebook may have provided definitions, maximized coherence of the codes, and also identified changes during the study as it evolved (Guest et al., 2006). However, eventually I deemed a codebook was not needed or relevant for the study. Before, during, and after the interviews, all data were stored in a secure location to ensure confidentiality. If during the entire research process discrepancies were found during the interviews, data collection, or review of the collected material, I took immediate action to clarify the issue or eliminate the discrepancy to ensure the study’s precision.

Data Collection and Analysis

Twelve interviews were conducted in the same manner with a targeted window of 30 minutes each to ensure constancy through the data collection process. The interviews were conducted by phone or Skype (video communication from a personal computer) at my private home office to ensure confidentiality and that the conversations were not overheard by anybody. The participants were encouraged to share their honest opinions, attitudes, teaching styles, and practices in regard to academic integrity and how they address it and prevent violations in their online course rooms. I asked structured follow up questions as needed to ensure all the required and desired information was collected.
Each interview was recorded as an audio file and then transcribed by me into a word document and saved in an encrypted, password-protected flash drive with a different code used to identify each participant/interviewee. Specific information categorizing each participant, including education, experience, gender, and age, was included. This was done to ensure that names or any other information that may connect the participants with their answers was eliminated once the data were sorted and analyzed.

After collection, all the raw data were sorted and then coded to organize and identify the primary points of the interviews. The data were then categorized according to major and minor categories and themes for the purpose of answering the research questions (Campbell et al., 2013). The data were identified by using words, tables, and figures to display the different categories and then labeled with a written term related to the participant’s response during the information collection process. The categorized code words were based on topics related to academic integrity issues, recently published literature on the topic, and common sense (Creswell, 2014). The coding system utilized for semistructured interviews was the axial coding method (Corbin & Strauss, 1998).

I used caution to reduce or eliminate the omission of relevant research findings or newly uncovered information discovered during analysis of the collected data that may have not been initially targeted or part of the original research question themes (Schmidt, 2017). To reduce this possibility after the initial analysis, the collected data were reexamined to uncover key elements, motives, and factors about the online business school instructors teaching effectiveness. Once the data were coded, potential trends, patterns, and themes were targeted for identification. Additionally, any relationships or traits between instructors who prevent academic integrity and those who do not was further analyzed to uncover the reasons and potential trends.

Limitations

The limitations of this study included the selection of instructors based on availability and their willingness to participate rather than using ones from a chosen diverse pool of participants. This may have eliminated a balance of male-to-female teachers, those with equal experience and education, or participants from different ethnic backgrounds. The list of potential participants was obtained from the selected university used in this research. The ability to preselect participants based on multiple factors was not possible because only limited personal information about each possible participant was made available to me until after the participants agreed to be interviewed. Another limitation was the presence of social desirability bias where participants provide answers based on what they perceive the researcher wants to hear to appear socially desirable to them (Mcfarlane, 2012). With the research topic being based on academic dishonesty and whether the instructor’s actions prevent or promote it, the participants may have been hesitant to provide truthful answers. This was minimized by ensuring all the responses were held in complete discretion and the interviewees remained anonymous.

FINDINGS

The same ten structured questions were addressed to each individual participant (see Appendix), and once the answers were gathered and coded, five major themes emerged. These themes, along with some responses and additional content, are presented below.

The first theme was the difference between cheating and plagiarism in the online environment and a traditional classroom. Half of the participants (n = 6) expressed their thoughts on the difference between academic dishonesty in the online classroom versus the traditional classroom, with four participants specifically stating it was more prevalent online than in a traditional classroom environment.

Participant 1 elaborated on this theme by stating, “Online seems to favor the environment where plagiarism can occur over the traditional classroom.” With Participant 6 asserting, “In an online classroom, students feel free to test you first to see how much you will tolerate in regards to cheating and plagiarism.” While Participant 7 explained “Cheating and plagiarism is higher online than on the campus. Students have the opportunity to download and share material with other students online.”

The second theme was poor time management skills, with seven participants stating this as a reason students cheat and plagiarize. The responses indicated that students felt rushed to complete
assignments as the results of poor time management skills, which prompted students to copy and paste material from an online source and pass it off as their own before the due date to avoid having points deducted for a late assignment. This is further explained by Participant 2’s answer, “Students feel rushed because they lack time management skills. Students just want to get through the work without absorbing the information. It takes longer to find, copy, and paste an assignment than to complete it honestly.” Participant 6 further elaborated on this topic of how poor time management pressures students to cheat and plagiarize, “Characteristics of the online students are not like the traditional students. They are working and studying at the same time and struggling to meet the deadline. Pressure and time constraints may push them toward cheating and plagiarism.”

The third theme was that students do not fully understand all the elements of correctly citing and referencing sources in APA format and most plagiarism is unintentional because the students do not understand what they are doing wrong. This was evident by six of the participants stating this as the main reason students plagiarize in the online classroom.

Participant 1 stated, “Plagiarism is unintentional; which happens the most because students don’t know better.” Participant 5 explained, “Students do not realize they are cheating or plagiarizing. They quote material without correctly citing and referencing their sources because they do not know what they are doing wrong.” Participant 9 stated, “Plagiarism is not always malicious. Nine times out of ten, it is done accidentally and a result of ignorance because the student did not know it was plagiarism.” Participant 10 thought, “Students don’t fully understand plagiarism because of lack of knowledge.”

When asked, what is the school you teach (online courses) for the perspective of cheating and plagiarism?, the responses include those from Participant 1, “No, not acceptable. The school requires teachers to enforce it.” Participant 2 stated, “The policy is in the course modules with information on who to reach out to.” Participant 5 answered with, “They want it reported. The school has policies in the course rooms to prevent it.” Participant 6 is quoted as, “The school provides all the rules and mechanisms to mitigate the problem. All policies are posted in the classroom.” Participant 9 explained, “The school has a great process, and it is spelled out and organized.”

The fourth theme was instructor responsibility to ensure cheating and plagiarism do not happen, and how the school strongly supports the promotion of academic integrity in their online classrooms. All the participants (n = 12) expressed that instructors are responsible for ensuring academic integrity is upheld to high standards by the students, and the school has a no tolerance policy, with procedures in place to prevent and address the occurrence of violations. All the participants (n = 12) stated the Turnitin plagiarism checker tool was the most important instrument used by them to check students submitted assignments for plagiarism or cheating.

Four of the participants stated they used additional sources to check for plagiarism such as the Google website or the Grammarly writing help website. Three of the participants explained they had never witnessed cheating or intentional plagiarism while teaching at the school. It is noted that all three of these teachers have taught twenty classes or fewer. The ones who answered no were Participant 2 (10 classes), Participant 5 (6 classes), and Participant 12 (20 classes). Only one other participant had taught fewer than 20 classes (6 classes) and answered yes to the question of witnessing cheating or intentional plagiarism. The results indicate that more experienced and seasoned instructors teaching online classes at the school had witnessed cheating and plagiarism.

The fifth theme evident in the responses was the idea of using teaching moments. This was stated to apply explicitly to students who have been caught cheating and plagiarizing. Participant 2 stated, “The instructor can give a zero, or can work with the student and make it a teaching moment.” Participant 5 explained, “If instructors do not let students know, then there is a missed opportunity to teach them to change.” Participant 7 expounded, “If the student owns up to cheating and plagiarism, the instructor lets them redo the assignment and use the incident as a teaching moment.” Participant 9 reasoned, “The process is an unpleasant event, but the experience can be pleasant. There is latitude for the instructor to work with the students to turn the issue into a learning experience.” Participant 11 concluded with, “Plagiarism and teaching should be used as a learning experience to teach students.”
An additional topic emerging from the study was addressing the issues of plagiarism and cheating with the students first before routing an academic integrity violation report through school administration. Of the participants indicating they have witnessed cheating and plagiarism in their online classroom, the results varied on how a determination was made to report it or not. Participant 7 stated, “Confront the students first. It depends on their response. If they own up to it, then I let the student redo the assignment, and send them training tools.” Participant 8 explained, “Give the students a chance to explain why they have a high Turnitin score before penalizing the student.” Participant 1 was quoted as, “First time the instructor has a one-on-one meeting and ask for an explanation.” Participant 11 stated, “I work with the students first to ensure they understand citing and referencing sources.”

Participants were asked if they have ever submitted an academic integrity violation report and if they knew where the academic integrity violation reports are found. The results show only two of the participants had submitted an academic integrity violation report through school administration, with only four knowing that the forms and instructions are located in every online course in the Information for Instructors/Plagiarism section of the course. The results indicated participants are more likely to address issues of plagiarism and cheating on their own instead of getting school administration involved or exposing student plagiarism or cheating issues outside of the classroom.

**Evaluation of Findings**

Poor time management was discovered to be a primary reason students plagiarize and cheat because they get behind on the coursework, feel pressured to meet deadlines, and end up submitting work that is not their own. Rust et al. (2015) revealed that not all students are self-disciplined, motivated, or persistent enough to be successful online. Moten et al. (2013) found that those who lack these qualities sometimes turn to cheating and plagiarism to compensate for their lack of time management skills.

Online academic integrity violations versus the traditional classroom was mentioned in half (n = 6) of the responses. Baek and Choi (2002) found different classroom settings have dissimilar levels of cheating. The reasons for this variation include instructor participation, the culture of the learning environment, student’s adherence to rules and guidelines, how assignments are graded, and the attitude exhibited by the instructor toward the students. Robinson and Glanzer (2017) explained that creating a moral climate is a complex procedure involving many elements, with the most important being an active instructor leading by example.

All the participants (n = 12) believe they are preventing academic integrity by addressing it on their own, and they are responsible for ensuring academic integrity is held to high standards. However, there is no indication this is actually happening as only 16% of the study’s participants have submitted an academic violation report through school administrations, and only four knew where the reports were located. A study on faculty members at a large state university found only 52% read and or understood the school’s policy on plagiarism (Gullifer & Tyson, 2014). Madara and Namango (2016) found faculty seldom discuss the rules or consequences of academic integrity violations with their students.

When a report is not submitted, it is difficult to track how many times a student has cheated or plagiarized in their university career. While some instructors may use a violation as a teaching moment in one class without reporting it, there is no promise the student will not do it in another if academic integrity violations are not systematically tracked. The university where the participants taught did not have a system to monitor and track previous violations so instructors could view student’s integrity issues outside of their classroom.

**RECOMMENDATIONS**

The first recommendation of how the findings can be applied to practice is addressing the results from the study in which half of the participants (n = 6) stated that the atmosphere in the online environment is more susceptible to cheating and plagiarism than the traditional course room. Richardson et al. (2015), stated that the instructor’s role in preventing academic integrity violations is essential and represents the methods teachers use to create a quality online atmosphere that supports and sustains productive classroom environments. Isakov and Tripathy (2017) found when the conditions to cheat were available more
students did so. When the instructor eliminated the conditions, it limited the opportunity, and the cheating declined.

The recommended approach for instructors should be to set guidelines, rules, and procedures at the beginning of each course. Teach those students who do not fully understand correct formatted writing procedures and protocol, and discipline those who intentionally cheat and plagiarize. Not all instructors thrive in the elearning environment because they do not understand what is expected of them (Bailie, 2014). Correcting the issue of academic integrity in any learning environment can be done by establishing an atmosphere of honesty, morality, and ethics. Though time consuming, it can be done by monitoring, understanding, and enforcing instructional policies on cheating and plagiarism while being fair and consistent.

The second recommendation from the results of the study is to utilize technology inside and outside of the online classroom to detect and prevent cheating and plagiarism, as only two of the 12 instructors interviewed used methods other than the Turnitin plagiarism detection tool in every online course. Richardson and Alsup (2015) argued that teachers who expand their technical abilities to reach outside of the classroom develop greater value to students and learning institutions. When tools and practices are explored outside the basic requirements for the classroom, then competences are shaped and teaching practices are expanded (Vinagre, 2017). The more tools acquired and mastered in combating the issues of cheating and plagiarism, the easier it can be prevented. More training by institutions, utilizing prevention tools by instructors outside of the classroom, and making available advance technology detection tools by manufacturers to educational professionals (not students) can help detect and prevent violations of academic integrity.

The third recommendation is to ensure all academic integrity violations are reported, as the research findings from this study found only two of 12 participants have ever officially recorded an academic integrity violation through the school administration. Madara and Namango (2016) found some faculty rarely discuss rules or consequences of academic integrity violations with their students. Eaton (2017) stated that instructors know their institutions have formal policies on cheating and plagiarism, but few read, understand, or enforce them.

There were no follow up questions specifically asking the participants how they might be better incentivized to report academic integrity violations. The results of only two instructors officially reporting integrity violations outside of their classroom to school administration was not discovered until all the interviews were completed and all answers from the participants were reviewed as a whole. The topic of how to incentivize or promote the reporting of academic integrity violations outside of the classroom to school administration would be a relevant topic for future research. Until this research can be conducted, recommendations on how to address the issue now are presented below.

Requiring online instructors to take training on where academic integrity violations forms are located, how to complete them, and the importance of tracking violations should be part of training for all online schools. This training could be held during the hiring process and again annually for each instructor before they can teach another academic year. How an institution or faculty member addresses cheating and plagiarism after it has been discovered is just as important as implementing preventative measures (Burrus et al., 2013).

Keeping track of violations submitted using a universitywide process could promote reporting them because professors could see previous cheating and plagiarism issues conducted by students. Making students’ records easily available to the instructor without having to go through school administration or complete lengthy paperwork could also promote compliance (Nkata and Dida, 2019). The goal is to record intentional incidents, so a record can be established and violations can be tracked throughout a student’s academic career. When no record is established, a student could be cheating and plagiarizing their way through college to graduation and never have it reported. A record helps establish trends and makes it easier to track what subjects, courses, or instructors have a higher incidence of plagiarism and cheating violations over others. Once a trend is established, it can be easier to address and correct (Jereb et al., 2018).

Reporting plagiarism and other academic integrity violations to school administration helps create a quality online atmosphere that
supports and sustains productive classroom environments (Richardson et al., & Mueller, 2015). The instructor’s environment or setting has a big impact on the student’s decisions to cheat and/or plagiarize. Upholding academic integrity by reporting violations helps build ethical core values students can carry throughout a lifetime (Cifuentes & Janney, 2016). How academic integrity violations are handled after they are discovered can also be an essential part of the academic experience and can determine both academic and professional futures for the pupil and teachers (McGrail & McGrail, 2015). A reported academic integrity violation to school officials not only tracks a student’s moral actions it can also impact their future in a way that changes their behavior from poor to good (Wang & Murnighan, 2017).

Because all intentional academic violations are mandated to be recorded, it does not mean a punishment must accompany the report. The decision whether to penalize should still rest with the instructor through confirmation from a school administrator or a second set of eyes to ensure the decision is justified (Hammersley, 2016). An example of recommendations for sanctions could be a documented warning for a first-time offense, failure of the assignment or course for a second offense, and suspension or expulsion for the third time. Documentation of the academic integrity in these circumstances is just as important as the penalty applied for the offense.

CONCLUSION

The findings from this study show most instructors believe cheating is more prevalent online, students plagiarize more because of misunderstanding than intentionality, and students cheat because their poor time management skills force them to use other people’s work in place of their own to meet deadlines. All participants believe it is their duty to prevent cheating and plagiarism, and they are addressing academic integrity issues in the correct manner; however, most instructors are not reporting incidents outside of their own classrooms.

The issue is that instructors believe they are addressing cheating and plagiarism correctly by using the incident as a teaching moment and explaining what the student did wrong and then allowing the student to redo the assignment in question or by awarded the student a grade of zero without reporting the violation to school administrators. When no documentation is created, then students can repeat the offense in multiple courses and ultimately graduate by means of unethical actions. The importance of this study is that it shows most online instructors are doing what they believe is their best to prevent academic integrity violations, but they may be promoting violations by not reporting them, which ultimately allows some students to graduate without fairly earning their degree.

Based on the findings and themes from this study, further research on online instructors and their teaching effectiveness could explore three different areas, which include reporting academic integrity violations, adapting instructors to the elearning environment, and examining what makes online learning institutions successful.
REFERENCES


APPENDIX B

Interview Questions for Participants

1. What is your perspective on academic integrity (cheating and plagiarism) in the online classroom?
2. What are some of the reasons you think students plagiarize and cheat online?
3. What is the school you teach (online courses) for perspective of cheating and plagiarism?
4. What prevention methods do you use in your own online classroom to prevent cheating and plagiarism?
5. What tools are available to you as part of the course rooms to detect plagiarism and cheating?
6. Have you ever witnessed or caught students cheating and or plagiarism assignments in your classes?
7. How do you make a decision to report it or not?
   a. Follow up questions:
      1. What issues do you have about reporting cheating and plagiarism issues?
      2. What options are available to you in regards to the penalties?
8. Have you ever submitted an academic integrity violation report?
   a. Follow up questions:
      1. Where are the integrity violation reports and instructions on how to complete them found?
      2. If you have submitted an academic integrity violation report how was the issue addressed by the school after the report was submitted?
9. There are educators who believe when we do nothing as teachers to prevent plagiarism and cheating, we are actually promoting it. What are your thoughts regarding this statement?
10. Is there any other comments you have in regards to promoting or preventing plagiarism in the online eLearning environment?
Interactions between instructors and students at distance learning universities are crucial in motivating students and enhancing learning outcomes. Although prior empirical studies have examined email messages at distance learning universities from different perspectives, this is the first study, to the best of our knowledge, to explore the effectiveness of emails considering students’ profiles and their behavior on learning platforms. Specifically, we differentiate between students who are “active” in virtual courses (called “active” students) and students who are “nonactive” in virtual courses (called “inactive” students) in order to design email content and motivate students. Focusing on this differentiation and a control group, we investigate in a Managerial Accounting for Tourism course the effectiveness of motivational emails to: (a) engage students in the virtual course, (b) detect similar behaviors according to sociodemographic characteristics, and (c) affect learning outcomes.

Keywords: asynchronous communication, higher education, learning management system, motivational email messages.

INTRODUCTION
E-learning has grown rapidly in the past few years, driven by progress in the development of Information and Communication Technologies (ICTs). The Babson Survey Research Group (2016) noted that distance education students increased for the fourteenth straight year in the United States. The survey found that over 30% of higher education students take at least one distance education course and that there were 3,356,041 students enrolled in distance and nondistance courses and 3,003,080 students enrolled exclusively in distance courses in 2016. In fact, the number of students engaged in distance learning has increased regardless of whether the economy was undergoing a period of expansion or recession. The COVID-19 pandemic has also forced many students around the world to move from the classroom and the traditional education system to an online system. Therefore, learning methods and strategies in distance education at universities are becoming an increasingly valuable and relevant subject for researchers.

In distance education, communication between instructors and students plays a vital role in enhancing the students’ participation and their motivation to learn. Interactions between instructors and students can be applied to a one-to-one basis (individual communication) or to a one-to-the-group manner (class communication). The latter method is typically used in online courses to welcome students; provide pertinent information about the course, schedule, and calendar; make announcements; hold discussion forums and message boards; or provide reminders. Interactions between instructors and students at the individual level are a valuable tool for providing private feedback, private reminders about participation, the fulfilment of the learning objectives, and other types of communication. A combination of both types of communication is crucial to keep students engaged in the course. An instructor’s interactions with students can create an appropriate environment that makes learners part of the course and builds a sense of community. It can also help alleviate learning isolation and prevent dropout.

Distance learning universities have high rates
of abandonment and low graduation rates compared
to conventional education. Inkelaar and Simpson
(2015) found that in distance higher education,
typical graduation rates are near 20%, which
is very low compared to conventional higher
education. If students’ motivation decreases,
they may gradually become more inactive during
the semester until they drop out of the course.
Therefore, active motivational strategies should
be developed based on learning strategies in
combination with class materials.

This paper explores the effectiveness of
individual communication with students as a
potential strategy to engage students in virtual
courses and improve their learning. Email messages
are a traditional means of communication in
online courses (and maybe the oldest) and are still
the most common today (Dailey-Hebert, 2018).
Consequently, email messages create learning
opportunities because of their advantages: Email is
an easy way to deliver messages through nonverbal
communication, it permits a wide variety of
communication styles, and it does not require a
real-time connection between participants. In this
context, email messages (instructional emails,
motivational emails, reminder emails, personal
emails, mass emails, etc.) emerge as a valuable tool
to promote learning objectives and engage students
(Chang et al., 2015; Hassini, 2006; Heiman, 2008).

Prior research has examined the potential of
emails to achieve different learning strategies and
learning outcomes. The most common questions
examined in such studies are related to the impact
of email communication on: (a) students’ academic
performance (Dickinson, 2017; Inkelaar &
Simpson, 2015; Kim & Keller, 2008; Nkhoma et al.,
2018; Yu & Yu, 2002); (b) students’ objectives in
communication (that is, whether they ask questions
about technical problems, supplementary materials
and references, voluntary quizzes, or assessments)
(Covarrubias et al., 2019; Hassini, 2006; Uddin &
Jacobson, 2013, Uddin et al., 2014); (c) students’
preferences in communication (Chang et al., 2015;
Hassini, 2006; Uddin & Jacobson, 2013; Uddin et
al., 2014; Woods, 2002; Woods & Keelers, 2001);
(d) the level of students’ satisfaction and motivation
and changes in their behavior (Heiman, 2008; Robb
& Sutton, 2014; Yu & Yu, 2002); (e) differences
in learning contexts (online education, hybrid
education, on-site classes, or formal and informal
education) and differences in students’ maturity
levels (such as adults vs. adolescents, graduates vs.
undergraduates) (Chang et al., 2015; Huett et al.,
2008); and (f) students’ profiles and characteristics
such as age and gender (Covarrubias et al., 2019;
Debrand & Johnson, 2008; Jones et al., 2016; Park
et al., 2019).

Another stream of research has focused on email
content (motivational, volitional, personalized,
mass message, etc.) to determine how different
types of emails affect students: (a) attitudes and
behaviors (Kim & Keller, 2008; Li & Moore,
2018); (b) academic performance (Hodges & Kim,
2010; Huett et al., 2008; Inkelaar & Simpson,
2015; Kim & Keller, 2008; Robb & Sutton, 2014);
(c) technology attention and adaptation (Kim &
Keller, 2011); (d) self-regulation and self-efficacy
(Hodges & Kim, 2010; Kim & Keller, 2008; Li &
Moore, 2018); and (e) retention level (Huett et al.,
2008; Li & Moore, 2018).

Although prior empirical studies have
investigated email messages at distance learning
universities from different perspectives, to the
best of our knowledge, no study has explored the
effectiveness of emails considering students’ profiles
in virtual courses. Consequently, we adopt a new
classification of students—active and inactive—to
better analyze the effectiveness of emails on
both virtual courses and academic achievement.
Although we adopted and tested several strategies
in previous courses with a focus on all participants,
these were not sufficient to engage the students in
the course and motivate them to actively participate
throughout the semester.

The objectives of this research are as follows.
First, we examined the effectiveness of emails in
encouraging students to participate in the virtual
course by considering students’ profiles in order
to design email content and adequately motivate
students. Specifically, we differentiate between
students who are active in the virtual course since
the beginning of the course (“active” students) and
students who are not active in the virtual course
since the beginning of the course (“inactive”
students). We also used a control group for active
and inactive groups to compare the results between
students who received an email and students who
did not receive an email. We expected that active
students would be more influenced by the email
messages than the inactive students. However, we
were interested in capturing the attention of inactive students because they have a higher probability of dropping out of the course.

Second, we analyzed the effectiveness of emails in engaging students, considering their sociodemographic characteristics. Previous studies have provided mixed results regarding communication settings and the effectiveness of emails according to students’ characteristics. For example, Park et al. (2019) found that users’ perceptions and intentions to adopt multimedia technology for learning is different for men and women using online and blended learning. Debrand and Johnson (2008) focused on differences in the use, and perceived usefulness, of email and instant messaging software according to gender using a sample of undergraduate students. In general, the results showed that students of both genders used emails in a similar manner, but women perceived emails as being more useful than men. Jones et al. (2016) analyzed email content and found that the number of emails, length and word count, objectives or reasons for sending an email, and emotional tone differed for women and men. The current study includes two sociodemographic characteristics—gender and geographical location—because our students are distributed among different regions worldwide. Using the classification of active and inactive students proposed above, we tested the effectiveness of emails in engaging students according to their sociodemographic characteristics.

Furthermore, to better examine the effectiveness of email messages, we not only analyzed their ability to engage students in virtual courses, we also considered students’ academic performance. Apostolou et al. (2013) called for more empirical studies focusing on how technologies may promote learning in accounting with special attention to the measure of performance. Viola et al. (2020) also argued that the methodology in distance education (both online and hybrid) has scarcely been examined in prior papers, at least in certain disciplines. Thus, our third objective was to investigate the effectiveness of email communication regarding academic performance (quizzes that contribute to exams and final exams) considering students’ profiles (active and inactive). We assumed that students who receive motivational emails will obtain higher marks compared to students who do not receive motivational emails.

The words and content included in emails (i.e., tone, color, images, etc.) may influence students’ motivation (Dickinson, 2017; Huett et al., 2008; Kim & Keller, 2008), success rates, test evaluation (Dickinson, 2017), retention, and recall (Huett et al., 2008). Consequently, the current study proposes different email content according to students’ behavior to adequately motivates students with greater effectiveness: (a) congratulating active students on their use of the virtual course materials, and (b) encouraging and promoting the use of the virtual course materials for inactive students. Additionally, we used LIWC software (Linguistic Inquiry Word Count) to test the content of the email.

This study relied on individual communication through email messages according to students’ profiles, with the objective of correctly motivating and engaging the students in virtual courses. We think that instructor interventions could be a potential tool to keep students connected during courses and to prevent dropout.

LITERATURE REVIEW AND HYPOTHESES

Several theories have been proposed to explain online learning frameworks, such as Transactional Distance Theory and Community of Inquiry. Transactional Distance Theory asserts that distance education is a pedagogical concept and construction that depends on three elements: structure, dialogue, and learner autonomy (Ekwunife-Orakwue & Teng, 2014; Moore, 1989, 1990). Structure refers to the design of courses, dialogue is the communication between parties, and autonomy is defined as the learners’ control and ability to manage their own learning. In this model, the more structure is provided in online courses, the less dialogue is needed, and vice versa (Ekwunife-Orakwue & Teng, 2014; Moore, 1989, 1990). Consequently, dialogue plays an important role in online learning, considering the interactions between instructor and learner, learner and learner, and learner and content.

In the Community of Inquiry approach, online learning is explained through three constructs: teaching presence, cognitive presence, and social presence (Garrison et al., 2000; Garrison et al., 2001). Teaching presence refers to the course design and planification, social presence includes communication and group cohesion and is related to the projection of the learner as a real person.
into the online system, and cognitive presence is related to critical and creative thinking and is an essential element in this model (Garrison et al., 2000; Garrison et al., 2001; Joksimovic et al., 2014). Prior studies have used several approaches to measure cognitive presence, including messages (Joksimovic et al., 2014).

Other studies have examined the success of elearning using other frameworks, such as the Technology Acceptance Model, the User Satisfaction Models, and the E-Learning Quality Model (see Al-Fraihat et al., 2020 for a revision). According to Al-Fraihat et al. (2020), the focus of attention in the literature has shifted in recent years to the interactions and attitudes of online participants and instructor-learner interactions, as well as students’ characteristics and attitudes related to online learning success, instead of technology itself. In this context, communication and interactions between instructors and students is a crucial element in elearning environments to motivate students to fulfill learning objectives. Instructors face the challenge of implementing learning activities that keep students engaged and facilitate deeper learning. Instructor interaction can create an appropriate environment that makes students feel as though they are part of the course and builds a sense of community. It can also ameliorate learning isolation and prevent students from dropping out of the course. Indeed, prior research has pointed out that motivation is one of the most important factors affecting students’ commitment and undergraduates’ success (Inkelaar & Simpson, 2015).

In the context of distance education, asynchronous and synchronous communication play a fundamental role in motivating students to achieve their objectives. Asynchronous communication has the advantage of not requiring real-time connection. In this context, email communication emerges as a valuable strategy for interacting in online environments. Dailey-Hebert (2018) pointed out that email is a vital communication method because it is stable, reliable, user-friendly, and used by all professionals at different stages. Chang et al. (2015) revealed that 97% of students are comfortable engaging in email communication with their instructors, according to a survey of both graduate and undergraduate students. Moreover, in a ranking of students’ preferred channels for communication with their instructors, email messages came in first followed by posted course announcements. Li and Moore (2018) also found that email is an effective tool for capturing students’ attention in MOOC courses.

Many studies have examined the use of email messages to achieve different learning strategies or learning outcomes. For example, Hassini (2006) found that students mainly use emails to discuss assignments, projects, and grades. Uddin and Jacobson (2013) examined 34 students enrolled in a master’s degree course with the objective of analyzing the evolution of networking during the semester. The results showed that emails: (a) are more frequent at the end of the semester, (b) are less frequent and more decentralized during the semester, and (c) do not have the same intensity throughout the semester—that is, students’ participation varies according to the objective. They also detected some levels of in-degree activity, out-of-degree activity, and reliabilities of the predictive power of reciprocity. In a subsequent study, Uddin et al. (2014) found that students’ behavior changed during the semester and that the increase in their study load is the main factor for these changes. The evidence also suggests that email is a vehicle for discussing assignments.

Similarly, Yu and Yu (2002) showed the usefulness of email in enhancing students’ cognitive growth and their perception of learning (social and academic). They also noted that email contributes to academic performance but does not affect students’ attitudes towards computers. Heiman (2008) compared students who received email messages every two weeks during one semester with students who did not receive email messages during the semester, using a sample of 229 undergraduate students from distance learning universities. The results suggest that students who receive personal emails in online learning have a higher level of satisfaction with the course compared to those who do not receive personal emails. In addition, this form of communication increases students’ coping strategies.

Woods and Keelers (2001) found that students who receive emails with audios or videos have higher levels of satisfaction than those who do not receive personal emails, but they did not find that students who receive an email each week have higher levels of satisfaction than those who receive
an email monthly. In a subsequent study, Woods (2002) proposed an empirical design based on four groups of students. The first group received a personal email at the end of each week for a total of fifteen messages in a four-month period, the second group received a personal email at the end of each month for a total of four messages in a four-month period, the third group received two messages in the semester, and finally, the control group did not receive any messages. The results indicate that the levels of participation and satisfaction with the learning experience do not increase with the number of personal messages sent to students.

Interestingly, Covarrubias et al. (2019) found that emails and messages do not influence students in the same way when considering actions and user’s characteristics. Focusing on how messages affect undergraduate students’ help-seeking behavior and grades, they show that messages are positively associated with peer-led tutoring sign-ups, and consequently, with a greater number of tutorial sessions and better final course grades. In contrast, the results do not show the effects of messaging on men signing up for tutoring.

Educational psychology theories indicate that email content plays a vital role in influencing students. A seminal paper published by John Keller in 1983 extended the research in this field. Keller (1983) designed a theoretical framework to enhance students’ learning and motivation in courses. Four elements are crucial in student communication, according to Keller’s model (called the ARCS model): attention (A), relevance (R), confidence (C), and satisfaction (S). Subsequent papers made relevant progress in the field (Huett et al., 2008; Kim & Keller, 2008, 2011; Kuhl, 1987; Robb & Sutton, 2014; Visser et al., 1999). For example, Kuhl (1987) introduced six controls to encourage students to pay attention to the actions they should take to achieve their goals, such as encoding emotion, motivation, parsimonious information processing, and environment. In this sense, emotion control is useful for minimizing negative feelings that become obstacles to achieving students’ goals, and environment control is valuable for minimizing distractions.

Visser et al. (1999) focused on motivational strategies through two types of messages—mass or personalized—using a sample of postgraduate students enrolled in a distance education program offered by London University. The results of their research did not show statistically significant differences between the use of mass messages versus personalized messages. Thus, the authors suggested that mass messages are used because they are easier to implement in universities with distance learning platforms. Kim and Keller (2008) compared the motivation, study habits, and achievement of students who received personal email messages based on individual audience analysis and students who did not receive personal messages using a sample of 101 undergraduate students. The results of their work revealed that motivation and mean test grades were higher for students who received a personal email compared to students who did not receive a personal message.

Robb and Sutton (2014) chose a sample of students enrolled in twelve online classes at a community college and identified the benefits of using motivational emails. In particular, the evidence suggests that the group that receives motivational email messages are more successful in completing their work and they also obtain better grades. Huett et al. (2008) focused on the use of motivational mass emails to influence students’ motivation and retention using a sample of students enrolled in online and face-to-face courses. Interestingly, their results did not identify any differences between online students and those in face-to-face classrooms.

It is also important to consider the content of emails. Li and Moore (2018) provided several tips for improving the effectiveness of emails: send concise emails that focus on information about course content, send reminder emails, and offer rewards to motivate students to continue learning. Dickinson (2017) found that the tone of emails affects students’ academic performance, regarding both success rates and teaching evaluations. Robinson et al. (2013) suggested that students’ email content is valuable for designing effective learning strategies and predicting academic performance.

In summary, the literature has paid special attention to the interactions between instructors and students and among students themselves to increase the students’ motivation and achieve different learning objectives. This paper relies on individual communication through email messages according to students’ profiles with the objective of motivating and engaging students in virtual courses. Based on the findings of previous literature, we define three hypotheses:
H01: There is no association between a student’s reception of a motivational email and changes in the student’s status in the Blackboard learning program.

H02: There is no association between changes in a student’s status in the Blackboard learning program after receiving a motivational email and students’ characteristics.

H03: There is no association between a student’s reception of a motivational email and the student’s performance.

RESEARCH METHOD

Data Collection and Participants
To collect data in this study, we selected the course Managerial Accounting for Tourism at UNED (Universidad Nacional de Educación a Distancia). UNED offers distance learning education (a blended and online model) with the largest number of students in Spain. It is also one of the largest universities in Europe. The data were obtained from the Blackboard learning program and the grade program, which included each student’s grade. The sample was made up of 387 third-year undergraduates that were enrolled in the Managerial Accounting for Tourism course in the 2018-19 academic year.

Table 1. Descriptive Statistics

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>130</td>
<td>34%</td>
</tr>
<tr>
<td>Female</td>
<td>257</td>
<td>66%</td>
</tr>
<tr>
<td>Total</td>
<td>387</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center</td>
<td>90</td>
<td>25%</td>
</tr>
<tr>
<td>North</td>
<td>99</td>
<td>28%</td>
</tr>
<tr>
<td>Island</td>
<td>89</td>
<td>25%</td>
</tr>
<tr>
<td>South</td>
<td>79</td>
<td>22%</td>
</tr>
<tr>
<td>Total</td>
<td>357</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assessment</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiz</td>
<td>135</td>
<td>35%</td>
</tr>
<tr>
<td>Exam</td>
<td>172</td>
<td>44%</td>
</tr>
</tbody>
</table>

Table 1 provides descriptive statistics of the sample. The percentage of females is around 66% and the percentage of males is around 34%. The distribution of students by geographical location is homogenous. Table 1 also reveals that over 35% of students attended a voluntary quiz that contributed to their final exam, and over 44% attended the final exam. This study only considers the ordinary session (February exam) and excludes the extraordinary session (September exam) because it is likely that the email monitoring process has a transitory effect in the extraordinary session. That is, there is little chance that the effect of the email persists through the second semester and the summer holidays until the exam taken in September. Hence, Parte and Mellado (2014) found that the students’ behavior in extraordinary evaluations is different from that in ordinary evaluations.

Procedure

We used the Blackboard learning program to obtain information about the students from the beginning of the course until the day after the registration period closed. Specifically, we checked the Blackboard network every day to find evidence about the students’ interventions, the frequency of the interventions, and the type of message (related to the subject content, general questions, exercises, etc.). This information allowed us to classify students into groups before sending emails. It was extremely important to correctly direct the emails in terms of content and strategies. In the fifth week of the semester (one day after the closure of the registration period), we detected three types of students: active students (those who frequently entered the virtual course, on average once a week), almost-inactive students (those who accessed the online platform infrequently, only once or twice since the beginning of the semester), and inactive students (those who had never entered the online course). Based on this evidence, the literature review, and the instructors’ previous experience with the subject, we designed interventions for the semester.

The current study used two emails to motivate students according to their profiles—active students, almost-inactive students, and inactive students. The students were randomly assigned to a group: active students with emails and active students without emails, almost-inactive students with emails and almost-inactive students without emails, and inactive students with emails and inactive students without emails.

The emails were short and contained relevant information about the materials and motivational sentences to engage the students. For example,
for volitional strategies in inactive students, we remarked that they were in the fifth week of the semester and it was extremely important that they dedicate time to studying managerial accounting. We also highlighted that it would be convenient for them to carefully read the program of the subject and to frequently visit the virtual course, in which there were useful materials to prepare them for studying the subject—supplementary case studies associated with each chapter, quizzes, mini videos, etc. For confidence strategies, we included the remarks “You can still do it!” and “You have time!” For almost-inactive students, we used the previous message because they had already entered the virtual course though infrequently (only once or twice since the beginning of the semester). We then considered inactive students as risky learners in terms of their probability to abandon the course. For active students, we remarked that they were doing very well and encouraged them to continue during the semester. Although we edited several emails focusing on student groups, the platform system did not allow us to address and customize our emails according to psychology theory to boost the results (Kim & Keller, 2008).

With respect to the time at which emails were sent, we chose the afternoon because most students were working and studying at the same time. Consequently, there was a higher probability that they would be at work in the morning and would not be paying significant attention to email.

After the intervention, we tested the changes in the students’ status in the virtual course—that is, their access to the virtual course—considering different times after the mail was sent (one day, half-a-week, one week, and one month). We examined the results using the active, almost inactive, and inactive classification method. In other words, changes in the status in the virtual course for students who received a motivational email compared to students who did not receive a motivational email, changes in the status in the virtual course for active students who received a motivational email compared to active students who did not receive a motivational email, and changes in the status in the virtual course for inactive/almost-inactive students who received a motivational email compared to inactive/almost-inactive students who did not receive a motivational email. In the data analysis, we grouped together inactive and almost-inactive students, and regarding students’ sociodemographic students’ characteristics, we examined by gender and geographical location changes in their status in the virtual course for students who received a motivational email.

Turning back to previous academic experience in the Managerial Accounting subject area, it seems that there is a large group of students who do not participate actively in the virtual course. These students do not use the materials prepared to follow the course; moreover, they do not participate in the quizzes and tests that contribute to the exam. They are only interested in the final exam. However, previous studies in the field showed that students that participate in partial tests obtain better academic performance (Parte & Mellado, 2014, 2021). Consequently, we used the email channel to motivate students to participate in the virtual course and to attend the online quizzes, which contribute to the exam, and the final exam by using a different type of student classification.

Within the course, there is a quiz that contributes to the exam and a final exam. The quiz takes place in the tenth week of the course and is a voluntary assessment that contributes to 5% of the student’s final grade. The test consists of 10 questions related to the first eight chapters of the textbook. The semester ends with the final exam. Although we use the Blackboard system for the majority of the course, the final exam is taken in a face-to-face setting similar to that used in conventional education. The students’ motivation for attending the final exam is different from that for attending the quiz. Students must study all the chapters of the textbook to pass the exam, and the difficulty of the final exam is higher than that of the quiz. It is possible that students who need more time to prepare for the exam prefer to attend the extraordinary exam in September. Students’ marks in the quiz are the first variable of performance for the study, and students’ grades in the final exam are the second variable of performance. After the academic exam, we analyzed the grades of students who received an email and those who did not receive an email.

Data Analysis

Figure 1 shows the classification of students according to their behavior in the Blackboard learning program. As previously mentioned, we tracked students’ behavior in the Blackboard
network from the first day of the course until the day after the registration period closed. At that time, there were 240 active students and 118 inactive/almost-inactive students. The students were randomly assigned to one of the following groups: active students with email messages (n = 143) and active students without email messages (n = 97), and inactive/almost-inactive students with email messages (n = 65) and inactive/almost-inactive students without email messages (n = 53). In total, we sent 208 messages: 143 to active students and 65 to inactive/almost-inactive students. It is also important to mention that there was a slight difference in the number of observations of each group due to the adjustment of students in the days immediately after the registration period closed.

It should be noted that there was a slight difference between the students enrolled in the subject (n = 387) and the students enrolled in the virtual course (n = 358). This difference was caused by the lack of access to the course for students with special characteristics and students from penal institutions.

To control the email content, we used the LIWC program to analyze the text of the email messages before their delivery. In particular, we were interested in identifying the appropriate levels of three variables: (a) analytic thinking, because our emails contained instructional text to motivate students to access the virtual course; (b) clout, because we sought to impart confidence and expertise; and (c) emotional tone, because we sought to motivate and engage students. The results show high values in analytic thinking (over 88%), which reflects high levels of formal, logical, and hierarchical thinking; clout (over 95%), which suggests that the instructor is writing from the perspective of high expertise and is confident; and emotional tone (over 97%), which reflects positive tone and upbeat style.

RESULTS

In this section, we present the results of the study. Our first objective is related to the effectiveness of the email in motivating students to visit the virtual course. The results related to this objective are summarized in Table 2.

The columns of Table 2 show the effects of the email messages in the virtual course at different times (one day, half week, one week, and one month). To better analyze the results, we divided Table 2 into three panels. The Panel A shows the results for all students, Panel B exhibits the results for students classified as active, and Panel C presents the results for students classified as inactive.

In Table 2, Panel A, the first row shows the students' access to the virtual course one day after sending the email and the cumulative effects in the days immediately after sending the emails. These percentages are calculated by dividing the number of instances of access to the virtual course for students with emails between the total number of messages sent. In Table 2, Panel B, the second row presents the access to the virtual course of students without email communications. This is our control group, and the percentages are calculated by dividing the number of instances of access in the virtual course for students without emails between
Panel A. All Students

<table>
<thead>
<tr>
<th></th>
<th>One day</th>
<th>Half week</th>
<th>One week</th>
<th>One month</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Message (208)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>13.94%</td>
<td>47</td>
<td>22.60%</td>
</tr>
<tr>
<td>No message (150)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>13.33%</td>
<td>33</td>
<td>22.00%</td>
</tr>
<tr>
<td>Increase</td>
<td>0.61%</td>
<td>0.60%</td>
<td>0.49%</td>
<td>1.71%</td>
</tr>
<tr>
<td>Chi-square</td>
<td>1.65</td>
<td>2.45</td>
<td>4.20</td>
<td>7.49</td>
</tr>
</tbody>
</table>
| p value        | 0.199   | 0.118     | 0.041    | 0.006     

Panel B. Active Students

<table>
<thead>
<tr>
<th></th>
<th>One day</th>
<th>Half week</th>
<th>One week</th>
<th>One month</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Message (143)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>19.58%</td>
<td>43</td>
<td>30.07%</td>
</tr>
<tr>
<td>No message (97)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>17.53%</td>
<td>27</td>
<td>27.84%</td>
</tr>
<tr>
<td>Increase</td>
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<td>2.23%</td>
<td>-2.19%</td>
<td>4.87%</td>
</tr>
<tr>
<td>Chi-square</td>
<td>2.69</td>
<td>3.66</td>
<td>3.78</td>
<td>9.48</td>
</tr>
</tbody>
</table>
| p value        | 0.101   | 0.056     | 0.052    | 0.002     

Panel C. Inactive Students

<table>
<thead>
<tr>
<th></th>
<th>One day</th>
<th>Half week</th>
<th>One week</th>
<th>One month</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Message (65)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>1.54%</td>
<td>4</td>
<td>6.15%</td>
</tr>
<tr>
<td>No message (53)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>5.66%</td>
<td>6</td>
<td>11.32%</td>
</tr>
<tr>
<td>Increase</td>
<td>-4.12%</td>
<td>-5.17%</td>
<td>1.48%</td>
<td>-9.06%</td>
</tr>
<tr>
<td>Chi-square</td>
<td>2.69</td>
<td>3.66</td>
<td>1.32</td>
<td>0.00</td>
</tr>
</tbody>
</table>
| p value        | 0.101   | 0.056     | 0.251    | 1.000     

Table 2. Effect of the Message in the Virtual Course

the total number of students who did not receive email messages. Panel A shows that the percentage of students who visited the virtual course after receiving an email was similar to the percentage of students who visited the virtual course without receiving an email. However, these results should be interpreted with caution because Table 2 does not differentiate students’ profiles. Using the chi-square test, we find p values statistically significant for one week and for one month.

Table 2, Panel B presents the results for active students. Panel B reveals that the percentage of students who changed their status after receiving an email was higher than the percentage of students who changed independently (without a message). The increase was from 2.05% for the first week to 4.87% for the first month. Using the chi-square test, we find p values statistically significant. However, considering the inactive students, the evidence suggests that the email channel does not motivate students to visit the virtual course. It seems that students visit the virtual course following other motivations (Table 2, Panel C).

The second objective of the study is to test the effectiveness of emails by gender and among geographical locations, and these results are summarized in Tables 3 and 4. Table 3 shows the results for gender. It seems that females are more active when receiving emails across all periods. This increases from 5.42% for the first week to 9.62% for the first month. The chi-square test shows an association between gender and changes in status in the virtual course for students who receive an email (p < 0.01). In contrast, we do not find an association between gender and changes in the status in the virtual course for students who did not receive an email (p > 0.05).

Table 4 shows the results for geographical location. In this case, the chi-square test is not statistically significant for geographical location. The exception is the return for one day for students
who receive an email, but the limited number of observations does not allow us to draw conclusions.

Our last objective is related to the effectiveness of emails in boosting academic performance (quiz and final exam). The results are summarized in Tables 5 and 6.

Table 5 shows that students who receive motivational emails, on average, obtain slightly higher marks on the quiz (that contributes to the final exam) than students who do not receive motivational emails, although the differences in marks are low, and the t-test is not statistically significant. Both active and inactive students who receive motivational emails obtain slightly higher marks on the quiz compared to students who do not receive motivational emails, but the t-test is not statistically significant. In this case, we did not divide the sample by gender because we did not have enough observations. It should be noted that the inactive group only had 22 observations.

Similarly, Table 6 reveals that students who received a motivational email, on average, obtain higher marks on the final exam than students who did not receive motivational emails, although the t-test is not statistically significant. Considering the students’ profiles, the results suggest that students who were classified as active and received motivational emails, on average, obtained higher marks on the final exam compared to students classified as inactive. Additionally, active students obtained higher marks on the final exam compared to inactive students.
The current paper examines the potential of email channel to engage students in learning and keep them connected. Our first objective examines the effectiveness of emails in encouraging students to visit the virtual course according to their profiles: inactive students (and almost-inactive) and active students. We designed two emails to tailor the motivational messages to the students according to their profiles. The results show that the percentage of active students who changed their status in the virtual course after receiving an email was higher than the percentage of active students who changed their status without receiving email messages. Consequently, email messages may help motivate active students to access virtual courses, although the returns are low. In the case of inactive students, the email messages did not motivate them to access the virtual course. Thus, we can conclude that inactive students visit the virtual course according to other motivations.

Our second objective examines the effectiveness of emails in engaging students according to their sociodemographic characteristics. The results show that motivational emails affect more women than men since women changed their status in the virtual course faster than men. However, we did not find any differences related to students’ geographical location.

Our last objective examines the extent to which email messages affect students’ academic performance. The results show that students who receive motivational emails, on average, obtain slightly higher marks on quizzes than students who do not receive motivational emails, although the differences are very low, and the t-test is not statistically significant. Both active and inactive students who received motivational emails obtained slightly higher marks on the quiz compared to students who did not receive motivational emails. Similarly, students who received a motivational email obtained slightly higher marks on average on the final exam than students who did not receive motivational emails, although the results of the t-test were not statistically significant. Considering students’ profiles, the results suggest that students classified as active who received motivational emails obtained higher marks on the final exam on average compared to students classified as active who did not receive motivational emails. It should

---

**Table 5. Results for the Quiz**

<table>
<thead>
<tr>
<th>Quiz</th>
<th>Message</th>
<th>N</th>
<th>%</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>All the students</td>
<td>YES</td>
<td>73</td>
<td>54.07%</td>
<td>4.137</td>
<td>0.073</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td>62</td>
<td>45.93%</td>
<td>4.065</td>
<td>0.099</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>135</td>
<td>100.00%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active students</td>
<td>YES</td>
<td>63</td>
<td>55.75%</td>
<td>4.127</td>
<td>0.077</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td>50</td>
<td>44.25%</td>
<td>4.040</td>
<td>0.101</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>113</td>
<td>100.00%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inactive students</td>
<td>YES</td>
<td>10</td>
<td>45.45%</td>
<td>4.200</td>
<td>0.042</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td>12</td>
<td>54.55%</td>
<td>4.167</td>
<td>0.094</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>22</td>
<td>100.00%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 6. Results for the Final Exam**

<table>
<thead>
<tr>
<th>Final exam</th>
<th>Message</th>
<th>N</th>
<th>%</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>All the students</td>
<td>YES</td>
<td>97</td>
<td>56.40%</td>
<td>4.449</td>
<td>2.811</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td>75</td>
<td>43.60%</td>
<td>4.268</td>
<td>2.702</td>
</tr>
</tbody>
</table>
| Student classification
|                      |         |     |       |       |       |
| Active (with Quiz)  | YES     | 49  | 28.49%| 5.018 | 2.816 |
|                     | NO      | 39  | 22.67%| 4.687 | 2.812 |
| Inactive (no Quiz)  | YES     | 48  | 27.91%| 3.869 | 2.712 |
|                     | NO      | 36  | 20.93%| 3.814 | 2.537 |
also be noted that active students obtained higher marks on the final exam than inactive students.

**IMPLICATIONS**

The current study contributes to the educational literature in several ways. In response to the call for further studies focusing on interactions and attitudes between students and instructors (Al-Fraiha et al., 2020), this study provides evidence from students pursuing a tourism degree who have a low motivation to study accounting. To engage students, we consider it crucial to complement class materials with motivational tools that enhance learning. This study focuses on communication content and strategies according to students’ profiles. To the best of our knowledge, previous studies that focused on interactions between instructors and students at distance learning universities have not explored the effectiveness of emails considering students’ profiles in virtual courses. Consequently, we adopt a classification based on students’ behavior—active and inactive students—to better analyze the effectiveness of emails on both virtual courses and academic achievement.

The current study examines the effectiveness of emails, a traditional communication channel in elearning environments that is still the most common channel today at every level of elearning education. We consider that motivational email messages cannot be discarded in the distance learning university. The evidence suggests that email messages between instructors and students turn out to be an interesting channel to motivate students enrolled in a distance learning university. Motivational emails may help some students achieve their learning objectives, and we believe that email messages could be useful for online students because of their positive return in virtual courses and academic performance. However, students who are inactive do not experience any changes in their status after receiving email messages. Future studies may repeat our work and include more information about this group of students. It is also necessary to test different motivational strategies to capture the attention of this group. We consider it important to identify students with a low probability of success (and inactive students) and design specific strategies to encourage them to become gradually more active due to their high probability to drop out of courses.

In combination with prior research in the field, our results can help instructors and future researchers design specific strategies to promote students’ participation. Although prior research has provided extensive evidence about the effectiveness of emails at distance learning universities and in online courses, a more informative identification of students could boost these results. Our study provides several insights for distance education and could be applied to different subjects and courses.

**LIMITATIONS**

One limitation of this study is related to the reading of emails, as we did not know how often students open institutional emails. Some students redirect institutional emails to their personal email accounts, while others prefer to keep their private and institutional email accounts separate. Consequently, we could only determine whether emails had been delivered but not whether they had been read. More importantly, we consider it essential to provide deep email content to achieve better results. It is also important to conduct a detailed analysis of how many messages should be sent to students.

**SUGGESTIONS FOR FURTHER RESEARCH**

The above limitations create new avenues for future studies. In addition to the number of emails, appropriate timing for interventions, and email content, future research may continue exploring email communication according to students’ profiles to improve its effectiveness. It would also be interesting to include more variables to better categorize students into groups, such as according to their previous grades, the number of times they have been enrolled in the subject, and their age. Finally, future studies could combine email messages with other communication channels such as social media (Apps, Tweets, Facebook) or phones (instant messages).
REFERENCES


ABSTRACT

The purpose of this retrospective study was to test the association of simple timeliness measures with academic performance in an online quantitative reasoning course using data extracted from gradebooks (N = 157). Guided by the Social Cognitive Model, timeliness was assumed to be a consistent behavior chosen by the student based on personal goals and social patterning. Submission of assignments early in the first four weeks of the term proved to be a significant predictor of the final percentage grades (mean difference = 5.02, p = 0.006). Submitting assignments Just-in-Time was not significantly related to the final percentage grade. The significance of early submission of assignments persisted after adjusting for the effects of failing status. The results are useful for targeting students who may benefit from encouragement in the form of personal messages from the instructor.

Keywords: timeliness, early submission, lateness, online learning, higher education, asynchronous, academic performance

INTRODUCTION

Professional doctorate programs that are offered online require course work in statistical analysis. However, students often are anxious about these courses because some students have struggled with statistics in previous courses and many lack confidence in their ability to learn the material, and academic performance is shown to be lower in doctoral statistics courses than in other subjects (Rotenstein et al., 2009). Instructors may find themselves uncertain about how they can improve student competence in the material and, consequently, academic performance. If instructors knew how to identify a subset of students who are both willing and able to benefit from outreach, it might be possible to improve the grade distribution.

Background

Predictors of academic performance are of perennial interest in higher education research. This line of research is even more urgent in online programs where maintaining student motivation and commitment are ongoing challenges. Instructors who reach out to students may be able to foster a greater sense of community and increase engagement. Simple tools are needed for identifying students who might benefit from instructor intervention. Targeted outreach could be beneficial for students who desire more engagement with faculty and a greater faculty presence (McElroy & Lubich, 2013).

Studies of academic performance in online classes typically have relied on primary data collection in the form of large surveys of students with long instruments. The instruments are psychometrically valid but tend to exhibit weak effects on academic performance. They also may not be practical for use by individual instructors because they require primary data collection. A 27-item instrument designed to measure engagement was shown to correlate with academic performance among 40 undergraduates (Handelsman et al., 2005). An instrument of this length has questionable...
utility for use by instructors. A study of 669 largely online, nontraditional doctoral students using a short eight-item instrument measuring grit (passion and persistence for long-term goals) was able to predict grade point average with a Pearson r of .093, p < .016 (Cross, 2014). A follow-up study of grit and a large personality inventory in 478 doctoral students (Walsh, 2020) did not find grit to be a significant predictor of grade point average; instead, conscientiousness was significant with an r-square of 0.025 (b = 0.089, p = 0.002).

Another approach to the study of academic performance, called learning analytics, relies on secondary data in the form of activity counts obtained from learning management systems (LMS). For example, a study of 354 undergraduates analyzed eight indicators of participation and persistence and reported significant correlations with academic performance (Morris et al., 2005). Various indicators of interaction are significantly related to academic performance, but the effects might be different in different types of classes (Agudo-Peregrina et al., 2014). The LMS approach to obtaining predictors of academic performance may be convenient for the individual instructor if the instructor has access to reports about their own classes. These systems can produce alerts warning the instructor about students who are at risk of poor performance due to inactivity or lateness.

Timeliness may be a promising avenue of investigation. Time spent on academic activities is a significant predictor of academic performance (Carver et al., 2017) but timeliness is a different concept. Timeliness encompasses a range of timing that extends from very early completion of tasks to very late. Procrastination is known to increase the risk of academic failure (Rabin et al., 2011). Various studies have linked procrastination among students with anxiety (Haycock et al., 1998), perfectionism and fear of failure (Flett et al., 1992), lack of computer skills (Rahardjo et al., 2013), low self-efficacy (Haycock et al., 1998), low motivation combined with aversion for academic tasks (Brownlow & Reasinger, 2000), low say-do correspondence (Howell et al., 2006), and weak executive functioning (Rabin et al., 2011). However, procrastination appears not to be related to any Myers-Briggs personality type (Ferrari et al., 1992).

At the opposite end of the timeliness spectrum, early submission of academic work might indicate higher executive functioning. Procrastination is related to executive dysfunction (Rabin et al., 2011). Executive functioning includes self-regulation and the ability to plan, organize, initiate, and complete work. These skills are conducive to academic success. On the other hand, submitting papers at the last minute (labelled as Just-in-Time) can be described as pragmatic and useful (Ferket et al., 2012; Rotenstein et al., 2009). Waiting allows more time to perfect the paper and leaves open the possibility of acquiring useful information from other students who complete their assignments sooner. Despite these apparently good reasons for waiting, earlier submission has been shown to predict better scores (Rotenstein et al., 2009).

The purpose of this retrospective study was to investigate the predictive validity of simple timeliness measures that can be assessed before the middle of the term. If these measures are valid, then they could be used to target students for the special attention than many of them crave (Cung et al., 2018). This in turn could increase academic performance, motivation, engagement, student satisfaction, and a sense of community in the class.

**Theory and Research Questions**

Guided by the Social Cognitive Model (Bandura, 1988), timeliness is assumed to be a consistent behavior chosen by the student based on personal goals and social modeling. According to the theory, students who consistently complete assigned work early do so because they able to self-regulate and early submission meets their personal goals. Students are self-motivated based on prior academic success that has increased their self-efficacy (Zimmerman et al., 1992). Goals include professional achievements such as grades and social activities. Students who submit assignments early can be expected to be high in self-efficacy and to get better than average scores. Students who submit their work Just-in-Time have settled on this behavior pattern because they believe it helps them to achieve their goals, both social and professional. If their grades are not as good as expected, they are able to work harder and achieve higher performance. However, students who are failing may lack motivation because their poor academic performance has reduced their self-efficacy.

The research questions associated with the study are:
1. Is there an association between timeliness measure and final grades of graduate students in an online quantitative reasoning course?

2. Is there an association between timeliness measure and final grades of graduate students in an online quantitative reasoning course after adjusting for failing status?

METHODS

Setting

Students in this course were pursuing a doctorate in the health sciences, either the PhD in public health, the PhD in Health Services, or the Doctor in Health Administration. The course is entirely online and asynchronous with terms that are 12 weeks in length. Discussion posts are submitted weekly, and assignments are also submitted weekly and are due at 2:00 a.m. on Monday morning. Assignments are graded with a standard rubric provided by the course designers, and late assignments are penalized at 25% per day late. Instructors do not design the course; their role is to facilitate, answer questions, and grade papers. There are no tests. Class sizes typically are fewer than 15 students after dropouts. The course subject is quantitative reasoning. The graded assignments are exercises demonstrating the ability to use SPSS software to test hypotheses. Only one instructor taught all sections of the course analyzed in this project.

Sample

Data were obtained from the gradebooks of the class sections included in the study (14 consecutive sections beginning in the spring term of 2017 and ending after the summer term of 2020). The sample size was 157 students. The proposal was approved by the university Institutional Review Board and received administrative institutional approval.

Variables

The dependent variables were two measures of academic performance: the final percentage score and the final percentage score rank-transformed with higher values indicating higher scores. The rank-transformation was performed to reduce outliers and normalize the distributions. The primary independent variables were two measures of timeliness: (a) Early Submission (Early1×4-submission of at least one assignment more than one day early in the first four weeks of the term); and (b) Just-in-Time (JIT1×4-submission of at least one assignment in the last two hours before the deadline). Students who were classified as disabled and allowed to submit late every week without penalty were classified as Just-in-Time rather than late. Both timeliness variables were coded as a dummy variable with 1 for yes and 0 for no. Students could be classified as Yes on both measures and this happened eight times. Failing status (Fail4) was scored as 1 for yes if the percentage score was less than 80 at the end of week 4 and 0 for no. The covariates were year (2017, 2018, 2019, 2020) and term (1 = spring, 2 = summer, 3 = fall, 4 = winter).

Analysis

The statistical significance of the timeliness measures was tested via univariate analysis of variance in the means of the academic performance variables. Significance was set at p < 0.05. The general linear model procedure in SPSS was used to test the independent effects of the variables found to be significant in the univariate analyses.

RESULTS

Means of the two dependent variables for early and not-early submitters are shown in Table 1. Early submitters (42.7% of the sample) had significantly higher means on both percentage grade and the rank of the percentage grade. The difference between the means of percentage grade was 5.02% (p < 0.006). The means for rank of percentage grade for early and not early were 95.04 and 67.06, respectively (p < 0.001). The means of the dependent variables were not significantly different for JIT students in comparison to not JIT (Table 2). JIT students comprised 33.1% of the sample.

Table 1. Means of Early Submission Status

<table>
<thead>
<tr>
<th>Early1×4</th>
<th>Percentage Grade (P=0.006)</th>
<th>Rank Pct Grade (p&lt;0.001)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Mean</td>
<td>82.62</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>90.00</td>
</tr>
<tr>
<td></td>
<td>Std. Deviation</td>
<td>12.78</td>
</tr>
<tr>
<td>1</td>
<td>Mean</td>
<td>87.64</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>67.00</td>
</tr>
<tr>
<td></td>
<td>Std. Deviation</td>
<td>8.37</td>
</tr>
<tr>
<td>Total</td>
<td>Mean</td>
<td>84.76</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>157.00</td>
</tr>
<tr>
<td></td>
<td>Std. Deviation</td>
<td>11.36</td>
</tr>
</tbody>
</table>
Table 2. Means by Just-in-Time Status

<table>
<thead>
<tr>
<th>JIT1×4</th>
<th>Percentage Grade (P=0.851)</th>
<th>Rank of Pct Grade (P=0.114)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Mean</td>
<td>84.64</td>
<td>83.04</td>
</tr>
<tr>
<td>N</td>
<td>105.00</td>
<td>105.00</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>13.24</td>
<td>47.74</td>
</tr>
<tr>
<td>1 Mean</td>
<td>85.01</td>
<td>70.85</td>
</tr>
<tr>
<td>N</td>
<td>52.00</td>
<td>52.00</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>6.11</td>
<td>39.68</td>
</tr>
<tr>
<td>Total Mean</td>
<td>84.76</td>
<td>79.00</td>
</tr>
<tr>
<td>N</td>
<td>157.00</td>
<td>157.00</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>11.36</td>
<td>45.47</td>
</tr>
</tbody>
</table>

Table 3. Means by Failing Status

<table>
<thead>
<tr>
<th>Fail4</th>
<th>Percentage Grade (P&lt;0.001)</th>
<th>Rank of Pct Grade (P&lt;0.001)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Mean</td>
<td>88.12</td>
<td>92.68</td>
</tr>
<tr>
<td>N</td>
<td>122.00</td>
<td>122.00</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>5.51</td>
<td>40.11</td>
</tr>
<tr>
<td>1 Mean</td>
<td>73.07</td>
<td>31.31</td>
</tr>
<tr>
<td>N</td>
<td>35.00</td>
<td>35.00</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>17.42</td>
<td>27.32</td>
</tr>
<tr>
<td>Total Mean</td>
<td>84.76</td>
<td>79.00</td>
</tr>
<tr>
<td>N</td>
<td>157.00</td>
<td>157.00</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>11.36</td>
<td>45.47</td>
</tr>
</tbody>
</table>

Table 4. Means by Term

<table>
<thead>
<tr>
<th>Term</th>
<th>Percentage Grade (P=0.986)</th>
<th>Rank of PCT Grade (p=0.825)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Mean</td>
<td>84.92</td>
<td>82.96</td>
</tr>
<tr>
<td>N</td>
<td>39.00</td>
<td>39.00</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>12.65</td>
<td>46.54</td>
</tr>
<tr>
<td>2 Mean</td>
<td>84.31</td>
<td>75.23</td>
</tr>
<tr>
<td>N</td>
<td>55.00</td>
<td>55.00</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>12.33</td>
<td>43.23</td>
</tr>
<tr>
<td>3 Mean</td>
<td>84.95</td>
<td>76.86</td>
</tr>
<tr>
<td>N</td>
<td>28.00</td>
<td>28.00</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>9.04</td>
<td>44.36</td>
</tr>
<tr>
<td>4 Mean</td>
<td>85.15</td>
<td>82.23</td>
</tr>
<tr>
<td>N</td>
<td>35.00</td>
<td>35.00</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>10.33</td>
<td>49.77</td>
</tr>
<tr>
<td>Total Mean</td>
<td>84.76</td>
<td>79.00</td>
</tr>
<tr>
<td>N</td>
<td>157.00</td>
<td>157.00</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>11.36</td>
<td>45.47</td>
</tr>
</tbody>
</table>

Table 5. Means by Year

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage Grade (p=0.128)</th>
<th>Rank of PCT Grade (p=0.139)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017 Mean</td>
<td>86.85</td>
<td>86.84</td>
</tr>
<tr>
<td>N</td>
<td>44.00</td>
<td>44.00</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>7.46</td>
<td>49.35</td>
</tr>
<tr>
<td>2018 Mean</td>
<td>85.70</td>
<td>85.15</td>
</tr>
<tr>
<td>N</td>
<td>46.00</td>
<td>46.00</td>
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<tr>
<td>Std. Deviation</td>
<td>10.31</td>
<td>43.10</td>
</tr>
<tr>
<td>2019 Mean</td>
<td>81.54</td>
<td>67.09</td>
</tr>
<tr>
<td>N</td>
<td>47.00</td>
<td>47.00</td>
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<tr>
<td>Std. Deviation</td>
<td>15.80</td>
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<tr>
<td>2020 Mean</td>
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<tr>
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<tr>
<td>Std. Deviation</td>
<td>6.26</td>
<td>42.45</td>
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<tr>
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<td>79.00</td>
</tr>
<tr>
<td>N</td>
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<td>157.00</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>11.36</td>
<td>45.47</td>
</tr>
</tbody>
</table>

Failing status was strongly associated with the means of the dependent variables (Table 3). Students who were failing at week 4 (22.3% of the sample) had a mean final grade of 73.07. (A grade of 80% and above is considered passing; students earning less than 80% must retake the class.) In contrast, students not failing at week 4 had a mean final grade of 88.12 (p < .001). The mean rank scores showed a similar pattern (mean difference 61.37, p < .001). No significant differences were found by either year or term (Tables 4 and 5).

The general linear model-univariate was used to test the independent effect of early submission status on the rank of percent grade (Table 6). The variance explained by the model overall indicates a strong effect (partial eta square = .353), indicating that about 35% of the variance in academic performance was explained by the two independent variables. Only the regression results for the ranked variable are shown because outliers prevented the model for the unranked grades from meeting the assumptions of linear regression analysis. Fail status had a partial eta square of .287 (p < .001). Early submission was significant at p = 0.004 but the partial eta square was weak (.052).

DISCUSSION

This paper reports on a study of 157 doctoral students enrolled in an online quantitative
reasoning class using simple and novel timeliness measures. The data collection methodology was low-tech in comparison to studies extracting data from learning management systems (LMS). For example, in a recent report LMS activity data from 4989 students was analyzed to identify predictors of academic performance (Conijn et al., 2017). Most of the r-squares reported from the multiple linear regression analysis were less than 0.25, despite the large sample size and large number of predictors. LMS studies require special permissions and data extraction skills. They also require the reader to see meaning in click counts, which might be counter-intuitive for some. In contrast, simple visual examination can be used to identify early submitters in the first four weeks and immediate action can be taken by the instructor.

Failing status was controlled in the analysis and found to be the strongest predictor of academic performance. Generous admission standards are intended to increase the accessibility of higher education to all, a laudable and achievable goal, but one consequence of this policy is enrollment of some students who are not developmentally prepared for the demands of the program. They may lack basic computer skills, reading and writing skills, or the willingness to do the necessary work. As a result, a nonzero failure rate is both expected and necessary, lest universities all become diploma mills. Academic ability is an important determinant of success in higher education (O’Connell et al., 2018) and its absence is not under the control of the instructor.

This study found statistically significant results with weak effects for one of the timeliness variables: early submission one time in the first four weeks. Studies of academic performance typically report weak effects even when statistical significance is achieved (Walsh, 2020). In this study, being an early submitter independently predicted a 5.1 percent increase in the final percentage grade. This is enough to make the difference between an A and B or between a C and B. To put this effect into perspective, we can compare it to the effect of tutoring on final percent grade in a calculus class. Three tutoring sessions were found to increase the final grade by 1 percent (Rickard & Mills, 2018).

Just-in-Time submitters were not found to have lower or higher means than other students in this analysis. Submitting at the last minute may allow student to optimize some of the personal goals but it neither helps nor hurts their final grades in this class.

LIMITATIONS OF THE STUDY

This study involves only one instructor for all the sections analyzed and may be subject to instructor bias. In addition, the sample is small, thus limiting statistical power. Demographic variables such as age, gender, and race are not included in the gradebook and were not available for analysis. The study is limited to one type of class (quantitative reasoning), one type of instruction (asynchronous online with no tests in small classes), and one type of student (doctoral students in the health sciences). The findings may not be generalizable to other type of classes, types of instruction, or types of students. Finally, the small sample offered limited statistical power.

Despite these limitations, the findings reported here are potentially useful for instructors of similar courses. Flagging early submitters creates the opportunity to reach out to them with encouragement since they might be able to apply their executive functioning skills to improve their grades. This kind of targeted outreach, perhaps via email messages, could foster a greater sense

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
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<td>56955.285</td>
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<td>.353</td>
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<td>.672</td>
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<td>83850.140</td>
<td>61.913</td>
<td>.000</td>
<td>.287</td>
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<tr>
<td>Early1×4</td>
<td>11490.645</td>
<td>1</td>
<td>11490.645</td>
<td>8.484</td>
<td>.004</td>
<td>.052</td>
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<tr>
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<td>154</td>
<td>1354.327</td>
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<td></td>
<td></td>
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<tr>
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<td>157</td>
<td></td>
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<tr>
<td>Corrected Total</td>
<td>322477.000</td>
<td>156</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. R Squared = .353 (Adjusted R Squared = .345)

Table 6. Independent Effects on Rank of Percent Grade
of classroom presence (Cung et al., 2018) and engagement in the class. Additional research is needed to verify the findings, test new predictors that are equally simple, and evaluate the effects of classroom interventions.

This analysis also reveals that rank transformations of academic performance variables can be useful to eliminate outliers and normalize distributions. Overall, the study demonstrates that instructors can monitor timeliness easily among their students for the purpose of improving classroom performance.

RECOMMENDATIONS

Recommendation for practice #1: Instructors should consider being flexible about office hours and accept email queries and phone calls throughout the day.

Recommendation for practice #2: Instructors should encourage students to take advantage of statistics tutors and help sessions provided by the university.

Recommendation for practice #3: Instructors should consider sending encouraging messages to students who have submitted early to reinforce the behavior and also sending messages to students who have expressed worry to see if they are feeling better about the course.
REFERENCES


There is a need to investigate student intention to participate in online discussion forums in the context of online collaborative learning due to the importance of student participation and the widespread student inactivity reported in some studies. Student participation in online discussion forums could be predicted by the constructs included in the Theory of Planned Behavior (TPB). This paper presents a cross-cultural adaptation (CCA) and validation of a questionnaire based on TPB for analysis using Structural Equation Modelling (SEM). The CCA was conducted to adapt the English items included in the questionnaire for use in an Indonesian context. This is part of our study on factors that affect student intention to participate in online discussion forums. The rationale for conducting a CCA was the need to cater to the different characteristics of the language and the cultural backgrounds of the participants of this study in comparison to the participants involved in the construction of the original measurement items. The adaptation and the validation of the questionnaire involved a literature review, back-translation, an expert review, pretesting, and a statistical validation test to ensure its reliability and validity. The result shows that the adapted instrument is valid and reliable to be used for further SEM analysis (i.e., structural model evaluation). Moreover, this paper demonstrates that expert-reviewed adaptation and the back-translation method could produce valid and reliable measurement items for SEM. Therefore, future studies that utilize SEM with cross-cultural adapted items from relevant prior studies should consider adopting expert-reviewed adaptation and back-translation methods.

Keywords: online collaborative learning, online discussion forum, intention, questionnaire adaptation, back-translation, structural equation modelling.

INTRODUCTION

Nowadays, the notion of online collaborative learning has gained prominence among education practitioners and researchers (Stahl et al., 2006). According to this concept, learners collaboratively construct their personal understanding through exchanging and challenging other learners’ ideas in a process of inquiry resembling a scientific
discourse within an online learning environment (Garrison, 2016). To facilitate such collaborative learning activities, an asynchronous online discussion forum is usually utilized as a part of the blended-learning approach in higher education.

The extensive use of elearning due to the growth of the internet made the asynchronous online discussion forum a popular means to facilitate interaction among students and teachers (Hew et al., 2010) and to provide online collaborative learning in higher education. Due to its text-based and asynchronous characteristics, a discussion forum enables students to have time to reflect on their peers' opinions, challenge them, formulate new ideas, and express these in the form of a threaded context (Garrison & Anderson, 2003). Thus, as the discussion progresses, the threads formed in the forum show the process of inquiry among the students.

Whether this process results in successful collaborative learning is ultimately determined by students actively participating in it (Harasim, 2012). Moreover, the students’ active participation is an important part of the online learning environment as it determines the learning outcomes (Yukselturk, 2010). However, some studies have reported that student inactivity in online discussion forums poses a significant problem for online collaborative learning (Fung, 2004; Hew et al., 2010). Without active participation, it is impossible to have a meaningful exchange of ideas and construct personal knowledge. Therefore, strategies need to be identified and implemented to foster student participation in online discussion forums by understanding what factors affect students’ intention to participate.

To address such problems, student intention to participate in an online discussion forum needs to be investigated because intention is a factor that predicts behavior according to the Theory of Planned Behavior (TPB; Ajzen, 1991). The construct of intention can be quantified and analyzed using the Structural Equation Modelling (SEM) approach to uncover its relationship with other relevant constructs that are the antecedents of intention (i.e., attitude, subjective norms, and perceived behavioral control). This requires the development of a valid and reliable questionnaire.

However, constructing a valid and reliable questionnaire that is adapted from the items of relevant prior studies is challenging due to the different cultural backgrounds of the participants and the different contexts of their behavior. Participants of the study could differently perceive the original items and the adapted items, as shown in a study by Sousa et al. (2016). Thus, a new and distinct method of adapting and translating the items needs to be implemented in order to achieve equivalence with the original items (Beaton et al., 1998). Moreover, a statistical test needs to be conducted to measure the reliability and validity of the measurement items.

Using items developed for a previous study in a new study is common in SEM research. However, some SEM research involves participants who have different cultural backgrounds in comparison to the participants involved in the previous study that developed the SEM items. Furthermore, some SEM research (Adiyasa et al., 2018; Shihab et al., 2017; Wijaya et al., 2015) did not utilize or report the use of Cross-Cultural Adaptation (i.e., the approaches outlined in Beaton et al., [1998]) in adapting the items to fit the intended cultural context. This could lead to participant’s misunderstanding SEM measures (i.e., the meaning of some words in the questionnaire), which in turn could be detrimental to the validity and the reliability of the results. Moreover, in the context of developing measurement items for investigating student intention to participate in online discussion forums, it is not sufficient to retrieve and translate relevant items from prior studies that utilize identical segments of studied subjects (i.e., students) and research framework (i.e., including the constructs of TPB) due to the possibility of mistranslating and misunderstanding the terms used in the items. This issue leads to the need to implement a Cross-Cultural Adaptation (CCA) approach in SEM studies.

This study focuses on the development and cross-cultural adaptation of questionnaire items to measure student intention based on the constructs of TPB based on CCA guidelines developed by Beaton et al. (2000) for a cross-cultural adaptation for self-report measures. This is a part of our larger study that implements the SEM approach to investigate the factors that affect student intention to participate in an asynchronous online discussion forum. The following research question is addressed in this study:

Do measurement items that were retrieved
from the relevant literature and adapted using the CCA method have adequate reliability and validity for SEM analysis in the context of student intention to participate in online discussion forums?

**LITERATURE REVIEW**

There are three concepts that are relevant to this study, namely online collaborative learning, the Theory of Planned Behavior, and the quantitative measures adaptation method. These concepts are presented in the following subsections.

**Online Collaborative Learning and Asynchronous Discussion Forums**

Online collaborative learning is an approach to online learning in which learners actively engage with each other by exchanging and challenging ideas to construct a personal understanding of a concept (Garrison, 2016). It is rooted in the social constructivist theory of learning, which asserts that learners construct their own knowledge based on their direct experience in their environment, their prior knowledge, and their interaction with other learners in exchanging and challenging ideas (Bransford et al., 2000; Ertmer & Newby, 2013; Garrison, 2016).

An asynchronous text-based means of communication (i.e., an online discussion forum) is usually utilized to facilitate online collaborative learning. An online discussion forum is a favorable environment to support online collaborative learning due to its asynchronous characteristic that enables students to have some time to reflect on their ideas as well as the other students’ ideas which could exhibit a higher-order thinking (Garrison, 2016). This study focused on developing a questionnaire to measure student intention to participate in online discussion forums.

**Theory of Planned Behavior**

The Theory of Planned Behavior (TPB) is a behavioral theory that is commonly utilized in the information system adoption model. This theory was developed by Ajzen (1991), who extended the prior Theory of Reasoned Action proposed by Fishbein and Ajzen (1975). According to the Theory of Reasoned Action, a particular human behavior that is reasoned could be predicted by its subject’s intention. The construct of intention has two antecedents, namely the attitude towards the behavior (i.e., positive/negative personal judgement) and the subjective norms (i.e., peer pressure). In the TPB, the antecedents of the intention also include the construct of perceived behavioral control (i.e., the availability of means to perform the behavior). This study developed an instrument that is based on the TPB (see Figure 1).

![Figure 1. Theory of Planned Behavior (Ajzen, 1991)](image)

This study focused on developing an instrument for investigating the student’s intention. Therefore, the constructs addressed in this study consisted of the intention, attitude, subjective norms, and perceived behavioral control of the students on their use of online discussion forums. In the context of this study, attitude refers to the degree of favorable sentiment towards the use of online discussion forums. On the other hand, the subjective norms are related to the social pressure exerted by a student’s social environment (i.e., classmates, lecturers, etc.) that encourages the use of online discussion forums. Moreover, the perceived behavioral control refers to the students’ ability to use online discussion forums (i.e., skills, access to resource, etc.).

**Cross-Cultural Questionnaire Adaptation Method**

Adapting a quantitative measurement item retrieved from a prior study conducted using a survey on participants with different cultural backgrounds requires a unique approach in order to achieve equivalence (Beaton et al., 1998). An extensive review by Epstein et al. (2015) provides an overview of state-of-the-art CCA method. In the review, the most common method included in CCA are: (a) a committee review, (b) back-translation, and (c) focus groups. Moreover, it suggests that adaptation and validation are basically two different phases that need to be differentiated in CCA studies. Furthermore, the review concluded that no single method is the best CCA method and the decision to use a particular method is a matter
of resource feasibility (e.g., the time and money available to the researchers).

One guideline that could be adopted is the one proposed by Beaton et al. (2000). Based on this guideline, the adaptation process consists of several phases, namely: (a) translation, (b) synthesis, (c) back-translation, (d) expert committee review, (e) pretesting, and (f) submission and appraisal by a committee. In this study, this guideline was adopted with some adjustments. The details regarding the use of this guideline in this study are presented in the next section.

**METHODS**

This study employed a CCA method as outlined by Beaton et al. (2000) with several adjustments related to the feasibility of the study. The steps are illustrated in Figure 2, and the details of each step are described in the following subsections.

**Literature Review**

The first step in developing the questionnaire was a literature review. The review was aimed at retrieving relevant measurement items from relevant studies for each TPB construct. The items were retrieved only from papers that focused on the adoption of elearning and included at least one TPB construct (attitude, subjective norms, or perceived behavioral control). The original items are shown in Table 1.

**Adaptation, Forward-Translation, and Initial Expert Review**

After the original items in English were retrieved from the literature review, the items were adapted by changing the object of measurement to “online discussion forum.” For example, an item that stated, “I will use elearning system on a regular basis in the future” was adapted to state, “I will use online discussion forums on a regular..."
basis in the future.” The adapted items are shown in Table 1.

Next, the items were forward-translated by two translators, namely a context-aware translator and a context-blind translator. The author (i.e., Kasiyah and Santoso) took the role as the context-aware translator to ensure context relevance of the items. The context-blind translator was a professional translator from an international language institute in Indonesia.

Furthermore, the adapted version and the original items were reviewed by two experts in online collaborative learning. The experts involved in this study have about 15 years experience in online and distance education.

**Translation Synthesis**

The context-aware and context-blind versions were synthesized by resolving discrepancies. The synthesis was conducted by comparing the versions to the original TPB construct description by Ajzen (1991) and the original items. The experts were also involved in the synthesis to gain more insight and resolve discrepancies.

After the synthesis was conducted on both the context-aware and context-blind versions, the synthesized items were back-translated by a professional translator. The back-translator was different from the translator involved in the previous context-blind translation to prevent subjectivity.

**Expert Review**

An expert committee consisting of two experts who were involved in the initial expert review reviewed the items produced in the previous steps. The discrepancies were highlighted and resolved by comparing them to the original TPB construct description by Ajzen (1991) and the original items. The review was identical to the one conducted in the previous initial expert review.

**Pretesting (Readability Test)**

The expert-reviewed items were pretested on 10 participants. The pretest was aimed at identifying readability issues (e.g., participant’s understanding of the items). The readability test was conducted online by collecting participants’ opinions on each item. They were instructed to report items that were confusing. The participants’ opinions were used as the basis for further revision of the questionnaire.

The participants were graduate and undergraduate computer science students from different regions across Indonesia. All participants had prior experience using the online discussion forums in an elearning system provided by the faculty.

**Appraisal by Experts**

A final expert review was conducted to produce the final revised items based on the readability test. The expert committee consisting of two experts from the initial expert review was involved again in this review. The final expert review was aimed at resolving readability issues in some items by rewording the items while maintaining their meaning equivalence with the original version or adding an explanation below the item (i.e., definition or examples) to aid participants in understanding it.

**Final Validation**

Finally, after the final translated items were retrieved, the items were validated through a survey and a series of statistical tests. The survey involved 129 graduate and undergraduate students. The method of validation was based on Hair et al. (2014) to ensure the measurement items’ validity and reliability for further analysis using the SEM approach. The statistical procedures for the validation included the measurement of: (a) outer loadings, (b) indicator reliability, (c) average variance extracted, (d) composite reliability, (e) Cronbach’s Alpha, and (f) HTMT criteria. The results of the measurements are presented in the following.

**RESULTS AND DISCUSSION**

This section presents the initial construction of the questionnaire (the original measurement items), the pretested items, and the final validated questionnaire. The results are presented in the following subsections.

**Original Measurement Items**

Through the literature review, the initial questionnaire was developed by retrieving relevant measurement items for each TPB construct from relevant literatures. It consisted of 18 items retrieved from two studies by Lee (2010) and Yu and Yu (2010) in the context of elearning or other educational technology-related adoption. The retrieved items from those studies were developed from prior research in information systems adoption. The original items are presented in Table 1.
The original retrieved items were then adapted to suit the purpose of this study by changing the wording of the measurement items to include the phrase “online discussion forum” as the object of interest. The adapted items are also presented in Table 1. The items were further translated into Indonesian, back-translated into English, and reviewed by experts.

**Pretested Items**

The translated items were pretested (readability tested) by 10 participants in order to investigate whether the participants had differing perceptions on what were included in the items. Based on the readability test, 26 issue-related comments were collected. The issues and the number of the participants who reported the issues are as follow: (a) confusion due to perceived identical items (n = 6) on ITN1, ITN2, and ITN12, (b) confusing wording of “. . . within my control” on PBC1 (n = 6), (c) confusing wording of “it is likely . . .” on ITN4 (n = 1), (d) confusing wording of “it is desirable . . .” on ATT3 (n = 2), (e) confusing wording of “is a wise idea . . .” on ATT5 (n = 1), (f) confusing use of a comma on a translated item of SN1 (n = 1), and (g) confusion due to perceived identical items (n = 2) on SN2, SN3, and SN4. In summary, the comments explained confusing identical items (n = 2) and confusing wording (n = 2).

The participants reported that 9 out 18 items (50%) had readability issues (i.e., confusing words). These findings revealed that some word usage in the items could lead to different perceptions of the meaning of the items among the participants. Moreover, a questionnaire adaptation study by Ovariyanti and Santoso (2016), who developed an Indonesian version of the Index of Learning Style (ILS), also reported that 25% of their items were confusing according to the participants of the readability test. In another Indonesian CCA by Wardhani et al. (2018), some readability-related problems also existed, such as unfamiliar terms and misinterpretation of items. Similar problems were also identified in a study by Sterie and Bernard (2019).

The persistence of readability issues in several studies confirm that a proper method is crucial in achieving meaning equivalence in adapting a measurement item (Beaton et al., 1998). To achieve such equivalence, some readability-related issues could be identified and resolved through a readability test involving a sample of the participants in a quantitative survey study.

Based on the participants’ comments, reviews and appraisals by the previously involved experts were conducted. The items were revised according to the experts’ views by changing the words or adding explanations. Furthermore, the revised items were statistically validated in the final validation phase.

**Final Validation Results**

The final translated and pretested (readability tested) items were validated through a series of statistical procedures for measurement model evaluation that was established by Hair et al. (2014). The procedures included evaluating internal consistency and reliability (Cronbach’s alpha & composite reliability), convergent validity (outer loadings, indicator reliability, and average variance extracted), and discriminant validity (confidence interval of the HTMT measures).

The evaluation was conducted by comparing the results with the established cut-off criteria. Two items (SN5 & PBC 1) did not satisfy the criteria and were excluded from the questionnaire to preserve the validity and the consistency of the TPB measurement model for further SEM analysis. Details of the final validation results are presented in Table 2.

By the exclusion of only two items, and no constructs were measured by fewer than two items, the validity and the reliability of the measurement items were successfully achieved. Adequate validity and reliability indicate that only minor readability and comprehension issues were encountered by the participants. Thus, the adapted questionnaire was fit for use in the SEM approach.

The findings show that producing two versions of the translation, i.e., the context-aware and context-blind translations, back translating the items, and conducting several iterations of item revision involving both experts and a sample of participants as proposed by Beaton et al. (2000) could produce adapted measurement items that are fit for the SEM approach. Therefore, future quantitative survey studies that utilize SEM in which the measurement items are retrieved from literature with differing languages should consider adopting this CCA method. Despite a study suggesting that back-translation is not necessary to be conducted (Epstein et al., 2015), it could be
included in the study design to ensure the validity and reliability of the measurement model.

CONCLUSION

Based on the results, the adapted questionnaire is fit for use in a SEM analysis to investigate student intention to participate in online discussion forums. It has adequate reliability and validity to measure student intention, attitude, subjective norms, and perceived behavioral control. Therefore, this study shows that the CCA procedures are beneficial for inclusion in the design study of a quantitative survey research that utilizes the SEM approach and retrieves the measurement items from studies with differing languages and cultures. In the future, further analysis to evaluate the structural model of the TPB should be conducted as part of the ongoing research on student participation in online discussion forums. Future studies could also be directed at utilizing the CCA method in constructing SEM measures in other areas (e.g., health, ecommerce, etc.). Moreover, comparing the outcomes of various CCA validation steps that are conducted in different contexts could give some insights on the effectiveness of the CCA method in producing adapted instruments that have meaning equivalence with the original instruments.
REFERENCES


ACKNOWLEDGEMENT

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<table>
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<th>Item Code</th>
<th>Original Item</th>
<th>Adapted Item</th>
<th>Final Translated Item</th>
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</thead>
<tbody>
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<td><strong>Intention</strong></td>
<td>ITN1</td>
<td>I will use the elearning system on a regular basis in the future (Lee, 2010).</td>
<td>I will use the online discussion forum on a regular basis in the future.</td>
<td>Saya akan menggunakan forum diskusi daring secara rutin di masa yang akan datang.</td>
</tr>
<tr>
<td></td>
<td>ITN2</td>
<td>I will frequently use the elearning system in the future (Lee, 2010).</td>
<td>I will frequently use the online discussion forum in the future.</td>
<td>Saya akan sering menggunakan forum diskusi daring di masa yang akan datang.</td>
</tr>
<tr>
<td></td>
<td>ITN3</td>
<td>I will strongly recommend that others use the elearning system (Lee, 2010).</td>
<td>I will strongly recommend the online discussion forum for the others to use it.</td>
<td>Saya akan sangat menyarankan orang lain menggunakan forum diskusi daring.</td>
</tr>
<tr>
<td></td>
<td>ITN4</td>
<td>It is likely that I will use online learning systems (Yu &amp; Yu, 2010).</td>
<td>It is likely that I will use the online discussion forum.</td>
<td>Kemungkinan besar saya akan menggunakan forum diskusi daring.</td>
</tr>
<tr>
<td></td>
<td>ITN5</td>
<td>Assuming I had access to an online learning system, I would use it (Yu &amp; Yu, 2010).</td>
<td>Assuming I had access to an online discussion forum, I would use it.</td>
<td>Apabila saya memiliki akses ke forum diskusi daring, saya akan menggunakankannya.</td>
</tr>
<tr>
<td></td>
<td>ITN6</td>
<td>I intend to continue to use online learning systems (Yu &amp; Yu, 2010).</td>
<td>I intend to continue to use the online discussion forum.</td>
<td>Saya berniat untuk terus menggunakan forum diskusi daring.</td>
</tr>
<tr>
<td><strong>Attitude</strong></td>
<td>ATT1</td>
<td>Using elearning is a good idea (Lee, 2010).</td>
<td>Using the online forum discussion is a good idea.</td>
<td>Menggunakan forum diskusi daring adalah ide yang bagus.</td>
</tr>
<tr>
<td></td>
<td>ATT2</td>
<td>I like using elearning (Lee, 2010).</td>
<td>I like using the online discussion forum.</td>
<td>Saya suka menggunakan forum diskusi daring.</td>
</tr>
<tr>
<td></td>
<td>ATT3</td>
<td>It is desirable to use elearning (Lee, 2010).</td>
<td>It is desirable to use the online discussion forum.</td>
<td>Menggunakan forum diskusi daring adalah aktivitas yang saya inginkan.</td>
</tr>
<tr>
<td></td>
<td>ATT4</td>
<td>Using the internet for learning would be/is pleasant (Yu &amp; Yu, 2010).</td>
<td>Using the online discussion forum for learning would be/is pleasant.</td>
<td>Penggunaan forum diskusi daring untuk kegiatan belajar adalah hal yang menyenangkan.</td>
</tr>
<tr>
<td></td>
<td>ATT5</td>
<td>Using the internet for learning would be/is a wise idea (Yu &amp; Yu, 2010).</td>
<td>Using the online discussion forum for learning would be/is a wise idea.</td>
<td>Menggunakan forum diskusi daring untuk pembelajaran adalah ide yang bijak.</td>
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<tr>
<td><strong>Subjective Norms</strong></td>
<td>SN1</td>
<td>People important to me support my use of elearning (Lee, 2010).</td>
<td>People important to me support my use of the online discussion forum.</td>
<td>Orang-orang, yang penting bagi saya, mendukung saya menggunakan forum diskusi daring.</td>
</tr>
<tr>
<td></td>
<td>SN2</td>
<td>People who influence me think that I should use elearning (Lee, 2010).</td>
<td>People who influence me think that I should use the online discussion forum.</td>
<td>Orang-orang, yang berpengaruh bagi saya, berpendapat bahwa sebaiknya saya menggunakan forum diskusi daring.</td>
</tr>
<tr>
<td></td>
<td>SN3</td>
<td>People whose opinions I value prefer that I should use elearning (Lee, 2010).</td>
<td>People whose opinions I value prefer that I should use the online discussion forum.</td>
<td>Orang-orang yang pendapatnya penting bagi saya, lebih senang jika saya menggunakan forum diskusi daring.</td>
</tr>
<tr>
<td></td>
<td>SN4</td>
<td>In general, my classmates support the introduction of online learning systems (Yu &amp; Yu, 2010).</td>
<td>In general, my classmates support the introduction of the online discussion forum.</td>
<td>Secara umum, teman-teman sekelas saya mendukung digunakannya forum diskusi daring.</td>
</tr>
<tr>
<td></td>
<td>SN5</td>
<td>My teacher is very supportive of online learning system use for my learning (Yu &amp; Yu, 2010).</td>
<td>My teacher is very supportive of the online discussion forum use for my learning.</td>
<td>Dosen saya sangat mendukung penggunaan forum diskusi daring untuk pembelajaran.</td>
</tr>
</tbody>
</table>
### Table 2. Final Validation Results Based on Measurement Model Evaluation for SEM

<table>
<thead>
<tr>
<th>Item Code</th>
<th>Convergent Validity</th>
<th>Internal Consistency and Reliability</th>
<th>Discriminant Validity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Outer Loading [&gt;0.70]</td>
<td>Indicator Reliability [&gt;0.50]</td>
<td>AVE [&gt;0.50]</td>
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<td>ITN1</td>
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<tr>
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<td>0.704</td>
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<tr>
<td>ITN3</td>
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<td>ITN4</td>
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<td>ITN5</td>
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<tr>
<td>ITN6</td>
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<td>AT T4</td>
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<td>AT T5</td>
<td>0.812</td>
<td>0.659</td>
<td></td>
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<tr>
<td>SN1</td>
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</tr>
<tr>
<td>PBC1*</td>
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<td>0.454</td>
<td></td>
</tr>
<tr>
<td>PBC2</td>
<td>0.877</td>
<td>0.769</td>
<td>0.818</td>
</tr>
<tr>
<td>PBC3</td>
<td>0.932</td>
<td>0.889</td>
<td></td>
</tr>
</tbody>
</table>

Note: * SN5 and PBC1 were eliminated due to insufficient outer loading value and indicator reliability. The cut-off values for the SEM analysis according to Hair et al. (2014) are shown inside the square brackets "[]".
ABSTRACT

Metacognition has recently been used as an aspect of assessment in the development of learning, given its importance in improving the ability of students to solve problems. Collaborative online learning is a recommended form of learning because it fosters peer interaction. A higher frequency of interaction will improve the process of knowledge construction for an individual student. This process occurs because metacognitive activities are getting better. Metacognitive skills are also closely associated with help-seeking behavior. This article is a systematic review of the research conducted from 2009 to 2019 related to collaborative online learning, help-seeking behavior, and metacognitive skills. The purpose of this review is to identify and analyze the role of help-seeking behavior and the aspects of metacognitive skills developed in collaborative online learning. The results of the review show that there are various metacognitive aspects related to help-seeking behavior, and in the context of collaborative online learning, a variety of metacognitive aspects that are used to assess help-seeking behavior are found. Recommendations are also given at the end of this review.

Keywords: systematic literature review, collaborative online learning, help-seeking behavior, metacognitive aspect

INTRODUCTION

Computer-based learning provides opportunities for students to be able to learn everywhere and use their learning more broadly. However, this learning will be effective if students manage their own learning by the process of metacognitive activities and self-regulation (Azevedo, 2005). Therefore computer-based learning, especially collaborative learning, can be considered as a collection of students’ metacognitive activities (Walker et al., 2009). To improve learning so it is more productive, collaborative computer-based learning needs to improve its metacognitive quality by intervening in the form of introducing metacognitive strategies (Khosa & Volet, 2013). Thus, collaborative online learning requires a process of increasing metacognitive activities for the effectiveness of achieving learning objectives.

Besides being closely related to metacognitive learning, collaborative online learning is also related to help-seeking behavior (Kiefer & Shim, 2016). Help-seeking becomes an activity that is needed by students when experiencing difficulties with academic problems. Students will build relationships with someone to get help (Beisler & Medaille, 2016). Help-seeking was initially modeled by Nelson-Le Gall (1981) based on cognitive studies, then modified by Mercier & Frederiksen
(2008) according to the characteristics of the learning system. Finally, help-seeking is defined as one of the metacognitive activities for learning teaching materials and completing learning tasks (Chu et al., 2018). Thus, in fact both metacognitive and help-seeking behaviors play important roles in collaborative online learning.

Studies on metacognitive and help-seeking behaviors in the development of collaborative online learning have been carried out, but they are in a limited perspective, such as collaborative learning studies in the metacognitive perspective (Khosa & Volet, 2013; Kim & Lim, 2018; Smith & Mancy, 2018), or collaborative learning studies with help-seeking behavior perspectives (Du et al., 2015; Erkan et al., 2015). Whereas “metacognitive” and “help-seeking” are two terms that are related and mutually improve the quality of learning (Chu et al., 2018; Hauswirth & Adamoli, 2017), a collaborative online learning study with a metacognitive and help-seeking perspective requires a deeper study.

Research that examines metacognitive activities with help-seeking in collaborative learning has its own challenges. In addition to the complexity of its very diverse aspects, only a portion of research studies on collaborative learning with these two perspectives can be discussed in depth. Collaborative learning research alludes to these two perspectives, but only for the aspects that are limited to several metacognitive aspects (Hao et al., 2016). The development of collaborative online learning varies from year to year. Between 2009 and 2019, researchers conducted studies on collaborative online learning based on the completeness of the metacognitive regulations, which included monitoring, planning, and evaluating as well as the completeness in supporting help-seeking behavior.

This systematic literature review investigates several research papers that were published between 2009 and 2019. The aim is to identify and analyze metacognitive activities in help-seeking behavior in collaborative online learning. The identified metacognitive activities take precedence over the metacognitive aspects of a regulation. Meanwhile, the help-seeking behaviors identified are the interaction with fellow students and the behavior when using hints. Identification is also carried out on the independent variables to see their impact on learning outcomes.

A REVIEW ON THE METHOD OF THE STUDY

In order to understand the current development of collaborative online learning, this study reviews papers published in Springer, Taylor & Francis, Science Direct, IEEE Xplore, and ACM Digital Library in a ten-year period: 2009–2019. The criteria used to choose articles for this study are: (a) the articles are based on empirical research results; (b) the articles are published in English; and (c) the main output is in the form of learning outcomes. The search for relevant articles on online databases was done by using the keywords “collaborative learning metacognitive” or “collaborative learning help-seeking.”

Several reviews of collaborative learning have been carried out in the past four years. Among them are reviews that discuss two taxonomies; for example, there is a review of group formations and grouping techniques in collaboration (Maqtary et al., 2019), a review of the relationship between teacher guidance strategies and the process and outcome of collaboration between students (van Leeuwen & Janssen, 2019), a review of grouping criteria and grouping algorithms (Ge et al., 2018), reviews based on knowledge-building processes (Said et al., 2015), and reviews based on relevant concepts in coaching student interactions (Kaendler et al., 2015).

To date, there has not been any literature review about collaborative online learning that examines metacognitive factors in help-seeking behavior. This study focuses on the metacognitive factors of help-seeking behavior in collaborative online learning. This guideline summarizes the three stages in a systematic review: (a) the review plan, (b) the review process, and (c) the report of the review results. The research questions that guide this study are as follows:

1. How do metacognitive activities affect collaborative online learning outcomes?
2. How do help-seeking behaviors contribute to metacognitive activities?
3. How do help-seeking behaviors play a significant role in collaborative learning and metacognitively influence learning outcomes?

COLLABORATIVE LEARNING THEORY, HELP-SEEKING, AND METACOGNITION

There are three stages in the thinking
The development process from divergent to convergent on collaborative learning theory, namely (a) generating ideas, (b) organizing ideas, and (c) intellectual convergence (Harasim, 2017). The process of generating ideas is achieved through brainstorming, verbalizing, and making information. Organizing ideas is done through clarifying and arranging new ideas that are in accordance with other ideas so that intellectual convergence occurs in the form of mutual understanding or beneficial contributions to the construction of knowledge. When students collaboratively go through complex conceptual spaces, they need metacognitive facilities to support the construction of collaborative knowledge (Hmelo-Silver, 2003).

One of the activities that supports metacognitive learning is help-seeking (Hauswirth & Adamoli, 2017). Help-seeking is differently defined between humans and nonhumans. Help-seeking with human assistance is in the form of metacognitive questions from the facilitator and students’ collaborative interactions. While nonhuman help-seeking is an instrumental type of assistance in the form of hint facilities, i.e., explanations aimed at understanding the principle of resolution, it is not assistance to ask for ready-made answers (Puustinen & Rouet, 2009).

The role of friends in help-seeking activities in collaborative learning is very important for the development of academic beliefs and behavior. When the learning problems faced are beyond reach, students will tend to choose friends to ask for help (Shin, 2018). Figure 1 illustrates the development of metacognitive and help-seeking research in collaborative online learning.

<table>
<thead>
<tr>
<th>Year</th>
<th>1970</th>
<th>2000</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cognitive Phenomena</td>
<td>Metacognitive Strategy</td>
<td>Metacognitive Collaborative Talk</td>
</tr>
<tr>
<td></td>
<td>Model of Cognitive Monitoring</td>
<td>Metacognitive Intervention</td>
<td>Metacognitive Collaboration Learning</td>
</tr>
<tr>
<td></td>
<td>Metacognitive Definition</td>
<td>Reciprocal peer Tutoring</td>
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<td>Metacognitive Knowledge</td>
<td>Help-seeking Tendencies</td>
<td>Collaboration Help-seeking</td>
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<tr>
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<td>Help Tutor</td>
<td>Help-seeking Performance</td>
</tr>
<tr>
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<td>Metacognitive Experience</td>
<td>Help Seeking Supplies</td>
<td>Adaptive Help-seeking</td>
</tr>
<tr>
<td></td>
<td>Measure to Metacognition</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Activity finding out the environment</td>
<td>Help-seeking as Instrumental skill</td>
<td></td>
</tr>
<tr>
<td></td>
<td>learning</td>
<td>Help-seeking as a process</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Help-seeking Model</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Social and Cultural Norm on Help-seeking</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Measuring Willingness to Help-seeking</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Effective Help-seeking Skill</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Aptitude Problem Solving</td>
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<tr>
<td></td>
<td></td>
<td>Achievement Goal</td>
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<tr>
<td></td>
<td></td>
<td>Student Performance</td>
<td></td>
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<tr>
<td></td>
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<td>Student Connectivity</td>
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<tr>
<td></td>
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<td>Student Metacognitive Regulation</td>
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<tr>
<td></td>
<td></td>
<td>Student Social Metacognitive Regulation</td>
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<tr>
<td></td>
<td></td>
<td>Student Level</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Deep-level Regulation</td>
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<tr>
<td></td>
<td></td>
<td>Student Metacognitive Experience</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group Metacognitive</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Student Perspective</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Collaboration Problem Solving</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1. Development of Metacognitive and Help-seeking Research
RESULTS AND DISCUSSION

The analysis of the published research uses nonstatic methods to evaluate and interpret the results of the study. Based on the search strategy, a total of 349 papers were obtained, and 120 of them met the criteria. However, only 27 papers were accepted for the review (54 papers were rejected because they were not related to metacognitive activities or help-seeking behaviors, 30 papers were rejected because they were insignificant to learning outcomes, and nine papers were rejected because they were not relevant to the research questions).

This section discusses the relationship among collaborative learning, metacognitive activities, and help-seeking behaviors. This discussion only focuses on the 27 papers accepted for the review. Table 1 provides an illustration of how metacognitive activities and help-seeking behaviors become independent variables to influence learning outcomes. The following sections are the answers to the research questions.

Research Question 1: How do metacognitive activities affect collaborative online learning outcomes?

The research on collaborative online learning with an emphasis on metacognitive aspects has two major components. The first one is the metacognitive regulatory component. Experts divide this component into several aspects, such as planning, information management strategies, monitoring, debugging strategies, and learning evaluation (Schraw & Dennison, 1994). Later, this theory was revised by Moshman (2018), who divided it into three parts, namely planning (choice of strategy and allocation of resources), monitoring (online awareness about understanding and performance), and evaluation (assessing the results and the process of managing one's learning). In fact, Lai (2011) considered metacognitive regulation as a monitoring cognition that includes planning, awareness, and evaluation. The second component is metacognitive knowledge contained in declarative, procedural, and conditional knowledge (Schraw & Dennison, 1994) or one’s self-knowledge cognition (Moshman, 2018). However, Lai (2011) considered cognitive knowledge as strategic knowledge or the knowledge about when and why to use the strategy. Besides these two components, Meijer et al. (2013) added another one, the responsive metacognitive component.

In this paper, the metacognitive activities we reviewed are limited to the metacognitive regulation with aspects of planning, monitoring, and evaluating. The reason is that the three aspects are most often involved in the reviewed papers. Therefore, in addition to the three aspects of metacognitive regulation, we consider other aspects. Our research has discovered that all papers on collaborative online learning that discuss the metacognitive factors of studying always involve the aspects of monitoring. They also include planning aspects (71%), evaluating aspects (57%), and other aspects (14%). Most of the research discusses learning performance and changes in students’ metacognitive regulation. Mutual interaction between students has the potential to improve metacognitive regulatory skills (De Backer et al., 2015a). However, many students fail to translate the knowledge into metacognitive monitoring skills despite having adequate metacognitive knowledge (de Carvalho Filho, 2010). Therefore, other efforts are needed to help develop these skills, one of which is help-seeking behavior.

Research Question 2: How do help-seeking behaviors contribute to metacognitive activities?

Help-seeking behaviors used in collaborative online learning are the ones that play a role in learning how to succeed as oneself, not those that directly execute solutions to the problems (Nelson-Le Gall, 1985). There are two types of help involved. The first type is student interaction with other humans, which is the interaction between students and facilitators and the interaction between students. The second type is seeking nonhuman assistance, which is done using hints (Puustinen & Rouet, 2009). Online help-seeking is useful for training self-regulated learning skills (Liu, 2017). Help-seeking is also the type of metacognitive activity involving monitoring or evaluating the understanding of self-learning (Chu et al., 2018). Therefore, each stage of help-seeking activity is the stage for increasing metacognitive abilities. In fact, help-seeking is very important for teachers and facilitators to help students in metacognitive learning strategies (Karabenick & Newman, 2010). However, in contrast to the metacognitive activities that were previously targeted to students, these strategies have the potential to improve help-
seeking skills (Jansen et al., 2017). Hence, “help-seeking” and “metacognitive” are two terms that can be mutually causal. Help-seeking behaviors have the potential to improve metacognitive skills and in turn, the metacognitive encouragement for students will reinforce their help-seeking behaviors in collaborative learning.

The help-seeking behaviors reviewed in this paper are limited to the interactions between students. Moreover, the nonhuman help-seeking activity is limited to the search for hints in collaborative online learning. This study has found that some papers examine help-seeking behaviors in student interactions (64%), and some papers examine help-seeking activities using hints (44%). However, the form and evaluation of interactions studied vary. Research conducted by Kiefer & Shim (2016) and Shin (2018) assessed the longitudinal relationship in help-seeking interactions among students with the focus on their social goals or the influence of friends. Student interaction can also be assessed in the form of classroom script. The classroom-script structure has a substantial effect on help-seeking behavior (Mäkitalo-Siegl & Fischer, 2011).

Research Question 3: How do help-seeking behaviors play a significant role in collaborative learning and metacognitively affect learning outcomes?

As previously mentioned, “help-seeking” and “metacognitive” are two terms that are mutually causal in collaborative online learning. Some experts claim that the two terms are learning strategies with an integral scale as the resource management and cognitive strategies (Pintrich et al., 1991). In the context of resource management, Wosnitza et al. (2015) examined the help-seeking behavior between groups compared with intragroup. The results affected the development of independence, collaboration, and problem-solving skills in class management. However, no literature that examines the characteristics of metacognitive help-seeking in collaborative learning in more detailed has been found. From 27 papers reviewed, there were only three papers that discussed help-seeking with a metacognitive perspective, and even then, only one paper was tested in a collaborative learning group (see Table 1).

Individually, students with high metacognitive abilities show better performance and self-confidence (de Carvalho Filho, 2010), since high cognitive activity is always preceded by high metacognitive abilities (Molenaar & Chiu, 2015). Consequently, if a collaborative intervention is conducted by utilizing metacognitive abilities, the problem-solving skills will improve rapidly despite the high level of difficulty (Sandi-Urena et al., 2011). Collaborative interventions can be performed in computerized scripts that provide guidance for group interactions so as to encourage individual metacognition processes through the collaborative design phase (Chen & Chiu, 2016) and are significantly related to metacognitive regulation (De Backer et al., 2017). Thus, metacognitive activities affect the results of online collaborative learning and vice versa.

Help-seeking can be reviewed from two factors: student factors and context factors that affect students (Schworm & Gruber, 2016). Factors related to students are student role identity in groups (Du et al., 2015) and student interactions in group cognitive processes (Gu et al., 2015) that affect the performance of collaborative learning groups (Walker et al., 2009). Likewise, the academic quality of students (Ryan & Shin, 2011) and students’ goals for mastering learning are positive predictors of help-seeking activities, and, vice versa, students who only aim not to be the worst students become negative predictors (Roussel et al., 2011). Meanwhile, context factors that affect students such as instructional consequences and group work challenges are positively related with collaborative learning group performance (Du et al., 2015). Student interaction in collaborative learning groups significantly improves metacognitive regulation of monitoring, evaluation, and orientation (De Backer et al., 2012, 2015a). In interactions, friends who are asked for help are those who have similarities in persistence, effort, challenge-seeking, and independent learning strategies (Shin, 2018). Although there is no significant difference between pretest and posttest in metacognitive knowledge, there are significant changes in metacognitive regulation (De Backer et al., 2012). Thus help-seeking behavior has a significant contribution to metacognitive activities, especially in metacognitive regulation.

Help-seeking is designed to make students become independent in learning (Aleven et
al., 2016) and improve their skills in seeking help (Erkan et al., 2015; Roll et al., 2011). Help-seeking is positively related to the effectiveness of collaborative learning (Walker et al., 2009). Help-seeking patterns can be arranged through the structure of class scripts in collaborative inquiry learning (Mäkitalo-Siegl et al., 2011). Even though there is a written script, the facilitator or teacher is not allowed to refuse requests for help from students (Wosnitza et al., 2015). Some activities in collaborative learning that suit help-seeking activities that significantly affect metacognitive activities are asking and explaining to each other in group discussions (De Backer et al., 2015b; Smith & Mancy, 2018), observing group members to ask for possible help (Biasutti & Frate, 2018; De Backer et al., 2016), using collaboration scripts (Kim & Lim, 2018), and fostering collaboration attitudes (Jin & Kim, 2018). However, groups with high social network connectivity have advantages in cognitive and metacognitive strategies (Lawanto & Santoso, 2013). Therefore, help-seeking behavior plays a significant role in collaborative learning and metacognitively affects learning outcomes.

Table 1 illustrates that in collaborative learning there is one aspect, the monitoring aspect, that is always a measure in assessing metacognitive activities, while the planning and evaluating aspects are not always a measure even though most learners use it. The variables mostly use metacognitive activities to determine student performance. While research involving help-seeking behavior has made use of aspects of interaction between students balanced with aspects of using hints in seeking help, not many involved put these two aspects together as variables in the study. Most of the research uses group behavior variables and individual metacognitive activities to determine student performance and help-seeking skills.

**FUTURE DIRECTIONS FOR RESEARCH**

Collaborative online learning research by investigating metacognitive skills and social networking has been carried out to examine the monitoring and learning management strategies (Lawanto & Santoso, 2013). A similar study has been carried out by Molenaar and Chiu (2015), which found that planning strategies in groups with certain cognitions affect group performance. Metacognitive studies for collaborative learning are also used in nursing practice (Aiguier et al., 2015), whereas Junus et al. (2015) used metacognitive aspects of Linear Algebra learning to examine the presence of these aspects in face-to-face meetings and online discussions. The metacognitive aspects of collaborative online learning encourage students to be more aware of their attitude of learning independently so that it is no longer limited to instructional packages (Gulati, 2013). In the context of collaborative learning, metacognitive aspects can be seen as socio-metacognitive, which is the ability of students to monitor and regulate activities related to the development of the classroom environment that is improved over time (Borge & White, 2016).

In this review, we found no collaborative online learning paper that examined the metacognitive activities of human help-seeking behavior together with nonhuman help-seeking. Metacognitive feedback has been investigated as an aspect of monitoring in help-seeking behavior by using hints (Roll et al., 2011), and even then, it is still limited to intelligent tutoring systems, not to collaborative learning. Help-seeking in an intelligent tutoring system is different from help-seeking in the classroom (Vaessen et al., 2014). Although the differences are not completely clear, both include collaborative learning.

Further study can be conducted to examine whether collaborative online learning pays more attention to human and nonhuman help-seeking behaviors in improving metacognitive skills. Furthermore, improving the quality of help-seeking behaviors can be studied to see whether it will improve metacognitive skills and significantly affect the quality of collaborative learning. Whether human help-seeking and nonhuman help-seeking behaviors stimulate one another should be researched more. In addition, the question about which metacognitive aspects are the closest to help-seeking behaviors in collaborative online learning can also become a research theme to develop further.

**CONCLUSION**

This paper presents a systematic literature review of help-seeking metacognitive factors in collaborative online learning. The review has illustrated that help-seeking behavior, metacognitive activities, and collaborative online
learning have a significant relationship even in different aspects and components.

Although there is no collaborative online learning study that studies metacognitive activities on human help-seeking behavior along with nonhuman help-seeking, our review has obtained metacognitive components and help-seeking factors to improve learning performance and learning behavior. The results of this study provide recommendations as an analytical material for collaborative learning modeling with metacognitive and help-seeking aspects to improve learning performance.
REFERENCES


Table 1. The Distribution of Studies on Metacognitive Help-seeking in Collaborative Online Learning

<table>
<thead>
<tr>
<th>No</th>
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<th>Independent Variable</th>
<th>Dependent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>(Walker et al., 2009)</td>
<td>Help tutor</td>
<td>AA &amp; MF</td>
<td>SP</td>
</tr>
<tr>
<td>2</td>
<td>(de Carvalho Filho, 2010)</td>
<td>✓</td>
<td>ML</td>
<td>SP</td>
</tr>
<tr>
<td>3</td>
<td>(Sandi-Urena et al., 2011)</td>
<td>✓ ✓</td>
<td>MI</td>
<td>Strategy, Ability, SR, SRp</td>
</tr>
<tr>
<td>4</td>
<td>(Mákitalo-Siegl et al., 2011)</td>
<td>Classroom-script</td>
<td>Classroom-script Structure</td>
<td>HS Process</td>
</tr>
<tr>
<td>5</td>
<td>(Roussel et al., 2011)</td>
<td>HS approach &amp; avoidance</td>
<td>Mastery Performance Attitude</td>
<td>AG &amp; SG</td>
</tr>
<tr>
<td>6</td>
<td>(Ryan &amp; Shin, 2011)</td>
<td>HS behavior</td>
<td>Prior GPA Achievement SG</td>
<td>HS tendencies</td>
</tr>
<tr>
<td>7</td>
<td>(Roll et al., 2011)</td>
<td>✓</td>
<td>HS Errors</td>
<td>MF</td>
</tr>
<tr>
<td>8</td>
<td>(De Backer et al., 2012)</td>
<td>✓ ✓ ✓</td>
<td>Cognitive Strategies Metacog Strategies Regulation Strategies</td>
<td>SC</td>
</tr>
<tr>
<td>9</td>
<td>(Lawanto &amp; Santoso, 2013)</td>
<td>✓ ✓ ✓</td>
<td>Content processing Transactive discussions</td>
<td>SSMR</td>
</tr>
<tr>
<td>10</td>
<td>(De Backer et al., 2015b)</td>
<td>✓ ✓ ✓</td>
<td>Scaffolding</td>
<td>MS</td>
</tr>
<tr>
<td>11</td>
<td>(Molenaar et al., 2014)</td>
<td>✓ ✓ ✓ ✓</td>
<td>Student level Group level</td>
<td>Peer-oriented reason Group work interest</td>
</tr>
<tr>
<td>12</td>
<td>(De Backer et al., 2015a)</td>
<td>✓ ✓ ✓</td>
<td>12 role group</td>
<td>CPS</td>
</tr>
<tr>
<td>13</td>
<td>(Molenaar &amp; Chiu, 2015)</td>
<td>✓ ✓</td>
<td>Online HS</td>
<td>Flipped Classroom</td>
</tr>
<tr>
<td>14</td>
<td>(Du et al., 2015)</td>
<td>Role Group</td>
<td>Intergroup Intragroup</td>
<td>SD, CPS</td>
</tr>
<tr>
<td>15</td>
<td>(Gu et al., 2015)</td>
<td>Peer-oriented reason Group work interest</td>
<td>SA</td>
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<td>16</td>
<td>(Erkan et al., 2015)</td>
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<td>Flipped Classroom</td>
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</tr>
<tr>
<td>17</td>
<td>(Wosnitz et al., 2015)</td>
<td>Role Group</td>
<td>Cognitive Metacognitive SRL Motivation</td>
<td>HS Skills</td>
</tr>
<tr>
<td>18</td>
<td>(Aleven et al., 2016)</td>
<td>ITS</td>
<td>DLR</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>(De Backer et al., 2016)</td>
<td>✓ ✓ ✓</td>
<td>Collaborative talk Metacognitive talk</td>
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</tr>
<tr>
<td>20</td>
<td>(Chen &amp; Chiu, 2016)</td>
<td>✓ ✓</td>
<td>P, M, E</td>
<td>SMX</td>
</tr>
<tr>
<td>21</td>
<td>(De Backer et al., 2017)</td>
<td>✓ ✓ ✓</td>
<td>MR</td>
<td>Aspect of SPS</td>
</tr>
<tr>
<td>22</td>
<td>(Smith &amp; Mancy, 2018)</td>
<td>✓</td>
<td>RPT participants</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>(Kim &amp; Lim, 2018)</td>
<td>✓ ✓ ✓</td>
<td>P, M, E</td>
<td>GM</td>
</tr>
<tr>
<td>24</td>
<td>(Jin &amp; Kim, 2018)</td>
<td>✓ ✓ ✓</td>
<td>MR</td>
<td>Aspect of SPS</td>
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<td>25</td>
<td>(Biasutti &amp; Frate, 2018)</td>
<td>✓ ✓ ✓ ✓</td>
<td>P, M, E, O</td>
<td>GM</td>
</tr>
<tr>
<td>Page</td>
<td>Reference</td>
<td>LA</td>
<td>Friend Role</td>
<td>HS tendencies</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>----</td>
<td>-------------</td>
<td>---------------</td>
</tr>
<tr>
<td>26</td>
<td>(Shin, 2018)</td>
<td>LA</td>
<td>Friend Role</td>
<td>HS tendencies</td>
</tr>
<tr>
<td>27</td>
<td>(Schworm &amp; Gruber, 2016)</td>
<td>Adaptive HS</td>
<td>GO, EB, LS</td>
<td>HS performance</td>
</tr>
</tbody>
</table>

Note. P=Planning; M=Monitoring; E=Evaluating; Other=Orientation, Reflection, Metacognitive Knowledge; AA=Adaptive Assistance; AG=Achievement Goals; CPS=Collaborative Problem Solving; DLR=Deep-level Regulation; EB=Epistemic Belief; GO=Goal Orientations; GP=Group Performance; GM=Group Metacognition; HS=Help-seeking; IGSMI=Intragroup Social Metacognitive Interaction; ITS=Intelligent Tutoring Systems; LA=Longitudinal Association; LS=Learning Strategies; MF=Metacognitive Feedback; ML=Metacognitive Level; MI=Metacognitive Intervention; MP=Metacognitive Planning; MR=Metacognitive Regulation; MS=Metacognitive Scaffolding; SA=Student Achievement; SC=Student Connectivity; SD=Self-Directness; SG=Social Goals; SMR=Student Metacognitive Regulation; SMX=Student Metacognitive Experience; SP=Student Performance; SPr=Student Perspective; SPS=Scientific Problem-Solving; SR=Solve Rate; SRp=Self-reported; SSMR=Socially Shared Metacognitive Regulation; SX=Student Experience; RPT=Reciprocal Peer Tutoring.
USABILITY OF MASSIVE OPEN ONLINE COURSES (MOOCS): MALAYSIAN UNDERGRADUATES’ PERSPECTIVE

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ABSTRACT

Massive Open Online Courses (MOOCs) have recently gained popularity in a blended learning approach at educational institutions around the world. Despite this trend, little research exists on the students’ experiences and emerging challenges with implementing this online learning platform in a higher education setting, particularly from the Malaysian perspective. To address this need, this study was conducted to evaluate the usability of MOOC-OpenLearning based on the undergraduate students’ perception of it. Utilising the quantitative approach, a survey was disseminated online to students in various undergraduate programs in a public university in Malaysia, Universiti Tun Hussein Onn Malaysia (UTHM). The study findings revealed a generally moderate level of positive perceptions among the respondents towards all the usability aspects of MOOC-OpenLearning in supporting their learning process, i.e., in terms of usefulness, ease of use, ease of learning, and satisfaction. An implication of this study is that respondents have significant uncertainties towards the usability of MOOC—OpenLearning and the emerging challenges of using it may require further exploration.

Keywords: usability, usefulness, ease of use, ease of learning, satisfaction, MOOCs, Massive Open Online Courses, Malaysia, UTHM, undergraduates, higher education, public universities, teaching and learning, online learning.

INTRODUCTION

The current COVID-19 pandemic, which took the world by surprise since the end of 2019, has made online learning tools and approaches more important than they were before. With the lockdowns and educational institutions closing globally, teaching and learning process are no longer restricted to traditional, face-to-face approaches. Advances in information and communications technology are considered the panacea for higher education institutions to ensure the continuity of education and effectively facilitate the process of educational delivery through the proliferation of online learning tools and platforms for various fields of studies. Massive Open Online Courses (MOOCs) are one such tool that has emerged as a new form of technology-enhanced learning in the higher education setting and beyond.

MOOCs have become especially relevant for supporting teaching and learning process during this pandemic. MOOC providers have responded to the pandemic in three broad ways: “by opening up catalogue access to campus students, by launching free courses about COVID-19, and by offering free
certificates for particular courses” (Schaffhauser, 2020, para.3). According to Impey (2020), MOOCs have seen a surge in enrolment since March 2020, and at Coursera (i.e., an online platform offering MOOCs), enrolment has skyrocketed to 640% higher from mid-March to mid-April 2020 than during the same period in 2019. Globally, around 10 million more learners were enrolled in MOOCs in 2019 compared to 2018, leading to an estimated global enrolment of 110 million students and a 10% growth in student numbers (ICEF Monitor, 2020). Furthermore, the global growth of MOOCs is projected to rise at a rate of 29% from 2020 to 2025, making the learning platform the fastest-growing education market (Guide2Research, 2020).

Similarly, MOOCs are gaining momentum in Malaysia. In 2016, the MOOCs Malaysia platform hosted at OpenLearning.com offered 63 courses with more than 148,917 students taking or having taken courses through the platform (Rahman 2016). In 2018, the number increased significantly to over 800 courses with a total of 900,000 enrolments in Malaysia MOOC and other MOOCs in Malaysia (The Star Online, 2018). In fact, as reported in the same article, in line with its ambition to become an international education hub, the Malaysian government aims to attract 250,000 international students, and already over 100,800 overseas students are enrolled in Malaysian-developed MOOCs. The above statistical evidence shows the relevance and potential of MOOCs, not only in supporting the 21st century learning needs among students but also in realising the country’s aspiration towards becoming a more developed nation through a regionally and internationally recognised higher education system.

Given this aspiration, it is importance to study the usability of MOOCs. As suggested by Ball and Bothma (2017), usability evaluation is an important aspect to be studied to reveal how certain tools and systems are really used so that further improvements can be made to the design of them. As revealed by Rabin et al. (2019), poor usability can delay learners’ progress and decrease the personal benefits learners could gain from participating in the learning intervention. The challenges in designing MOOCs lie not only in the pedagogical aspect but also technical areas that also comprise the “usability” element.

Few studies have been conducted on the usability aspect of MOOCs. In fact, past studies have shown that there are many usability issues that tend to recur in the process of implementing certain learning interventions, particularly those involving online technologies (e.g., Kenttälä et al., 2015; Obel, 2018; Santoso et al., 2016). Although user experience measurements have been used widely in the evaluation of any product, there is still a limited effort to assess the usability of online learning platforms (Santoso et al., 2016). When it comes to MOOCs, Explorance (2013) listed four main challenges in evaluating the usability of these online courses, which are the lack of established criteria, low completion rates, varying instructor involvement, and accessibility issues. In Malaysia, although the government has been actively supporting the use of MOOCs in both public and private educational sectors, research on the usability aspect has been scarce.

The main objective of this study was to evaluate the usability of MOOC-OpenLearning from the perspective of undergraduate students in a Malaysian public university, specifically from the aspects of: (a) usefulness, (b) ease of use, (c) ease of learning, and (d) satisfaction. Emerging challenges with regards to the implementation of MOOC-OpenLearning at the university were also examined.

LITERATURE REVIEW

MOOCs in Higher Education

Online technologies have become a great influence in education nowadays and have opened doors for new opportunities for learners outside the traditional boundaries of educational delivery. Since the late 20th century, blended learning, i.e., combining online and some form of face-to-face interaction, appears to be emerging as the main approach for supporting 21st century education across higher education institutions globally (Cairns & Alshahrani, 2013). MOOCs are one of the blended learning approaches with interactive tools to offer online courses that enable students to access learning resources anytime and anywhere. MOOCs are designed mainly as standalone, online courses that provide learners free access to education and unrestricted participation in any course of their choice. A new format of teaching and learning that has emerged in higher education globally is the combination of MOOC
with traditional university courses, resulting in a blended course design (McNamarah et al., 2017). One of the primary goals of such a hybrid approach to teaching and learning is to enhance students’ learning experience and ultimately their success and satisfaction (McNamarah et al., 2017).

According to Alanazi and Walker-Gleaves (2019), there are many explanations for the emergence of MOOCs, which had the starting philosophy of Connectivism and Connective Knowledge. This philosophy “describes the manner in which new learning opportunities have come into existence from the widespread use of digital and web technologies and devices, in combination with the instructional paradigms of distributed and collaborative learning” (Alanazi & Walker-Gleaves, 2019, p. 3140).

In recent years, many scholars and educational practitioners have investigated how MOOCs can contribute to improving the learning attitudes, outcomes, and experience of students, especially in a higher education setting within the context of either formal or informal education. This includes developing positive attitudes, individualizing education, and learning outside the classroom (Alanazi & Walker-Gleaves, 2019); providing free and accessible education (Manalo, 2014); and increasing learners’ satisfaction (Rabin et al., 2019). Apart from that, several studies also reported on how MOOCs are integrated into the existing teaching and learning approach in a higher education context. For instance, a study by Fidalgo-Blanco et al. (2016) described the hybrid pedagogical model of MOOC, namely the xMOOC and cMOOC. While “xMOOCs promote instructivist and individualist, use classic elearning platforms and are based on resources, cMOOCs are connectivist and are based on social learning, cooperation and use of web 2.0” (Fidalgo-Blanco et al., 2016, p. 2). Regardless of the type of MOOC, we observed similar perceptions among the participants in our study with regards to the quality of the learning experience.

In Malaysia, MOOCs are considered a new initiative by the government that aims to increase the level of technological use in public and private higher education institutions (Nordin et al., 2015). In fact, Malaysia is said to be the first country in the world to implement the MOOC initiative for public universities, as stated by the former Higher Education Minister of Malaysia, Datuk Seri Idris Jusoh (Centre for Global Online Learning, n.d.). Initially, Malaysia MOOC was officially launched in 2015 through the Malaysia’s national MOOC platform for public higher education institutions, called OpenLearning.com (Kumar & Al-Samarraie, 2018). Under the 11th National Malaysia Plan (2016–2020), the Malaysian government has allocated funds for the Ministry of Education (MOE) to further implement online initiatives for higher education institutions. One of the main initiatives of the MOE, under the Malaysian Education Blueprint 2015–2025 (Higher Education), is to use blended learning as a conduit for transforming existing pedagogy, and the further development of MOOCs has been outlined as one of the important plans in the online initiative (Fadzil et al., 2015). Under this plan, public universities in Malaysia will develop MOOCs on core modules and pools of students from these universities will participate in those courses through the national platform of MOOC, i.e., OpenLearning.com. Until 2018, over 880 courses have been created by Malaysian educators, and a total of 900,000 participants in this country have enrolled in MOOCs on OpenLearning, either Malaysia MOOC or MOOCs by other entities (The Star Online, 2018).

In UTHM, the Centre for Global Online Learning is responsible for developing and monitoring MOOC-OpenLearning while delivering training and advisory services related to elearning implementation at the university. Until early 2018, a total of 25 MOOC courses had been jointly developed by all faculties and schools at the university (Hammim, 2018). UTHM’s MOOC-OpenLearning covers six fields of studies, which are Civil Engineering, Education, Electrical Engineering, Computer Engineering, Mechanical Engineering, and General Studies (Centre for Global Online Learning, n.d.). MOOC-OpenLearning has been integrated as one of the teaching and learning approaches at the university, along with other techniques such as problem-based learning, blended learning, and fully online learning, assessment, and training (The Official Portal of UTHM, 2020).

The Concept of Usability

Usability is one of the key attributes that are used to measure the usefulness of a certain product or application. Berns (2004) defined usability as “the extent to which a product can be
used by specific users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use” (p. 21). Notess (2001) argued that the definition of usability “is not standardised in the same way that, for example, some performance measurements have been assigned standard benchmarks” (para. 3). Usability can be seen as either a measurable attribute of a product, a process that aims for improvement, or a functional group that needs to be balanced with business objectives, technical constraints, and time constraints (Notess, 2001).

From a theoretical perspective, usability is part of the broader term “user experience,” which refers to the ease of access and/or use of a certain products or services. User experience, generally abbreviated as UX, refers to “the subjective experience of the user when interacting with technology to perform some task or function to achieve a desired outcome and end goal” (Fishbeck, 2016, para. 5). The two fundamental elements of user experience are the user and the technology, which drive each other and produce a subjective experience in the user’s perceptual space (Fishbeck, 2016). Morville (2004) developed the User Experience Honeycomb to illustrate the facets of user experience and explained that there are seven elements contributing to developing a meaningful and valuable user experience (useful, usable, desirable, findable, accessible, credible, and valuable). As part of these elements, usability emphasizes the importance of ease of use on the interface-centred methods and perspectives of human-computer interaction (Morville, 2004).

“Usability evaluation” and “usability testing” are always used interchangeably. According to Rosenbaum (1989), the goal of both usability evaluation and usability testing is the same, which is to improve the usability of products or services. The implementation of usability evaluation is not limited to web platforms (Sidhawara et al., 2018). It can also be performed on mobile platforms, such as phones and tablets. Usability evaluation includes several aspects of the product or application. Lund (2001) suggested four dimensions to evaluate the usability of a product: usefulness, ease of use, ease of learning, and satisfaction dimensions. Meanwhile, Sidhawara et al. (2018) listed the criteria for usability evaluation of web-based platforms as ease of use in relation to usage steps, user time, and consistency of web site elements. Rubin, Jeffrey, Chrisnell and Dana (2008, as cited in Lestantri et al., 2018, p. 6) provided the description of each dimension as follows:

- **Usefulness** is related to the usefulness of the product for the user; how much is the product useful and utilised by the user to achieve user goals?
- **Ease of use** is related to the ease of the user using the product.
- **Ease of learning** is how fast a user can operate the product and how long until the user understands how to use it.
- **Satisfaction** is related to user acceptance, feelings, and opinions of the product.

Usability evaluations can provide both qualitative data and quantitative data. “Quantitative data notes what actually happened. Qualitative data describes what participants thought or said” (usability.gov, 2020, para. 7). The evaluation of usability can be done using the survey method to process data related to the products of a service’s effectiveness, efficiency, and satisfaction (Hendra & Yulyani Ariffin, 2018). There are several surveys developed by early scholars that can be used to measure usability from the user perceptions. For instance, the USE Questionnaire was developed by Lund (2001), which includes four dimensions to measure the usability of a product or service, namely Usefulness, Ease of Use, Easy of Learn, and Satisfaction. Other common surveys for usability evaluation include the User Experience Questionnaire, i.e., UEQ (Laugwitz et al., 2008), the System Usability Scale, i.e., SUS (Brooke, 1996), and the Questionnaire for User Interaction Satisfaction, i.e., QUIS (Chin et al., 1988).

**Usability of MOOCs**

From the educational perspective, the usability of a learning tool or intervention refers to the extent to which learners can learn through and use the tool or intervention to achieve their learning goals. In elearning, for instance, usability is closely related to user interaction (Sidhawara et al., 2018). For the case of mobile-based platforms, the expert usability review method was useful in proposing new guidelines for developing and implementing mobile learning applications based on usability attributes (Hujainah et al., 2016). Other than that, studies by
various scholars also linked usability as the main factor in both students’ and instructors’ adapting to a learning management system (Aharony & Bar-Ilan, 2016), students’ satisfaction in educational websites (Hasan, 2014), and students’ and lecturers’ experience as users in a student-centered elearning environment (Junus et al., 2015).

A vital aspect to be considered when it comes to the usability of a teaching and learning intervention is how such a tool or application supports the development and mastery of students’ 21st century learning skills. As suggested by the North American Council for Online Learning and the Partnership for 21st Century Skills (2006), “the mastery of 21st century skills occurs through intentional instructional design, direct instruction of quality curriculum and meaningful assessments—regardless of whether the students complete courses online or in a brick and mortar building” (p. 5). Online learning is an ideal environment for the 21st century students to learn and acquire knowledge. The 21st century students, i.e., participatory learners who use information technology to accomplish specific tasks such as the use of online learning and learning management systems (Chigwada, 2020), require a learning environment that can foster understanding their own activity as learners. Thus, usability is related to the effective and efficient accomplishment of learning-related tasks or goals as experienced by the 21st century students in the online environment, either with or without the use of specified learning tools (Nambisan, 2010).

In the specific context of MOOCs, according to Hew et al. (2020), successful implementation of a MOOC is defined as the extent of student satisfaction with the course. Totschnig et al. (2013) explained that a usable MOOC platform provides intuitive and useful tools for content editing and structuring while, at the same time, its use encourages learners, maintains a familiar environment for them, and reduces the cognitive learning load involved. Studies in the literature provided empirical evidence pertaining to the usability of MOOCs. For instance, a study by Yusoff and Sulaiman (2017) utilized the enhanced problem-solving model to measure the usability of MOOC by adapting the problem-solving videos in the platform. In another study, an empirical investigation was done to identify how various factors, including content, navigation, learning and support, accessibility, interactivity, and self-assessment and learnability could affect student motivation to learn in a MOOC (Deshpande & Chukhlomin, 2017).

While the benefits of MOOCs have been widely discussed in the literature, several scholars also reported some issues and challenges related to the usability aspect of MOOCs. For example, Hasan (2014) evaluated the usability of educational websites among students in a Jordanian university and observed that there was dissatisfaction among the students with regards to the design, although they were satisfied with the content and navigation (ease of use) of the tested websites. In another study, two main conclusions related to challenges in the usability of MOOCs were drawn: “firstly, there is a surprising difference in how users perceive and approach the MOOCs, and secondly, MOOCs do need their own usability checklist” (Frolov & Johansson, 2014, p. 28).

With so much focus given to MOOCs by educational providers and practitioners around the world, their phenomenal development and implementation in higher education has not been examined thoroughly in Malaysia. In fact, MOOCs are considered a very recent development in Malaysia (Fadzil et al., 2015), and another recent study highlighted the need to further explore factors contributing to student readiness for MOOCs (Subramaniam et al., 2019). Although the courses are offered for free and bring advantages for students’ learning, there is still a limited number of students who fully utilized the system (Mohamad & Irwan Abdul Rahim, 2018). Furthermore, while the literature on the implementation of MOOC-OpenLearning in Malaysia has been scarce, the aspect of its usability has yet to receive much attention.

Taking the above needs into consideration, this paper addresses the current gap in the research pertaining to the usability of MOOC-OpenLearning in supporting undergraduates’ learning from the Malaysian perspective. Emerging issues and ways forward to integrate MOOC-OpenLearning are also further discussed.

**METHODOLOGY**

This study employed the quantitative method through the online survey approach. One of
the major strengths of online surveys is time efficiency whereby researchers can reach out to potential respondents without time constraint and geographical barriers; at the same time, they can acquire the data the instant responses are submitted by respondents (Park et al., 2019).

*Population and Sampling*

The population of this study was undergraduate students from UTHM. It was reported by the MOE that the total student enrolment in UTHM at the end of 2018 was 17,862 students. The sampling method used for the respondents was convenience sampling whereby the online survey was administered via the university’s student mailing list in all faculties at the university, and those who were willing to participate answered the survey at their convenience. According to Leiner (2014), convenience sampling is researching those elements of the population that are easily available to the researcher, and ideally, the convenience pool of samples “provides a sufficiently large number of highly motivated respondents from different backgrounds, available on demand and throughout multiple survey waves” (p. 3).

Thus, the convenience sampling approach suited the nature of this study, which was to measure the usability of MOOC-OpenLearning among students at the university with diverse demographic profiles and study background. The respondents’ experience in using MOOC-OpenLearning was initially identified in the survey, so these students have considerable prior knowledge and experience in the integration of these online learning tools into their undergraduate courses at the university. The convenience sampling and the online survey approach allowed us to gather responses from respondents who represented undergraduate students in the university from different groups by gender, age, ethnicity, study year, and faculty of study.

*Survey Instrument*

In order to run the data collection, we adopted the USE questionnaire developed by Lund (2001). The USE questionnaire measures the subjective usability of a product or service. This survey instrument contains 30 close-ended items with a five-point Likert scale evaluating the usability in four dimensions: usefulness, ease of use, ease of learning, and satisfaction. In addition, the USE questionnaire includes the listing of several negative and positive aspects of the product being studied. Apart from the personalized web-based form, the questionnaire is also accessible online from https://garyperlman.com/quest/quest.cgi?form=USE.

*Data Collection*

Prior to implementing the main study, a pilot study was conducted to confirm the reliability and validity of the survey items. A statistical reliability test was conducted to measure the internal consistency of all usability variables. The results of Cronbach’s alpha values were found to be 0.970 (usefulness), 0.984 (ease of use), 0.966 (ease of learning), and 0.978 (satisfaction). All Cronbach’s alpha values were higher than 0.9, thus exceeded the conventional minimum of 0.70 for reliability (Nunnally, 1978). Therefore, all variables measuring the usability of MOOCs in this study were deemed to be reliable.

Following this, the finalized survey was disseminated to undergraduate students in UTHM through a Google form. The survey link was sent to the list of student emails and included terms indicating the respondents’ consent to participate in the study. No forms of incentive were given to the respondents for their participation in the survey; their participation was on voluntary basis whereby they were given the option to proceed answering the survey only if they are willing to participate. At the end of the data collection, 435 responses were received from a total 1,035 students who undertook the general studies subjects. All of them received the questionnaire via email, and further analyses were done according to the study objectives.

*Data Analysis*

The statistical software SPSS Statistics was used to organize and analyze the primary data obtained from the survey. Specifically, common descriptive statistics, such as frequencies and means, were calculated for each survey item to provide descriptive information about the respondents’ demographic profiles as well as their perceptions on various usability aspects of MOOC-OpenLearning. In addition, Pearson correlation analysis was also run to look for significant relationships between the usability variables.
Table 1. Respondents’ Demographic Profiles

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
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<td></td>
</tr>
<tr>
<td>Male</td>
<td>192</td>
<td>44.1</td>
</tr>
<tr>
<td>Female</td>
<td>243</td>
<td>55.9</td>
</tr>
<tr>
<td>Ethnicity</td>
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<td>Chinese</td>
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<td>Indian</td>
<td>32</td>
<td>7.4</td>
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<tr>
<td>Others</td>
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<td>1.8</td>
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</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
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<tr>
<td>under 20</td>
<td>73</td>
<td>16.8</td>
</tr>
<tr>
<td>20 to 24</td>
<td>353</td>
<td>81.1</td>
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<td>25 to 29</td>
<td>8</td>
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<td>35 and above</td>
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<td>0.2</td>
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<td>Current Year of Study</td>
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<td></td>
</tr>
<tr>
<td>One</td>
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</tr>
<tr>
<td>Two</td>
<td>187</td>
<td>43.0</td>
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<td>Three</td>
<td>23</td>
<td>5.3</td>
</tr>
<tr>
<td>Four</td>
<td>8</td>
<td>1.8</td>
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<td>Faculty of Study</td>
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<td></td>
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<td>Civil &amp; Environmental Engineering</td>
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<td>Electrical &amp; Electronic Engineering</td>
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<td>16.3</td>
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<td>Mechanical &amp; Manufacturing Engineering</td>
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<td>12.6</td>
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<tr>
<td>Technical &amp; Vocational Education</td>
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<td>4.8</td>
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<tr>
<td>Technology Management &amp; Business</td>
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<td>Applied Sciences &amp; Technology</td>
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<td>Computer Science &amp; Information Technology</td>
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</tr>
<tr>
<td>Engineering Technology</td>
<td>58</td>
<td>13.3</td>
</tr>
</tbody>
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FINDINGS

Demographic Information

As can be seen from Table 1, the majority of respondents were female (n = 243; 55.9%). In terms of ethnicity, a majority were Malay (n = 331; 76.1%), followed by Chinese (n = 61; 14.0%), Indian (n = 32; 7.4%), and other races (n = 8; 1.2%). As for age, almost all of them (n = 353; 81.1%) were between 20 and 24 years old.

As for study profiles, the largest group was first-year students (n = 217; 49.9%). Only 1.8% (n = 8) were in their fourth year. Regarding study program, the majority of the respondents were studying engineering related courses (n = 275; 63.2%) at the time the study was conducted.

Usability of MOOC—OpenLearning

From the descriptive analysis shown in Table 2, the mean values of all variables ranged from 3.50 to 3.61, with standard deviation values less than 1.0.

Table 2. Descriptive and Reliability Analysis

<table>
<thead>
<tr>
<th>#</th>
<th>Variables</th>
<th>No. Of Items</th>
<th>Summary Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Usefulness</td>
<td>8</td>
<td>Mean 3.50</td>
</tr>
<tr>
<td>2</td>
<td>Ease of Use</td>
<td>11</td>
<td>Mean 3.51</td>
</tr>
<tr>
<td>3</td>
<td>Ease of Learning</td>
<td>4</td>
<td>Mean 3.57</td>
</tr>
<tr>
<td>4</td>
<td>Satisfaction</td>
<td>7</td>
<td>Mean 3.50</td>
</tr>
</tbody>
</table>

The following describes in detailed the four usability aspects of MOOC-OpenLearning, which are usefulness, ease of use, ease of learning, and satisfaction.

a) Usefulness

Table 3 indicates the descriptive results for the usefulness items. The overall mean of 3.50 suggests that respondents generally had a moderate positive perception about the usefulness of MOOC-OpenLearning in supporting their learning. Most of them (61.9%) agreed that MOOC is useful. More than 50% also supported that MOOC saves them time when using it (mean = 3.58), makes things to be accomplished easier to get done (mean = 3.54), and helps them to learn more effectively (mean = 3.50). However, less than 50% supported the usefulness of MOOC in other aspects, such as in helping them to be more productive (mean = 3.49) and giving them control over own activities in their life (mean = 3.44). Many respondents moderately agreed that MOOC meets their need (mean = 3.41) and does everything as they expected (mean = 3.40). Furthermore, based on the mean distribution, a large percentage of respondents were neutral and thus uncertain about the usefulness of MOOC-OpenLearning in all aspects.

b) Ease of Use

Next, the respondents were asked about the ease of use in using MOOC-OpenLearning, and the descriptive results are shown in Table 4.
There was a moderate positive perception among respondents about the ease of use in using the MOOC-OpenLearning. More than 50% of them agreed that MOOC is simple and easy to use (mean = 3.61 and 3.59 respectively), effortless in usage (mean = 3.57), user friendly (mean = 3.55), flexible (mean = 3.53), and requires the fewest steps possible to accomplish tasks (mean 3.49). Yet, more than 50% of them also found that MOOC is not an easy task for several aspects, such as to recover from mistakes quickly and easily (mean = 3.44), to use it without written instruction (mean = 3.46), and to use it successfully every time (mean = 3.48). Based on the percentage distribution for all items, many respondents seemed undecided about the ease of use of MOOC-OpenLearning.

c) Ease of Learning

The aspects summarized in Table 5 indicated respondents’ feedback about the ease of learning through MOOC-OpenLearning. Generally, the overall mean of 3.57 suggests respondents’ moderate positive perception about this usability aspect. More than 50% of total respondents agreed that it is easy for them to learn using MOOC (mean = 3.61). A larger group also supported that they learned to use MOOC quickly (mean = 3.56), easily remember how to use it (mean = 3.55), and thus quickly became skilful with the learning applications (mean = 3.55). However, similar to the previous aspects, the percentage distributions also revealed that many respondents were neutral about whether or not they find MOOC as easy to be learned.
Table 5. Descriptive Statistics for Ease of Learning Items

<table>
<thead>
<tr>
<th>#</th>
<th>Items</th>
<th>% of Agreement</th>
<th>% of Disagreement</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I learned to use it quickly.</td>
<td>53.8</td>
<td>9.9</td>
<td>3.56</td>
<td>.973</td>
</tr>
<tr>
<td>2</td>
<td>I easily remember how to use it.</td>
<td>53.6</td>
<td>10.8</td>
<td>3.55</td>
<td>.972</td>
</tr>
<tr>
<td>3</td>
<td>It is easy to learn to use it.</td>
<td>57.0</td>
<td>8.5</td>
<td>3.61</td>
<td>.964</td>
</tr>
<tr>
<td>4</td>
<td>I quickly became skilful with it.</td>
<td>52.7</td>
<td>10.6</td>
<td>3.55</td>
<td>.967</td>
</tr>
</tbody>
</table>

Table 6. Descriptive Statistics for Satisfaction Items

<table>
<thead>
<tr>
<th>#</th>
<th>Items</th>
<th>% of Agreement</th>
<th>% of Disagreement</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I am satisfied with it.</td>
<td>52.4</td>
<td>10.3</td>
<td>3.52</td>
<td>.996</td>
</tr>
<tr>
<td>2</td>
<td>I would recommend it to a friend.</td>
<td>50.8</td>
<td>11.0</td>
<td>3.51</td>
<td>.985</td>
</tr>
<tr>
<td>3</td>
<td>It is fun to use.</td>
<td>49.4</td>
<td>10.3</td>
<td>3.48</td>
<td>.970</td>
</tr>
<tr>
<td>4</td>
<td>It works the way I want it to work.</td>
<td>47.3</td>
<td>11.5</td>
<td>3.46</td>
<td>.967</td>
</tr>
<tr>
<td>5</td>
<td>It is wonderful.</td>
<td>51.3</td>
<td>10.8</td>
<td>3.50</td>
<td>.992</td>
</tr>
<tr>
<td>6</td>
<td>I feel I need to use it.</td>
<td>50.1</td>
<td>11.7</td>
<td>3.49</td>
<td>.985</td>
</tr>
<tr>
<td>7</td>
<td>It is pleasant to use.</td>
<td>53.1</td>
<td>10.3</td>
<td>3.54</td>
<td>.975</td>
</tr>
</tbody>
</table>

Table 7: Correlation analyses between all variables

<table>
<thead>
<tr>
<th>Components</th>
<th>Usefulness</th>
<th>Ease of Use</th>
<th>Ease of Learning</th>
<th>Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usefulness</td>
<td>1</td>
<td>.885**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ease of Use</td>
<td>.809**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ease of Learning</td>
<td>.838**</td>
<td>.849**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td>.790**</td>
<td>.823**</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed).

Table 8: Respondents’ Comments and Suggestions

<table>
<thead>
<tr>
<th>#</th>
<th>Themes</th>
<th>Examples of Respondents’ Comments/ Suggestions</th>
</tr>
</thead>
</table>
| 1  | Improve ease of use         | “make a better and stable platform”
|    |                              | “make the interface easier”
|    |                              | “improve in searching group subject”
|    |                              | “better if the usage of the platform is consistent, too many platforms are messy.”
|    |                              | “make games based on learning topics”
|    |                              | “include more exercises”
|    |                              | “more information videos”
|    |                              | “add more interactive ways”
|    |                              | “add simple notes and examples of questions”
| 2  | Add more applications       | “There is a need to set timing in M00C for students to complete their work”
|    |                              | “it would be better to have it with online or one-to-one explanation”
|    |                              | “combine SMAP (Student Academic Information System) and M00C”
|    |                              | “Make it more convenient, such as mobile application”
| 3  | Improve ease of learning    | “need to simplify the M00C content”
|    |                              | “make it more interesting to read”
| 4  | Integrate with other platforms | “build a platform that can works offline”
|    |                              | “make it as an application so that it is easier to use without having to navigate the web”
d) Satisfaction

The final aspect of usability in the survey is related to respondents’ satisfaction towards the use of MOOC-OpenLearning throughout their study in the university. Again, respondents generally felt moderately satisfied about the use of OpenLearning applications (overall mean = 3.5). Specifically, a majority of respondents agreed that MOOC is pleasant to use and wonderful (mean = 3.54 and 3.50 respectively), and they felt satisfied with it (mean = 3.52). Around 50% also agreed that they would recommend MOOC to their friends (mean = 3.51). Nevertheless, around 50% or less felt that they need to use MOOC (mean = 3.49). While less than 50% found that MOOC is fun to use (mean = 3.48) and works the way they wanted it to work (mean = 3.46), a large number of respondents were still neutral or undecided about their satisfaction in using MOOC throughout their study.

e) Correlation Analyses

Pearson correlation analyses were used to study whether there is a significant relationship between each variable in this study. Results from the analyses are summarised in Table 7. The results confirmed that there were significant positive relationships (at 0.01 confidence level) among all usability variables. Respondents’ satisfaction was significantly correlated to their perception about the usefulness, ease of use, and ease of learning of MOOC-OpenLearning.

f) Comments and Suggestions for Improvement

In addition to the above, an open-ended question in the survey sought respondents’ comments and suggestions about how the use of MOOC-OpenLearning can be improved at their university. Table 8 summarised the themes identified and the related comments by the respondents. Generally, the respondents suggested that the use of MOOCs can be improved in terms of ease of use, variety of learning applications, ease of learning, integration with other platforms (such as online student information system and mobile applications), effectiveness of content, and accessibility.

DISCUSSION

Overall, the study findings indicated that there were moderate positive perceptions among undergraduates in the university with regards to all usability aspects of MOOC-OpenLearning. Furthermore, the respondents seemed to be mostly neutral in responding to all the aspects.

In terms of usefulness, most students agreed that MOOCs are useful in general, but many others seemed to be neutral, particularly on the expected outcomes of their usage. As for the second aspect, ease of use, the majority found that MOOCs are simple, easy to use, user friendly, and flexible, but a significantly large percentage of students also seemed to be undecided about this aspect. Quite similarly, while most respondents mainly agreed on the ease of learning in using MOOCs, many others remained neutral in responding to this aspect. With regards to satisfaction, although the majority agreed on the pleasant and wonderful experience in using MOOCs, many respondents remained neutral about this aspect.

The above findings on moderate positive perceptions among students somewhat corroborate the findings of other studies that looked at various aspects of usability evaluation in the implementation of MOOCs. For instance, a similar study by Ariffin et al. (2021) aimed to identify the students’ acceptance in using MOOCs at UTHM. It was reported in the study that the mean values of the four domains of the students’ acceptance, namely perceived usefulness, perceived ease of use, user satisfaction, and attribute of usability, were moderate, with perceived ease of use having a higher value compared to the other domains.

As observed in this study, a large distribution of students indicated neutral responses for most of the usability items. This indicates that there were significant levels of uncertainty among respondents with regard to the usability of MOOC-OpenLearning. This was similarly observed in a study by Manalo (2014) in which the participants of the online course indicated either neutral or positive reactions towards MOOCs with very few strong negative reactions towards its use. Manalo added, the “neutrality of the responses may indicate that the participants neither agreed nor disagreed with the statements because they did not find the course to be applicable to them” (p. 120). Also, a study by Walker (2016) found that while students were satisfied with most modes of instructor-student
communication in online graduate courses, they were somewhat in between satisfied and neutral for other applications.

The undergraduate students’ moderate positive perception towards MOOCs-Open Learning as observed in this study indicates that they were not fully aware of its usability, despite acknowledging its potential and benefits for their learning. This suggests the need to bridge respondents’ expectation in using the learning applications to their learning needs and preferences, especially in the wake of the global pandemic. According to Kumar and Garg (2020), the major characteristics contributing to the acceptance and usability of digital learning and integration of MOOCs in higher education include awareness, content, context, certification, capability, and strategic execution. The current crisis has made online distance learning the new norm for many and thus MOOCs have become increasingly relevant for the students to benefit from online and blended learning practices in higher education, particularly in terms of getting cheap or free access to education. Many MOOC platforms have now made some of their courses available for free during the pandemic, such as Coursera, which is providing every university impacted by the crisis with free access to their course catalogue through Coursera for Campus (Carolyn, 2020).

As for 21st century learners in particular, the four Skills for Today as identified by the coalition P21 (Partnership for 21st Century Learning) are creativity, critical thinking, communication, and collaboration; these four skills should be overlaid across all curriculum mapping and strategic planning as an integral part of every lesson (Driscoll, 2016). In line with this need, according to Gamage et al. (2018), an effective MOOC design with three main principles and characteristics of the pedagogical framework (collaborative, interactive, and networked learning framework) would be able to address the 21st century learning goals. In addition, other current studies reported several benefits related to the usability aspects of MOOCs for today’s learners, such as the availability and accessibility of free, rights-cleared teaching and learning resources (Haber, 2020); improved career benefits and job performance (Impey, 2020); and online readiness via quality open access resources (Kerr, 2020).

In terms of correlation analysis, Lund (2001) noted that if there is an increase in the rating for ease of use, then the rating of usefulness improves and vice versa. Correlation test results in this study provided evidence supporting Lund’s suggestion that the four usability variables have a strong correlation with each other. These significant correlations suggest the importance to consider the intervariable relationships in improving the students’ perceived usability of MOOCs. This result is similarly noted in prior research suggesting the effects of usability variables on one another. For instance, while studying the usability of elearning using the USE Questionnaire, Sidhawara et al. (2018) found that Spearman’s correlation coefficients for usefulness of the four other variables were of high value, and significance number was less than 0.05. In another study looking at the usability of web-based student grade processing information systems, Hendra and Yulyani Ariffin (2018) observed that usefulness, ease of use, and ease of learning variables influenced the satisfaction variable significantly.

In addition to the above, several issues have emerged based on this study findings:

• Usefulness: many respondents did not find MOOCs useful in helping them to be more productive, supporting their independence in own daily activities, and addressing their learning needs and expectation.

• Ease of use: many of them also did not find it easy to use a MOOC for several aspects, such as to recover from mistakes easily and quickly, to use it without written instruction, and to use it successfully every time.

• Ease of learning: respondents were mainly neutral about whether or not they found MOOCs easy to learn.

• Satisfaction: Areas that many respondents felt less satisfied with include the need to use a MOOC, its fun aspect, as well as its efficacy as required by students.

Therefore, the above findings suggest that there are several usability issues in the implementation of MOOCs-Open Learning at the university, and these include the aspects of self-learning needs and expectation, supports in using the applications, as well as learning motivation and efficacy. According to Yousef et al. (2015), there are several limitations of MOOCs that present barriers to learners, such as
the limitation of a teacher-centered and centralized learning model, the lack of effective assessment and feedback, the lack of interactivity between learners and the video content, and the diversity of MOOC participants.

Like other online learning tools and applications, the implementation of MOOCs, particularly during the current crisis, is not without certain challenges and limitations. The challenges based on several current studies include the issues of equity of access (Haber, 2020), low penetration of MOOC awareness, nonuniformity of the information among students, and teachers’ role in dealing with such issues (Kumar & Garg, 2020). Several earlier studies also highlighted issues and challenges related to the usability of MOOCs in various educational settings. In an exploratory study by Aharony and Bar-Ilan (2016), it was observed that students have different needs and expectations when it comes to adopting MOOCs in their learning process. Thus, the authors highlighted the needs for MOOC platforms to provide multiple options to accommodate the students’ needs. In another study, the issue of MOOC usability was highlighted as one of the aspects that causes various problems to teaching assistants and hinders effective support to learners and consequently affects the learners’ experience (Ntourmas et al., 2019). With regards to students’ satisfaction, Ariffin et al. (2021) found in their study that while some students were not confident in using the MOOC applications, others were worried about having a low level of motivation.

Considering the issues and challenges identified, the following five recommendations are made regarding how the design aspects of MOOCs can be further improved from the perspective of higher education students in Malaysia:

Convenience of Usage

MOOCs should be easy to use. The interfaces and applications should not be too complex. Rather the MOOC needs to be user-friendly and familiar enough for students of all levels to navigate. It should assist students to learn independently at their own path without having to rely on instructions and guidance. Relevant information and communications technology skills are important for the effective use of MOOCs, and therefore instructors and learning providers must ensure that the necessary trainings and guidelines are provided for students who lack these skills (Fianu et al., 2018). Immediacy is also an important quality that determines the 21st century students’ convenience in using MOOCs. As stated by Oblinger and Oblinger (2005), these digital natives are used to receiving information fast, prefer to parallel process and multitask, and thrive on immediate gratification.

Attractiveness and Interactivity

MOOCs should be attractive and interactive to motivate and ignite students’ interest in the courses. According to Ngadiman and Sulaiman (2017), an attractive web-based application not only ensures its ease of use and user satisfaction, but it also makes it easy to be understood and save time learning and completing a particular task. This can be achieved using interactive learning applications and gamification of the platform, such as quizzes, rewards, and badges. These seem more appealing to the students, especially the 21st century learners, than using merely textual and graphical information. Gamage et al. (2018) proposed a facilitator-driven group learning pedagogy inspired by cMOOCs and similarly highlighted the need to increase interactivity and collaboration in meeting the 21st century goals. As noted by the authors, a stimulating situation for such learning condition is where a known group of students will discuss, cocreate, and think-aloud about the content they learn through a MOOC.

Convenience for Learning

A good MOOC learning experience is where it can improve both students’ learning experience and outcomes. There should be the necessary supports in the learning applications for students to gain an understanding of the learned subjects. Using MOOCs would make students more productive in learning, support them in their self-learning path, and address their learning needs and expectation. Moore (2014) explained that one of the dimensions to be considered in a usable learning application is the quality of learning where lessons are well-organized and encourage both interaction and self-reflection, and the learning feedback should also be available and helpful. A student-centered approach is an essential part of the 21st century learning through which learners need to “learn how to learn” on their own, i.e., be able to acquire new information as problems arise, connect the new information with existing knowledge,
and thus apply it to solving the problem at hand (Nichols, 2019).

**Content Effectiveness**

Effective contents are helpful not only for students to obtain understandings but also for their learning reinforcement. One way to design effective content for MOOCs is through microlearning, or short bits of learning, which is one type of instruction that suits the nature of online learning, especially when it involves large informal online classes (Pressbooks, n.d.). Through microlearning, curricular content is broken into shorter chunks of content, or microcontent, and it can be in the forms of text-based content or multimedia-based content. It would be easier for students to focus on certain information and decide what content they want to learn at a time rather than focusing on the course as a whole (Pressbooks, n.d.). In addition, the new generation of digital tools allows today’s 21st century learners to become generators of content instead of passive consumers of knowledge (Scott, 2015). Thus, the students would value the availability of user-generated content through online platforms and tools such as social networking sites, blogs, wikis, and video-sharing sites (Scott, 2015).

**Flexibility and Accessibility**

The 21st century learner needs learning environments that embrace the variety of places, ideas, and people as required by today’s modern world, and thus reflects a flexibility in terms of space, time, people, and technology (Machado, n.d.). The massive and open nature of MOOCs means that students of all backgrounds and levels would be joining the class. Therefore, MOOCs should be flexible and inclusive to meet the accessibility needs of diverse learners. One way to do this is by integrating MOOCs with other platforms and applications, such as computer-based and mobile-based tools and applications. Sharples et al. (2014) listed three features of mobile and ubiquitous technologies that contribute to enhance students’ MOOC learning experience, which are “always with you,” “sensor pack,” and “connectivity.” In addition, MOOCs should also provide supports for both online and offline learning modes to allow students to learn flexibly anytime and anywhere, especially those who lack internet accessibility. For instance, the availability of downloading features for video applications provides offline learning support for students to watch the lecture without depending on the network connection (Goel & Chauhan, 2015).

**CONCLUSION**

In conclusion, the findings demonstrate that there are moderate positive perceptions and significant levels of uncertainties among the undergraduate students in the university with regards to the usability of MOOCs in supporting their learning. While a majority agree that MOOC-OpenLearning is useful, easy to use, easy to learn, and satisfying in several aspects of learning, many others are neutral on whether or not the online courses are good in several areas of usability. Therefore, this study’s findings suggest the need to explore the possible factors leading to the significant level of doubts among students and what further actions could be taken in order to enhance MOOCs learning experience in higher education institutions.

This study has put forward the importance of considering usability as the key element, particularly for the university management and academics, in implementing certain learning intervention aimed to enhance students’ learning outcomes and experiences in the 21st century learning environment. Most importantly, five key elements are proposed based on the study findings with regards to how the usability of MOOCs can be improved: (a) convenience of usage, (b) attractiveness and interactivity, (c) convenience for learning, (d) content effectiveness, and (e) flexibility and accessibility. The findings obtained also provide the basis for future similar research focusing on the implementation of MOOCs in a blended teaching-learning approach to course offerings in any higher education setting.

The study findings should also be considered in the light of several limitations. First, this study only explored the usability of MOOC OpenLearning applications by involving respondents from one public university only. Thus, the findings cannot be generalized to represent the whole population of undergraduate students in Malaysia. Furthermore, due to the limitation of the sampling and online survey method, the distribution of study samples was unrepresentative by study years. The most obvious drawback of convenience sampling is the risk of sampling bias, which may lead to the
distribution of samples that does not represent the entire population being studied (explorable.com, 2009). Secondly, this study did not investigate in detail the usability aspect of MOOC-OpenLearning applications from a more qualitative perspective, such as through interviews, which may enrich the data obtained. Finally, other usability aspects of a learning application, such as efficiency, remain unexplored in this study.
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