Editorial – Volume 21, Issue 2

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Welcome to the second issue of 2020. The sudden worldwide appearance of COVID-19 has captured the attention and energy of almost every aspect of society including how we view and approach open and distributed learning. Indeed, many educational jurisdictions have outright cancelled all in-person classes (K-12 and post-secondary) and are now looking to move to remote learning to temporarily bridge the gap. I and many of my open university colleagues have been approached by desperate educators wanting to immediately convert their courses right in the middle of term. Even with over 25 years of online and distance experience, this is new territory for me. I am used to developing courses and then running them. Moving over from in-person to remote during the course itself is a bit like trying to change the tire on a car while it is still driving down the highway. However, it will get done, because it needs to be done. If you were ever looking for motivational opportunity to convince fellow educators, overly comfortable and set in the in-person mode of teaching, to look at alternative teaching modes—this is it. Never waste a crisis.

I fully expect that in upcoming issues of *IRRODL* we will see studies relating and exploring some of these experiences from around the globe. Essentially, what can we learn from all this? In this respect, I take a more positive view in the long run. There will, of course, be practical lessons learned like moving the last month of term lectures and assignments online, setting up alternate laboratory experiences, running remote examinations, and hopefully some of those will be more than slapped-on solutions like long lecture recordings and textbook dumps. However, there will also be some bigger overarching lessons. One of the more important ones for me is the realization that despite the commonly accepted emphasis on the individual, we are still all very much connected with and responsible for each other worldwide. I believe this is something that naturally resonates with researchers in an area with a strong social mandate like open and distributed learning.

On a side note, you already know that *IRRODL* currently requires APA Style (sixth edition) for its [submissions]. A new *Publication Manual* (seventh edition) was released in October 2019 and in the coming months we plan to transition from the sixth to seventh edition style. Keep posted for details and the exact date for this upcoming changeover. In the meantime, please continue to use APA Style (sixth edition).

In our first paper of this issue **Zapata** explores the development of instructional modules for an open textbook in a "book sprint" fashion by graduate students. While there were several tangible benefits identified, analysis indicated some gaps in the materials produced, which could have been a consequence of the structure of the book sprint itself.

Through their exploratory qualitative study of online postgraduates, **Peacock**, **Cowan**, **Irvine**, and **Williams** identify and discuss three important themes (interaction/engagement, the culture of the learning, and support) in promoting a sense of belonging and in ensuring that there are opportunities for meaningful group and peer interactions.

In the following study, **Rushidi**, **Shishi Kumar**, **Yon Rosli**, and **Baderisang** provide insight into the factors that may strengthen relationships and enable universities to increase both their service recovery satisfaction level and overall student retention rates. The findings of this study also confirm and highlight the influence of service recovery satisfaction on behavioural outcomes, which could inform future strategies to encourage learner loyalty and persistence.

Despite cost savings and demonstrated effectiveness of open textbooks, perceptions about quality, relevance, ease of access, and other concerns persist. **Bethel** confirms the quality measure developed for post-secondary study in the Bahamas as a viable practical tool to assess open resources and found that the open textbooks studied were accessible and well matched to course content, but of varying quality.

Teaching practice is a significant practical component of pre-service teacher education programs even at a virtual university. **Abdullah** and **Mirza** investigate the quality of these modules that train the prospective teachers coming from an online educational setting for their professional teaching careers.

In the next article, **AlDahdouh** examines the prevalence and distribution of learner emotions in connectivist environments. Implications for researchers and teachers in distance education are discussed including that negative-activating emotions can somehow produce positive consequences—although not always.

Andoh, **Appiah**, and **Agyei** explore perceptions of postgraduate distance education students which revealed that was not dependent on age, gender, or programme of study, but was significantly related to study centre location and semester of study. Furthermore, the authors critically consider and discuss learner views on physical facilities, staff-students relationship, facilitator quality, and student support services.

University teachers are the prime movers for integrating e-learning systems into higher education institutions and therefore understanding their willingness to use such technology is critical. In this technology acceptance study **Goh**, **Hii**, **Tan**, and **Rasli** advance our current understanding by identifying the dual roles of motivation for instrumental use, as both cause and mediator.

One final word. Because of the heightened awareness of open and distributed learning it might be a good opportunity to make interested colleagues aware of *IRRODL*. It is available free-of-charge to anyone and is a tremendous resource for researcher and practitioner alike.

Sprinting to the Finish Line: The Benefits and Challenges of Book Sprints in OER Faculty-Graduate Student Collaborations

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Abstract

This article investigates the results of a book sprint experience whose main objective was the development of instructional modules for an open textbook for the teaching of Spanish as a second language. Six graduate students at a public American university participated in the project for a week, working in pairs in the creation of activities that required the incorporation of the tenets of the dual pedagogical frameworks of performance- and literacy-based instruction (as realized through learning by design). Data were collected through both an opinion survey and the assessment of samples of the participants' products. The results of the survey showed that graduate students felt that being part of the book sprint had been beneficial both at the professional and personal levels, but they had also experienced difficulties similar to those reported in previous studies. The products analyzed pointed to a lack of connection between the required pedagogical tenets and the materials developed, which has also been reported in existing works on pre- and in-service teachers as materials developers. The article discusses how these results could have been a consequence of the structure of the book sprint, and it offers recommendations for future activities of this kind.

Keywords: book sprints, open education, OER materials, second language pedagogy, graduate student professionalization

Introduction

Two of the most important developments that the field of second language (L2) pedagogy has seen in the last 10 years have been the adoption of performance- and literacy-based instructional approaches (Allen & Paesani, 2010; American Council on the Teaching of Foreign Languages [ACTFL], 2012; Warner & Dupuy, 2018) and the increasing interest in open educational resources (OER; Blyth, 2014). The establishment and growth of two non-profit academic organizations—such as the Center for Educational Resources in Culture, Language and Literacy (CERCLL) and the Centre for Open Educational Resources & Language Learning (COERLL)—attest to these trends. These movements originate in the compelling need to prepare students to understand and actively use their second languages in the production of the kinds of texts common in today's diverse, multimodal world, and also to offer them personalized, affordable, educational materials, which commercial, one-size-fits-all L2 textbooks cannot do (Blyth, 2014; Thoms & Thoms, 2014). That is, OER-based L2 instruction can facilitate the implementation of instruction that answers learners' personal and academic needs, and that can open L2 use to the dearth of genres that characterizes today's world of communication.

However, in spite of these trends and the resources that both CERCLL and COERLL have offered educators, one problem persists: the availability of open, theoretically grounded L2 instructional resources (Thoms & Thoms, 2014). This was the case for Spanish before the start of the experience presented in this article, a missing resource that inspired a learning materials development project that would result in, to the best of the author's knowledge, the first open textbook for beginning L2 Spanish for university students in the United States. The creative process was carried out by a faculty member and six graduate students in a public university in the southern region of the United States. Throughout a period of one week, they worked together in a book sprint to develop the four instructional chapters that would become part of the first volume of the textbook.

Our first objective was to describe this experience, and to explore the participating graduate students' perceptions of the process in order to discover the possible benefits of this kind of activity for their professionalization. Our second goal was to analyze the products created by the students to investigate whether they reflected the tenets of the two pedagogical frameworks (performance-based instruction and learning by design) in which the content was required to be grounded. To the best of the author's knowledge, no existing work has looked at the use of book sprints for L2 materials development, nor has it analyzed their potential for graduate education.[1]

The article is organized as follows. The first section of the paper provides a definition of book sprint as it is understood in the OER world and presents previous studies. The next four sections describe the study: (a) the institutional background, and structure of and rationale behind the book sprint; (b) the participants; (c) the materials; and (d) the protocols. The subsequent two sections present the results of the study and discuss their limitations and implications. A final brief section concludes.

Previous Book Sprint Experiences

The idea of book sprints for the development of OER materials was first put forward by Tomas Krag and his team in 2005 (Kean, 2012). Book sprints can be defined as creative, collaborative "process[es] [that] start with a group of five-ten people, a facilitator, and an idea or title for a book, and wrap up five days later, culminating in the production of a finished book" (Hyde, 2010, p. 241). Those who participate in book sprints share a common expertise and resort to digital platforms (e.g., Google docs) to collaborate during the writing activity. Also, when needed, they incorporate existing open resources to develop novel material that is always published digitally, and is made available under one of the Creative Commons licenses. Book sprints are quite common in non-academic contexts for the development of software, apps, and manuals (see Kean, 2012; Zennaro, Canessa, Fonda, Belcher, & Flickenger, 2007). In education, to the best of the author's knowledge, there have been three reported book sprint experiences, and their objective, as expected, has been the development of textbooks or monographs for different disciplines.

Thayer (2012) made reference to the first one: an initiative that took place in late summer 2012, in Finland, where a high school math textbook was produced during a weekend by a collaborative group of researchers, instructors, and students. The resulting product was a 130-page digital book with an open CC-BY license. Since the publication of the first textbook, the Finnish group has continued collaborating, and they have produced books for other math-related topics such as calculus. Unfortunately, neither Thayer nor the group (in the Facebook site devoted to the project) provided any information about the number of people that participated in the effort, nor did they discuss students' roles or how they benefitted from the experience of co-writing the textbook with faculty and researchers.

The setting for the second academic book sprint in the existing literature was the University of British Columbia in Canada, where, in 2014, a group of faculty experts in the field of geography gathered to produce a university-level textbook on geographical aspects of British Columbia (Green, 2016). This time, the production period took place over four days, but the writers worked in 12- to 14-hour cycles. The collaborative effort resulted in a 200-page open textbook that was subsequently peer-reviewed, edited, and published by the university's faculty and IT staff. Even though this experience was mostly successful, Green (2016) also described some challenges. For example, he believed that, before the start of the writing process, it is important to allot time for collecting and organizing resources to fully devote the book sprint time to writing and not research. In addition, he reported the existence of difficulties with the division of labor due to the different levels of participation displayed by the writers, and, thus, he recommended the establishment of preliminary meetings to discuss issues of accountability. In spite of the reported challenges, this researcher believed this kind of writing experience is worthwhile because it "can create a first draft and open us to potential, because all open textbooks really are first drafts waiting for improvement" (Green, 2016, p. 189).

Taylor (2016) reported on the third academic book sprint in the literature. This time, the collaborative writing experience involved the participation of 10 experts in the field of modern languages, with a focus on the digital humanities and literature, who wrote 24 individual blogs that explored different aspects of digital scholarship in that discipline. The book sprint took place during one week in November 2015, and it was organized by two faculty members at the University of Liverpool, who developed both the main topic to be addressed by the writers and six questions that also needed to be incorporated into their work. The experts'

writing resulted in a 13,000-word piece, published in a digital platform. Even though Taylor deemed this experience successful, like Green (2016), she also makes reference to some challenges. For example, it was hard for the authors to write in the same style and with a common authorial voice. Also, the contributors felt time pressure due to, she believed, the fact that "the timescale was certainly different from that experienced by most academics when writing an academic piece" (Taylor, 2016, p. 29). Taylor suggested that the challenging issues the participants encountered could be addressed by careful planning and monitoring of the writing activity as it unfolded. Despite the reported negative aspects, this book sprint resulted in the fruitful collaboration of experts in various parts of the world.

These three projects for print-based academic books have provided us with information about the necessary conditions to achieve successful results. In addition, they have clearly pointed to the value of collaboration through this type of writing activity. However, only one of them (Thayer, 2012) included student participation, and no data were provided about either the number of participants, or the way in which they participated, or how they benefitted from the experience. Also, the three reports failed to include any specific instruments to collect evidence. This paper seeks to contribute to the research on book sprints by not only providing more information about the implementation of this type of activity at an American university, but also filling the existing gaps by exploring its effects on graduate student professionalization, as well as examining the resulting products in more depth than in previous studies.

The Study

Research Questions

This work describes a book sprint experience in an American university with graduate student participation. In addition, it attempts to provide comprehensive answers to the following questions:

1. What professional and personal benefits do the graduate students who participated in the book sprint report after finalizing their writing activity?

2. How do the resulting products reflect the tenets of performance-based instruction and learning by design?

In the next sections, we provide information about the institutional background of which the book sprint was part and the process itself. Then we present information on the participants, instruments, and methods of data collection and analysis that were employed to answer the research questions.

Institutional and Project Background

The book sprint project took place for a week in early August 2018 at a public university in the southern region of the United States. The impetus behind it was the need to develop an OER textbook for the teaching of beginning Spanish that would provide the students at the institution not only with an affordable instructional option, but also with a solid, theoretically-based product, which could not be accomplished with a commercial, one-size-fits-all L2 textbook. The goal was to create an instructional tool that would be

connected to the personal and academic experiences of the students at the institution, would increase their understanding of Spanish oral and written texts, and would facilitate the use of their L2 for communication in different social contexts (what is defined as performance-based instruction; ACTFL, 2012). Also, in accordance with a literacy-based focus, the new resources would allow learners to understand the relationship between linguistic structures and meaning as presented in diverse types of texts. To achieve these goals, students would be working within the knowledge processes (experiencing, conceptualizing, analyzing, and applying) in the literacy-based framework known as learning by design. This would facilitate "the reciprocal connection between . . . academic learning (conceptual scheme, critical analysis, etc.) and [the] grounded, real-world practical experiences and applications, or simulations of these [that characterize performance-based instruction]" (Cope & Kalantzis, 2015, p. 16).

Even though at the time when the book sprint was planned there were a few, unrelated OER activities for beginning Spanish available digitally (e.g., Zapata, 2017), there was not an open, complete curricular option that reflected the tenets of performance- and literacy-based instruction. Therefore, there was a need for new material. In addition, the book sprint would offer graduate students at the institution the opportunity to grow both as L2 teachers and as materials developers by synthesizing and combining the pedagogical knowledge they had acquired in their recent methods class and the experience they had accumulated through their practice.

The person in charge of both the textbook initiative and the book sprint was a faculty member who was not only a specialist in L2 acquisition and pedagogy, but also the Spanish Basic Program director. She had also taught the graduate methods class, in which the pedagogical bases of the pending OER textbook had been included. Due to the lack of major funding for the OER book, she felt the best alternative for its development (or at least for its first draft) was a book sprint.

The book sprint alternative was viable for several reasons. First, this activity was financially feasible because she could secure small stipends for the participating graduate students, and she had free access to the institution's resources (e.g., a computer room where it could be carried out). Second, the book sprint would allow graduate students to work with their peers to complete the writing process collaboratively. Third, the book sprint would broaden their knowledge of different aspects of open educational resources (e.g., their origin, Creative Common licenses). Fourth, it would strengthen their existing conceptualizations of performance- and literacy-based instruction (as grounded in learning by design). And finally, it would contribute to their overall professional training.

The faculty member in charge first organized the logistics of the book sprint based on the experiences of others, so she followed the recommendations outlined by Banfield, Lombardo, & Wax (2016) and Kean (2012). For example, she secured a comfortable, quiet room with the resources that would allow the team to work together, as well as stipends for the graduate students. Also, as recommended in the literature, she developed a methodology (Taylor, 2016) that she and the graduate student collaborators would follow, setting specific rules for the whole activity (e.g., time frames, collaboration). The next step involved determining the time frame. The second week of August was deemed appropriate because students were back from their summer breaks, and orientations and classes had not started yet. The writers would meet for seven hours every day from Monday to Friday and would write in a common space.

Since the main goal of the book sprint was to finish the first volume of the textbook, which was to include an introductory module (already written) and four other ones, the faculty member in charge felt that six graduate student participants would be ideal. That is, she would be in charge of the first chapter, and the students, working in pairs, would write the subsequent three. Once this person had secured funding for stipends, she sent an invitation for participation to all graduate students in her department, stating that in order to participate in the project, they not only had to have had at least one year of teaching experience, but they also had to have taken the methods class. The main reason behind these requirements was the fact that the book was grounded in specific pedagogical frameworks, and in order to quickly create activities that would reflect the necessary theoretical tenets, collaborators needed to have solid, previous knowledge of those tenets. Also, since the textbook was going to answer the specific personal and academic needs of the students belonging to the institution, it was crucial for the writers to know what these learners were like (e.g., topics they were interested in, cultural and social background), which was why the participants had to have taught for at least one year at the institution.

In order to avoid the problems reported in previous studies (e.g., Green, 2016), the faculty member established clear rules for participation (e.g., the division of labor within and among pairs) and the following outcomes:

1. By the end of the fifth day, all pairs will have produced and edited their chapter, and will have organized the additional materials (e.g., photos and citation information) in the Google folders provided.

2. The chapters developed by each pair will reflect the tenets of performance-based instruction (as detailed in ACTFL, 2012) and learning by design (as detailed in Cope & Kalantzis, 2015).

Also, before the start of the activity, the faculty member in charge created Google folders for each team, in which she placed both the introductory module she had written previously (this document would act as the example to be followed) and resources (e.g., photos, videos, links to Websites) that could be used in the chapters. In addition, she organized the work pairs based on the students' personalities and relationships (e.g., she considered whether they got along, whether they were friends). Three days before the start of the book sprint, she sent all the collaborators a reminder, and she shared the project's Google folders with them.

The first two hours of the first day of the sprint were devoted to presenting the project and the book sprint itself. The faculty member in charge talked about the objectives of the OER initiative, the pedagogical frameworks in which it was grounded, and the characteristics of book sprints in general. She also provided graduate students with information about OER licenses, pointing out what could and could not be included in the materials. Finally, she discussed the rules that each pair needed to follow, as well as the outcomes she had set for that particular group's work. The writing process started immediately after this presentation. Even though specific procedures had been established for the pairs, the participants were also given the freedom to approach the task in the way they deemed most convenient. The rest of that first meeting and the days that followed proceeded in the same way. The group worked together for three hours in the morning, stopped for one hour to have lunch and relax, and continued their work for another three hours in the afternoon. By the end of the week, all the products were uploaded to the Google folder for the activity, and the graduate student collaborators completed an online, open survey that probed their opinions of the

experience. The resulting chapters were edited by the faculty member in charge throughout the fall 2018 semester, and they are now available as the published first volume of the textbook.

Participants

The participants in this study were six graduate students (one male, five females), who were part of a doctoral program with concentrations in Hispanic literature, cultural studies, and linguistics at an American, public university. Their average age was 34 years old. Five participants were native Spanish speakers, and one of them was a native English speaker. All of them had at least one year of experience teaching Spanish at that institution, and had received training in the pedagogical frameworks in which the OER textbook was grounded—performance-based instruction and learning by design. All of them had volunteered for the project, though they received a small stipend for their participation.

The participants were organized in three working pairs to facilitate and enhance the creative process, and each pair was given a number (1, 2, or 3). Each pair consisted of a graduate student who was in the linguistics concentration of the doctoral program, and one that was in literature. The members of pair #1 were in their mid-twenties and had at least three years of teaching experience. The students in pair #2 were older (in their thirties and early forties) and they had at least five years of teaching experience. Pair #3 was similar in age to pair #2, but the participants had differing levels of experience—while one of them had at least five years of experience, the other had only one year. The members of the three pairs had worked with the faculty member in charge as graduate teaching assistants in the Spanish program she directed. They had also been her students in the methods class.

Instruments

Data for this study were collected in two ways. The first source of data was a survey with 10 open-ended questions (Appendix) that probed the participants' perceptions of the book sprint experience and was distributed via Google Forms once all work had been finalized. The second source of data were the products developed by the participants. Samples of the content they produced were analyzed by the researcher in order to investigate whether they reflected the tenets of the pedagogical frameworks in which the textbook was expected to be grounded.

Procedures

The opinions that the participants expressed in the survey were analyzed qualitatively. In the first step, categorical aggregation, the researcher read the participants' responses to the 10 questions in the questionnaire to identify themes. Then, she coded each emerging theme and developed a list of categories and exemplifying statements for each of them. In the next step, she cross-examined themes, categories, and statements, applying Glaser's (1965) constant comparative method of data analysis to ensure that there were no discrepancies in the initial analysis.

In order to discover if the products developed by the graduate student collaborators reflected the tenets of both performance-based instruction and learning by design, the researcher assessed two sections representative of two of the three main module components, namely communication (presentation of vocabulary) and language (presentation of a grammar structure).[2] She focused on the presence or absence of the frameworks' main principles and expected instructional elements. These were organized into a total

of nine categories (Table 1). If these categories were present in all activities in the section analyzed, the category received two points; if they were partially present, the category received one point; and if they were absent, no points were allotted. The total possible points for each section was 18, and for the two, 36. In addition, the quality of the resources used was evaluated. If the two parts that were analyzed incorporated high-quality photos and/or videos and the preferred licenses in the project (i.e., CC, CC-BY, and CC-BY SA), they were given two points. This brought the total points that products could get to 38. The numerical results of this assessment were analyzed using descriptive statistics.

Table 1

Categories Used for Analysis of Products

Performance-based instruction	Learning by design
1. Activities promote authentic, real world use of language, even though the language is learned and practiced in a learning environment.	4. Reflects the principle of *belonging*; content (topics and activities) has a direct relation with students' lifeworld and informal learning.
2. Variety of tasks related to the curriculum.	5. Resources used are authentic and multimodal.
3. Language is presented in meaningful communicative contexts.[a]	Knowledge processes reflected in content:
	6. experiencing the known and the new;
	7. conceptualizing by naming and with theory;
	8. analyzing functionally and critically; and
	9. applying appropriately and creatively.[b]

Note. [a]Adapted from *ACTFL Performance Descriptors for Language Learners* (p. 4), by American Council on the Teaching of Foreign Languages, 2012, Alexandria, VA: ACTFL. Copyright 2012 by ACTFL.
[b]Adapted from "The Things You Do to Know: An Introduction to the Pedagogy of Multiliteracies," by B. Cope and M. Kalantzis, in B. Cope and M. Kalantzis (Eds.), *A Pedagogy of Multiliteracies: Learning by Design* (p. 4), 2015, London, UK: Palgrave Macmillan. Copyright 2015 by Bill Cope and Mary Kalantzis.

Results

Research Question 1: Professional and Personal Benefits Reported by the Graduate Students

All graduate students participating in the book sprint seemed to have had positive opinions of the experience. The main professional benefits reported were connected to the following opportunities: (a) learning more about open education, OER materials, and licenses; (b) reviewing and practically applying the concepts they had learned in their methods class; and (c) becoming co-authors of a beginning Spanish textbook, which would enhance their curriculum vitae (CV). The writers also felt that the need to develop activities that students would use in a classroom had given them a new outlook on their teaching practice. Additionally, three of the six participants believed that working with a partner with a different perspective on instruction had complemented and enhanced their knowledge of possible pedagogical moves that could be integrated into their practice.

When discussing the personal benefits of the experience, all participants made reference to the collaborative nature of the work, which not only had allowed them to complete a task that they would not have been able to achieve on their own, but had also brought them closer to both their pair partner and the rest of the collaborative team. Furthermore, two of the collaborators felt that being part of the book sprint had made them feel more confident about their abilities as both teachers and materials developers. These two students were among the less experienced of the overall group. In addition, two other members of the group believed that collaboration had resulted in their becoming better communicators and collaborators. The themes present in the participants' opinions and representative quotes are summarized in Table 2.

Table 2

Student-Reported Benefits of Book Sprints

Themes	Representative statements
Being able to learn more about open education, OER, and materials development	"The OER/copyright information that I learned will help me with my professional future. Also, the experience of writing a textbook (explaining, grammar concepts, creating engaging activities, finding authentic OER resources) is very helpful."
Reviewing and applying theoretical concepts	"There are too good things [sic] to say about this experience, for example, it give [sic] us (graduate students) the opportunity to review and apply what we have been learning about pedagogy (hands on)."
Becoming a co-author	"It gave us the opportunity to be co-authors. This will help our CV, to get a job..."
Contributed to enhancement of own teaching practice	"It is an experience that allows you to think about your personal teaching style: how you explain concepts, how you relate to your students, how you scaffold activities, how you maintain students' interest. More importantly, book sprints allow you to learn from others through the exchange of ideas."
Collaboration	"Work team collaboration for me was the most positive experience. I was able to work with freedom, but, at the same time, my partner was an important factor to clear my ideas and keep [my work] on track."
Contributed to the enhancement of confidence as teacher/materials development	"I think that this experience made me feel worth and confident about doing what I love, teaching, and the process of creating material in a friendly environment."
Contributed to the development of communication and collaboration skills	"On a personal level, I learned how to better communicate and collaborate with others in a professional setting."

Research Question 2: Products That Reflected the Tenets of Performance-Based Instruction and Learning by Design

By the end of the book sprint week, none of the collaborative pairs had been able to finish the modules they had been assigned. Only one pair had approached completion, but several elements were still missing from their work. When the activities in the two sections were analyzed using the categories that referred to the principles and instructional elements of both performance-based instruction and learning by design, it was clear that none of the graduate student pairs had fully incorporated them into their work. However, there were similarities and differences among the resulting products. For example, the learning by design principle of belonging and the experiencing knowledge process were reflected in all the pairs' work, since the resources that they had developed were closely connected to students' lifeworld and interests. However, the presence of the other elements in the participants' work varied. The results of the assessment are summarized in Table 3.

Table 3

Results of Product Assessment

Categories	Total for pair #1	Total for pair #2	Total for pair #3	*M*	*SD*
Points for vocabulary section (communication)	8/18	17/18	4/18	9.67	6.66
Points for grammar section (language)	8/18	13/18	12/18	11	2.65
Points for quality of resources	2/2	2/2	1/2		

The vocabulary section exhibited the highest number of differences among the three pairs, as is reflected in the standard deviation number in Table 3. Only the product developed by pair #2 (the most experienced teachers) incorporated almost all of the required elements, receiving 17 points out of the possible 18. Not only did these graduate students present the focal words in a textual context, but they also created activities that promoted authentic use of the language, and they incorporated multimodal resources to do so, which, overall, reflected the goals and tenets of performance- and literacy-based instruction (as represented by learning by design). In contrast, pair #1 failed to include most of the required elements. For example, not only was there no textual context to introduce the vocabulary, but the majority of activities also consisted of discrete point exercises (e.g., drills, student interactions that would not promote active use of Spanish for communication), which were more connected to traditional L2 methodologies than to performance-based instruction and learning by design's knowledge processes. Pair #3 also made limited use of authentic, multimodal resources, along with using visual elements that were of poor quality (e.g., not age-appropriate for university students, low-definition photographs). Finally, this pair did not follow the instructions given regarding Creative Commons licenses. The work produced by pair #1 included more elements than did that

of pair #3, but it had similar problems such as the lack of vocabulary presentation in context and the absence (or partial presence) of activities incorporating learning by design's knowledge processes.

The assessment of the grammar section rendered similar results among the three pairs (Table 3). Pair #2 had the highest number of points, but their work was not as effective as in the vocabulary section. For example, the activities they developed only partially reflected the tenets of either performance-based instruction or learning by design, and there was no clear connection between grammar rules and use. The work of pair #3 included more of the required elements than in their vocabulary tasks (see above), but still only partially. Pair #1 did not present grammar structures in communicative (i.e., textual) contexts, and they failed to incorporate activities in two of the four learning by design knowledge processes. The resources used by the three pairs were of better quality than those in the vocabulary sections, but they were neither multimodal nor authentic, except in the case of pair #3, who resorted to an authentic video to provide a social context to present the featured grammatical structures.

Discussion

The opinions expressed by the graduate students in the survey suggest that the book sprint resulted in both professional and personal benefits for them. For example, through their participation in this experience, they were able to learn more not only about open education, Creative Commons licenses, and OER, but also about the process of materials development. In addition, the book sprint provided them with the opportunity to refresh and broaden their knowledge of the pedagogical frameworks they had learned in their methods class and had been incorporating in their practice, and was a way to enhance the professional development section of their CV. An indirect, professional benefit reported was the reflection on their own teaching that their work on the modules had brought about.

At the personal level, the main benefit of the book sprint, as in the case reported by Taylor (2016), seemed to have been the collaborative, collegial work environment. All graduate students reported the opportunity to work with their peers as the most important personal aspect of the experience, not only because it allowed them to get closer to their partners and the group as a whole, but also because it resulted in their own personal growth as both communicators and collaborators. The success of the collaborative context of the book sprint was clearly observed in the harmonious, yet heterogeneous, work environment that took place during that week.[3] That is, unlike the book sprint experience described by Green (2016), in this one, there appeared to have been no friction among the collaborators.

The opinions expressed in the survey and the observation of the collaborative work environment suggest that the graduate students in the book sprint not only took the task at hand seriously, but also worked hard, following all the rules provided for the division of labor. In addition, as both Green (2016) and Taylor (2016) recommended, they were provided with an outline of the topics to be included in their modules and an ample number of resources to incorporate into their work. However, in spite of these factors, none of the pairs was able to write a complete draft. The collaborators' failure to achieve the expectations and outcomes set up at the beginning of the book sprint could be due to a variety of reasons.

For example, in the survey, all participants stated their frustration with the time period allotted to the project, since they felt that "a little bit more time would have resulted in better activities that would have reflected the methodology better" (participant #5). Also, three of the collaborators complained that the open materials that had been given to them to include in their modules had been insufficient. These two complaints echo the problems reported by both Green (2016) and Taylor (2016).

These results suggest that, even though the faculty member in charge had tried her best to follow recommendations from previous studies and book sprint experts such as Banfield et al. (2016), there were still problems with this experience. Perhaps the six hours per day format was not enough for the development of activities for graduate students who, despite having teaching experience and being excellent teachers (as evinced by their high student evaluations and the program director's assessment), had never worked as independent materials developers before. Also, even though the collaborators in each pair had very good relationships with one another, they belonged to different doctoral concentrations and were not used to working collaboratively. This, in turn, might have resulted in differences in both the way they viewed and approached the task. Finally, these problems might have been exacerbated by the stress of having to find more open resources.

All these factors may also have contributed to the difficulties that the graduate students seemed to have had when they tried to materialize the tenets of both performance-based instruction and learning by design in their products. The results of the assessment of the sample vocabulary and grammar sections in the participants' modules suggest that they were not able to fully incorporate elements that reflected the required pedagogical tenets. Only the members of pair #2 were almost able to fulfil the expectations set up at the beginning of the book sprint, which was probably connected to their joint teaching experience and the presence of a doctoral student whose main focus was L2 pedagogy. The materials developed by the other two pairs resembled more the kinds of activities found in the commercial textbook that they had been using in their classes. This appears to signal a disconnection between the participants' knowledge of performance- and literacy-based instruction and their ability to transfer it to the creation of materials. That is, it seems that the experience they had had teaching with commercial textbooks leaked into their work and influenced it more than what they had learned explicitly in their methods class about performance-based instruction and learning by design. This type of disconnect has been reported in the literature on materials development by pre- and in-service instructors. For example, existing studies (e.g., Bouckaert 2018; Kuzborska, 2011) have shown that, when creating instructional materials, teachers often rely more on their prior teaching experiences, intuitions, and personal views of L2 learners and the learning process, rather than on their fields' theories, conceptualizations, and frameworks.

These results suggest that, even though the book sprint collaborators had teaching experience and knowledge of both performance- and literacy-based instruction (as framed in learning by design), they were perhaps still not ready to undertake materials development for a project such as a complex textbook. It is possible that a more effective course of action would have been to assign separate sections instead of whole modules to each pair, and tasks within specific knowledge processes instead of within all of them. These more realistic expectations and objectives could have resulted not only in a more comprehensive learning experience for the graduate students, but also in products that approached the expected outcomes more closely.

Limitations and Implications

Even though the results of this study suggest that graduate students' participation in book sprints might result in personal and professional benefits, there are limitations to this work. First, the sources of data on the participants' perceptions of the experience are limited. The survey used in this work could have been complemented by interviews before and after the book sprint, which could have shed more light on expectations as well as individual benefits and challenges. As a result, a more comprehensive picture of the experience could have been achieved. Also, debriefings or think-aloud protocols with members of each pair could have offered more information on their creative process and choices, and this could have rendered a more in-depth understanding of the reasons why they had difficulties completing their task and materializing the expected pedagogical tenets.

The findings also suggest that book sprints need to be structured in a different way if graduate students are expected to be part of the process. First of all, it might be important to review the pedagogical and theoretical tenets expected to ground the materials before the beginning of the writing process. Perhaps, one or two theoretical sessions could be organized and connections between theory and practice could be made explicit through the analysis of existing samples. Additionally, the results appear to show that the participants might have felt overwhelmed by the responsibility of developing whole chapters in such a short period of time. Thus, it might be more feasible to limit work to instructional sections, instead of whole chapters. When considering the positive aspects of this experience, it seems that the clear rules and expectations set at the beginning of the activity for group work contributed to its collegial and productive environment. Clearly, as Taylor (2016) suggested, rules and expectations for the division of labor and collaboration are a must.

Conclusion

As open education continues to grow in L2 teaching, book sprints may offer valuable opportunities for the much-needed development of personalized, theoretically sound materials, as well as for collaboration and professional growth. Nevertheless, as shown in this work, it is important to consider collaborators' academic and personal needs. In the same way as L2 one-size-fit-all textbooks cannot answer specific student needs, a one-size-fits-all book sprint will not be effective for the development of materials. Careful planning, guidance, and personalization are essential for the success of this type of activity.

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Appendix

Survey Questions

1. What were your expectations before the book sprint?

2. What was your actual experience like? Was it similar or different to your expectations? Please explain.

3. How useful was your previous experience as a teacher when developing activities? Please explain.

4. How useful was your previous methodology training when developing activities? Please explain.

5. What were the most positive aspects of this experience?

6. What were the challenges you encountered when participating in the book sprint? How did you overcome them?

7. What resources did you use to complete the tasks assigned to you?

8. What is your perception of your final product? To what extent did your original idea change during the process?

9. What did you learn from this experience at the personal and professional levels?

10. What makes books sprints a worthwhile activity?

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[1] Rossomondo (2012) describes an OER materials-development project that involved the participation of graduate students. However, it did not employ the book-sprint methodology.

[2] Since most of the pairs did not finish the culture sections, these sections were not included in the assessment.

[3] The work environment during the book sprint week was observed by the researcher.

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An Exploration Into the Importance of a Sense of Belonging for Online Learners

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Abstract

Fostering a sense of belonging and a personal connection is seen as fundamental by many educational researchers, regardless of the learning environment. Online learning certainly provides flexible learning opportunities but comes with notable issues. For online learners, nurturing a sense of belonging may present a way of improving their experiences and attainment, as well as reducing attrition rates. Research specifically exploring sense of belonging and online learning is limited. This article addresses that gap and reports on a small-scale exploratory study using qualitative data-collection and analysis methods to investigate the importance, or not, of sense of belonging for postgraduates' online education by exploring the origins and nature of their lived experience of online learning and their sense of belonging therein. Our initial findings emphasise its importance for them as online learners and have identified three significant themes: interaction/engagement, the culture of the learning, and support. These early findings highlight the importance of these three themes in promoting a sense of belonging and in ensuring that there are opportunities for meaningful group and peer interactions; they will be of interest to all engaged in online education.

Keywords: sense of belonging, online learning, online group work, online discussions, interaction, tutoring

Introduction

Over the last two decades, there has been a continuing interest in online learning, with numbers of online courses expected to grow further as institutions reach out to more diverse markets (Allen & Seaman, 2013). Nowadays, it is common for students, especially those studying online, to be employed in a profession but seeking further development, possibly for accreditation. Consequently, the authors refer herein to *learners* rather than students, aside from when quoting from cited sources, questionnaire returns, or interview transcripts.

Online learning can provide a flexible learning space, allowing learners access to educational opportunities while continuing to fulfil their various professional and familial responsibilities (O'Shea, Stone, & Delahunty, 2015). By studying in this nurturing environment with like-minded peers, learners can broaden and deepen the skills and abilities required in their chosen career pathways. They gain instant access to up-to-date resources and to experts in their subject specialism (Laurillard, 2012). However, for many learners, the online space may be alien, even threatening (Thomas, 2012), resulting in high attrition rates and lower than expected learner attainment compared with campus-based learners (Carr, 2000). This is particularly so when learners must post contributions in online discussions and engage in online group work (Whittaker, 2015). Online learners often report feelings of being "out of their depth," as well as being under-confident in their academic skills and abilities (Baxter, 2012).

In face-to-face campus-based programmes, learners with a strong sense of belonging report feelings of being comfortable in their learning environs and engaged with their studies. Additionally, they consider that their social and cultural values are aligned with those of their university. Such learners are usually more motivated and have a firm belief that they can achieve and will achieve (Matheson & Sutcliffe, 2018; Meehan & Howells, 2018). Jarvis (2009) and Illeris (2014) both identify that how the learner mobilises the mental energy for learning through motivation, emotion, and volition is critical in driving the character and durability of the learning. Thus, the absence of a sense of belonging for these learners may lead to feelings of anxiety, frustration, and boredom, impacting negatively on their academic life and performance. This is potentially the case in settings where their values and needs seem unappreciated.

Many issues that a sense of belonging seeks to address are also applicable to online learners. With the requirement for learners to cope effectively with a wealth of materials that focus more on the content and on acquisition of knowledge rather than offering incentives, some can find online learning to be a lonely experience from the outset (Illeris, 2014). However, little is known about a sense of belonging on the part of online learners who are engaging in collaborative, community-based learning, and even less is known about how institutions and tutors can and do promote it.

This article reports on exploratory work investigating the origins, nature, and importance—or not—of a sense of belonging in the lived experience of online learning for certain postgraduate online learners. This work was undertaken to extend the limited research into these aspects of collaborative online learning. The chosen methodology enabled action-researching university tutors to obtain illuminative insights into aspects of the learning experiences they were creating and to identify findings that have already been of interest to managers and tutors in the sector.

19

In what follows, we use *tutor* to describe a staff member appointed to support the creative planning of a course before learning activities commence and to facilitate learning during the course (Peacock & Cowan, 2017). We believe it highly desirable in any online programme for learners to develop a sense of belonging about their experience; and we agree with Thomas, Herbert, and Teras (2014) that strategies that foster online learners' sense of belonging could enhance their educational experiences and improve retention. So we are seeking here to broaden and deepen understandings about sense of belonging in online learning while providing guidance for tutors, professional staff, and institutions about promoting it in online learning. This article and the action research it describes were founded on the theory and findings reported by Thomas et al. (2012). The outcomes will be of interest to tutors working in the online learning space, professional staff such as librarians, support staff in immediate contact with online learners, and senior management and policy makers as they seek to address online learners' needs as identified above.

The Need for Belonging

Defining the Concept

The need and desire to feel in some way connected with and related to others, and to be positively regarded by them, is a universal human characteristic, influencing behaviours and perceptions (Baumeister & Leary, 1995). Individual needs for a sense of belonging vary but are particularly acute in times of flux, stress, and transition (Strayhorn, 2012), as when studying in an unfamiliar environment like online education. The term itself—*sense of belonging*—seems deceptively clear and explicit; but while many descriptions of it exist, there is a general lack of clarity and consistency among them. Sense of belonging seems to have both psychological and social dimensions for learners, with two defining attributes (Hagerty, Williams, Coyne, & Early, 1996). The first involves feelings of being accepted, needed, respected, mattering, and valued in a class. The second pertains to feelings of fitting in—being connected with a group, class, department, subject, institution, or all of these (Hausmann, Ye, Schofield, & Woods, 2007; Vaccaro, Daly-Cano, & Newman, 2015).

We subscribe to the most frequently cited and accessible educational definition of sense of belonging, due to its emphasis on feelings. It was proposed by Goodenow in 1993, where she describes sense of belonging as comprising feelings of

> being accepted, valued, included, and encouraged by others (teachers and peers) in the academic classroom and of feeling oneself to be an important part of the life and activity of the class. More than simple perceived liking or warmth, it also involves support and respect for personal autonomy and for the student as an individual. (Goodenow, 1993, p. 25)

Belonging in Campus-Based Learning

It has been widely confirmed that campus-based learners value having a sense of belonging, with feelings of being cared and mattering to one or more people in a group who in turn matter to them, although perhaps for different reasons (Strayhorn, 2012). Generally, the concept is linked to Hurtado and Carter's work in 1997, which offers a holistic approach to learner withdrawal, suggesting that learner persistence is a joint

responsibility of learner and institution. Since then, educational researchers have linked a sense of belonging with improved learner attainment, increased learner satisfaction, and persistence (Hausmann et al., 2007; Locks, Hurtado, Bowman, & Oseguera, 2008; Vaccaro et al., 2015). Hoffman, Richmond, Morrow, and Salomone (2002-2003) report that "the greater a student's sense of belonging to the university, the greater is his or her commitment to that institution … and the more likely it is that he or she will remain" (p. 228). Significant work in the United States reports the particular importance of a sense of belonging for learners who perceive themselves to be marginal to campus life and non-traditional according to class, race, ethnicity, sexual identity, income, or disability (Hausmann et al., 2007; Johnson et al., 2007; Locks et al., 2008; Vaccaro & Newman, 2017). Strayhorn (2012) deduces that if a sense of belonging is not developed, learners' ability to attend to the task at hand (studying and fulfilling the goals of higher education) will be impeded. The lead author of an extensive research project involving 22 higher educational institutions in the United Kingdom concludes that "at the heart of successful retention and success is a strong sense of belonging in [higher education] for all students" (Thomas, 2012, p. 6). Thus, the concept is recognised and valued for campus-based learning.

Belonging in Online Learning

> The need for belonging is one of the most important needs for all students to function well in *all types of learning environments* [emphasis added]. (Jackson et al., 2010, para. 5)

Some research has been published regarding sense of belonging in online learning. Garrison (2011) articulates the importance of belonging in online communities of inquiry, stating that we should "establish a feeling of belonging to the critical community that must develop over time" (p. 32). The authors (Peacock & Cowan, 2019) have used an adapted version of the community inquiry framework to frame specific suggestions for action to nurture online learners' sense of belonging. Thomas et al. (2014) offer similar insights into the tutor and learner perspectives of online learning and an associated sense of belonging, emphasising its importance and that engagement and collaboration with peers fosters "a sense of camaraderie that diffuse[s] some of the isolation" (p.76) associated with online learning. Such interactions reduce anxiety, help learners to develop their ideas, and build connections. Conversely, lack of community building negatively inhibits the development of a sense of belonging and may impact upon retention. Thomas et al. (2014) acknowledge that fostering a sense of belonging and trying to encourage learners to become part of the community and its interactions is a challenging task for tutors. This study engages with that need.

Research

We now introduce our work into online sense of belonging and outline our findings to date. We are a small action-research team comprising three tutors engaged in promoting and facilitating online learning and an experienced visiting researcher.

Our primary research question has been the following:

- What are our online learners' accounts of their sense of belonging within their current postgraduate studies?

Supplementary questions include:

- How do these online learners define *sense of belonging*? What does the term mean to them?

- Is having this sense of belonging relevant for these online learners or not?

- According to these learners, what does, or does not, promote for them a sense of belonging at the course and institution levels?

- How important are peers in promoting and sustaining a sense of belonging?

- What role does the tutor play in promoting a sense of belonging for these learners?

We desire to understand in what ways, if any, online learners find it relevant to have a sense of belonging—and why. Also, as tutors, we want to know what helps to promote a learner's sense of belonging and what role tutors and peers might play in developing and maintaining it.

Data Collection

Our small-scale exploratory study was undertaken at a small niche university in Scotland, whose 5,000 enrolled learners take predominantly professional programmes at undergraduate and postgraduate levels in Health Sciences, Arts, Social Sciences, and Management. The institution has a developing strategy promoting online provision that uses a collaborative approach for all modules. Learners from three online modules were asked to assist. These modules have been run online for several years to enable worldwide recruitment and engagement of employed learners; they have consistently received significantly positive learner feedback.

We approached learners ($N = 50$) studying two compulsory modules part-time in the fully online MSc in Professional and Higher Education programme. One is a first programme experience, while the second follows in the second or third year of study. Both embody a strong collaborative, community-based approach, with learners being introduced to resource materials through a variety of online journals, videos, and narrated PowerPoint presentations. Online discussions are core activities. Learners are introduced at the outset to their roles and responsibilities within the online community. They are expected to participate weekly in structured individual and group activities. In regular synchronous sessions, learners have the opportunity to meet with others in breakout rooms and to develop questions to be posed to the community. Synchronous drop-in sessions provide space for learners to discuss their studies with either the module tutors or the programme leaders.

Another group of learners ($N = 10$) was also approached. They were enrolled in the part-time online MSc in Dispute Resolution programme and were studying a compulsory module, Fundamentals of Dispute

Resolution. Most were busy professionals employed in complaint handling. This module was the first to be followed and included programme induction activities. It followed a structured collaborative approach to learning akin to that described above and clustered around five core learning topics. Learners were expected to participate in weekly discussion board activities, which contributed to the assessment in four of the five topics. Learners were paired for two activities and were expected to use Skype or a phone to discuss the task at hand. Two synchronous sessions were held, with varying success. One-to-one sessions with the tutor via phone or Skype were offered at two points within the module.

With ethical approval from Queen Margaret University, Edinburgh, volunteers from the three selected modules were recruited through a strategy of announcements and discussion postings in the university's virtual learning environment. They were initially invited to complete an anonymous online survey comprising eight open-ended questions. The survey tool had been piloted with two learners who had previously completed modules in the MSc in Professional and Higher Education programme. Their feedback was valuable in fine-tuning the tool, which asked learners to concentrate upon their current module, to explain what *sense of belonging* meant to them, and to provide concrete examples of incidents that had had a positive or negative effect on their sense of belonging. Other questions explored the impact of peers, as well as of the tutor and the family, on sense of belonging.

The data provided by 12 survey respondents (18.5% of the cohort) were collated by the visiting researcher. At the end of the survey, respondents were invited to undertake a 45-minute telephone interview. Two learners volunteered. A further invitation was sent to all other respondents, but no responses were received. This small number of responses is something that should be considered in any follow-up study.

Semi-structured telephone interviews were conducted by the visiting researcher, concentrating upon the interviewees' experiences in their current module. Files of the interview transcriptions were shared with interviewees for editing to ensure their agreement with the record. No changes ensued or were requested.

In our research, we strove for trustworthiness and authenticity. Contacts with volunteer participants were undertaken by a senior academic (the visiting researcher) with no connection to the learning experiences. The analysis of the returned questionnaire and interviews was also undertaken independently. The arrangements for confidentiality in the survey and subsequent interviews precluded identification of the modules that individual volunteers were studying.

Although our participant numbers were small, much of the emerging open-ended data implies frankness and honesty, was informative to the teachers, and is expected to be of wider interest.

Data Analysis

Thematic analysis (Creswell, 2014) was used to analyse both the qualitative responses received from the survey and the telephone semi-structured interviews (which added considerable depth). First, the responses to each question in the survey were grouped under meaningful subheadings. The analysis of returned questionnaires followed this approach:

- Assemble quotations under the questionnaire questions as main headings.

- Subdivide quotations under headings that describe a word or concept in the quotes.

- Rearrange quotations under subheadings to relate to something of a story line.

- Use all the submitted text except the odd conjunction; otherwise omit nothing.

- Add nothing other than the descriptions of what subheadings entail; refrain from editing.

- Omit all identification numbers to ensure confidentiality.

For example, when asked if a sense of belonging was important to them as online learners, all respondents replied "Yes" and gave short rationales, which were then themed into the following subheadings: Benefit, Motivation, Connections, Supportive Interactions, and Need (which was about isolation and socialisation).

The telephone interviews were structured around questions based upon significant questionnaire responses. Responses were transcribed by the visiting researcher, who eliminated any repetitions, pauses, and muttering. Sections that might cause identification of the interviewee were redacted. Otherwise, no editing or selection was done.

The materials were reordered in relation to the emerging survey themes. The reordered transcripts were reviewed by the research team, who sought deeper meaning from the points raised in questionnaire responses. The semi-structured interview transcripts were then thematically analysed using a concept mapping approach (Kane & Trochim, 2007) to identify the main concepts and sub-concepts. The subheadings from the survey were also concept mapped, and each set of initial concepts from the content elicited from the participant group was reviewed. A member of the programme team independent of the research undertook an independent mapping exercise to ensure the veracity of the three main initial concepts engagement, culture of learning, and support.

Findings

This research aimed to establish the origins, nature, and importance (or not) of a sense of belonging in the lived experience of online learning for certain postgraduate learners; what a sense of belonging meant to them; and which facets of the online learning experience were important to them in relation to sense of belonging.

The three main concepts emerging from the analysis of the questionnaires and semi-structured interviews are explored in the following sections, which include quotations from the survey responses and the interviews to ensure that learners' voices are heard. Crucially, all 12 respondents identified sense of belonging as important to them as online learners, as it could prevent isolation. One opined that it is essential for all learners, but more so for online learners, as they are remote and lack the regular meeting and socialisation of face-to-face delivery of learning. Respondents variously believed that a sense of belonging was a "feeling" of being part of a community, of belonging to a group of learners with a common goal, and of engaging with learning materials and other learners and tutors.

Engagement

The concept of *engagement* featured in all responses within the survey and related to tutors and learners. Tutors were identified by some respondents as being pivotal to the development of learners' sense of belonging, with comments such as "tutors are the glue that bring it together." Specifically, respondents identified that the tutor's attitude and approach set the tone of the learning and the development of a sense of belonging by safeguarding the way learners behave through their friendliness, helpfulness, and enthusiasm, and by maintaining contact via discussions, announcements, and posts—all of which assisted in reinforcing a sense of belonging. Learners noted that tutors "had an impact on [their] sense of belonging by their openness and honesty" and that "by having a continual presence during online discussions and through the short videos... the tutors [are brought] right into my dining room!" One respondent specifically identified "the glue" as "the quality of the learning materials put together, the guided reading and many references, the encouragement and feedback. These are all intrinsic to feeling valued and supported and key in sustaining that overall sense of belonging."

Learner involvement and interaction was also highlighted as critical in maintaining a sense of belonging during the modules. This related mostly to the nature and depth of posts in the discussions, along with engagement with group work and activities. The introductory element of getting to know each other, as well as and prior to the developing interactions, was indicated as crucial: "The encouragement to share information about ourselves and our histories made me feel a sense of belonging and connectedness with other students"; "Through the discussion boards I get to know my peers and therefore feel a sense of belonging."

This idea was followed up in the interviews, wherein one respondent noted that "although you have never met them physically face to face...it's amazing how you do get glimpses of people's personality from the sort of online interactions going on."

One interviewee suggested that some of the sense of belonging might be related to personal situation or context. This learner had been in a new job, was very isolated, and felt something had been "lost"; "That's when I really had the sense of belonging to a community online because I was physically so far away from everyone."

The use of group work and other paired activities was seen as a strong method of developing a sense of belonging, as learners were actively expected to collaborate with their co-learners to achieve end goals by a certain allocated time: "In group tasks we have been able to help each other out by taking on a bit extra here and there at various times"; "It's good to have someone to help and make you feel like you are together in a class."

The online discussions were identified by learners as another strength in developing a sense of belonging, with the importance of engaging in discussion, by offering feedback and contrasting views, highlighted as a positive way of supporting and encouraging each other: "I think the discussion boards were helpful in this respect (peer impact on sense of belonging) as it meant getting to know other students and acted as an on-going conversation albeit not in real time."

A complementary perspective was presented by one respondent who identified that missing online discussions had a negative impact on their sense of belonging: "If I feel disconnected it is invariably because my own work commitments have taken over and I have missed out on online discussion or distanced myself from the learning materials."

Interview responses concurred with these views, with more in-depth detail obtained from interviewees who noted that interactions associated with group activities were mainly initiated by the learners—because they had a shared purpose of wishing to do well and supporting each other in achieving that. Most discussion interactions were triggered by a tutor-designed thread, which was usually based on the activities in the module; however, subsequent learner engagement in these was individually driven.

Culture of Learning

The concept of a *culture of learning* emerged from commentary around incidents that impacted positively or negatively on learners' sense of belonging. The culture of the modules within the learning group affected learners' sense of belonging through the module structure, the tutors' behaviours, and the materials, along with consequent learner behaviours.

Issues related to positive development of a sense of belonging that emerged were the notion of sharing and also the aspect of online learning materials being accessible over time. For this particular set of learners, responses suggested that the sharing of challenges and anxieties as learners in discussion groups had a powerful impact on the development of sense of belonging, as illustrated in the following quotation:

> When I first started the module, I was very stressed and anxious with the platform and the material and everything else. Despite the tutor's reassurance, it was only when I saw similar concerns being posted on the discussion hub that I felt slightly at ease that I was not alone in trying to figure out how everything works. It was quite a relief!!!

In offering their advice to other learners regarding developing a sense of belonging, respondents identified the online discussions as valuable, promoting the flexibility of thinking seen as intrinsic to transformative learning. Similarly, they reported that they had encouraged peers to be unafraid to challenge, question, and/or disagree with peers, as doing so enhances the quality of discussions.

The use of the discussion board by tutors was also seen as promoting a sense of belonging, with learners suggesting that when tutors posted their own views of things relating to the subject matter, learners got to know tutors a little more "as humans." Learners also valued feedback and the feeling that the tutor was regularly "present" online. They advised "Be visible, be present and offer as much live feedback as possible...It makes the connection more obvious"; "Put up your own views on things relating to the subject matter, so they [learners] can get to know you a bit more."

A noteworthy strength of the online modules was the continued availability of materials and discussions as the modules progressed, with one learner commenting,

> Due to illness I was unable to complete unit 3 of work for the module in first year. I have only been able to reconnect with this after everyone else has completed and submitted their assessment.

26

> Despite this, being able to access the online discussions/thoughts still makes me feel part of this learning community.

Conversely, some aspects of online learning were found to detract from learners' sense of belonging. Specifically, some aspects of feedback, or lack thereof, seemed to resonate with the learners as having a negative impact. The notion of off-putting behaviour emerged; specific behaviours were seen as detrimental to a sense of belonging, such as not posting any comment on discussion threads; cancelling an arranged session to do some group work, and then not responding to efforts to rearrange the time; and misunderstandings of feedback during group work activities or in discussions.

> Providing feedback on a peers' work is therefore a minefield in terms of how it will be interpreted. This occurred once when a student wrote that another student's work "suffered from spelling errors." Cue a really long thread about hurt, support, female solidarity, etc, etc.

The whole aspect of online group work seems to present pitfalls in terms of maintaining a sense of belonging: "If people write back and/or offer feedback in a derogatory manner that lessens your sense of belonging."

However, the sense of achievement of a common overall goal by the group seemed to outweigh negative aspects of feedback:

> During the group tasks things got a bit fraught where there were some occasional misunderstandings of the online feedback—but these queries were swiftly cleared up as the overall goal of completing the task took over, and by the end the sense of achievement had obliterated any temporary individual "difference of opinion."

Support

The third concept derived from the research was the notion of *support*, which was interwoven throughout the questionnaire responses. Aspects of support that were highlighted were the sharing of issues, offering advice and views on aspects of the module, module design, and family support.

Support and constructive connections were specifically described as peer group interaction assisting in resolving learning difficulties. When learners felt stressed, help and feedback from peers and tutors through the discussion groups proved valuable, as it helped them to construct and develop their learning, offering the opportunity to "check things out." Informal connection with learners in the module seemed distinctly supportive, giving learners the feeling that they were not alone in their struggles: "I was happy to see that other people were having similar difficulties, which in turn significantly reduced my anxiety over the summative submission"; "In forum discussion, peers provide much needed guidance when there is some issue that needs to be further explored or revisited but also to bounce ideas off."

Results from the survey clearly showed that the module design and tutor/peer engagement were critical in developing a sense of belonging. The provision of engagement activities from the very start seems important in developing a connection between tutor and learners, as well as between learners. Use of multiple-media aspects, rather than a full-text base, also featured positively in maintaining a sense of belonging. Short

videos to be viewed, activities of differing sorts—not always group work and all forms of interaction beyond the virtual learning environment were seen as important. Group work and (conversely) nonengagement feature in the findings, with differing views of mandatory assessed work to promote engagement (the "stick approach") versus engagement in working for learning (the "carrot approach"). Similar views were expressed in respect of discussion board contributions: "Assessed discussion boards means everyone contributes and the conversation continues"; "Try to apply peer pressure in group projects, by having some sort of (recorded) tele-meetings (or logbooks or other) in order for all members of the group to equally participate and contribute."

Online collaborative sessions were valued highly for their "live" interaction and the immediacy of discussion and commentary. Tutor posts via e-mail or the virtual learning environment, with updates, interesting articles, and similar inputs, were also valued as supportive, as learners felt the tutor was always there for them.

Equally valued were the creation and use by learners of private locations or spaces within which they could engage in discussions and provide assistance in elucidating content and requirements of which formative activity they wished their tutors to be unaware.

This significance of interactive and engaging activities was summed up by an interviewee comparing their current online learning experience with a previous one:

> I had started an online TEFL [Teaching English as a Foreign Language] course but this simply consisted of reading text online and completing activities related to it. There were no audiovisual materials, no interaction with other people on the course...I found it hard to motivate myself to complete the course and gave up.

Discussion

Our pilot-study learners believed a strong sense of belonging was of importance for them, and particularly so as online learners, being not physically present at the institution. Such findings concur with those of Thomas et al. (2014). Sense of belonging also appeared to increase learners' likelihood to remain on their course, to complete their studies and provided them with an extra level of resilience, especially in times of stress or anxiety, or simply when there were issues such as limited access to expected resources or inaccurate, limited, or late feedback.

Our work also identified the complexity of the "SoB feeling"—that is, the sense of belonging, being multifaceted, fluctuating, and ephemeral in nature, and differing for learners according to the context of their studies, individual needs, and self-efficacy. As Carruthers Thomas (2019) suggests, sense of belonging is "negotiated in the momentary, the imaginary and the private" (p. 76). Nowhere was this more evident to the researchers than when one interviewee described two unfortunate experiences of lack of support and direction in the initial enrolment and academic mismanagement of assessment. Nevertheless, the tenor of that interview was of a distinctly positive course experience and a strong overall sense of belonging.

Throughout the study, it emerged that interactions with tutors and peers and professional services are critical in the development and maintenance of an online sense of belonging. Learners want to be known by their tutors "as individuals rather than reference numbers" and to have a relationship with them. The tutor guides learners through their studies, signposting potential routes forward and thus helping them to feel that they matter and that their presence would be missed. Furthermore, learners with a strong sense of belonging were forgiving of problems if they had formed the impression of a well set-up course that generated a strong, inherent sense of belonging. This reiterates O'Keeffe's (2013) findings, in working with campus-based learners, that "the creation of a caring, supportive and welcoming environment within the university is critical in creating a sense of belonging" (p. 605).

While the importance of tutors in planning and facilitating structured activities contributing inter alia to the development of a strong sense of belonging was expected within our study, the substantial influence of peers was surprising. Comments such as "If I do not feel I know the other learners, I do not feel I belong" were common. There was a belief that having relationships with others following the same programme and being part of a community helped with understanding within the programme and provided a better learning experience. One learner explained, "peers are the community that I am working within, and therefore all interaction with them provides the belonging." While this finding links with Koole and Parchoma's (2013) description of belonging in online learning communities as an iterative process of dialogue and exchange with other members, it is contrary to the finding of researchers in Australia that many online learners were expecting to be "lone wolves" working individually and in isolation from their peers (Brown, Hughes, Keppell, Hard, & Smith, 2015).

The ethos of our online spaces clearly impacted on learners' sense of belonging. For instance, synchronous meetings, as identified by participants in Thomas et al.'s (2014) study, were particularly popular, fostering connections with others. Online interactions were also seen as a means of levelling the playing field by minimising differences in culture, gender, and discipline, which might otherwise inhibit some of the group activities and learners' sense of belonging. As one learner noted, "It was possible to feel a sense of belonging and community in both the larger and smaller group, regardless of culture, professional status, or professional backgrounds."

The level, timeliness, and quality of support were considered important in promoting sense of belonging. Brief interactions and guidance from tutors and peers helped learners feel more comfortable in the online context and more confident in their abilities. Learners talked about tutors being "a continual presence during online discussions and through short videos," which helped make the alien environment less impersonal and more a place to go for help and guidance.

Recommendations for Tutors

Our final supplementary research question addressed the role of the tutor in promoting an online learner's sense of belonging. We learned that a supportive, facilitative tutor can effectively help online learners to develop and maintain a sense of belonging throughout their studies. Others have certainly noted the importance of a caring, enthusiastic tutor who can be trusted (Hoffman et al., 2002-2003; Strayhorn, 2012); this was particularly emphasised by our learners—at a distance and without the traditional face-to-face reassurance of tutors. Early introductions to the programme team through short videos and synchronous

sessions seem to be of great potential in helping build bridges and develop trusting, nurturing tutorial relationships.

The role of the community and peers in developing sense of belonging was a key feature for our participants. Early opportunities in online discussions for learners to introduce themselves and share experiences, their reasons for undertaking studies, and their long-term goals, assisted in group formation and the development of peer support networks. Collaborative activities in which learners work together, for example, in the development of an artefact, linked closely to assessment, can develop peer relationships and promote feelings of being accepted, mattering, and being valued.

Limitations of the Study

This article has reported the first stages of an ongoing action-research study into sense of belonging for online learners. We accept that our work involved a small sample who developed a sense of belonging in particular circumstances. However, such early findings have already helped us to gain and provide sufficient insights into sense of belonging in the online educational space to inform further research studies during a group project set up by the UK Quality Assurance Agency in Scotland to produce a tool kit for online tutors on promoting sense of belonging (Quality Assurance Agency, 2019).

Our combined data-collection tools of open-ended survey questions followed by interviews have worked well in terms of the richness of the data generated, leading to the identification of our three themes. The visiting researcher noted the extent and quality of the additional evidence that was gathered during the 45-minute interviews, providing considerable depth of insight into some matters already identified in more general terms in the questionnaire responses. In the future, we will refine our tools to ensure that more space is available for learners to articulate their understandings of sense of belonging.

Conclusions

Many publications have emphasised the importance of sense of belonging for online learners and especially those who are considered to be at risk of course non-completion (O'Keeffe, 2013). However, little seemed previously known in detail about a sense of belonging on the part of online learners who are engaging in collaborative, community-based learning; and even less was known about how institutions and tutors can promote it. Online learners in a new and potentially alienating environment, remote from the physical campus and separated physically from their peers, seem to be especially in need of a sense of belonging. In their testimonies, our learners valued tutors who created a sense of belonging in their study experience; we found that for these online learners, this tutor effort created more resilience and more connection to their studies, their peers, and their tutors, and it assisted them in remaining in the course and, indeed, flourishing.

Acknowledgements

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33

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An Empirical Study on Service Recovery Satisfaction in an Open and Distance Learning Higher Education Institution in Malaysia

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Abstract

This study investigated the relationships among justice dimensions (distributive, procedural, interpersonal, and informational), university image, service recovery satisfaction, and customer behavioural outcomes (trust, word of mouth, repurchase intention, and loyalty). This study adopted a cross-sectional survey approach and data were collected through a survey of 303 students of Open University Malaysia in Malaysia who experienced service failure and service recovery. The framework was tested via partial least square structural equation modelling, and the results revealed a significant relationship between justice dimensions and service recovery satisfaction in terms of procedural and interpersonal justice. Service recovery satisfaction had a significant effect on all customer behavioural outcomes investigated. University image did not have a moderating effect on the relationship between justice dimensions and service recovery satisfaction. Theoretical and practical implications of the study are discussed in this paper.

Keywords: justice dimensions, service recovery satisfaction, university image, behavioural outcomes, open and distance learning

Introduction

The business landscape in the education sector has become more complicated due to the offering of similar academic programmes by many higher education institutions. With a large number of universities and colleges operating in Malaysia, one would expect stiff competition ahead in the higher education industry in this country (Çakıroğlu, Kokoç, Gökoğlu, Öztürk, & Erdoğdu, 2019). However, higher education institutions often neglect to recover their students' satisfaction right after the occurrence of service failure, and scarce information is available about the determinants of service recovery satisfaction and its outcomes. An unsuccessful service recovery effort may cause the customer to leave, leading to potential adverse effects on the service provider's financial bottom line (Tamta & Rao, 2017). Research on service failure and recovery is still progressing, and more research is required in the area of service failure to facilitate the provision of satisfactory recovery and to transform students' dissatisfaction into satisfaction (Phuong, 2018). There is a lack of research on service recovery in Malaysia's private higher education institutions, specifically open and distance learning (ODL) institutions. This study was carried out in the context of such institutions in order to offer useful information about the justice dimensions, service recovery satisfaction, and its outcomes.
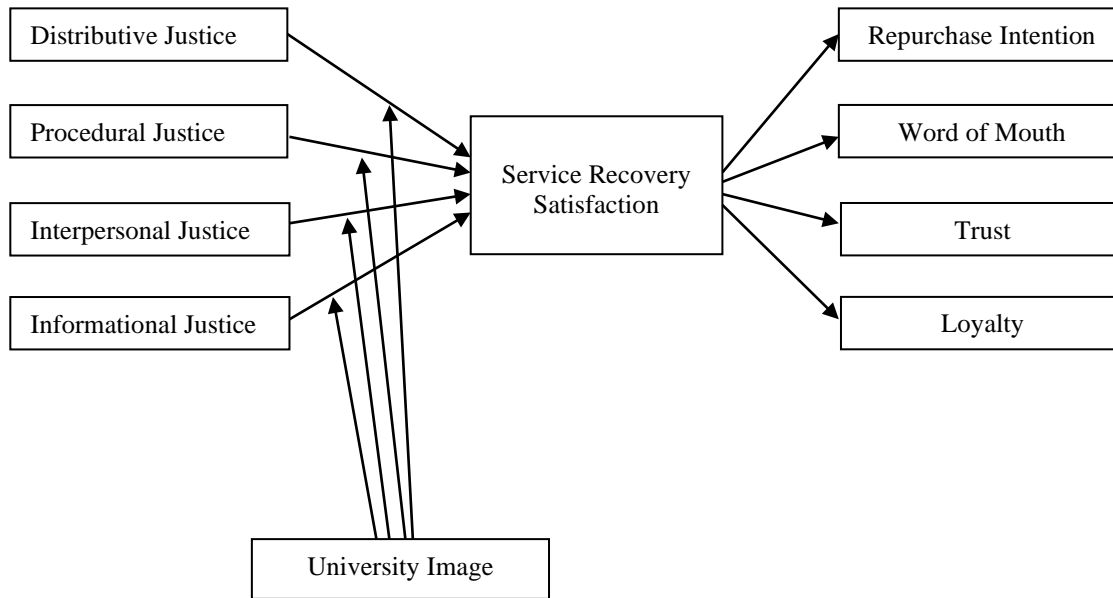
Significance of the Study

This study contributed to the further understanding of the role of service recovery particularly in the context of ODL in Malaysia. Institutions should adopt recovery strategies that will improve their relationship with students, and further increase students' overall satisfaction (Chahal & Devi, 2015). Therefore, service failure must be overcome and the institution must have an effective service recovery strategy in place. Service recovery through various justice dimensions is one of the potential solutions that can reinstate the level of satisfaction after the customer has experienced service failure (Smith & Mpinganjira, 2015). Implementing service recovery is one of the fundamental requirements for maintaining overall customer satisfaction and will create positive customer outcomes which can minimise customer defection (Knox & van Oest, 2014). This study will help the institution better understand the essentials of providing service right the first time, and how to deal with challenges positively if service failure does happen.

Literature Review

The leading theoretical perspective in service recovery studies has centred on justice theory (Maxham III & Netemeyer, 2002a). They explained that justice is the most suitable concept for understanding the determinants and outcomes of service recovery satisfaction. Justice theory states that in an exchange, customers evaluate a service recovery attempt as just or unjust (Bajaj & Krishnan, 2016). For researchers in service failure and recovery, justice theory is the main framework for investigating service recovery strategies and clearly understanding what constitutes a successful service recovery (McColl-Kennedy & Sparks, 2003). Thus, justice theory seems appropriate in explaining the customers' attitude and behaviour in response to service recovery (Juhari, Awais Bhatti, & Kumar Piaralal, 2016).

Research Model

Distributive Justice

Procedural Justice

Interpersonal Justice

Informational Justice

Service Recovery Satisfaction

Repurchase Intention

Word of Mouth

Trust

Loyalty

University Image

Figure 1. Theoretical framework. Adapted from "Relationships of Perceived Justice to Service Recovery, Service Failure Attributions, Recovery Satisfaction, and Loyalty in the Context of Airline Travelers," by D. Nikbin, M. Marimuthu, S. S. Hyun, and I. Ismail, 2015, *Asia Pacific Journal of Tourism Research, 20(3)*, p. 243 . CC BY.

The research model depicted in Figure 1 can be interpreted as made up of two parts, namely, antecedents of service recovery satisfaction that consists of distributive, procedural, interpersonal, and informational justice, as well as outcomes of service recovery satisfaction which consists of word of mouth, loyalty, trust, and repurchase intention. Justice theory offers theoretical support for this model. In addition, university image is included as the moderator variable, identifying the moderating effect in the relationship between the four-justice dimensions with service recovery satisfaction (Nikbin, Ismail, & Marimuthu, 2013).

Theoretical Foundation and Hypotheses Development

In this study, the four dimensions of justice were used as the determinants of service recovery satisfaction. The first dimension, distributive justice, looks at individuals' impression of the fairness of the results they receive. In a situation of service failure, distributive justice can be defined as the fairness of the outcome of service recovery (Nikbin, Ismail, Marimuthu, & Abu-Jarad, 2011). The second dimension of justice is procedural justice. Mattila (2001) stated that procedural justice is the perception of justice in terms of processes or procedures to recover from service failure. It refers to individuals' view of the fairness of the procedures and processes used to determine the results they received (Greenberg, 2009).

Krishna, Dangayach, and Jain (2011) and Leticia Santos-Vijande, María Díaz-Martín, Suárez-Álvarez, and Belén del Río-Lanza (2013) indicated that interactional justice should be further separated into two different dimensions, namely, interpersonal justice and informational justice. Interpersonal treatment refers to the interactional component of the service delivery process, whereas informational justice refers to the perceived adequacy and truthfulness of information explaining the causes of

unfavourable outcomes (Colquitt, 2001; Greenberg, 1994). Informational justice serves to adjust responses to procedures, in that explanations provide the information needed to assess the parts of the process. Informational injustice mirrors a perceived insufficiency of fairness in a condition of sufficient information about a change (Colquitt, Conlon, Wesson, Porter, & Ng, 2001; Timming, 2012). It has been given less attention in the service marketing literature and has only lately been applied to this context (Lee & Park, 2010). This conceptualisation has not been thoroughly tested in Malaysia, particularly in the ODL context, by using the four dimensions of justice. Hence, it represents a research gap that forms the main foundation of this study. Based on the literature discussed, the hypotheses can be set out as follows:

- Hypothesis 1 (H_1): Distributive justice has a significant relationship with service recovery satisfaction.

- Hypothesis 2 (H_2): Procedural justice has a significant relationship with service recovery satisfaction.

- Hypothesis 3 (H_3): Interpersonal justice has a significant relationship with service recovery satisfaction.

- Hypothesis 4 (H_4): Informational justice has a significant relationship with service recovery satisfaction.

Customers who encounter a fair procedure, fair interpersonal treatment, and fair information dissemination regarding a process and outcome are likely to develop higher service recovery satisfaction towards the service provider. Also, customers who are treated fairly are likely to develop higher behavioural outcomes in the future (Kumar Piaralal, Kumar Piaralal, & Awais Bhatti, 2014).

Repurchase intention is one of the key outcomes of service recovery satisfaction (Thomas, Blattberg, & Fox, 2004). It refers to an individual's decision to purchase a product or service from the same organisation again while considering their present positions (Sabharwal, Soch, & Kaur, 2010). Past researchers have found a significant relationship between service recovery and repurchase intention (Goodwin & Ross, 1992; Kelley, Hoffman, & Davis, 1993). Referral in the form of word of mouth has been identified as one of the fundamental approaches to spreading information about a product or service, either positively or negatively. Past studies demonstrated a positive relationship between service recovery satisfaction and word of mouth (WOM; Wen & Chi, 2013). Customers who receive effective service recovery will probably patronise the service provider and even spread positive WOM about the service provider, and subsequently disseminate goodwill.

Crosby, Evans, and Cowles (1990) characterised trust as a conviction created by a customer in light of the belief that the service provider is dependable and would act in the best interest of the customer. When effective service is delivered, customer satisfaction and loyalty are gained through trust, which can eliminate or minimise uncertainties and risks (Wang & Chang, 2013). An effective service recovery will likely lead to redeveloped trust because customers then believe that the service provider is honest in solving their problems.

Customer loyalty refers to customers' commitment to a service provider, demonstrated through customers' continued patronage with the same provider (Mahalakshmi & Karthikeyan, 2018). The

application of relationship marketing in cultivating customer loyalty is gaining interest among organisations; including customers in service recovery efforts may trigger customers' perception of recovery satisfaction and enhance their behavioural outcomes such as inducing loyalty (Bandyopadhyay, 2018). Therefore, based on the literature discussed, this study proposed the following hypotheses:

- Hypothesis 5 (H_5): Service recovery satisfaction has a significant relationship with repurchase intention.

- Hypothesis 6 (H_6): Service recovery satisfaction has a significant relationship with WOM.

- Hypothesis 7 (H_7): Service recovery satisfaction has a significant relationship with trust.

- Hypothesis 8 (H_8): Service recovery satisfaction has a significant relationship with loyalty.

The topic of university image has attracted the interest of researchers, and it is important to see how universities are creating value and developing research on their image (Osman, Saputra, & Luis, 2018). This issue is receiving increased attention because of growing competition among universities, as well as the importance and contribution of university image in attracting and recruiting students (Aghaz, Hashemi, & Sharifi Atashgah, 2015). This research enhances the existing literature in ODL and service recovery by proposing a relationship between both of these constructs but also by suggesting a moderating role for university image. Given the high level of interest in this relationship, this investigation will constitute one of the research contributions in this area. Therefore, it is posited that:

- Hypothesis 9 (H_9): The relationship between distributive justice and service recovery satisfaction will be stronger when the interaction effect of university image is significant.

- Hypothesis 10 (H_{10}): The relationship between procedural justice and service recovery satisfaction will be stronger when the interaction effect of university image is significant.

- Hypothesis 11 (H_{11}): The relationship between interpersonal justice and service recovery satisfaction will be stronger when the interaction effect of university image is significant.

- Hypothesis 12 (H_{12}): The relationship between informational justice and service recovery satisfaction will be stronger when the interaction effect of university image is significant.

Methodology

This study adopted a cross-sectional survey approach. The unit of analysis was the students who experienced service failure and service recovery. The Power Analysis - G*Power program was used to calculate the minimum sample size of this study (Hair, Hult, Ringle, & Sarstedt, 2017). In this study, the researcher was interested in learning about students' service recovery satisfaction, in which the students must have experienced both service failure and service recovery as provided by the institution. The university classified the information of those students who experienced service failure as private and confidential, and due to the sensitivity of the data that contained confidential

information about the institution, the university was unwilling to disclose it. Due to the unavailability of the list of ODL students who experienced service failure, a purposive sampling method was adopted. Under the circumstances, random sampling was almost impossible to conduct. In this study, the data was collected through self-administered questionnaires and carried out at five OUM learning centre in Klang Valley which have been identified to have a high number of students that experienced service failure and service recovery compared to other learning centre throughout the country.

A pilot study involving 39 Open University Malaysia (OUM) students tested the instrument before conducting the main survey. Items addressing justice dimensions, service recovery satisfaction, university image, trust, repurchase intention, word of mouth, and a loyalty construct were adopted from previous studies (Andreassen, 2001; Brown, Cowles, & Tuten, 1996; Cengiz, Er, & Kurtaran, 2007; del Río-Lanza, Vázquez-Casielles, & Díaz-Martín, 2009; Kau & Loh, 2006; Maxham III & Netemeyer, 2002b; Richard & Zhang, 2012). The questionnaire was further evaluated by a group of experts comprising two academicians and a practitioner. In addition, a focus group discussion was conducted with 10 OUM students to discuss the context of the study, to ensure the questions were well understood, and to gather suggestions and comments from the respondents. Data was collected through self-administered questionnaires and carried out at OUM Learning Centre in Klang Valley. The data collection was conducted early in the January 2017 semester and spanned approximately six months. The researcher was given a timetable and dates because the seniors and newly enrolled students were having different class on different dates. The intended respondents were not newly enrolled students but rather senior students who had completed at least one semester. Therefore, the researcher only conducted the data collection on the dates when the senior students is having their classes.

Results

Data Screening

All the returned questionnaires were checked, coded, recoded, and recorded using SPSS statistical software version 23. Out of the 750 questionnaires distributed, 450 were returned. Out of 450 returned questionnaires, 90 were not usable because more than 25% of the items were unanswered, resulting in a sample of 360 questionnaires (48% response rate). The response rate is adequate and justified, as service failure and service recovery are exceptional phenomena and the response rate obtained is common in service recovery studies (Nikbin, Marimuthu, Hyun, & Ismail, 2015). Since this study was only interested in respondents that experience service failure and service recovery, 22 samples out of 360 were identified as not fulfilling this criterion. Based on inspection of the box plots of each variable, 35 cases were considered as outliers. After deleting the outliers, the previous sample of 338 respondents was reduced to 303 respondents for further analysis as shown in Table 1.

Table 1

Demographic Profile of Respondents

Demographic profile	*n*	%
Country		
Malaysia	303	100.0
Gender		
Male	105	34.7
Female	198	65.3
Age		
24 years old and below	37	12.2
25–29 years old	84	27.7
30–34 years old	74	24.4
35–39 years old	44	14.5
40–44 years old	43	14.2
45–49 years old	10	3.3
50–54 years old	6	2.0
55–59 years old	4	1.3
60 years old and above	1	.3
Education level		
Diploma	55	18.2
Bachelor's degree	199	65.7
Master's degree	39	12.9
PhD/Doctorate	10	3.3
Programme		
Accounting	2	.7
Business Administration	27	8.9
Information Technology	11	3.6
Management	33	10.9
Human Resource Management	31	10.2
Occupational Safety and Health Management	33	10.9
Nursing	36	11.9
Islamic Studies	13	4.3
Early Childhood Education	48	15.8
Communication	3	1.0
TESL	7	2.3
Others	59	19.5
Year of Study		
Year 1	88	29.0
Year 2	86	28.4
Year 3	52	17.2
Year 4	47	15.5
Year 5	19	6.3
Year 6	6	2.0
Year 7	2	.7
Year 8	3	1.0

This study followed the treatment recommended by Podsakoff, Mackenzie, Lee, and Padsakoff (2003) for minimising common method bias (CMB) effects. The respondents were aware that there were no correct or incorrect responses to the items in the questionnaire. As well, they were assured that their responses would be kept confidential throughout the inquiry procedure. The scale items were improved to reduce CMB by avoiding vague concepts in the questionnaire, and when such concepts were used, simpler terms were offered. To further improve the scale items and content validity, all the questions in the survey were written in an easy, precise, and simple language. Harman's one-factor test, one of the most widely used techniques to address the issue of common method variance, was performed to examine the presence of CMB (Podsakoff et al., 2003); the variance should be less than 50%. In this study, no single factor accounted for most of the variance. Therefore, it can be concluded that CMB was not a major concern in this study.

Assessment of the Measurement Model

According to Hair, Black, Babin, and Anderson (2010), convergent validity can be assessed using factor loadings, average variance extracted (AVE), and composite reliability (CR). According to Hair et al. (2010), factor loading should be at least 0.5. Table 2 shows that the loading values were satisfactory with a range of 0.71 to 0.92. Internal consistency refers to the extent that indicators measure the same construct consistently. The Cronbach's alpha values in this study were in the range of 0.79 to 0.90 while the CR values were 0.88 to 0.93, indicating satisfactory convergent validity. The AVE should be at least 0.5 to establish convergent validity. The AVE values in this study were in the range of 0.66 to 0.82, indicating an acceptable level of convergent validity.

Table 2

Convergent Validity

Factors and items	Loadings	CA[a]	CR[b]	AVE[c]
Distributional justice		0.83	0.89	0.66
DJ1	0.87			
DJ2	0.79			
DJ3	0.71			
DJ4	0.87			
Informational justice		0.84	0.9	0.75
INFO_JU19	0.85			
INFO_JU20	0.86			
INFO_JU22	0.89			
Interpersonal justice		0.89	0.93	0.82
INTER_JU10	0.9			
INTER_JU11	0.92			
INTER_JU13	0.91			
Procedural Justice		0.86	0.92	0.78
PJ6	0.86			
PJ7	0.84			
PJ8	0.95			
Service recovery satisfaction		0.88	0.91	0.67

		CA	CR	AVE
SRS5	0.89			
SRS6	0.83			
SRS7	0.72			
SRS8	0.84			
SRS9	0.8			
University image		0.89	0.93	0.82
UI1	0.91			
UI2	0.91			
UI3	0.90			
Trust		0.79	0.88	0.70
B12	0.84			
B13	0.78			
B14	0.89			
Word of mouth		0.84	0.89	0.68
WOM15	0.91			
WOM16	0.87			
WOM17	0.78			
WOM18	0.72			
Repurchase intention		0.9	0.93	0.72
RI19	0.91			
RI20	0.9			
RI21	0.86			
RI22	0.91			
RI23	0.87			
Loyalty		0.9	0.93	0.77
LOYALTY24	0.93			
LOYALTY25	0.89			
LOYALTY26	0.83			
LOYALTY27	0.87			

Note. [a] Cronbach's alpha (CA); [b] Composite reliability (CR); [c] Average variance extracted (AVE).

Discriminant validity refers to the extent to which a particular construct differs from other constructs in the study (Garver & Mentzer, 1999). In this study, discriminant validity was confirmed using the Fornell and Larcker (1981) procedure, by examining whether the items loaded high on their own construct and loaded low on other constructs in the model as shown in Table 3. Table 3 also shows that all the square root of AVE values were greater than the corresponding correlation estimates. Cross-loading is the second criterion used to assess discriminant validity. To show satisfactory discriminant validity, the loading of each measurement item on its corresponding construct should be higher than its loading on other constructs (Chin, 1998). From Table 4, it can be seen that the factor loading of each indicator is greater than all of its cross-loadings.

Table 3

Discriminant Validity

Factors	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10
Distributive justice (X1)	0.81									
Informational justice (X2)	0.59	0.87								
Interpersonal justice (X3)	0.57	0.74	0.91							
Loyalty (X4)	0.27	0.46	0.59	0.88						
Procedural justice (X5)	0.62	0.67	0.69	0.41	0.89					
Repurchase intention (X6)	0.30	0.52	0.6	0.81	0.44	0.85				
Service recovery satisfaction (X7)	0.58	0.67	0.72	0.5	0.76	0.52	0.82			
Trust (X8)	0.45	0.58	0.66	0.58	0.58	0.58	0.67	0.84		
University image (X9)	0.57	0.64	0.75	0.55	0.66	0.56	0.77	0.71	0.91	
Word of mouth (X10)	0.39	0.59	0.67	0.68	0.53	0.72	0.61	0.7	0.66	0.82

Note. Diagonals are the square roots of AVE.

Table 4

Loadings and Cross-Loadings

Factors	TRUST	DJ	INFO_JUS	INTER_JUS	LOYALTY	PJ	RI	SRS	UI	WOM
B12	**0.84**	0.35	0.53	0.55	0.45	0.47	0.47	0.53	0.56	0.53
B13	**0.78**	0.25	0.34	0.45	0.45	0.39	0.45	0.42	0.47	0.52
B14	**0.89**	0.48	0.55	0.63	0.55	0.57	0.53	0.69	0.71	0.68
DJ1	0.46	**0.87**	0.6	0.63	0.33	0.58	0.38	0.56	0.58	0.41
DJ2	0.33	**0.79**	0.44	0.37	0.15	0.43	0.2	0.4	0.4	0.27
DJ3	0.26	**0.71**	0.37	0.35	0.19	0.45	0.15	0.4	0.32	0.23
DJ4	0.39	**0.87**	0.48	0.46	0.19	0.53	0.22	0.49	0.5	0.32
INFO_JU19	0.44	0.46	**0.85**	0.54	0.32	0.58	0.38	0.61	0.46	0.48
INFO_JU20	0.52	0.5	**0.86**	0.65	0.44	0.57	0.46	0.55	0.63	0.51
INFO_JU22	0.54	0.58	**0.89**	0.73	0.45	0.6	0.51	0.59	0.58	0.55
INTER_JU10	0.61	0.51	0.7	**0.90**	0.56	0.67	0.57	0.66	0.7	0.65
INTER_JU11	0.6	0.53	0.66	**0.92**	0.53	0.62	0.53	0.65	0.67	0.63
INTER_JU13	0.59	0.5	0.64	**0.91**	0.52	0.6	0.53	0.66	0.67	0.56
LOYALTY24	0.55	0.28	0.47	0.57	**0.93**	0.42	0.85	0.49	0.52	0.66
LOYALTY25	0.51	0.22	0.39	0.53	**0.89**	0.34	0.75	0.42	0.48	0.6
LOYALTY26	0.52	0.19	0.4	0.5	**0.83**	0.37	0.74	0.43	0.46	0.59
LOYALTY27	0.47	0.27	0.35	0.48	**0.87**	0.32	0.72	0.44	0.46	0.55
PJ6	0.53	0.53	0.59	0.63	0.38	**0.86**	0.41	0.68	0.57	0.49
PJ7	0.46	0.51	0.55	0.52	0.32	**0.84**	0.34	0.62	0.54	0.43
PJ8	0.54	0.6	0.65	0.68	0.39	**0.95**	0.42	0.7	0.63	0.48
RI19	0.5	0.29	0.46	0.54	0.76	0.4	**0.91**	0.44	0.48	0.67
RI20	0.5	0.23	0.44	0.53	0.76	0.38	**0.90**	0.44	0.49	0.66
RI21	0.39	0.18	0.36	0.41	0.44	0.31	**0.86**	0.33	0.35	0.45
RI22	0.5	0.27	0.44	0.5	0.79	0.37	**0.91**	0.46	0.49	0.63
RI23	0.54	0.29	0.48	0.55	0.86	0.4	**0.87**	0.5	0.54	0.63
SRS5	0.67	0.53	0.64	0.72	0.54	0.69	0.52	**0.89**	0.79	0.59
SRS6	0.56	0.48	0.59	0.61	0.44	0.63	0.44	**0.83**	0.62	0.51
SRS7	0.42	0.41	0.42	0.44	0.27	0.57	0.27	**0.72**	0.49	0.37
SRS8	0.55	0.5	0.59	0.6	0.39	0.66	0.44	**0.84**	0.62	0.53
SRS9	0.53	0.43	0.49	0.55	0.4	0.54	0.41	**0.80**	0.61	0.47
UI1	0.65	0.56	0.59	0.71	0.52	0.61	0.56	0.67	**0.91**	0.63
UI2	0.63	0.48	0.57	0.67	0.48	0.57	0.49	0.7	**0.91**	0.55
UI3	0.66	0.52	0.58	0.66	0.5	0.61	0.49	0.73	**0.90**	0.6
WOM15	0.68	0.32	0.53	0.64	0.72	0.44	0.75	0.53	0.64	**0.91**
WOM16	0.57	0.31	0.48	0.57	0.52	0.46	0.54	0.53	0.55	**0.87**
WOM17	0.58	0.36	0.52	0.53	0.52	0.44	0.56	0.54	0.56	**0.78**
WOM18	0.45	0.29	0.41	0.47	0.47	0.39	0.53	0.4	0.39	**0.72**

The Heterotrait-Monotrait index (HTMT) was developed to address the insensitivity of the Fornell and Larcker (1981) and cross-loading criterion. As shown in Table 5, all values of the HTMT index are less than 0.90, thereby confirming discriminant validity (Henseler, Ringle, & Sarstedt, 2015).

Table 5

Heterotrait-Monotrait Ratio (HTMT) Index

Construct	DJ	INFO_J	INT_J	LOYALTY	PJ	RI	SRS	TRUST	UI	WOM
Distributive justice (DJ)										
Informational justice (INFO_J)	0.70									
Interpersonal justice (INTER_J)	0.64	0.85								
Loyalty (LOYALTY)	0.30	0.53	0.66							
Procedural justice (PJ)	0.73	0.79	0.78	0.46						
Repurchase intention (RI)	0.34	0.60	0.67	0.86	0.50					
Service recovery satisfaction (SRS)	0.67	0.77	0.80	0.55	0.87	0.57				
Trust	0.52	0.69	0.77	0.68	0.68	0.68	0.77			
University image (UI)	0.65	0.74	0.84	0.61	0.75	0.63	0.86	0.82		
Word of mouth (WOM)	0.46	0.70	0.77	0.78	0.62	0.84	0.70	0.83	0.75	

Assessment of the Structural Model

The structural model for this study was evaluated using six steps to assess for multicollinearity issues, the significance and relevance of the structural model's relationships, the level of R^2, the effect size (f^2), the predictive relevance (Q^2), and the q^2 effect size (Hair et al., 2017). In partial least square, the multicollinearity test was carried out using the measures of variance influence factor (VIF). The results showed that the VIF values of all constructs ranged from 2.08 to 3.52, well below the suggested threshold of 5.0, thus indicating that the variables were free from multicollinearity issues (Hair et al., 2017). In assessing the significance and relevance of the structural model, the statistical significance test in PLS was accomplished using the bootstrap technique. The bootstrap resampling procedure (5000 sub-samples) was used to generate the standard errors and t-values, which indicates that the ß values (path coefficients) to be statistically significant. Table 6 shows the results of hypotheses testing.

Table 6

Hypotheses Testing

Hypotheses	OS[a]	SM[b]	SD[c]	T-statistics[d]	P-values	Hypotheses supported?	f^2	q^2
Hypothesis 1: Distributive justice has a significant relationship with service recovery satisfaction.	0.00	0.00	0.05	0.11	0.910	Not supported	0.01	0.003
Hypothesis 2: Procedural justice has a significant relationship with service recovery satisfaction.	0.29	0.29	0.06	5.04	0.000	Supported	0.17	0.004
Hypothesis 3: Interpersonal justice has a significant relationship with service recovery satisfaction.	0.16	0.15	0.07	2.24	0.030	Supported	0.01	0.004
Hypothesis 4: Informational justice has a significant relationship with service recovery satisfaction.	0.10	0.10	0.05	1.88	0.060	Not supported	0.01	0.004
Hypothesis 5: Service recovery satisfaction has a significant relationship with repurchase intention.	0.52	0.52	0.04	13.49	0.000	Supported	0.37	0.18
Hypothesis 6: Service recovery satisfaction has a significant relationship with WOM.	0.61	0.61	0.04	15.82	0.000	Supported	0.59	0.18
Hypothesis 7: Service recovery satisfaction has a significant relationship with trust.	0.67	0.68	0.03	22.78	0.000	Supported	0.83	0.18
Hypothesis 8: Service recovery satisfaction has a significant relationship with loyalty.	0.5	0.51	0.04	12.79	0.000	Supported	0.34	0.18

	OS	SM	SD	T statistics		
Hypothesis 9: The relationship between distributive justice and service recovery satisfaction will be stronger when the interaction effect of university image is significant.	0.03	0.03	0.05	0.55	0.580	Not supported
Hypothesis 10: The relationship between procedural justice and service recovery satisfaction will be stronger when the interaction effect of university image is significant.	-0.07	-0.07	0.05	1.23	0.220	Not supported
Hypothesis 11: The relationship between interpersonal justice and service recovery satisfaction will be stronger when the interaction effect of university image is significant.	-0.06	-0.06	0.05	1.32	0.190	Not supported
Hypothesis 12: The relationship between informational justice and service recovery satisfaction will be stronger when the interaction effect of university image is significant.	-0.05	-0.06	0.06	0.86	0.390	Not supported

Note. [a]OS = original sample, [b]SM = sample means; [c]SD = standard deviation; [d]T statistics = [t-value]^ > 1.96.
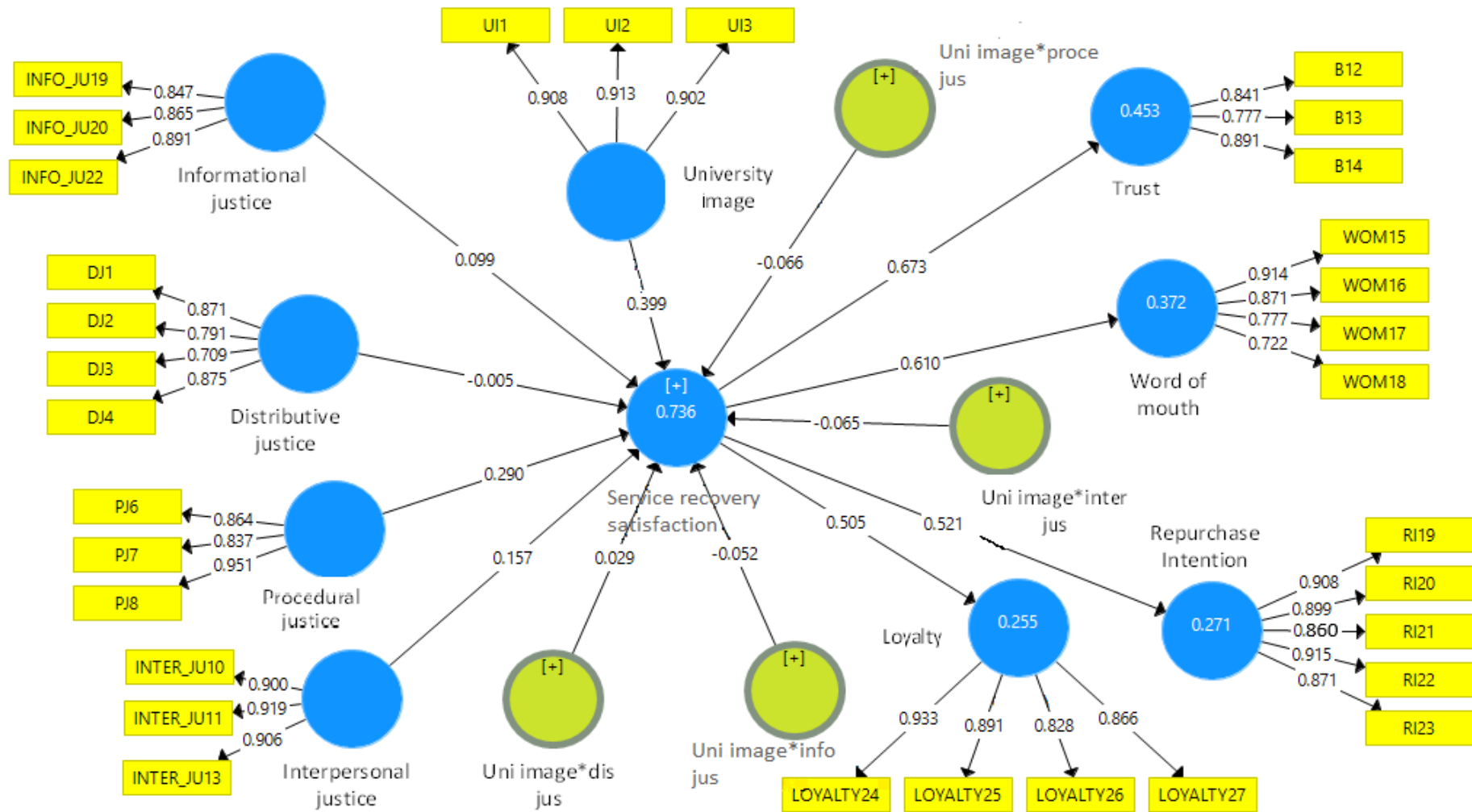
Figure 2. Full structural model with moderator.

The structural model was evaluated by running the PLS algorithm to examine the ß-values of the path coefficients and R^2 values as shown in Figure 2. The R^2 test was performed to examine the percentage of variance in the endogenous variables that can be explained by the exogenous variables. The results indicate that the R^2 values were distributed between 0.25 and 0.74. Service recovery satisfaction had the highest R^2 value indicating that the exogenous variables explain 74% of the variance in service recovery satisfaction. The lowest R^2 value was reported for loyalty (R^2 = 0.25), indicating that 25% of the variance in loyalty was explained by the exogenous variables. The R^2 values for trust (R^2 = 0.45) and loyalty (R^2 = 0.37) indicated that 45% of the variance in trust and 37% of the variance in loyalty were explained by the exogenous variables.

To test the moderating effect, one should test whether the interaction between independent and moderator variables have a significant effect on the dependent variable. If the interaction between the independent variable and moderator variable is significant, it can be concluded that the moderator variable has a significant effect on the dependent variable (Hair, et al., 2014). In the analysis, the PLS product-indicator approach was applied to determine the moderating effect. To test the effect, each predictor variable and university image were multiplied to create an interaction construct (i.e., distributive, procedural, interpersonal, and informational justice times university image) to predict service recovery satisfaction, as shown in Figure 2. The existence of moderation would be proven if the influence of the interaction variable on the criterion variable were found to be significant. Results from Table 6 show that university image does not moderate the relationship between each justice dimensions and service recovery satisfaction.

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Discussion

In this study, the respondents differentiated outcomes and process by rating distributive justice as an outcome construct, with procedural, interpersonal, and informational justice as the process constructs. The empirical results of the investigation demonstrate that the hypothesised relationships of procedural justice and interpersonal justice with service recovery satisfaction are supported. Therefore, it can be deduced that the students who experienced effective service recovery are more appreciative of the process of justice. Therefore, this study has narrowed the boundary of the generalizability of past studies in terms of procedural and interpersonal justice. The results also show that the procedural and interpersonal justice of OUM will affect the level of the student service recovery satisfaction, consistent with previous studies in service recovery setting such as Pai (2015) and, Singh and Crisafulli (2016).

However, the hypothesised relationships of distributive and informational justice with service recovery satisfaction are not supported in this study. The insignificant result of distributive justice contradicts the findings of other service recovery studies such as Kim, Kim, and Kim (2009) and Waqas, Ali, and Khan (2014), but is consistent with Fu, Wu, Huang, Song, and Gong (2015) and Roschk and Gelbrich (2014) who mentioned that providing compensation to customers does not always bring desirable outcomes. The results also show that informational justice was insignificantly

associated with service recovery satisfaction and inconsistent with the findings of other service recovery studies such as De Clercq and Saridakis (2015) and Taamneh (2015).

Considerable evidence from the service recovery literature indicates that service recovery satisfaction improves customer outcomes towards service providers who implement a service recovery strategy Lee (2018). In service recovery research, consumer outcome-based studies have focused on how service recovery strategy improves customer outcomes such as repurchase intention, word of mouth, trust, and loyalty. Our findings show that OUM students rated their service provider strongly and positively for all the outcomes under study, indicating that they are satisfied with the service recovery effort. The results in this study are consistent with prior service recovery studies such as Bhandari, Tsarenko, and Polonsky (2007) and Kau and Loh (2006).

The hypothesised moderating effect of university image on the relationship between justice dimensions and service recovery satisfaction is not supported. The findings of this study also contradict that of Lai, Griffin, and Babin (2009) who stated that when customers have a positive mind pattern of an image, this will lead to high satisfaction because these customers believe that the service provider will still bring benefits to them in the future; the effect of justice dimensions on service recovery satisfaction may be stronger for customers who have a positive image. Therefore, to discourage the students from switching to other institutions, OUM should continuously work to enhance customer relationship management and should make it a priority to improve their services and so portray more positive values for the customers, as suggested by Kaura (2013).

Conclusion

This study has provided insight into the factors that may strengthen relationships and enable service providers to increase both their service recovery satisfaction level and overall student retention rates. The findings of this study also confirm and highlight the influence of service recovery satisfaction on behavioural outcomes. The findings provide early empirical support to service providers in developing strategies that will encourage their customers to remain loyal to them.

The aim of this study was to investigate how the justice dimensions affect service recovery satisfaction and its outcomes, including the moderator effect of university image. The first theoretical contribution of this study deals with the relationships between justice dimensions and service recovery satisfaction and suggests that the four justice dimensions do not contribute equally to service recovery satisfaction. This means that different forms of recovery strategies have different effects on customer recovery satisfaction. The second theoretical contribution of this study deals with the relationship between service recovery satisfaction and its outcomes. The logic for this relationship stems from the fact that customer satisfaction is important for a business-oriented organisation because it is the main factor of customer retention and company market share (Hansemark & Albinsson, 2004). Barsky and Nash (2003) theorised that satisfaction improves profitability by expanding the business through gaining market share and increasing profit margins. Therefore, this study highlighted the importance of service recovery satisfaction in developing favourable and positive customer outcomes for the institution. The third theoretical contribution of this study is the moderating effect of the university

image. Although the empirical results of this study revealed that the university image does not have a moderating effect, this study suggests that the reason why service recovery satisfaction cannot be explained by justice dimensions or university image alone is that it requires other determinants, especially in the service failure and recovery context.

The practical implications for long-term financial performance in the context of ODL in Malaysia are that developing and maintaining a good customer base is viewed as one of the most important drivers in the customer life cycle or lifetime value (Ferrentino, Cuomo, & Boniello, 2016). These findings suggest that institutions focus on improving customer service recovery satisfaction. The results from this study provide new insights about the current relationship of the customer and service provider which are undeniably important and valuable for service providers seeking to improve their profitability and maintain competitiveness in the marketplace (Lemon & Verhoef, 2016).

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Open Textbooks: Quality and Relevance for Postsecondary Study in The Bahamas

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Abstract

Open educational resources (OER), are openly licensed text, media, and other digital and analog assets that are useful for teaching, learning, and research. Recent research has shown that in courses where open textbooks are assigned, students perform as well as or better than students in similar courses with commercially licensed textbooks. Despite cost savings and demonstrated effectiveness, perceptions about quality, relevance, ease of access, and other concerns persist. The objectives of this study were twofold: (a) to develop a practical and reusable measure for evaluating open textbook quality in terms of pedagogy, openness, accessibility, and relevance; and (b) to use the measure to rate the quality and relevance of open textbooks for use in higher education in The Bahamas. The study confirmed the viability of the quality measure as a practical tool to assess open resources and found that the open textbooks studied were accessible and well matched to course content, but of varying quality. More study is needed to explore ways to increase faculty adoption, use, adaption and production of OER.

Keywords: open educational resources, textbooks, access, quality, relevance

Introduction

Textbooks play an important role in student course outcomes. As the cost of university and college textbooks continues to rise, however, students increasingly cannot afford to purchase them. Increasing costs can lead students to purchase fewer texts and hence do poorly in courses, take fewer courses, or drop out of programmes of study altogether (Florida Virtual Campus, 2016). While textbook costs are a burden to all students, poor students are particularly impacted as they are least able to shoulder high educational costs. In effect, increasing costs present an additional educational barrier. Simply put, when costs increase, access is reduced.

While the population of The Bahamas is spread over 700 islands and cays, most residents live in the nation's capital city, Nassau, on the island of New Providence. Access to education in general, and higher education in particular, is challenging for residents on the Family Islands - the name given to the 30 or so populated islands other than New Providence. Even when Family Island residents can afford expensive texts, mail delivery is limited, making it more difficult for them to access learning materials. Open educational resources (OER) and open textbooks are promising alternative to commercial textbooks, and availability of OER is expanding (Wiley, Bliss, & McEwen, 2012). OER and open textbooks released in digital format seem especially suited to the islands of The Bahamas as Internet and mobile data connectivity is widespread, even in some of the more remote settlements.

Availability is not a sufficient condition for adopting open textbooks. Several factors may inhibit OER adoption including (a) *relevance* (Albright, 2005); (b) *findability* (Larson & Murray, 2008); (c) *existing teaching practices* (Hattaka, 2009); and (d) *quality* (Albright, 2005; D'Antoni 2006). Importantly, texts must be or must be perceived to be of a certain quality, to be considered as replacements for existing texts (D'Antoni, 2006). Despite cost savings, perceptions about quality, ease of use, ease of access, and match to course may discourage faculty from making the effort to find, review, and use open textbooks. At present, these explanations for the low adoption rate are speculative, as no formal study of OER and open textbook use in The Bahamas has been attempted to date.

This study focused on the question of open textbook quality. Specifically, the intention was to design and build an evaluation tool that would be easy to use and adapt to assess quality in a variety of different types of textbooks, regardless of content. This study made two unique contributions. First, it demonstrated the use of a new and easily reproducible approach for evaluating open textbooks quality on five dimensions: (a) pedagogy, (b) openness of license, (c) cost, (d) available media, and (e) relevance. Second, this study used this approach to evaluate potential OER texts for use in higher education courses in The Bahamas.

Objectives

The objectives of this study were twofold: (a) to develop a practical and reusable measure for evaluating open textbook quality in terms of pedagogy, openness, accessibility, and relevance; and (b) to use the measure to rate the quality and relevance of open textbooks for use in higher education in The Bahamas. Specifically, the study attempted to answer the following questions:

- How well did open textbooks score on a simple scale of pedagogical quality?

- How open were the textbooks in terms of their licenses?

- How accessible were the open textbooks in terms of cost?

- How accessible were the open textbooks in terms of the media delivery formats?

- How relevant were the open textbooks in terms of the degree to which they match course content at postsecondary institutions in The Bahamas?

Theoretical Framework

Textbooks can play an important role in student course outcomes. With students paying as much as $1,200 annually on average for books and supplies in the US (College Board, 2015), increasingly, students cannot afford to purchase textbooks and hence purchase fewer texts, take fewer courses, or may even drop out altogether (Florida Virtual Campus, 2016). Few local texts are available to Bahamian higher education students, and the cost of importing texts means that costs in The Bahamas are even higher. The University of The Bahamas website estimates typical annual costs of books and supplies for undergraduates at B$1,500 (University of The Bahamas, 2017). Textbook costs are a burden and can serve as a barrier. Added to which, off-site students, such as those studying online or at Family Island learning centres, are further disadvantaged, because in addition to high costs, they have to wait for books to be mailed to them.

Open educational resources would seem to be a viable and affordable alternative to traditional, commercially licensed textbooks. In addition to the cost savings of OER in general, electronic OER are particularly accessible and downloadable via the Internet, immediately lowering barriers to access for students in Nassau and the Family Islands alike. Despite over a decade in research and development of OER, increasing availability and ease of locating OER, and despite The Bahamas being one of the few countries in the Caribbean with a strategy for information and communications technology in education that promotes OER (Hoosen, 2012; Ministry of Education, 2017), OER use in The Bahamas seems a promise rather than an actuality (George, 2015). The reasons for slow adoption in The Bahamas have not been researched, but in other locations, issues have included: (a) questions of quality; (b) concerns about content match; (c) lack of awareness of OER; (d) difficulty in locating appropriate OER; (e) lack of recognition for faculty efforts to adopt, adapt, and reuse OER; and (f) complicated textbook approval processes (Allen & Seaman, 2016; Hilton, 2016; Mishra, 2017). Specifically, Wiley et al. (2012) identified several challenges to the adoption and reuse of OER: (a) discovery, (b) concerns about quality, (c) localization to meet local needs, and (d) lack of skills to adapt and remix content. In this study, open textbook quality was explored on a variety of levels.

Alsagoff (2016) identified four approaches to assessing OER and open textbook quality: (a) faculty (peer) reviews, where college and university faculty review the content against a standard set of criteria, similar to how they would review a manuscript for a peer-reviewed journal; (b) faculty ratings, where faculty rate their perception of quality after having used the content for a course; (c) student ratings, where students rate their perception of quality after using the text in a course; and (d) efficacy research where researchers compare the outcomes of students using openly licensed resources versus commercially licensed resources for different sections of the same course. While criteria-based

63

evaluation rates textbooks prior to use, the other three approaches rely on ratings after textbook use. Examples of studies referencing faculty and student ratings consistently reported positive ratings of open textbooks by faculty and students (Bliss, Hilton, Wiley, & Thanos 2013; Jung, Bauer, & Heaps 2017; Vander Waal Mills, Gucinski, & Vander Waal 2019). Similarly, in a review of efficacy research on OER and pen Textbooks, Hilton (2016) found that OER were at least as effective as licensed materials at promoting student achievement.

This study needed a criteria-based framework to rate textbooks prior to use, as the intention was to determine textbook quality in order to encourage adoption and use. Harvey and Green (1993) identified five dimensions of quality in higher education, three of which are most applicable to OER—transformative learning, fitness for purpose, and cost efficiency. Expanding on these, Kawachi (2014) developed the four-part TIPS framework for quality assurance of Open Educational Resources, version 2.0 (TIPS 2.0), as a tool to guide faculty in creating and authoring their own OER. TIPS is an acronym for the four categories of quality the framework is designed to evaluate: (a) teaching and learning processes, (b) information and material content, (c) presentation product and format, and (d) technical systems and technology. TIPS 2.0 revised version 1.0, incorporating feedback from OER experts, online OER forums, and teacher-practitioners (Kawachi, 2014). In total, TIPS 2.0 identified 38 quality criteria around the themes of pedagogy, learner-centeredness, openness, accessibility, relevance, adaptability, and content quality (Kawachi, 2014).

Although TIPS 2.0 provided a comprehensive quality framework for evaluating OER and open textbooks, its length and reliance on content expert knowledge was not well suited to this study. For this study, a more practical two-part assessment instrument, derived from the TIPS framework, was developed to evaluate textbook quality on five dimensions—pedagogy, openness of license, cost, available media, and relevance.

Pedagogy

The pedagogical quality of each text was rated using five items adapted from TIPS:

1. The use of learning objectives to signal the intent and purpose of the learning content. Clearly articulated learning objectives can boost learning in multiple ways including: (a) helping students differentiate types of knowledge; (b) ensuring students focus on the appropriate content and skills; (c) scaffolding independent, self-directed learning; and (d) enhancing meta-cognitive skills (Eberley Center, 2019).

2. The use of unit learning activities to engage and stimulate the learner. Effective learning activities can deepen learning by encouraging active as opposed to passive learning (Fink, 2003).

3. The use of diagrams and charts to enrich the content and facilitate retention. Decades of research has demonstrated that students learn better from text and images together than from images alone (Mayer, 2008; Nilson, 2010).

4. The use of practice exercises to deepen learning. Practice exercises give students the opportunity to apply the knowledge and skills they have learned in different contexts (Fink, 2003).

5. The use of pre- and post-assessments to deepen learning and help learners monitor their progress. Self-testing before, during, and after learning is not only an effective way to monitor progress, but also an effective tool for learning itself (Rohrer & Pashler, 2010).

Openness

Openness of license was rated according to a scale shown in Figure 1. Licenses are ranked inversely according to the limits on sharing of the resource—the more the limits, the lower the ranking (Green, 2014).
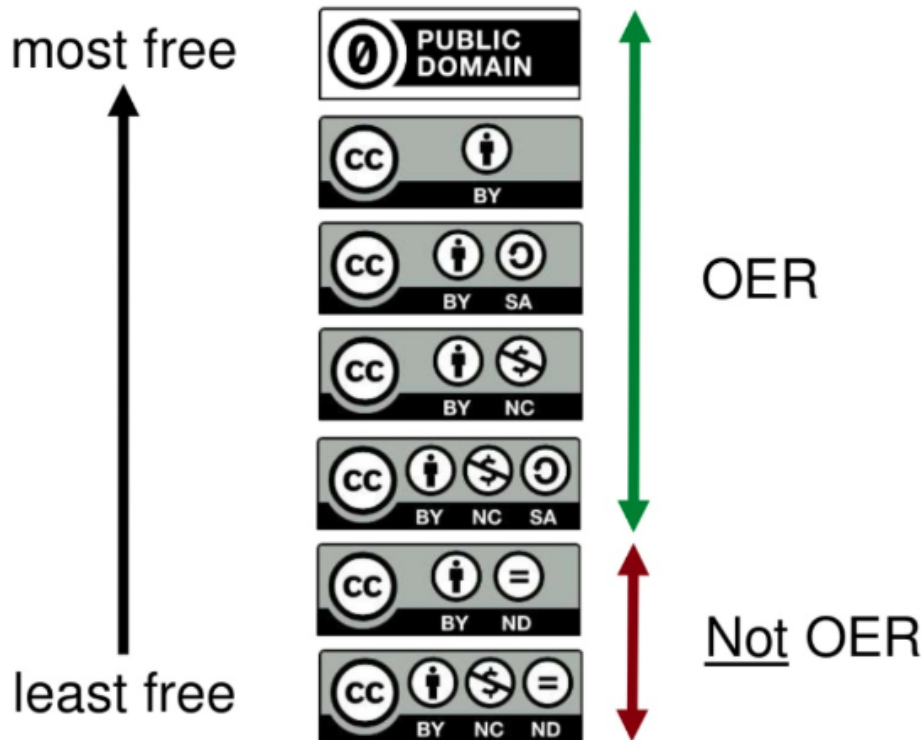

Figure 1. Openness scale. From "Open Education: The Moral, Business and Policy Case for OER," by C. Green, 2014 (https://www.slideshare.net/cgreen/updated-keynote-slides-october-2014). CC BY.

From the openness scale, three main principles of open licensing are used to differentiate the degree of openness of textbook licenses: (a) whether the resources can be reused at all (the basic principle of open licensing); (b) whether the resources can be re-used for commercial use or not; and (c) whether the resources can be repurposed and adapted (the principle of derivation). As Green (2014) demonstrated, the litmus test distinguishing OER from non-OER shareable resources is whether the license allows for repurposing and derivation. Neither of the NoDerivative (ND) licenses qualify as OER. Because all textbooks evaluated in this study were located in OER repositories, they were expected to be openly licensed in one form or another.

Accessibility: Cost

This study opened with reference to the increasing costs of commercially licensed textbooks and the impact those costs have on the accessibility of higher education. From an economic and social justice point of view, OER textbooks represent an improvement over commercially licensed texts (Hodgkinson-Williams & Trotter, 2018; Wiley, 2017). Affordability must therefore be one of the key criteria by which

the accessibility of textbooks is judged. Lower cost texts were rated more highly. Because all textbooks evaluated in this study were located in OER repositories, they were expected to be either completely free or free in some format.

Accessibility: Media

There is disagreement in the literature about whether OER must be electronic or otherwise. Electronic distribution facilitates sharing, re-use, and repurposing. Moreover, electronic formats can be edited to enable accessibility for visually impaired learners (Butcher & Moore, 2015). HTML and PDF formats are particularly portable as they can be accessed on any electronic device. On the other hand, at least one definition of OER suggests that they must still be available in suitable formats (presumably print) to facilitate access for those learners who still do not have access to the Internet (Cape Town Open Education Declaration, 2007). Accessibility is also rated according to the number of media formats in which the OER are published.

Relevance: Match

Relevance was rated by comparing textbooks to local higher education course content. Course outlines were subdivided into topics and then topics were subdivided into the specific learning objectives. Each learning objective was compared with the open resource to determine how completely, if at all, each learning objective was covered in the text.

Methodology

Textbooks from two open textbook repositories were identified for evaluation: OpenStax CNX (https://cnx.org/) and BCcampus OpenEd (https://open.bccampus.ca/). Senior undergraduate students were recruited as research assistant coders (at the time of the study, the higher education institution of the study had few graduate students, none of whom were available for the study). The research assistants participated in two training sessions, one on the process of coding for each of the research instruments. Included in both sessions were brief introductions to OER in general and the use of open textbooks specifically. For each instrument, two coders were anonymously assigned to evaluate each textbook. Scores were compared for consistency. Where coders disagreed, these ratings were re-evaluated to arrive at a mutually acceptable coding. All coding was done online using document sharing facilities of Google Drive.

Instrument One (Pedagogy and Accessibility)

See Appendix A for a copy of the complete form for evaluating textbook pedagogy and accessibility.

Pedagogy. Two coders rated each text on a variety of quality items suggested by the TIPS framework: (a) use of learning objectives, (b) unit activities, (c) diagrams and charts, (d) practice exercises, and (e) unit pre-assessments and post-assessments. Item ratings were totaled to give an overall quality score for each textbook. Textbooks with significant disagreements were noted and re-evaluated by a third coder. Coders could add optional comments as well.

License. Textbooks were coded according to their license. The licenses were ranked in order of openness from more to less open according to the scale illustrated in Figure 1, namely:

- PD or CC0: Public Domain

- CC BY: Attribution

- CC BY-SA: Attribution ShareAlike

- CC BY-NC: Attribution NonCommercial

- CC BY-NC-SA: Attribution NonCommercial ShareAlike

- CC BY-ND: Attribution NoDerivatives

- CC BY-NC-ND: Attribution NonCommercial NoDerivatives

- ©: Copyright – all rights reserved

Texts with CC BY-ND, CC BY-NC-ND, or © were not considered to be OER.

Cost. The lowest-cost version of each textbook was coded on a scale of 0 to 5 with 0=$0 (free), 1=$0.01 to $24.99, 2=$25.00 to $49.99, 3=$50.00 to $74.99, 4=$75.00 to $99.99, and 5=$100 or greater.

Media. Coders recorded each of the formats in which the resource was available: print, HTML, PDF, ePub, iBook, Kindle, and other. Accessibility was ranked according to the number of different formats available.

Instrument Two: Relevance

See Appendix B for a copy of the complete form for evaluating textbook relevance.

Course match. Textbooks were identified that might be suitable for specific courses at a local higher education institution. Course outlines were used to detail specific topics, subtopics and learning objectives to be taught. Textbooks were then evaluated on how completely they covered each learning objective from the course outlines using a three-point scale (2=completely, 1=partially, 0=not at all). Ratings totals were given as a percentage of the highest possible score. Coder totals were compared and where significant differences were noted, textbooks were re-evaluated by a third coder.

Data Sources

Textbooks from OpenStax CNX and BCcampus OpenEd were identified that targeted higher education academic courses that were likely to have content matching to local higher education courses. Technical books were not included.

Results

Textbook Identification

In the two repositories, a total of 71 college textbooks were identified that were likely to be a good match with university or college courses. Some titles were cross-listed, resulting in some degree of duplication. In all, 30 texts were listed in both repositories, meaning that a total of 41 unique textbooks were

identified. Table 1 shows how these textbooks were classified by discipline.

Table 1

Distribution of OER Textbooks by Discipline

Discipline	Number of texts
Business	21
Hospitality	1
Mathematics	11
Science	8
Total	41

Pedagogical Quality

Scores for pedagogical quality ranged from 1 to 9 out of a possible 9, with modal scores of 4 and 7 and a mean of 5.4 (*SD* 2.2; see Figure 2). Overall scores revealed only part of the picture, however. When individual item scores were compared, a clear pattern emerged. Mean item scores expressed as a percentage of the maximum possible score were ranked from highest to lowest: (a) stated learning objectives (78%); (b) use of diagrams, charts, and other visuals (68%); (c) use of practice activities (66%); (d) use of learning activities (61%); (e) use of post-assessments (48%); and (f) use of pre-assessments (7%). Of note, three items: use of visuals, practice, and learning activities scored on all measure levels (i.e., extensive use, limited use and no use). For these three items, when extensive and limited use were collapsed into the binary use versus no use categories, each approached 90% or higher, indicating almost universal use of these three instructional strategies. It was clear that a significant proportion of the textbooks assessed adhered to a fairly consistent model of textbook construction that included the use of stated learning objectives, visuals, learning activities, and practice activities. The use of unit assessments was rare, particularly in terms of pre-assessments.
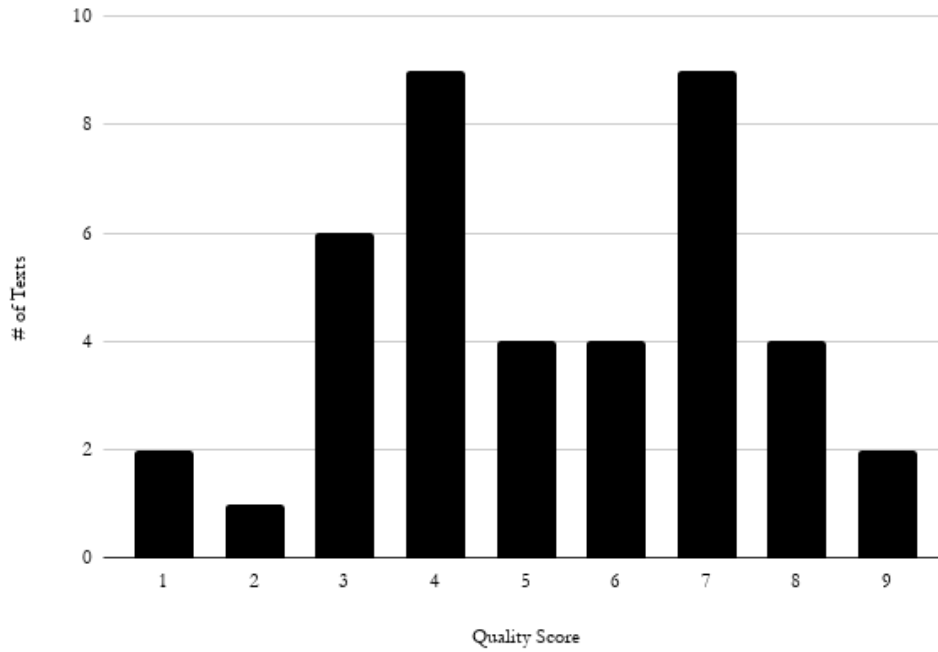
Figure 2. Distribution of pedagogical quality scores.

License

Approximately three quarters (31 out of 41) of the texts were licensed under the CC BY, one of the most open of the Creative Common licenses. Under this license, faculty and students can freely access, share, reuse, and re-write content provided attribution is given to the original author (see Figure 3). As expected, given that all textbooks were located in open repositories, all of the licenses qualified as OER under the openness score, even if some licenses were not as open as the CC BY.
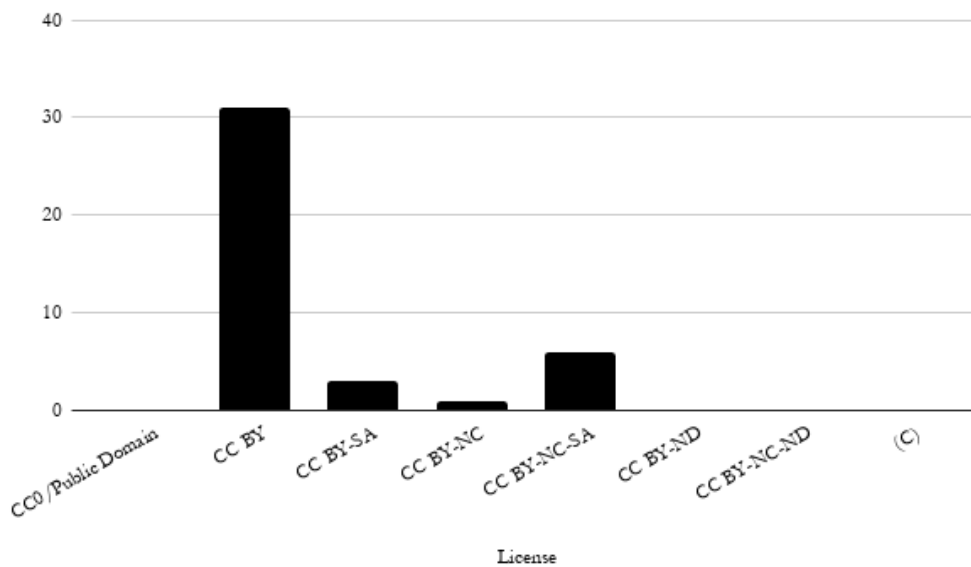
Figure 3. Distribution of textbooks by license.

Cost

Of the 41 textbooks evaluated, 40 were free and the remaining one cost between $25 and $49.99, though some texts added additional charges if students wanted to access printed copies. Nonetheless, all but one of the texts were free and the one that was not free, was still less expensive than commercial textbooks. Again, as expected, almost all the textbooks were completely free or free in some format.

Media

All textbooks were available in multiple media formats, with 31 of 41 available in three or more formats. All textbooks were available electronically, either as PDF downloads or HTML or both (see Figure 4). Specialized electronic formats (i,e., ePub, iBook, Kindle) were somewhat less common.

# of different media formats
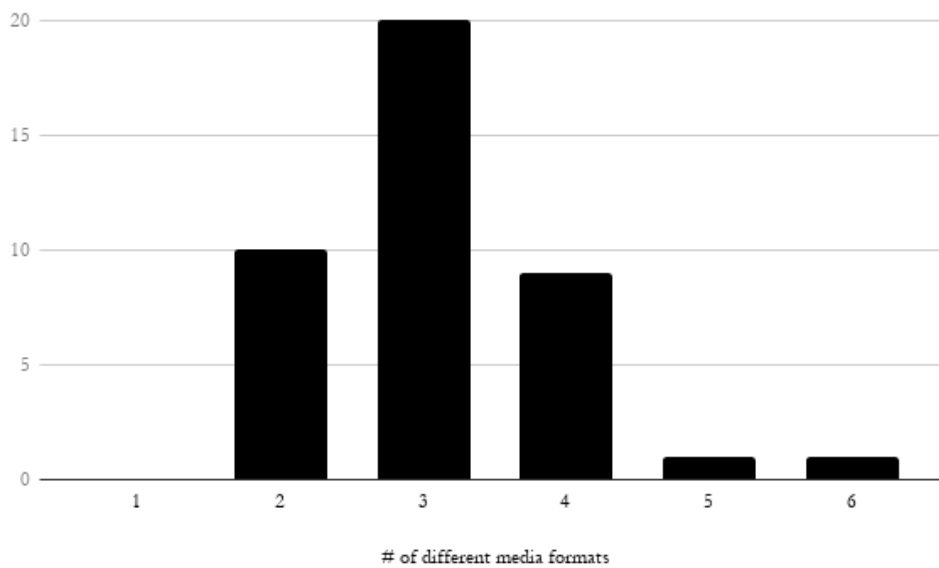
Figure 4. Textbook distribution by the number of available media formats per title.

Course Match

From the total sample, 17 textbooks were selected to be evaluated against 14 different courses. Courses were matched against as many as three different texts. Similarly, the same text could be matched against more than one course. In total, 29 unique pairings of textbooks and courses were evaluated. Two coders rated each text using the form shown in Appendix B. Where there were disagreements, the author re-coded the text to resolve the disagreement; re-coding successfully resolved all the disagreements. The degree of match for each of the courses is shown in Table 2.

Table 2

Rate of OER Textbook Match to Postsecondary Courses at a Postsecondary Institution in The Bahamas

Course number	Textbook title	Degree of match
1	*OpenStax Introduction to Psychology*	70%
2	*OpenStax Principles of Economics*	100%
3	*OpenStax Principles of MacroEconomics*	100%
3	*Lyryx Principles of MacroEconomics*	86%
4	*OpenStax Principles of MicroEconomics*	98%
4	*Lyryx Principles of MicroEconomics*	100%
5	*OpenStax Concepts of Biology*	76%
5	*OpenStax Biology*	83%
6	*OpenStax Concepts of Biology*	82%
6	*OpenStax Biology*	89%
7	*OpenStax Concepts of Biology*	72%
7	*OpenStax Biology*	81%
8	*OpenStax Introduction to Sociology*	78%
8	*OpenStax Introduction to Sociology 2e*	80%
9	*Fundamentals of Mathematics*	81%
9	*PreAlgebra*	85%
10	*Fundamentals of Mathematics*	55%
10	*PreAlgebra*	66%
10	*Elementary Algebra*	44%
11	*Elementary Algebra*	54%
12	*OpenStax College Algebra*	91%
12	*OpenStax Algebra and Trigonometry*	91%
12	*OpenStax PreCalculus*	14%
13	*OpenStax College Algebra*	73%
13	*OpenStax Algebra and Trigonometry*	73%
13	*OpenStax PreCalculus*	50%
14	*OpenStax College Algebra*	6%
14	*OpenStax Algebra and Trigonometry*	87%
14	*OpenStax PreCalculus*	87%

In general, the textbooks were well-matched to the courses. The mean degree of match was 74%, but this measure of central tendency may be misleading as two texts were particularly poorly matched to their respective courses (6% and 14%, respectively.) In general, textbook content was well-aligned with courses at the tertiary institution being studied, as demonstrated by the distribution of textbooks by degree of match (Figure 5.) The modal category is 80 to 89% match and a majority of textbook-course pairings (22 out of 29) fell within the top three categories.
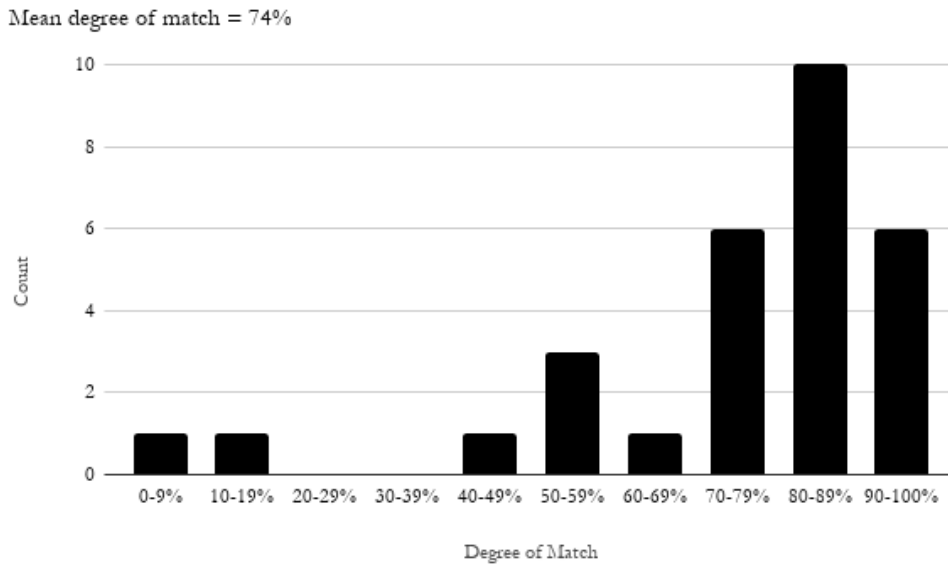
Mean degree of match = 74%

Figure 5. Distribution of textbook-course pairings rated by degree of match.

Discussion

This study set out to explore the quality of potential open textbooks on a variety of levels. In particular, open textbooks were evaluated on measures of pedagogical quality, openness, cost, available media, and local relevance.

Pedagogical quality varied across the spectrum. Scores clustered around two modes, namely 4 and 7, indicating that texts exhibited consistent differences in instructional design. As noted earlier, almost all texts scored highly on certain key items: (a) learning objectives, (b) diagrams and charts, (c) learning activities, and (d) practice exercises. Those texts scoring higher made more consistent use of post-assessments. Few texts employed pre-assessments. This heuristic approach of evaluating texts using instructional design principles needs to be balanced by comparing quality ratings to faculty and student ratings of open textbooks as in other studies (e.g., Jung, Bauer, & Heaps, 2017; Vander Waal Mills et al., 2019) and to the results of efficacy studies (e.g., Hilton, 2016).

Open licensing of texts was expected, as all texts were selected from a database of open resources. That there was variety at all in the types of licenses is perhaps of more interest. This may reflect a difference in approach between the repositories. On the one hand, OpenStax CNX explicitly encourages sharing, reuse, remixing and author attribution (OpenStax CNX, 2019). This means that most of the content in their repository was licensed under the CC BY license. BCcampus OpenEd on the other hand, takes a broader approach to Open Textbooks and advocates on behalf of CC licensing in general (BCcampus, n.d.). Resources stored in their repository are likely to have a wider variety of licenses than those in OpenStax CNX.

Unsurprisingly, all but one of the texts were free in some format or another (although some charged for hard copies). Even the text that was not free, cost in the $25 to $49.99 range, still considerably more affordable than commercial texts typically costing between $100 and $300 each.

As noted earlier, all texts were available electronically and in multiple formats. This is not surprising as it costs very little to migrate documents between different electronic formats. By publishing under an open license to begin with, OER publishers demonstrated a commitment to accessibility by publishing in as many formats as possible. Perhaps a more interesting question is why all OER publishers do not distribute in as many formats as possible?

Given the uniqueness of postsecondary courses, one would normally expect much variation in the degree to which texts matched courses. The high average degree of course match in the dataset (mean 74% and modal grouping 80–89%) was somewhat of a surprise. One explanation is that both databases had a large proportion of texts for introductory general courses that would not rely heavily on local content, for example mathematics, natural science, and business studies texts. This high degree of course match might be the strongest factor that could influence faculty to evaluate and potentially adopt texts for their courses.

Significance and Conclusion

This study set out to create a practical and easy-to-use tool to assess the quality of open textbooks and use that tool to evaluate the suitability of those textbooks for higher education courses in The Bahamas. The quality assessment tool proved fit for purpose but could be strengthened by comparison with other measures of quality as described below. Comparison of quality scores with content expert ratings would give further insight into the effectiveness of this quality measure. Variation in measures of pedagogical quality may reflect different approaches to textbook design, particularly if authors are viewing texts as tools to encourage self-directed learning on the one hand or instructor-led learning on the other.

Unsurprisingly, when the assessment measure was used to evaluate texts in two OER repositories, all texts scored highly on openness and cost. Both of these measures seem more suited to deciding whether a resource qualifies as OER rather than evaluating the quality of the resource. On the other hand, Wiley (2017) argued that because education is the sharing of public goods of knowledge, skills, and attitudes, openness of learning content is a fundamental and core value. Copyright law and commercial licensing can have the effect of restricting public goods and turning them into private goods. In this interpretation, the first measure of quality must be openness, as this measures how well the resource is aligned with educational core values (Wiley, 2017).

Educational costs are increasing and as a result, students have difficulty financing higher education. Expensive, commercially licensed textbooks present a significant cost barrier, notably for the traditionally underserved students whether in the Family Islands of The Bahamas, or any other remote settlement worldwide. Open textbooks can significantly reduce barriers and facilitate alternative delivery mechanisms such as online learning for all students. Faculty adoption of open textbooks and OER is slow, often because there is a distrust of the quality of open textbooks. This study investigated the quality of open texts and found them to score highly on several quality measures.

This study can also be useful in raising awareness of suitable open textbooks for higher education use, in that it addresses several common barriers to use and adoption. Potential suitable textbooks were found to be readily available, inexpensive or free, and to match well with local higher education course

content. Moreover, as most of them are licensed under the CC BY license, faculty are free to use, excerpt, adopt, and adapt these materials for their instructional needs.

The study is also useful because it demonstrates a new, easily reproducible method for evaluating the suitability of OER and open textbooks for adoption in courses. Next steps might include:

- public campaigns explaining the findings to increase awareness of OER by faculty and students;

- an exploration of faculty awareness of OER and their use;

- an exploration of faculty capacity to use, reuse, adapt, and create OER;

- capacity development workshops and training on how to find, use, reuse, and create OER;

- an exploration of how faculty presently select textbooks for courses;

- validation of the quality tool used in this study by:

    o faculty measures of quality, satisfaction, and attitudes;

    o students' measures of satisfaction and attitudes;

    o comparing quality scores for open texts with comparable commercial texts; and

    o comparing quality scores for open texts with student outcomes; and

- an evaluation of student outcomes in courses using open texts compared to students in similar courses using commercial texts.

This study and the next steps discussed above have focused primarily on use and reuse of OER and open textbooks by faculty in their courses. The longer-term goal must be the creation of sustainable infrastructure to embed the use and production of OER and open textbooks in higher education ecosystems. Changes in policy and practice around knowledge creation and sharing are needed to foster a mindset change toward openness in education.

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Appendix A

Textbook Evaluation Form 1 (Pedagogy and Accessibility)

One form to be completed for each textbook or resource.

Textbook or resource name:

```
┌─────────────────────────────────┐
│                                 │
└─────────────────────────────────┘
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Author(s):

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┌─────────────────────────────────┐
│                                 │
└─────────────────────────────────┘
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License (find at the bottom of the page):

- ○ PD = Public Domain
- ○ CC BY = Attribution
- ○ CC BY-SA = Attribution ShareAlike
- ○ CC BY-NC = Attribution NonCommercial
- ○ CC BY-NC-SA = Attribution NonCommercial ShareAlike
- ○ CC BY-ND = Attribution NoDerivatives
- ○ CC BY-NC-ND = Attribution NonCommercial NoDerivatives
- ○ © = Copyright (all rights reserved)

Cost:

- ○ Free ($0)
- ○ $0.01 to $24.99
- ○ $25.00 to $49.99
- ○ $50.00 to $74.99
- ○ $75.00 to $99.99
- ○ $100 or greater

URL:

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┌─────────────────────────────────┐
│                                 │
└─────────────────────────────────┘
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Format (check all applicable):

- ☐ Print
- ☐ HTML (online)
- ☐ PDF
- ☐ ePub
- ☐ iBook
- ☐ Kindle
- ☐ Other: ┌──────────────────────────┐
         │   │
         └──────────────────────────┘

Stated objectives: Resource outlines the learner objectives for each topic/unit.

◯ Yes
◯ No

Pre-assessment: Resource contains unit pre-assessments that allows learners to evaluate whether they have a mastery of the content prior to learning.

◯ Yes
◯ No

Diagrams/Charts/Tables: Resource contains graphics that enhance explanations and descriptions.

◯ Extensive
◯ Limited
◯ None

Learning activities: Resource contains unit activities for learners to reinforce content.

◯ Extensive
◯ Limited
◯ None

Practice: Resource contains further activities to practice learned concepts

◯ Extensive
◯ Limited
◯ None

Post-assessment: Resource contains unit post-assessments that allow learners to evaluate whether they have a mastery of the content after learning.

◯ Yes
◯ No

Additional Comments:

Appendix B

Textbook Evaluation Form 2 (Relevance)

One form to be completed for each course. List texts to be applied to that course as Textbook 1, Textbook 2, Textbook 3, and so on.

Text			Textbook 1	Textbook 2	Textbook 3
URL			URL 1	URL 2	URL 3
Topic # as listed in the course outline	Topic description as stated in the course outline	Objectives as listed in the course outline or subtopics if no objectives listed	Resource covers this objective: 2=Completely 1=Partially 0=Not at all	Resource covers this objective: 2=Completely 1=Partially 0=Not at all	Resource covers this objective: 2=Completely 1=Partially 0=Not at all
1	**Topic as stated**				
		Objective 1			
		Objective 2			
		Objective 3			
2	**Topic as stated**				
		Objective 1			
		Objective 2			
		Objective 3			
3	**Topic as stated**				
		Objective 1			
		Objective 2			
		Objective 3			
4	**Topic as stated**				
		Objective 1			
		Objective 2			
		Objective 3			
5	**Topic as stated**				
		Objective 1			
		Objective 2			
		Objective 3			

Athabasca University

Evaluating Pre-Service Teaching Practice for Online and Distance Education Students in Pakistan

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Abstract

In addition to conventional modes, teacher education programs in Pakistan are also offered through online and distance education. Teaching practice is a significant component of pre-service teacher education programs. Assessing the quality of teaching practice for pre-service student teachers is important, as these modules train the prospective teachers for their professional teaching careers. Virtual University of Pakistan (VU), an online university, offers pre-service teacher education programs. This research is an investigation into the learning opportunities and practices of VU student teachers in their teaching practice modules. Students enrolled in different teacher education programs served as the population of this study. Those in the fall 2018 semester who were enrolled in teaching practice modules were selected as a sample. Data sources included lesson plans prepared, lessons delivered, administrative and co-curricular duties performed by the students, as well as evaluation reports by supervisors, cooperating teachers, and school principals. There were improvements in the student teachers' lesson plan formation and their overall learning. Data obtained through personal visits by VU faculty was used to verify and assess actual classroom teaching. Lack of regular attendance and punctuality by student teachers was observed as a result. Internal review of the VU system as it relates to the teaching practice modules was conducted to address any shortcomings in the course(s), its procedures, and its controls. Recommendations for improving the system, such as grading the modules, peer-assessment, and orientation workshops for student teachers are provided, as well as suggestions for developments in the teaching practice modules themselves.

Keywords: teaching practice, evaluation, student teachers, online and distance education, pre-service teacher education programs, Pakistan

Introduction

Teacher education (TE) institutions generally offer pre-service TE degree programs. The focus of these institutions is to achieve excellence in preparing teachers through continuous improvement and compliance with international standards. Teacher education programs provide prospective teachers a set of learning opportunities designed to help them become good teachers. However, in the pasts, there has been a dissatisfaction with the TE programs in the US, based on criticism for failing to prepare effective teachers (Darling-Hammond, 2000). In Pakistan too, concerns have been raised over the quality of TE programs. The Government of Pakistan (2007) has also expressed misgivings about the quality of TE programs. The National Education Policy (2009) emphasized the need for quality in such programs, and urged that linkages be made with various institutions to strengthen these programs further. The National Accreditation Council for Teacher Education (2009) was established by the Higher Education Commission (HEC) in Pakistan to accredit all TE programs. While there are voices of dissatisfaction and concern in Pakistan, there are also a large number of teacher education institutions actively preparing teachers (Reba & Inamullah, 2014). These programs are running in conventional universities as well as in open and distance learning (ODL) mode. Whichever mode is used, teaching practice remains a pivotal module in such programs. Teaching practice modules are offered to prospective teachers to provide them practical experience along with theoretical knowledge. Teaching practice modules with various weightings are offered in teacher education programs worldwide.

In Nigeria, for instance, teaching practice for one semester is a compulsory part of TE programs (Aglazor, 2017). Quality of teaching practice is an essential concern of TE programs in all developed countries (Cobb, 1999; Liu, 2012). Globally, the experiences of teaching practice have been researched, particularly in relation to (a) professional growth (b) aligning teaching practice with content courses (Liu, 2012); and (c) other allied issues such as time and classroom management (Saphier, Haley-Speca, & Gower, 2008). Nonetheless, teaching practice serves as an integral component of initial teacher education degree programs (Mtika, 2008; Tang, 2003).

Teaching practice offers prospective teachers some practical exposure by providing experiences in actual classroom teaching. According to Surucu, Unal, and Yildirim (2017) it is obvious that the theoretical knowledge teacher candidates have received will not make sense and will not be useful unless they also encounter the knowledge, skills, attitudes, and behaviours that they will need in real educational environments. Teaching practice experience also builds student teachers' perceptions about the teaching profession (Kiggundu & Nayimuli, 2009). One core purpose of teaching practice programs is to enable student teachers to compete globally. Teaching practice is explained in detail below.

Teaching Practice

Teaching practice is a course or module designed to enable students to apply theoretical knowledge in actual classroom settings. It provides practical experience in teaching and dealing with students, in order to foster improved practical skills (Mashile, 2008).
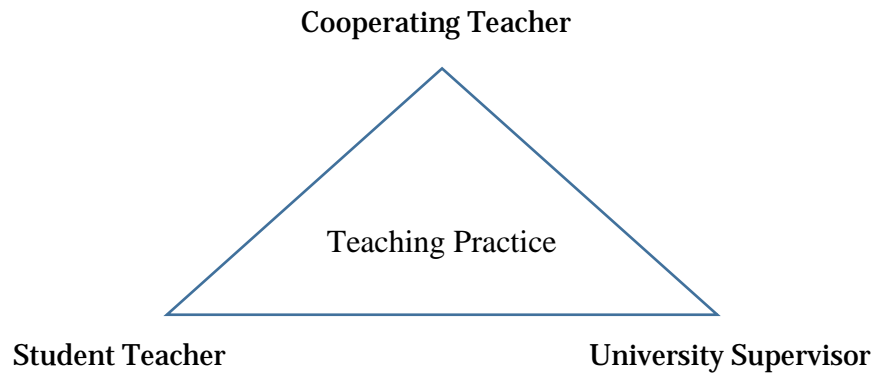
Figure 1. Teaching practice triad.

Teaching practice is often understood in the literature in terms of a triad. The teaching practice triad—as illustrated in Figure 1, a graphical representation of a teaching practice module—includes the cooperating teacher, university supervisor, and student teacher (Aglazor, 2017; Aglazor & Obi, 2016).

Teaching practice influences self-efficacy and especially technology supported self-efficacy (Unal, Yamac, & Uzun, 2017). In the literature, it is observed that student teachers frequently experience difficulties in matters such as classroom discipline, alignment in assessments, and using equipment for learning (Sarıtaş, 2007). Prospective teachers face various problems in converting their theoretical knowledge into teaching practice (Öksüz & Çevik, 2014). According to Kale (2011) teaching practice gives teacher candidates the opportunity to perceive their own level of skill, correct specific mistakes, and improve their weaknesses. Methods of assessing student teachers during teaching practice is a fundamental concern, and considerable discussion on improving assessment methods is available in the literature (Yahya, Mansor, & Abdullah, 2017). The role of the cooperating teacher is equally vital in student teachers' professional growth and development (Aglazor, 2017). These issues signify the need to evaluate the teaching practice programs that are offered to student teachers.

The purpose of evaluating any course, module, or program is to identify possible improvements, and to eliminate any irregularities (Johnstone, 2005). Evaluating teaching practice modules is worthy of research, as it becomes the foundation of career paths for prospective teachers.

While many Organisation for Economic Co-operation and Development (OECD) countries require education degrees as an entry qualification for teachers, a few countries, however, also require that teachers pass a national test in order to attain a teaching license (OECD, 2018). In Pakistan, teachers do not need any formal licensing, though the notion is under consideration. In such conditions, it is essential to place emphasis on teaching practice in pre-service training programs, as practices followed at this stage are carried out throughout a teacher's professional career. Improvements in teaching practice need to be based on contextual research evidence. Only after incorporating contextual improvements into the modules, can the teaching practice of Pakistani universities follow international standards.

As explained, TE programs in Pakistan are also being offered through ODL. The Virtual University of Pakistan is the first and only online university in Pakistan that provides all degree programs, including teacher education, through online technologies. VU offers various HEC-recognized degree programs of

different durations (Abdullah & Mirza, 2018). As per the roadmap for teacher education degree programs by HEC Pakistan, the following TE degree programs are currently offered: (a) BEd (Secondary), 1.5-year program; (b) BEd (Hons), 4-year program; (c) BEd (Elementary), 2.5-year program; and (d) associate degree (ADE), 2-year program. Entrants in these degree programs must have qualifications of (a) 16, (b) 12, (c) 14, and (d) 12 years, respectively (Higher Education Commission, 2016; National Accreditation Council for Teacher Education, 2016).

The present research was undertaken to evaluate teaching practice modules for teacher education programs offered in an online educational setting. Evaluating an online degree that prepares prospective teachers for both conventional and online contexts is significant, in order to reflect upon the learning and development this mode of education offers. Hence, this research was planned to evaluate the teaching practice module of different teacher education degree programs at VU.

Defining Key Terms

In this article, the three key terms related to the teaching practice triad are used according to the following definitions.

The cooperating teacher is that teacher in the selected school whose subjects are taught by the student teacher during their teaching practice. He or she facilitates the student teacher's work and signs all their assignments before the student submits them to the university. In this paper, the term cooperating teacher may be represented by the abbreviation CT.

The university supervisor is the teacher who supervises the student teacher and checks all their teaching practice assignments and tasks.

A student teacher is the student enrolled in the teaching practice course who is doing classroom teaching in the selected school. Other names available in the literature for student teacher are aspiring teachers, prospective teachers, candidate teachers, and so on.

Objectives of the Study

The following objectives were formulated for this study:

1. To evaluate the teaching practice module in terms of the learning activities offered to the student teachers.

2. To identify shortcomings in the teaching practice modules.

3. To recommend improvements in the teaching practice modules.

Methodology

This research made use of the program evaluation technique, defined as the systematic assessment of a program's activities and outcomes in order to make judgements, improve its effectiveness, and/or inform

decisions about future development (Anderson & Postlethwaite, 2011). Program evaluation in education is a process of describing a program's current situation or contributing to its development or making decisions about its policies (Yuksel, 2010). Program evaluation makes use of qualitative data, but often includes quantitative data as well (Pinch, 2009). In this mixed-methods research, qualitative and quantitative research methods were used to evaluate the TP program. Quantitative research methods helped identify the descriptive nature of the program, while qualitative research methods helped evaluate the overall program in a comprehensive way and contributed to a clear and deep understanding.

The two researchers for this study belonged to the VU faculty, and each had three years of experience at the time of the research. Together, they designed the teaching practice module and activities for TE programs at VU. Their background knowledge, understanding, and interest in the module makes them qualified for evaluating the program.

Description of the Study Sample

As explained above, VU offers teacher education programs in line with the HEC roadmap. This research was delimited to the teaching practice students and module in the fall 2018 semester only. Table 1 explains the teaching practice credits and the number of students in each teacher education degree program at the time the sample was created.

Table 1

Teaching Practice Offered to Students in Different Degree Programs at VU Fall 2018

Degree program	Teaching practice credits	Number of students
BEd (Hons), 4 years	15	2
ADE, 2 years	6	10
BEd (Secondary), 1.5 years	6	108

Due to an adequate number of students in the BEd (Secondary) 1.5-year degree program, the researchers selected this module of teaching practice only; the course code given to this module is TPT620. Hence, it was selected as the source of the sample to evaluate; 108 students were enrolled in this module in fall 2018.

Data Sources

As this was a comprehensive program evaluation, all activities planned within this course were sources of data, including

- administrative tasks related to students;

- students' assignments related to lesson plans;

- feedback from cooperating teacher and principal;

- monitoring visits to evaluate the student teachers' actual teaching;

- student teachers' feedback on teaching practice module;

- student teachers' feedback on teaching practice supervisor; and

- result of all activities over the semester.

Teaching Practice Module: TPT620

TPT620 is a six-credit course offered to those entering the BEd (Secondary) 1.5-year degree program with 16 years of education. Graduates of this program enter the job market as secondary school teachers in both the public and private sector school systems. Most of the students enrolled in this program already have academic degrees in science subjects, as is required for their employment, and are enrolled in this program to gain formal teacher education degrees. Therefore, the focus of the TPT620 course is on practical assignments along with a few administrative tasks in the school. The learning opportunities and activities in this course are outlined in Table 2. A total of 24 lesson plans are required in TPT620, with two lesson plans per week in each of the three subjects the student teachers select for teaching practice. The course evaluation is based 70% on teaching activities and 30% on administrative assignments and other tasks in the school.

Table 2

List of Activities and Assessment Scheme

Week	Tasks and assignments	F	CT comments	Evaluation by supervisor	Marks (out of 200)
1	Log of daily activities in the school	1	On all	All activities	20
	Record of school resources	1			
	Interview with CT	1			
	Interview with student(s) Community/co-curricular	1			
	Engagement	1			
2	Observation of classroom layout/set-up	1	On all	All activities	20
	Observation of classroom teaching	1			
	Observation of classroom activity/group work	1			
	Preparation of model lesson plans (LP)	1	Yes	Yes	20
3	LPs for subjects 1, 2, and 3	2 each	On any one	All 6	30
4	LPs for subjects 1, 2, and 3	2 each	On any one	All 6	30
5	LPs for subjects 1, 2, and 3	2 each	On any one	All 6	30
6	LPs for subjects 1, 2, and 3	2 each	On any one	All 6	30
4 to 6	Assembly, debate, sports, break duty, any other activity	Any 3	Any 3	Any 3	20

Results

Analysis of Students' Assignments to Explore Improvements in Learning

The assignments submitted by the student teachers were approved by the cooperating teachers and school principals. Cooperating teachers gave their comments on the assignments and university supervisors marked and assigned grades to the assignments. Analysis of assignments in terms of improvement in student learning and development is displayed in Table 3.

Table 3

Evaluation of Assignments Related to Lesson Plans

Lesson plan assignment	Overall assessment of assignments		
	Good (%)	Satisfactory (%)	Poor (%)
1	62.1	9.2	28.7
2	59.5	13.1	27.4
3	69.6	7.9	22.5
4	77.7	6.2	16.1

There was a total of seven assignments in the selected module. Three were related to administrative tasks a student teacher performs while doing their teaching practice in school; four were related to the preparation of lesson plans. Table 3 reflects the analysis of lesson plan assignments only. Assignments related to administrative tasks have not been included. While the lesson plan assignments were already marked by the university supervisors, for this research, they were critically reviewed against the specific criteria in a rubric designed to reassess the assignments. The rubric was comprehensive, and each section of the lesson plan (i.e., initial details, general and specific objectives, resources and materials used in teaching, procedures and details of teaching-learning activities, assignment(s) given, assessment of work/learning, and time allocation), was reviewed in line with the rubric criteria and assessed as poor, satisfactory, or good. After assessing each segment, researchers also gauged the overall assignment as poor, satisfactory, or good. Table 3 represents the overall percentages of weekly assignments.

Table 3 indicates that there was a distinct improvement in the students' learning. Of the week one lesson plans, 28.7% were assessed as poor, while slightly fewer (27.4%) were rated poor in the second week. The percentage of poor assignments fell further to 22.5% in the third week. In the last week of lesson plan assignments, there was a categorical decrease in poor assignments to 16.1%. Improvement of students' lesson plan assignments was clearly evident during this module. Similarly, the percentage of assignments in the good category improved from 62.1% in the first week to 77.7% in the fourth week. The increase in the good category and decrease in the poor category over four weeks of assignments is interpreted as improvement in the student teachers' learning.

Monitoring Visits to Evaluate Actual Teaching by Student Teachers

After evaluating the assigned lesson plans, monitoring visits of sample schools were made to observe and evaluate the actual teaching of student teachers. Out of the 108 students enrolled in TPT620, 15 were

selected for a monitoring visit. As VU seeks to admit students from all over Pakistan, the total sample also represented students distributed across Pakistan. To make best use of researchers' resources, only those cities where a cluster of student teachers was available were considered for a monitoring visit. Hence, Lahore with seven students (three male and four female) and Faisalabad with eight students (three male and five female), were visited for monitoring of teaching. Findings from those visits and observations are given in Table 4.

Monitoring visits were not announced to student teachers. It was observed that eight out of fifteen students (five of the six males and three of the nine females) were not present in schools on the visit day. Moreover, the absent student teachers were not taking classes as per the schedule they had submitted to the university supervisor. It can be inferred that student teachers, particularly males, were not be taking teaching practice seriously.

Table 4

Findings From Monitoring Visits

Students' gender	School type	City	Student employment status	Present at school	Lesson plans prepared	Attending scheduled class
Male	Private	Lahore	Student	No	No	No
Male	Private	Lahore	Student	No	No	No
Male	Private	Lahore	Student	No	No	No
Male	Public	Faisalabad	Student	No	No	No
Male	Public	Faisalabad	Employed in school	Yes	No	Yes
Male	Private	Faisalabad	Student	No	No	No
Female	Private	Lahore	Employed in school	Yes	Yes	Yes
Female	Private	Lahore	Student	No	Yes	No
Female	Private	Lahore	Student	No	No	No
Female	Public	Lahore	Employed in school	Yes	Yes	Yes
Female	Public	Faisalabad	Employed in school	Yes	Yes	Yes
Female	Private	Faisalabad	Employed in school	Yes	Yes	Yes
Female	Public	Faisalabad	Employed in school	Yes	Yes	Yes
Female	Public	Faisalabad	Employed in school	Yes	Yes	Yes
Female	Private	Faisalabad	Student	No	Yes	No

Students' Opinions About Course and Supervisor

At the end of their semester at VU, students are encouraged to give feedback on the course and the course instructor. Out of 108 students, only 43 completed the survey evaluating the TPT620 module and supervisors. Reponses were measured on a five-point Likert scale, where one represented strongly disagree and five denoted strongly agree. Table 5 reflects the evaluation feedback from TPT620 student teachers. Mean and standard deviations were calculated, along with the frequency and percentage of responses by student teachers. The TPT620 module evaluation form consisted of a series of items grouped by three particular factors, with a maximum possible score of five for each item. The factors comprised: (a) student contribution (M=4.37, SD=.79); (b) learning resources (M=4.17, SD=.91); and (c) evaluation (M=4.23,

SD=.74). All items in this evaluation had a mean score above 4.0 showing a high level of agreement (satisfaction) among students.

Table 5

Student Teachers Evaluation of the TPT620 Module

Factor	Item	*M*	*SD*
Student Contribution		4.37	.79
	I participated actively in the course through e-mail, Moderated discussion boards, *Skype/TeamViewer* sessions.	4.19	.89
	I think I have completed my internship within prescribed time.	4.40	.71
	I performed my internship with honesty and fulfilled all course requirements.	4.42	.78
Learning Resources		4.17	.91
	The learning material (e.g., semester plan, internship report guidelines) were relevant and useful.	4.16	.91
	The provision of learning resources in the e-library is adequate and appropriate.	4.19	.81
	The provision of learning resources (e.g., FAQs, glossary, important URLs) is adequate and appropriate.	4.09	1.0
Evaluation		4.23	.74
	The method of evaluating internship report submissions is reasonable and fair.	4.23	.88
	Feedback on different internship report submissions is well-timed.	4.28	.58
	Feedback on different internship report submissions is helpful.	4.16	.80
	Consistency and uniformity are observed during evaluation.	4.35	.56
	The instructor clearly communicates the assessment activities and evaluation criteria.	4.19	.84
	The evaluation of my documents (e.g., internship completion certificate [ICC]) is logical.	4.16	.77

Table 6

Student Teachers' Evaluation of Supervisor

Factor	Item	M	SD
Guidance by supervisor		4.13	.89
	Supervisor guides me and provides a clear track to complete my teaching practice.	4.23	0.83
	Supervisor guides me in preparing oral presentation of teaching practice.	4.02	0.95
Interaction with supervisor		4.14	.85
	Supervisor continuously interacts with me to keep my motivation high.	4.16	0.96
	Supervisor is always available through e-mail, MDB, or *Skype* to address my problems.	4.23	0.67
	While conducting *Skype* sessions, supervisor demonstrates knowledge of the subject.	4.02	0.92
Module-related support by supervisor		4.20	.74
	Reply to queries through e-mail or MDB reflects supervisor's command of the subject.	4.19	0.81
	Supervisor returns teaching practice submissions in a reasonable amount of time.	4.21	0.63
	Supervisor helps me search for a suitable institution for my teaching practice.	4.00	0.98
	The deadlines set by my supervisor for teaching practice submissions are appropriate.	4.40	0.53

Table 6 presents the responses of student teachers in evaluating their teaching practice supervisors. The supervisor evaluation also reflected a mean score for each item above 4.0, suggesting high levels of student satisfaction with their supervisors. These items were further grouped into factors such as: (a) guidance by supervisor (*M*=4.13, *SD*=.89); (b) interaction with supervisor (*M*=4.14, *SD*=.85); and (c) module-related support by supervisor (*M*=4.20, *SD*=.74). The analysis of both evaluation surveys (Tables 5 and 6) displayed high agreement among student teachers on all items, which can be interpreted as student teachers' high level of satisfaction with the module and the module supervisor.

Overall Results of the TPT620 Module

Out of the sample of 108 students, 90 achieved a pass and the remaining 18 were assessed a fail. The failed students submitted fewer than four assignments out of the seven required. In fall 2018, it was noted that the TP module was not graded, as it was a qualifying course only. Recommendations are given on the final result of students of this module on the basis of overall program evaluation by the researchers.

Discussion and Recommendations

This section presents a critical discussion of the findings of the TPT620 module evaluation in terms of how the study's research objectives were achieved.

Research Objective One: Evaluating the TPT620 Learning Activities

The complete module was reviewed and evaluated. The researchers analyzed all the components and activities planned throughout the course module. Data from different sources were gathered by making formal requests to the concerned departments such as administration and examination, as aligned with the ethical considerations of this study. Assignments from 108 students were reviewed and assessed again. Monitoring visit reports were analyzed and compiled to review the findings. Feedback given to student teachers on classroom teaching during monitoring visits was also reviewed. Module evaluation and supervisor evaluation forms were also analyzed and interpreted. In addition, the course related directions given to the students by the department of education from time to time were critically reviewed and possible improvement opportunities were explored. Anderson and Postlethwaite (2011) suggested that a comprehensive program evaluation in education studies calls for rigorous analysis of all the program's segments, so different components of the TPT620 module were analyzed for this evaluation. To achieve this first objective, this research explored the improvements in student teachers' learning and development as they participated in teaching practice modules.

After assessing the assignments, such improvements were seen; Table 3 reflects a significant increase in the assignments assessed as good, and a considerable decrease in the assignments assessed as poor. However, it cannot be ascertained whether students, by improving their theoretical assignments, can actually perform well in the practical field. Researchers considered this a limitation of the study; it would be useful to determine how many student teachers are employed, promoted, or receive a salary increment on the basis of this degree program. Darling-Hammond (2000) suggested that attaining an initial teacher education degree increases the chances of having a stable teaching career. A follow-up study to explore student teachers' career opportunities might help determine the actual learning and development achieved through the module.

In monitoring visits, the students were also given feedback on their teaching styles. Students who were present during the visits were evaluated for their teaching skills on a checklist to assess factors such as: (a) student teacher's personal traits, (b) classroom teaching, (c) classroom management, (d) classroom engagement, and (e) quality of teaching. However, in the fall 2018 semester, no outcomes of that evaluation were seen, since the teaching practice was not only non-graded because it did not contribute to students' final results. Follow-up monitoring visits should be made to review any improvements in students' classroom teaching. Other mechanisms of recurrent feedback on classroom teaching should be established after the monitoring visit, such as evaluation of teaching by cooperating teacher or peer-assessment, when there is more than one student teacher in the school. Previously, video recording student teachers' lectures was not successful at VU, as every student could not afford a smart mobile phone, and at times the resulting video and audio quality was also substandard. Therefore, alternate ways to assess performance need to be

identified, as literature indicates that monitoring students' teaching practices motivates and helps them improve (Aglazor, 2017; Unal, Yamac, & Uzun, 2017).

A workshop on a group of student teachers can be conducted before the start of TP modules, to familiarize them with the course requirements and learning outcomes. At VU, learning outcomes might be improved if workshops can be added. Allama Iqbal Open University (AIOU), another distance education university in Pakistan, organizes workshops for teaching practice students. A study of their practices might be useful for other ODL institutions, including VU. Therefore, a small level study is suggested by the researchers to evaluate the usefulness of such workshops at AIOU.

The results of evaluating the teaching practice module and supervisors indicated that students were mostly satisfied with the module and the supervisors. However, VU should review its student evaluation form and make it more specific to the TP module. VU should also consider adding international standards and practices to the TP module, and make the supervisors' role more practical (Kale, 2011).

Research Objective Two: Identifying Shortcomings in TPT620

During the evaluation of assignments other than lesson plans, it was observed that student teachers submitted timetables in various formats. VU should develop a standard timetable format for all student teachers to adhere to. Even though different schools might follow their own timetable format, student teachers could still develop their to follow the prescribed format, to be signed by the schools' authorities. Johnstone (2005) suggested that uniformity in all activities ensures transparency and merit in assessment. One shortcoming noticed during the TP evaluation was that student teachers' attendance was not monitored. Supervisors did not know whether the student teachers are actually going to the school regularly and punctually.

Another shortcoming observed was the student teachers already on the job did not comply with the teaching practice schedule of VU; instead, they followed their scheduled classes in the schools, other than secondary level classes, as per job requirements. Those who work in the same school they select for teaching practice should be asked to select and teach secondary level classes like other students as per degree requirements. United Nations Educational, Scientific and Cultural Organization (2002) encouraged that teaching practice take place at the same level the student teacher's career path, or similar to the requirements of the degree program. Other ways of ensuring the teaching practice at required level shall also be considered. Further, it was found that there were no follow-up monitoring visits; only one visit was made. The evaluation of classroom teaching was not included in the final outcome of the module. The reasons for this exclusion are obvious—as only sample students were monitored, making this evaluation a part of the final assessment does not fit well. However, VU's education department and leadership, as well as other ODL institutions, should consider ways to include teaching evaluation as part of the final assessment. As Mayes and Burgess (2011) have stated, teaching practice needs to be monitored, especially in ODL, in order to achieve learning outcomes effectively. Physical monitoring of teaching practice is not practically possible given that students are dispersed across Pakistan, therefore the use of information communication and technology is suggested. As well, student teachers might visit the campuses in their area in order that a sample model lecture, either live or recorded, can be evaluated.

Research Objective Three: Improving the Teaching Practice Module

In order to recommend improvements in VU's teaching practice modules, consolidated analyses of all data sets were done. The findings were reviewed and discussion points were raised. Researchers offer the following recommendations for improvement, as a result of this research.

The subjects that student teachers opt to teach in the schools must relate to the specialization subjects of their previous academic qualifications. This will align their previous academic qualifications and their classroom teaching, thus strengthening the content and control in their teaching. It is recommended that TP modules should be graded in pre-service teacher education programs to better reflect students' learning outcomes and achievements. Orientation workshops should be organized for student teachers, to achieve a twofold purpose. First, student teachers will come to understand the mechanism of teaching practice, and their questions might be addressed. Second, training could be offered on topics such as lesson planning and classroom management. Similarly, other ODL institutions that offer or intend to offer teaching practice should also incorporate this suggestion in their modules.

Student teachers' school selection could be improved. The preference, while selecting the schools, should be given to public sector schools. For private schools, a minimum number of students in the secondary level, perhaps 20, students should be added as a criterion. This would broaden student teachers' classroom teaching experience because, in public sector schools, the number of pupils in classes is high and classes are scheduled daily. Selecting a private sector school with at least 20 students in the secondary classes might also enhance the learning environment for student teachers. Peer assessment of student teachers might be considered, as a strategy for continuous improvement. Student teachers' attendance and punctuality can be emphasized and monitored if every document submitted by the student teacher is countersigned by their cooperating teacher and school principal. Another option could be a weekly attendance report duly signed by the cooperating teacher and principal. At the time of school selection, supervisors should contact the school principals and ensure that the student teachers have provided the original information about school, classes, timetable, and schedule. Practices of other ODL institutions across the globe need to be studied to help create a comprehensive policy for Pakistan. Making such reforms and improvements in the teaching practice module might help improve students' practice, as well as the module's learning and developmental outcomes. Similarly, the practices and evaluation of the TPT620 module in this research might help other developing countries initiate TE programs and set quality standards in teaching practice modules.

Conclusions

By analyzing the TP module and summarizing the discussion points it was concluded that overall, the students were satisfied with the teaching practice module and role of supervisors in conducting teaching practice at VU. It is further concluded that for continuous improvement, ODL institutions should consider recurrent feedback from student teachers in teaching practice modules. Student teachers improved their

lesson planning, which might be attributed to the learning activities in the teaching practice module. Therefore, it is clear that a mix of activities should be offered to student teachers as assignments in teaching practice modules to foster their learning. After evaluating the complete module, it is evident that despite a few possible improvement opportunities, the teaching practice offered in various degree programs at VU is striving to achieve its learning outcome of improving students' practical experience and learning. This teaching practice module enables student teachers to develop classroom preparation skills, including lesson planning. In their TP modules, other ODL institutions can improve student teachers' classroom management by offering strict monitoring of their classroom teaching. This evaluative study is useful as a case study for initiating and evaluating teaching practice modules in ODL institutions around the world.

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Emotions Among Students Engaging in Connectivist Learning Experiences

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Abstract

Emotion has long been a question of great interest in a wide range of fields. As a general rule, emotions are categorized as positive, which we seek, and negative, from which we turn away. However, empirically-backed connectivists claim that even negative emotions produce positive effects on student performance. What is less clear is how this process happens. This study had two primary aims. First, to assess the prevalence and distribution of emotions in connectivist environments. Second, to provide in-depth and experiment-based analysis that shows how and when negative emotions have their positive effect. Data for this study were mainly collected using an aided think-aloud protocol with nine participants, each of whom received ten tasks. Findings of the current study confirmed the dominance of negative emotions in connectivist learning environments and presented a model that could explain the variation of empirical results. Implications for researchers and teachers in distance education are discussed.

Keywords: connectivism, emotion, control-value theory, online learning, higher education

Introduction

The work presented in this paper was grounded in connectivism literature (Aldahdouh, 2017; Aldahdouh, Osório, & Caires, 2015; Downes, 2007; Siemens, 2005). Siemens (2006) emphasized the importance of emotions in connectivism and contended that "cognition, emotion, perception, and beliefs are knowledge creation and knowledge navigation enablers" (p. 16). As well, connectivists recognized that online learning without explicit guidance from an instructor could be as frustrating as exploring unknown territories without a map (Siemens & Tittenberger, 2009), a conclusion which found supporting evidence in several empirical studies (Capdeferro & Romero, 2012; Kop, Fournier, & Mak, 2011; Mackness & Bell, 2015; Tschofen & Mackness, 2012). A common assumption among connectivists, however, is that these negative emotions will force learners "to search for answers, to ask help, to seek for patterns and, in other words, to form connections" (Aldahdouh et al., 2015, p. 16). Yet, an empirical-based understanding of how negative emotions contribute to positive outcomes is still lacking.

We referred to control-value theory in an attempt to gain a better understanding of the emotions effect (Pekrun, 2014; Pekrun & Perry, 2014). In control-value theory, negative emotions are further divided into activating (e.g., anger, anxiety, shame) and deactivating emotions (e.g., hopelessness, boredom). We focused our attention on the consequences of negative-activating emotions because it was this set of emotions that was hypothesized to have positive impact on students' performance in connectivism. However, we found that control-value theory did not reach a firm conclusion as to whether negative-activating emotions would lead specifically to positive or negative outcomes. As Pekrun and Perry (2014) wrote, "the motivational effects of positive deactivating and negative activating emotions are proposed to be more complex" (p. 132). On the one hand, negative-activating emotions are expected to undermine interest, and, on the other hand, they may induce more efforts to avoid failure. And as expected, the empirical results were mixed; frustration emotion, for example, (a) predicted negative performance in some studies (Pekrun et al., 2004; Valiente, Swanson, & Eisenberg, 2012); (b) predicted the use of favorable meta-cognition strategies in other studies (Artino, 2009; Artino & Jones, 2012); and (c) lacked the power to predict meaningful online learning strategies in Marchand and Gutierrez (2012). Other negative-activating emotions such as anger and anxiety showed the same pattern of hybrid results (Lane, Whyte, Terry, & Nevill, 2005; Marchand & Gutierrez, 2012; Pekrun, Elliot, & Maier, 2009; Pekrun et al., 2004). These mixed results have made researchers stumble in their interpretation (Artino, 2009) and the field lacks in-depth and experiment-based analysis that shows how and when negative emotions take their positive effect.

This study set out to attain two aims. One was to inspect the prevalence and distribution of emotions in connectivist environments by gathering the frequency and relative frequency of various emotions. There is a general supposition among researchers that negative emotions dominate the feelings of students in online learning environments (Artino, 2009; Capdeferro & Romero, 2012; Zembylas, 2008), to the extent that some have argued that there is one positive emotion occurrence for every three to four negative emotions (Valiente et al., 2012). However, this ratio dropped to only 1.7 in a context of test-related emotions (see the results of study 1 in Pekrun et al., 2004). The context is indeed influential in terms of the emotions experienced by the participants. In test-related context, for example (Pekrun et al., 2004), students reported different set of emotions than in a MOOC context (Zembylas, 2008). Therefore, the literature is still in need of a study addressing the emotions that occur in connectivist learning environments, beyond the framework of MOOCs. The second aim of the current study was to

track the situations under which negative emotions produce their positive effect on a student's behavior. This study allowed learners' voices to emerge and brought out their own words.

Literature Review

Connectivism

Connectivists hold an alternative interpretation of how humans learn in a highly connected environment with abundant information (Downes, 2008; Siemens, 2005; Siemens & Conole, 2011; Wang, Chen, & Anderson, 2014). A central tenet of connectivism is that today, knowledge is dynamic and accelerating: "while there is a right answer now, it may be wrong tomorrow" (Siemens, 2005, p. 4). Although connectivists do not define knowledge, they propose that knowledge has a structure much like a network—because the network structure is powerful and inclusive (for more discussion about knowledge network, the reader is directed to Aldahdouh, 2019 and Downes, 2007).

To learn, in the connectivist view, is to form new connections or to recognize patterns of existing networks (Downes, 2016). Because the knowledge network is dynamic and chaotic, learning is viewed as a continuous process of adopting to newly formed patterns. A recent study by AlDahdouh (2018a) showed that learners form connections in three cyclic phases: planning, cognitive processing, and evaluating. The planning phase is a meta-cognitive process in which learners enumerate the surrounding nodes, order them, exclude some, and select one. Learners use three criteria in choosing nodes: (a) self-efficacy, (b) eligibility of the resource, and (c) feasibility of the resource. In the cognitive processing phase, learners interact with the selected nodes in hopes of finding the required information. The evolution phase refers to the process of questioning the value of the selected nodes.

Few studies have investigated the individual learning experience in connectivist environments (Mackness & Bell, 2015; Tschofen & Mackness, 2012). Participant emotions were considered in those studies, but only on the margins. For example, Kop et al. (2011) tracked what the participants of two MOOCs thought and felt, and found that MOOC newcomers felt confused and overwhelmed. As a result of a high level of autonomy, some participants felt included, accepted, and empowered, while others felt threatened and lost. Quite similar results were found by Mackness and Bell (2015), but additionally they spotted one interesting result—some participants recognized the fact that the organizers of MOOC in which they were participating were actually testing a new learning environment, with learners playing in a role similar to lab rats. Once again, the participants took two stances; some felt proud to be among the few who were building new knowledge, while others felt upset about the whole experiment. The issues of self-direction and self-motivation in the face of setbacks have now been fully recognized in connectivism literature (Aldahdouh & Osório, 2016; Downes, 2019).

Connectivism has been subjected to considerable criticism (Clarà & Barberà, 2013; Kop & Hill, 2008; Verhagen, 2006). Downes (2019) contended that most of the arguments against connectivism sprang from theoretical papers. Yet, the arousal of negative emotions in connectivist environments have led some researchers to adopt a skeptical view of connectivism and its ability to guide the teaching practices in online learning (Ament & Edwards, 2018; Cabrero & Román, 2018; Pando, 2018). For example, Ament and Edwards (2018) urged teachers to ignore recent trends in mobile learning, especially those calling for marginalizing the role of teacher (such as in connectivism and personalized learning) because

this will lead only to a deterioration of learner performance, both academically and emotionally. For connectivists, the negative emotions are just part of a normal learning process. How can learning ever happen, unless a learner experiences some sorts of confusion, anger, and frustration? Even more, AlDahdouh et al. (2015) argued that negative emotions do have a positive impact on learners' performance in that they push learners out of their comfort zone.

Control-Value Theory

The basic proposition in control-value theory emphasizes the role of control and value appraisals (Pekrun, Goetz, Frenzel, Barchfeld, & Perry, 2011; Pekrun et al., 2004; Pekrun & Perry, 2014). The theory acknowledged the various types of factors that can explain the arousal of emotions, all of which are proposed to take effect through two proximal antecedents—the perceived control of one's actions and outcomes, and the perceived value of the task's activities and outcomes. To put it simply, triggering students' emotions is thought to be preceded by changing in their self-concept of power over the task and their assessment of the task's value. It has been proposed that anxiety, for instance, is triggered when a student is uncertain about exam results (low outcomes-control), while anxiety becomes hopelessness when the uncertainty of exam results dips to a complete lack of hope. Anger is experienced when the results are highly appreciated (high outcome-value), while the teacher's activities are perceived as useless (low activity-value). Other emotions follow similar patterns and are aroused by a preceding combination of control and value appraisals (for more details, see Pekrun & Perry, 2014).

In a series of qualitative and quantitative studies, Pekrun and colleagues (Pekrun et al., 2011; Pekrun & Perry, 2014) tested the above-mentioned model and its applicability in examination contexts at schools and universities. The results identified two crossing dimensions that classify nine emotions into four sets of interrelated emotion profiles, as shown in Figure 1. According to Pekrun and colleagues' qualitative studies, almost all human emotions were reported by the participants, but the nine emotions represented in Figure 1 were the most often reported, and the most influential on the students' motivation and academic performance.
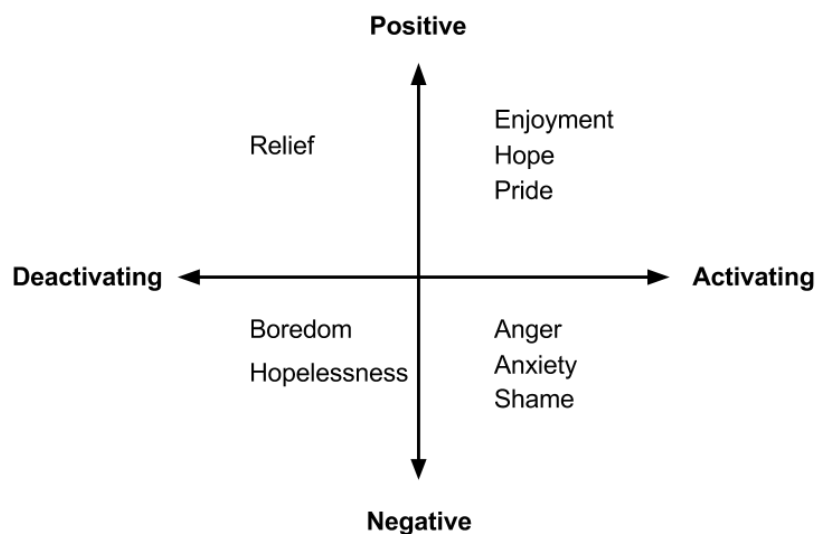

Figure 1. Taxonomy of achievement emotions into four categories.

Each emotion profile has different effects on student goals, motivations, and academic performance (Pekrun et al., 2011; Pekrun & Perry, 2014). Consistent findings across different studies showed that

101

positive-activating emotions are associated with adaptive consequences, such as (a) elaboration and meta-cognition (Artino & Jones, 2012); (b) learning strategies (Marchand & Gutierrez, 2012); (c) the choice of intensive online learning (Tempelaar, Niculescu, Rienties, Gijselaers, & Giesbers, 2012); and (d) higher exam grades in the virtual world learning environment (Noteborn, Bohle Carbonell, Dailey-Hebert, & Gijselaers, 2012). A destructive impact of negative-deactivating emotions has also been shown consistently in various studies (Artino, 2009; Artino & Jones, 2012; Noteborn et al., 2012).

The empirical findings of negative-activating emotions were, in contrast, mixed. For illustration, we put forward here the contradicting results of frustration emotion. Pekrun, Frenzel, Goetz, and Perry (2007) classified frustration initially as negative-activating emotion in a three-dimensional taxonomy of achievement emotions. The preliminary empirical results showed that frustration predicted maladaptive behavior (Pekrun et al., 2004; Valiente et al., 2012), but later works failed to replicate this result. In particular, successive studies (Artino, 2009; Artino & Jones, 2012) showed that frustration positively predicts the use of meta-cognition, one of the most important self-regulation strategies in online learning. Moreover, Marchand and Gutierrez (2012) showed that frustration and anxiety failed to maintain a significant predictive power for meaningful learning strategies for distance education students, while they both negatively predicted the learning strategies in face-to-face groups. Even with these contradicting results, in their later work, Pekrun and Perry (2014) reclassified frustration under negative-deactivating emotions.

It has proven difficult for many researchers to interpret how negative emotions can lead to positive outcomes. For some, the findings were exceptional and inconclusive (Artino, 2009; Artino & Jones, 2012) and should be received with caution (Marchand & Gutierrez, 2012). For others, the variation of results could be due the nature of the learning context, online versus face-to-face (Marchand & Gutierrez, 2012; Zembylas, 2008). Some scholars chose to defect from the control-value theory and suggested that the effect of negative emotions is mediated by some factors (e.g., cognitive processes) or moderated by others (e.g., effortful control; Lane et al., 2005; Valiente et al., 2012). Valiente et al. (2012) additionally provided an interesting suggestion that the level of arousal may tamper with the positive effects of emotion. Accordingly, being angry at a teacher's activities, for example, could encourage one to exert more effort, but only when the anger does not rise up to the level at which no more cognitive capacity is left with which to complete the task itself.

Generally speaking, the field is active, yet under-researched regarding the impact of negative emotions. As far as we can tell, no previous study has demonstrated the prevalence and distribution of emotions in connectivist environments nor qualitatively tracked under which situations the negative emotions produce their positive effect on students' behavior. The current paper attempts to unravel some of the mysteries surrounding those objectives.

Methodology

Design and Procedure

Participants in this study were recruited from Palestinian higher education institutions (HEIs). There are three types of HEIs in Palestine: university, university college, and community college. Each type offers specific types of programs. For example, universities, in addition to postgraduate studies, can

offer five undergraduate study programs: (a) four-year bachelor; (b) five-year bachelor (such as engineering); (c) six-year bachelor (such as medicine); (d) two-year diploma; and (e) one-year professional diploma. According to the *Higher Education Statistical Yearbook* for 2015/2016 (Ministry of Education and Higher Education, 2016), there are 50 accredited HEIs in West Bank and Gaza. The total number of students registered in HEIs for the academic year 2015/2016 was 216,028 (130,843 female) while the total number of newly enrolled students was 56,969 (33,292 female; Ministry of Education and Higher Education, 2016).

The current study employed aided retrospective think-aloud (RTA) as a main research method. An aided RTA is also known as "prompted retrospective protocol" (Kuusela & Paul, 2000, p. 398), "retrospective verbal protocol" (Ericsson & Simon, 1980, p. 226), and "stimulated retrospective think-aloud" (Guan, Lee, Cuddihy, & Ramey, 2006, p. 1253).

Upon inviting the participants to take part, the purpose of the research was clearly explained, and informed consent was collected. Each participant individually received ten tasks, one task after another. Participants were free to access any resource or to refer to anyone regarding the task, but they were asked to record their activities carefully (e.g., video recording of computer screen, screenshots of mobile conversation on *WhatsApp*, voice recording of face-to-face conversation with friends). A secondary consent was collected for any conversation involving other parties. Once completing the task, the participants took part in a follow-up RTA session, where they watched a recording of their activities and reported whatever was on their mind (Kuusela & Paul, 2000; Van Den Haak, De Jong, & Schellens, 2004). RTA sessions were video recorded.

Participants

Fifteen students participated in the experiment and accepted the informed consent terms (Table 1 shows a list of participants); nine students completed the ten tasks in the experiment. Data generated from only those nine participants were included in the analysis. A small and purposive sample was chosen because of the difficulty in obtaining a larger sample for a think-aloud study, and in line with recommendations in the literature for online experiences, which make a strong case for selecting only those participants who show the desire and willingness to generate rich information about the phenomenon (Limbu & Markauskaite, 2015; Sharpe & Benfield, 2012). Each participant received about US$26 as a financial reward upon completing the tasks. The final sample included two males and seven females. The study also comprised data generated by 62 secondary participants to whom the main participants turned during the study.

Table 1

Participants' Information

Name[a]	Gender	Age	Field of study	GPA[b]	Tasks completed	Length (in days)[c]
Weaam	F	22	Pharmacy	87.95	10	30
M. AbuNour	M	20	Public Relations	76.20	1	46
K. AbuNour	M		Information Security		0	0
Khaled W.	M	21	Share'a and Law	76.80	10	194
Khaled D.	M	19	Journalism	81.50	10	183
Talla	F	19	English Literature	82.70	10	87
Sabha	F	21	Education	85.50	10	82
M. Musharawi	M		Share'a and Law		0	8
Redaa	F	20	Science Education	93.6	10	24
Salwa	F		Science Education		0	31
Neran	F	21	Math Education	80.74	10	37
Khoula	F	21	Math Education	82.00	0	7
Nawal	F	28	Arabic Literature	93.25	10	51
Khaled A.	M		English Literature		0	11
Amal	F	21	Math Education	80.50	10	42

Note. [a]All names used are pseudonyms. [b]GPA stands for Grade Point Average (in percent). [c]The number of days to complete the task(s).

Measures

We set the following four criteria for the experiment based on connectivist instructions and the recommendations of previous studies (Aldahdouh, 2019; Aldahdouh et al., 2015; Downes, 2009; Siemens, 2005):

1. A task should belong to the participant's daily life, inside or outside the academic context.

2. A task should be formulated in such a way so as to stimulate participants to search.

3. The experiment settings should empower the participants to do whatever they want to do in order to accomplish the task at hand.

4. Participants should receive tasks of different levels of difficulty.

The 10 tasks (i.e., Q1 to Q10) in the experiment were arranged based on their expected difficulty as follows: (Q1) an information search, (Q2) investigate a person, (Q3) a question in their field of study, (Q4) a self-motivation question, (Q5) validate information, (Q6) a compound task, (Q7) write an essay, (Q8) a design question, (Q9) a creativity question, and (Q10) a technical question. In creativity question (Q9) for example, a black circle covered a considerable part of a short story written by the researcher (see Figure 2). Participants were asked to recover the missing part using the shown text, so the whole story became consistent.
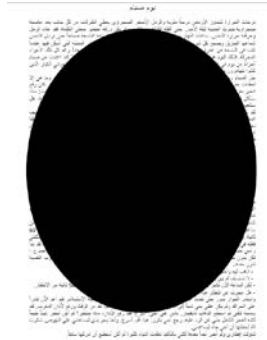
Figure 2. A snapshot of Q9.

Analysis

Throughout the experiment, the participants generated 1,364 files with a total storage size of 23 GB. This includes over 140 hours of video recordings and over 125 hours of audio recordings. Participants also produced text documents (doc, docx, and txt only) that totalled 93,255 words (*Facebook* and *Skype* chats were not included in this number).

Two theoretical frameworks guided the initial categorization process of emotions in this study. Connectivism—the first framework—identified three broad levels of learning networks, namely neural, conceptual, and external (Aldahdouh et al., 2015; Siemens & Tittenberger, 2009). The neural category was beyond the scope of our research, so our focus was solely on the conceptual and external levels of learning networks, hereafter referred to as internal and external, respectively. The other theoretical framework was the two-dimensional taxonomy of achievement emotions (Pekrun, 2014; Pekrun et al., 2007). Nevertheless, the aim of this study was to provide a detailed description of the higher-level categorization matrix proposed by the theoretical frameworks, rather than provide a rich description of the data set. The qualitative content analysis included the videos of RTA together with all other documented activities of the participants. ATLAS.ti 7 was used in the data analysis.

Results

Prevalence of Emotions in Connectivist Contexts

Participant's activities. Throughout the course of the experiment, the participants engaged in a wide array of learning activities and contacted various resources, as summarized in Table 2. The table was built based on the steps used in solving the tasks, as reported by the participants.

Table 2

Nodes' Distribution (Times of Occurrence)

Internal (80)	Cognitive processes (34)			
	Writing (46)			
External (347)	Internet searching (169)	Laptop or desktop (133)		
		Mobile (36)		
	Ask people (139)	Face-to-face (48)	Friends (9)	
			Family members (26)	
			Teachers (13)	
		Online (91)	E-mail (2)	
			WhatsApp (10)	Friends (9)
				Teacher (1)
			Facebook Messenger (57)	Researcher (6)
				Friends (26)
				Family members (7)
				Teachers (18)
			Facebook groups/pages (19)	
			Skype call (3)	
	Paper resource (30)			
	Digital resource (9)			
Give up (7)				

In Table 2, nodes are organized in a hierarchical manner. For instance, the participants asked people for help 139 times, and of these, 91 were through online communication. Online communication, in turn, took the form of e-mail twice, *WhatsApp* 10 times, and so forth. The implications of the activity distribution on theory and practice have been discussed in our previous work (Aldahdouh, 2018b, 2019). For this study, the list of activities was commingled with an emotion matrix to explore the distribution of emotions over activities.

Distribution of emotions. The participants expressed a diverse range of achievement emotions as shown in Figure 3 below.

	Activating (Occ=988, PoT=69,43)				Deactivating (Occ=435, PoT=30,57)			
Negative (Occ=1168, PoT=82,08)	Emotion	Occ[a]	PoC[b]	PoT[c]	Emotion	Occ	PoC	PoT
	Confusion	444	57,96	31,2	Frustration	183	45,52	12,86
	Anxiety	102	13,32	7,17	Hopelessness	140	34,83	9,84
	Irony	101	13,19	7,1	Boredom	61	15,17	4,29
	Anger	70	9,14	4,92	Sadness	11	2,74	0,77
	Shame	41	5,35	2,88	Regret	7	1,74	0,49
	Other NA	8	1,04	0,56				
		766	100	53,83		402	100	28,25
Positive (Occ=241, PoT=16,94)	Emotion	Occ	PoC	PoT	Emotion	Occ	PoC	PoT
	Enjoyment	67	30,18	4,71	Relief	33	100	2,32
	Hope	62	27,93	4,36				
	Surprise	51	22,97	3,58				
	Happy	36	16,22	2,53				
	Pride	6	2,7	0,42				
		222	100	15,6		33	100	2,32

Figure 3. Distribution of emotions in the experiment.

Note. Occ = times of occurrence; PoT = percentage of times of occurrence to the total number of emotions reported; PoC = percentage of times of occurrence to the number of emotions reported within the same category.

In total, emotional indications were spotted 1,423 times, and of these 1,168 (82.08%) were marked as negative and 241 (16.94%) as positive. The negative-to-positive ratio in this study was about 4,85:1. Activating emotions were reported 988 times (69.43%) in comparison to deactivating emotions that appeared 435 times (30.57%). The negative-activating category had the biggest share of all emotions reported (766 times; 53.83%). Other categories in descending order were: (a) negative-deactivating (402 times; 28.25%); (b) positive-activating (222 times; 15.6%); and (c) positive-deactivating (33 times; 2.32%). The top five emotions reported were purely negative: (a) confusion (31.2%); (b) frustration (12.86%); (c) hopelessness (9.84%); (d) anxiety (7.17%); and (e) irony (7.1%). The positive emotions were mainly classified as activating: (a) enjoyment (4.71%); (b) hope (4.36%); (c) surprise (3.53%); (d) happy (2.53%); and (e) pride (0.42%). In this study, only relief was identified as a positive-deactivating emotion and was mentioned very little (33 times; 2.32%).

By reading the relative frequency within each category, it can be concluded that confusion (57.96%) and anxiety (13.32%) were the best representative of the negative-activating emotion, together constituting 71.28% of the total number of emotional expressions reported within the category. Similarly, frustration (45.52%) and hopelessness (34.83%) represented the negative-deactivating category with a total of 80.35%, while enjoyment (30.18%) and hope (27.93%) represented the positive-activating emotions with a total of 58.11%.

It is noteworthy that each distinct feeling was classified within its category mainly based on the work of Pekrun and colleagues (Pekrun et al., 2007; Pekrun & Perry, 2014) but also based on our analysis of emotions' co-occurrence table generated by ATLAS.ti. For example, surprise did occur jointly with

negative and positive emotions, but it was classified as a positive-activating emotion because it co-occurred more often with the emotions within its group.

Distribution of emotions over activities. In order to help distinguish those activities that accounted for the bulk of emotional arousals, we were interested in assessing whether the pattern of emotional distribution varied across activities. Owing to the large number of end activities, similar activities were grouped together according to the hierarchy shown in Table 2. Figure 4 shows the distribution of emotions over the higher-level activities.
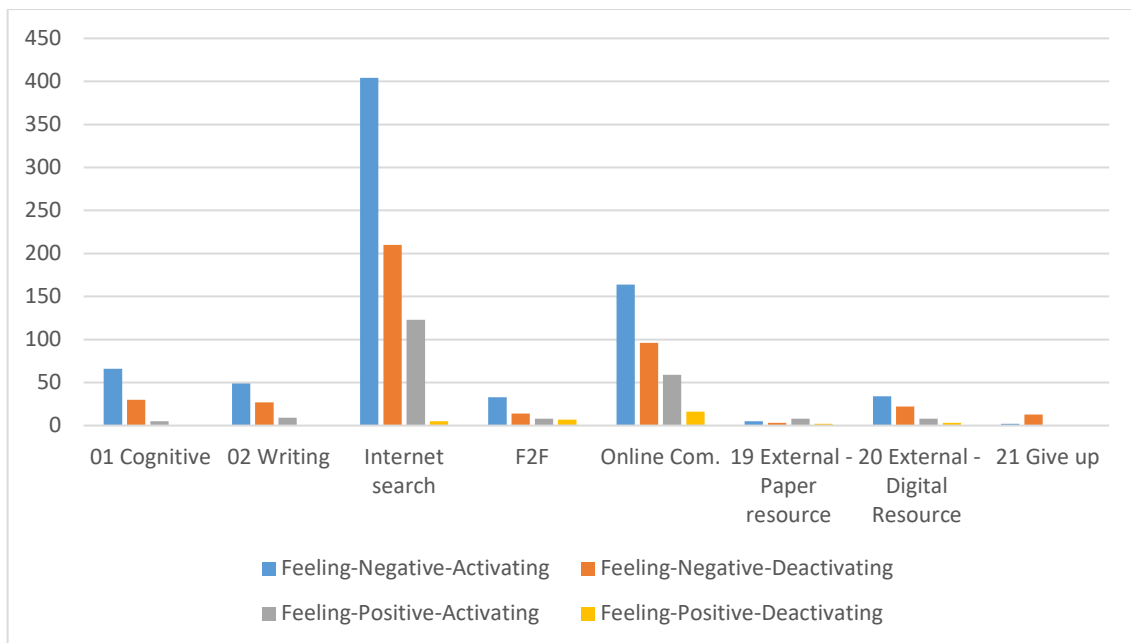
Figure 4. Emotion distribution over higher-level activities.

It is evident that Internet searching and online communication (e-mail, *Facebook* groups/pages, *Skype* calls, *WhatsApp*, and *Facebook Messenger*) accounted for most of the emotional arousal in the experiment. This result somehow reflects the fact that the participants spent most of their time searching the Internet (see Table 2). Another interesting finding is the consistent pattern of emotions among almost all learning activities. In most categories, negative-activating was the highest followed by negative-deactivating, positive-activating, and finally positive-deactivating. The pattern of emotions participants experienced while thinking and writing was almost the same as that while consulting others or searching the Internet. An exception to this paradigm was when the participants gave up, which was dominated by negative-deactivating emotions.

Qualitative Analysis

Some examples of emotions reported in the experiment revealed how negative emotions affected the behavior of the participants positively. In the following, the participants' voices show how they experienced negative emotions. Interpretations and implications of participants' behavior are addressed in the Discussion section.

Confusion was accompanied by repeating the same content twice or more, random clicks on a Web page, and suspending the current activity to think of different options. The following excerpt from Khaled W., in Q6, shows how he started acting randomly.

108

Khaled W.: [visiting a Web page he had visited several times].

Researcher: Then you have decided to come back to the application page again, didn't you?

Khaled W.: I was going up and down through the page not because I was searching for something, No! I was thinking of what I should do at that moment.

The previous excerpt shows that confusion had a positive effect on Khaled W. since he began to consider other options to solve the task. The positive effect was also applicable to other negative-activating feelings such as anxiety. The following excerpt from Sabha, in Q2, clarifies how her anxiety led her to come up with a new idea and to establish a new connection with her friend.

Sabha: After closing the first video recording [for the experiment], I went to sleep. But I couldn't rest that night until I knew who he is [the Palestinian character under investigation]. So, I visited his Facebook page on my mobile and searched for other people who liked his page. Then, I figured out that a friend of mine was among his followers. So, I talked to her.

Another example of a negative-activating emotion was a *Facebook* conversation between Neran and her friend in regard to Q9. Neran sent the question along with the story file (PDF) to her friend and asked her to solve the task. Apparently, her friend did not try to fill in the missing parts of the story on her own. Instead, she searched the Internet, to no avail, which made her angry. In response, she began to search for help and established connections with other people to remove the black circle from the PDF file.

Her friend: I was about to have a heart attack.
Listen, I don't promise you I will solve it, but I promise you I will send it for more than one person. Don't worry.
[after a while]
Here I am, I've sent it!
I will try also to send it to experts in photo editing to remove that black thing; and it will appear.

Neran: Really 😭😭😭😭
I cried with happiness.

Neran's response revealed the level of frustration and hopelessness she reached and how she was waiting for a glimmer of hope.

The previous excerpts serve as examples of how negative-activating emotions, namely anxiety and anger, may lead to establishing new connections, as connectivism has assumed (Aldahdouh et al., 2015). However, in the experiment, negative-activating emotions did not always serve to establish connections to new thoughts or people. For some participants, developing the negative-activating emotions devolved to negative-deactivating emotions, especially for those with continuous failure. The following excerpt

from Nawal, in Q6, shows that she reached a level of frustration, and maybe hopelessness, after experiencing anger in trying with no hope.

> Nawal: Frankly, the terms [of the scholarship] were all not applicable to me. And nothing went well, I mean nothing!

> Researcher: Aha.

> Nawal: There was a thing in the seventh video [a recording of her search on mobile]; I tried to click on 'Apply' [button] several times and I tried to click on anything on the webpage, but it was not working. Clicking on 'Apply' [button] has reloaded the page and brought me back to the same page. I do not know what else I can do now.

Negative-deactivating emotions were tightly coupled with giving up the task. In all these cases of giving up, the participants said they felt a high-level of frustration and hopelessness.

Discussion and Conclusions

The initial objectives of this current study were to identify the distribution of emotions in connectivist learning environments and explore the effect of negative emotions on the participants' behaviors. The findings revealed that the emotions experienced in this environment were particularly negative. The feelings of confusion, frustration, hopelessness, and anxiety dominated, and there was almost no room for feeling relief. Other positive emotions barely appeared and hardly reached one sixth of the total emotions decoded. The yields of negative emotions in this investigation were high. The overall negative-to-positive emotion ratio was found to be 4.85:1, far higher than that of previously reported ratios (Pekrun et al., 2004; Valiente et al., 2012). Moreover, the findings of the current study did not support previous research in terms of the top emotions experienced. In the study by Pekrun et al. (2004), for example, the most frequently reported negative emotions were, in descending order: (a) anxiety, (b) anger, (c) shame, and (d) hopelessness. This is in comparison to our results: (a) confusion, (b) frustration, (c) hopelessness, (d) anxiety, and (e) irony. We attribute this variation to the context of the experiment (problem-solving in connectivist environments vs. taking an examination on campus) and invite researchers to take the context into account before applying their measures. Our results, in contrast, support the connectivist hypothesis that engaging in connectivist environments greatly arouses learners' negative emotions (Aldahdouh, 2019; Downes, 2019; Kop et al., 2011; Mackness & Bell, 2015).

What is interesting about the data in Figure 3 is that they revealed a shared pattern of emotions across all activities, although the intensity of feelings differed significantly. It can be seen that the greatest share is for negative-activating and negative-deactivating emotions, followed by positive-activating and positive-deactivating. A possible explanation for this might be that the learning process itself triggers this pattern, regardless of the activity performed.

The single most striking observation to emerge from the qualitative analysis is that in each indication of negative-activating emotion we detected, the emotion showed a positive effect on the participants'

110

performance, particularly at first. The participants thought of alternative solutions, sought help, and employed higher-levels of thinking. This finding should not be completely surprising, however, since control-value theory suggests that emotions lying on the activating dimension will most likely induce one to act. What is remarkable about this finding is that these actions seem to be sufficient for one engaging in connectivist environments. Basically, learners in such contexts are not forced to rely solely on their own cognitive capacity (Downes, 2007; Wang et al., 2014), and thus, identifying the consumption of one's cognitive capacity as a negative consequence does not apply in this context (Pekrun & Perry, 2014). This could possibly explain why negative emotions positively predicted meta-cognition strategies (Artino, 2009; Artino & Jones, 2012), but not students' grades (Pekrun et al., 2004; Valiente et al., 2012). The destructive effect of negative-activating emotions did occur, but only when the failure was constantly happening. More often than not, the negative effect manifested itself in transforming the negative-activating to negative-deactivating emotion. So, confusion becomes boredom and anger becomes hopelessness. It can thus be suggested that undesirable effects of negative-activating emotions are mediated by negative-deactivating emotions, where the continuous failure can be thought of as a moderator.

The results of the present study are significant in at least two major respects. For researchers, the findings highlight the importance of targeting the top frequent negative and positive emotions listed in the results, especially for those who seek to identify the effect of emotions in connectivist learning environments using large samples. It makes little sense to study the effect of less frequent emotion such as sadness, although it is a primary emotion (see also the results of Pekrun et al., 2004), because this entails a decrease in its predictive power. For teachers in connectivist environments, a note of caution is due here since the level of negative emotions is certainly high. Although our results suggest the positive impacts of negative-activating emotions, this does not imply that the learning environment should be designed so as to arouse them. Rather, the role of teacher is to keep one's eyes open for frequent failure by students and to intervene before the negative-activating emotion develops to negative-deactivating emotion. Considering a possibly large number of learners in a regular connectivist learning environment (e.g., cMOOC), the teacher still has an option to inform the participants of the high level of negative emotions they may feel. Raising the participants' awareness is perhaps useful in any stage of the course and might help them to exert control over their emotions.

The findings of the current study are limited by a number of deficiencies. A small sample size is the clearest source of bias. Being qualitative in nature, this study should not, and cannot, prove or deny the generalizability of the model presented to interpret how negative-activating emotions take their effects. The literature is still in need of a large study that rolls out the effect of frequent failure, and examines the mediation role of negative-deactivating emotions between negative-activating emotions and the undesired outcomes. Another source of uncertainty is that we did not measure the level of emotional arousal. Therefore, we do not know as yet whether a high-arousal level manipulates the emotional effects as suggested by Valiente et al. (2012). Moreover, this study failed to track the distribution of emotions over time. An extended problem-solving context, like the one presented in this study, involves a continuous emotional arousal which fluctuates repeatedly over time. A study to plot the development of each emotion and the interaction among emotions over the course of the experiment would therefore be interesting. Despite these shortcomings, a combination of findings in the present study provides some support for the conceptual premise of connectivism and control-value theory in that negative-activating emotions somehow produce positive consequences, although not always.

Acknowledgements

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Postgraduate Distance Education in University of Cape Coast, Ghana: Students' Perspectives

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Abstract

The study explored perceptions of postgraduate distance education students of University of Cape Coast (UCC). Specifically, associations between UCC postgraduate distance students' characteristics and satisfaction, as well as students' perceptions of physical facilities, staff-students relationship, facilitator quality, and student support services were examined. Determinants of students' satisfaction regarding physical facilities, staff-students relationship, facilitator quality, and student support services were also investigated. A census was used for the study, whereby a questionnaire was used to collect data from 125 students. It was revealed that satisfaction was not dependent on age, gender, or programme of study but was significantly related to study centre location and semester of study. The students were generally satisfied with physical facilities, staff-students relationship, and facilitator quality but were unimpressed with student support services. The three domains that students were impressed with were deemed to be determinants of their satisfaction. It was recommended that those aspects of the programme that received satisfactory responses should be maintained but improved on with time. Those aspects with unfavourable responses, on the other hand, were to be critically considered for immediate improvement.

Keywords: student satisfaction, distance learning, service quality, higher education

Introduction

Education is considered one of the surest ingredients for developing the human resources of any society. Until recently, conventional education was the modus operandi when developing human resources. This form of education, despite its increasing importance and continuous increases in enrolment worldwide (Allen & Seaman, 2017; Seaman, Allen & Seaman, 2018) has been saddled with many challenges. They include problems of space, infrastructure, widening access, and enhancing access to participation in education. Other challenges include promoting equality and democratisation, and providing cost-effective and affordable education (Aggor, Kinyanjui, Pecku, & Yerbury, 1992; Chawinga & Zozie, 2016). Distance education has come to be seen as a solution to the challenges of conventional education (Bozkurt et al., 2015; Kwapong, 2010). Regardless of the barrier, distance education creates opportunities for many persons who could not or may not have access to enrol in conventional, regular higher education programmes (Panda & Santosh, 2017; Stoessel, Ihme, Barbarino, Fisseler, & Stürmer, 2015). Distance education programmes and institutions are increasing because of ease of accessibility (Afolabi, 2017; Özcan & Yildirim, 2018). According to Stewart (1993) and Krishnan (2012), the provision of support services is an important remedy to the limitations of distance education, making it akin to conventional education.

Competition for students among the many higher educational institutions has made customer satisfaction a paramount concept in the field of education (Osman & Saputra, 2019), and customer satisfaction is said to be a strategic tool towards achieving customer retention and loyalty (Agyei & Kilika, 2013; Zhen, Cao, & Tang, 2018). Kaur and Bhalla (2018) argued that students are the internal customers of educational institutions and as such, policymakers should yearn to satisfy their students since dissatisfaction ranks among the causes for high attrition rate among distance students (Jan, 2015). Sustainability and competitive edge are issues for institutions because "dissatisfied students can decide to discontinue schooling, complain to the university or to other higher institutions or engage in negative word-of-mouth" (Fosu & Poku, 2014, p. 211). This, according to Kaur and Bhalla (2018) pushes educational administrators to bring about service quality reforms in the higher education sector. Service quality has, therefore, become a major strategy for improving competitiveness in educational institutions (Chandra, Hafni, Chandra, Purwai, & Chandra, 2019).

Dimensions of educational service quality include quality of academic resources, teaching quality, administrative service quality, and quality of student support services (Kaur & Bhalla, 2018; Voss & Gruber, 2006). In searching for service quality in distance education, student satisfaction is of the essence due to its unique characteristics (Stoessel et al., 2015; United Nations Educational, Scientific and Cultural Organization, 2009). Oluwunmi, Durodola and Ajayi (2015) argued that strong competition among universities makes student satisfaction surveys essential tools in measuring institutional performance.

Despite the foregoing, student satisfaction studies seem to be skewed toward undergraduate students. Again, most of the currently available studies that centre on postgraduate studies are mainly focused on developed economies (Bright & Graham, 2016; Poon, 2019). Hofstede's theory suggested that there are differences in economies due to differences in culture which affect the value of their institutional culture and strategy (Hofstede, 1983). Findings from such studies cannot, therefore, be applied in whole in other economies such as sub-Saharan Africa which has varied economic, socio-cultural, and political differences.

Student satisfaction studies in Ghana are no different; they are skewed towards undergraduate studies. For instance, the study by Gonu and Agyepong (2016) focused on undergraduate students in one region out of the then ten regions in Ghana. While Ghansah, Segbenya, Gonu, and Peniana (2015) considered students from 45 of the 49 study centres in Ghana at the time, the participants were first-year diploma and post-diploma students. Apam and Alija (2017) also concentrated on higher national diploma students in their study. At UCC, postgraduate distance education is relatively new; it was introduced in the 2013/2014 academic year. As indicated, very little research has examined distance students' perspectives on postgraduate distance education. At a time when student satisfaction drives enrolment and retention, it is imperative to discover what satisfies the students and what does not. This study, therefore, aimed to ascertain how satisfied students were with their experience of UCC postgraduate distance education.

The objectives of this study were to investigate the association between UCC postgraduate distance students' characteristics and satisfaction, as well as their perceptions of physical facilities, staff-students relationship, facilitator quality, and student support services. This study also sought to examine which of these four domains determine students' satisfaction. The study contributes to Herzberg's two-factor theory of motivation (Herzberg, Mausner & Snyderman, 1959) by investigating its applicability to distance education. It also bridged the gap in the area of distance education and student satisfaction at the postgraduate level. It was expected that the outcome of this study would help management of UCC's postgraduate distance programme sustain and improve students' experiences.

UCC runs dual-mode distance education in which programmes run on campus are also run at a distance. UCC has yet to commence online distance learning, hence, uses face-to-face tutorials throughout the delivery of distance education (Fung & Carr, 2000; Su, 2004). Face-to-face tutorials are held fortnightly on Saturdays and Sundays with students and facilitators at designated study centres close to students' home regions. Print materials distributed at the beginning of each semester are the mainstay of the tutorials (see Osuji, 2005). During face-to-face tutorials at the study centres, students are expected to be physically present. This means that UCC distance students at Bono Region attend face-to-face tutorials at Sunyani study centre every two weekends, without having to travel to the UCC campus in Cape Coast which is about 353 kilometres away. This affords students the opportunity to access university education despite the limited facilities on campus, and also pursue other business during weekdays. Each study centre has a coordinator who is responsible for creating a conducive teaching and learning environment during face-to-face tutorials (e.g., tidy rooms, clean toilet facilities, well-arranged tables and chairs).

Literature Review

This study drew on Herzberg's two-factor theory of motivation (Herzberg et al., 1959). The scale items of the study were developed based on Herzberg's motivation and hygiene elements. Herzberg's two-factor approach, considered an accepted theory for explaining motivation and satisfaction, has been applied in disciplines such as human resource management, marketing, management, nursing, and education (DeShields, Kara, & Kaynak, 2005). The theory has two set of factors, namely satisfiers or motivators that result in satisfaction when effectively fulfilled, and dissatisfiers or hygiene factors which cause dissatisfaction when not present (Alshmemri, Shahwan-Akl, & Maude, 2017; Herzberg et al., 1959). In the current study, issues about facilitators, staff, and support services are directly related to

student outcomes and are regarded as satisfiers; issues of physical environment and its related variables are classified as hygiene factors.

There has been a proliferation of student satisfaction studies. For example, Illias, Hassan, Rahman, and bin Yasoa' (2008) conducted a study to determine if differences in demographic factors were related to student satisfaction and service quality. It was revealed, among others, that there were no significant differences between males and females in terms of their satisfaction. As well, age was not a factor in student satisfaction. Similarly, Oluwunmi, Emeghe, Oni, and Ajayi (2016) found that with the exception of the college a student was enrolled in, neither gender, age, level of study, nor religion affected satisfaction.

Malik, Danish, and Usman (2010) in their analysis of responses from 240 students to determine the impact of service quality on students' satisfaction in higher education institutions in Punjab, Pakistan, revealed that service quality significantly impacted students' satisfaction levels. They noted that there was an association between student satisfaction and factors related to administrative staff, including administrative staff being kind. The respondents were also satisfied with the institution's responsiveness. Students were, however, not satisfied with parking facilities, computer laboratories, and the complaint handling system. Azarcon, Gallardo, Anacin, and Velesco (2014) used conjoint analysis and multi-stage sampling to seek responses from 395 students. Their study revealed that quality of education and faculty, as well as level of fees, ranked among the most important preferences of students leading to their retention. Thematic analysis of students' consideration of quality of faculty was based on the professors' mastery and delivery of subject matter. Faculties' understanding of students and spending time outside the classroom with them in order to facilitate their understanding of lessons and going beyond the lessons were also important to students.

Farahmandian, Minavand, and Afshardost (2013) investigated the levels of student satisfaction with the quality of service provided at the International Business School Universiti Teknologi Malaysia in Kuala Lumpur. They established that students were satisfied with facilities, financial assistance, teaching quality, curriculum, and advising. Vidalakis, Sun, and Papa (2013) explored the relationship between quality and value of higher educational facilities and concluded that students believed quality of school buildings determined institutional performance and vice versa. Keelson (2011), using both descriptive and inferential statistics, studied the perceptions of 516 students regarding teaching quality in business studies programmes in Ghanaian polytechnics. Among others, the following were found to indicate high quality teaching and learning: (a) stimulating students' thinking, (b) willingness to help students, and (c) lecturers' use of quality teaching methodology.

According to Ghansah et al. (2015), support services and convenience of accessing study centres were among factors important to 1,014 undergraduate UCC students in 45 study centres. Abbasi, Malik, Chaudry, and Imdadullah (2011) found that students were dissatisfied with teaching, administrative support, library and accommodation services, among others. However, Deuren and Lhaden (2017) found that, among other things, administrative staff who were approachable, friendly, and responded to the needs of students significantly contributed to students' satisfaction.

Mansor, Hasanordin, Rashid, and Rashid (2012) also studied the importance of hierarchical service quality models and student satisfaction. They collected data from 179 respondents through questionnaires. Their study proved that several factors, namely (a) interactional quality (i.e., employees' attitude, behaviour, and expertise in attending to students' inquiries and problems); (b) maintaining a

good physical environment; and (c) outcome quality, in terms of timeliness of service provision were positive and significantly related to student satisfaction. Padlee and Yaakop (2013) also identified that satisfaction with academic services, conveniently accessing services in a university, administrative services, augmented services, relevance of courses offered to the aspirations of students, and aesthetics and cleanliness of facilities determined international students' overall satisfaction with Malaysian universities.

Kara, Tanui, and Kalai (2016) investigated the relationship between educational service quality and students' satisfaction in public universities in Kenya. Using a cross-sectional study design, responses of 1,062 undergraduate students selected through proportionate stratified random sampling were analysed using regression analysis. Quality of teaching facilities, availability of textbooks and Internet services, quality of students' welfare services, and administrative service quality were all found to be significantly related to students' satisfaction. However, quality of library service and library environment, lecturer quality, and quality of instructional practices were not important factors in student satisfaction. Fosu and Poku (2014) randomly surveyed and interviewed 400 students from Kwame Nkrumah University of Science and Technology and Christian Service University College to explore factors that influenced students' choice of higher education in Ghana. They found that high calibre lecturers, well-stocked library and availability of internet facilities, students-staff relationship, and university environment were sources of satisfaction for students; unresponsiveness from the university however was a cause of dissatisfaction.

Methodology

This study adopted a descriptive research design and post-positivist philosophical orientation (Holden & Lynch, 2004; Kothari, 2004; Van de Ven, 2007). This choice was premised on the nature of the study's objectives and our philosophical stance (Holden & Lynch, 2004). The study was delimited to students in Tamale, Sunyani, and Takoradi (a study centre each in Ghana's northern, central, and southern zones, respectively) who were in the second and third semesters of their programme. These students had completed all their courses, written end-of-semester examinations, and had received their results. Having completed a full cycle of the distance education programme, they were in a position to provide a fair assessment. Students in the first semester had yet to participate in the full extent of the distance education experience. Students who had finished the third semester had completed three full cycles with the institution but were not available at the study centres because they were writing their dissertation or thesis.

The population of the study comprised 186 students enrolled during the 2016/2017 academic year; of these, 112 were from Tamale, 50 from Takoradi, and 24 from Sunyani postgraduate study centres (University of Cape Coast [UCC], 2017). Due to the relatively small population, a census was conducted. Respondents were made aware of the purpose of the study and their voluntary participation. The principles of anonymity and confidentiality were assured and upheld. The right to discontinue as participants was also made clear and upheld. A total of 125 questionnaires were returned, representing a response rate of 67.2%.

Primary data was collected using a closed-ended questionnaire. The items were adapted from Abbasi et al. (2011), Azarcon et al. (2014), Deuren and Lhaden (2017), Farahmandian et al., (2013), Fosu and Poku (2014), Gonu and Agyapong (2016), Helgesen and Nesset (2007), Illias et al. (2008), Keelson

(2011), Malik et al. (2010), Oluwunmi et al. (2015), Padlee and Yaakop (2013), and Vidalakis et al. (2013). Postgraduate students' satisfaction with physical facilities, staff-students relationship, facilitator quality, and student support services were measured by a 5-point Likert scale on a continuum from strongly disagree to strongly agree.

The data was analysed using SPSS version 21.0. The study employed Cronbach's alpha to test the internal consistency and reliability of the questionnaire for each domain. The Cronbach's alpha values were as follows: (a) physical facilities (.78); (b) staff-students relationship (.908); (c) facilitator quality (.761); (d) student support services (.826); and (e) student satisfaction (.861). These values indicated practical, reliable, and valid use of the instrument (Cohen, Manion, & Morrison, 2007). The characteristics of the study respondents were presented using frequency (n) and percentages (%); chi-square test of analysis was used to investigate the association between postgraduate distance students' characteristics and satisfaction. Mean and standard deviation were used to ascertain students' perception of physical facilities, staff-students relationship, facilitator quality, and student support services. Ordinal regression analysis was conducted to obtain the domains that determined students' satisfaction. The overall rating of satisfaction with the four domains was determined using binary responses (i.e., 1 = poor, 2 = good).

Results

Association Between Respondents' Characteristics and Overall Satisfaction

Table 1 summarises the relationship between the respondents' characteristics and overall satisfaction. A total of 125 postgraduate students participated in the survey, with the majority (67.2 %) being 31 to 40 years of age, followed by 21.6% of respondents in the over 40 years of age bracket. Few were 30 years of age or less (11.2%). Male respondents dominated the postgraduate student population representing 68.0% and females, 32.0%. Respondents were sampled from the following programmes of study: (a) MBA Finance (29.6%); (b) MBA Accounting (23.2%); (c) MBA Human Resource Management (23.2%); (d) MEd Administration in Higher Education (15.2%); and (e) MBA Marketing (8.8%). Most of the respondents (63.2%) were in the second semester of the programme and 36.8% were in their third semester.

Table 1

Association Between Respondent's Characteristics and Satisfaction

Student characteristics		n (N=125)	%	x²	p-value
Age	30 years or less	14	11.2	6.72	0.57
	31–40 years	84	67.2		
	over 40 years	27	21.6		
Gender	Male	85	68	0.98	0.91
	Female	40	32		
Programme of study	MBA Finance	37	29.6	12.7	0.69
	MBA Accounting	29	23.2		
	MBA Human Resource Management	29	23.2		
	MBA Marketing	11	8.8		
	MEd Administration in Higher Education	19	15.2		
Study centre	Tamale	81	64.8	28.2	0.03
	Takoradi	27	21.6		
	Sunyani	17	13.6		
Semester of study	Second semester	79	63.2	29.5	<0.001
	Third semester	46	36.8		

With regard to respondents' characteristics and satisfaction with postgraduate studies, Table 1 shows that satisfaction was not dependent on age ($p = 0.57$), gender ($p = 0.91$) nor programme of study ($p = 0.69$), but significantly related to study centre ($p = 0.03$) and semester of study ($p = <0.001$).

Respondents' Perceptions Regarding Physical Facilities

Table 2 summarises respondents' perceptions regarding the quality of physical facilities. The location of study area was rated highest with mean score of 4.12 ± 0.77, followed by the perception that the building's structure is not dangerous to the health and safety of students with a mean of 4.03 ± 0.81. Other variables related to physical facilities that were affirmed to be of good quality were (a) lighting in the lecture rooms ensured good visibility (3.71 ± 1.04); (b) availability of necessary equipment such as a projector (3.68 ± 1.17); (c) study centre free from excessive noise (3.64 ± 1.1); and (d) lecture room floors were appealing (3.56 ± 1.03). In contrast, aspects of the physical facilities that did not receive favourable responses included toilet facilities were in good condition (mean scores of 2.74 ± 1.25) and walls of the lecture rooms were pleasant (2.78 ± 1.28).

Table 2

Respondents' Perceptions Regarding Physical Facilities

Statement	SD %	D %	U %	A %	SA %	$M \pm SD$
Location of study area is satisfactory.	0.8	5.6	2.4	63.2	28.0	4.12 ± 0.77
Building structure is not dangerous to the health and safety of students.	1.6	6.4	2.4	66.4	23.2	4.03 ± 0.81
Study centre is free from excessive noise.	6.4	12.8	7.2	57.6	16.0	3.64 ± 1.1
Ventilation in the lecture rooms is good.	12.0	17.6	6.4	53.6	10.4	3.33 ±1.23
The study chairs and tables are comfortable.	3.6	25.6	5.6	48.0	11.2	3.26 ± 1.23
Necessary equipment (e.g., projector) available in the lecture rooms.	9.6	8.8	4.8	57.6	19.2	3.68 ± 1.17
Walls of the lecture rooms are pleasant.	18.4	33.6	5.6	36.8	5.6	2.78 ± 1.28
Floor of the lecture rooms are appealing.	4.8	15.2	9.6	60.0	10.4	3.56 ± 1.03
Lighting in the lecture rooms ensures good visibility.	4.8	12.8	4.8	61.6	16.0	3.71 ± 1.04
Toilet facilities are in good condition.	20.8	27.2	13.6	34.4	4.0	2.74 ± 1.25

Note. SD=Strongly Disagree; D=Disagree; U=Uncertain; A=Agree; SA=Strongly Agree.

Respondents' Perceptions Regarding Staff-Students Relationship

Staff relationships with students were measured and the descriptive results are presented in Table 3. The responses were affirmative, indicating good relationships. The attributes with their respective outputs were (a) staff are polite (4.07 ± 0.67); (b) staff are friendly (4.06 ± 0.7); (c) staff are approachable (4.0 ± 0.75); (d) staff are patient in resolving students' problems (3.87 ± 0.83); (e) staff are always willing to help students (3.86 ± 0.85); and (f) staff are easy to contact (3.66 ± 1.09).

Table 3

Respondents' Perceptions Regarding Staff-Students Relationship

Statement	SD %	D %	U %	A %	SD %	$M \pm SD$
Staff are friendly.	0.8	3.2	4.8	72.0	19.2	4.06 ± 0.7
Staff are always willing to help students.	3.2	4.0	12.0	64.8	16.0	3.86 ± 0.85
Staff are approachable.	3.2	0.8	6.4	72.0	17.6	4.0 ± 0.75
Staff are patient in resolving students' problems.	1.6	7.2	10.4	64.0	16.8	3.87 ± 0.83
Staff are polite.	0.8	2.4	7.2	68.0	21.6	4.07 ± 0.67
Staff are easy to contact.	6.4	9.6	15.2	49.6	19.2	3.66 ± 1.09

Note. SD=Strongly Disagree; D=Disagree; U=Uncertain; A=Agree; SA=Strongly Agree.

Respondents' Perceptions Regarding Facilitator Quality

Responses regarding facilitators' knowledge, teaching methods, and other professional attributes are presented in Table 4. The results show that facilitators always being present for lectures was rated highest (4.22 ± 0.71). Respondents were also of the view that facilitators promote critical thinking (4.04 ± 0.69) and show mastery of the course content (4.02 ± 0.86). That facilitators also deal with students' concerns relating to the course and promote creativity were rated 3.97 ± 0.83 and 3.97 ± 0.78, respectively. Other variables that had good scores were that facilitators (a) complete courses for the

semester (3.89 ± 0.92); (b) are accessible to students (3.87 ± 0.85); and (c) always conclude classes at the allotted time (3.86 ± 1.19).

Table 4

Respondents' Perceptions Regarding Facilitator Quality

Statement	SD %	D %	U %	A %	SA %	$M \pm SD$
Facilitators are well versed in the course they handle (show mastery of the course content).	0.8	8.0	6.4	57.6	27.2	4.02 ± 0.86
Facilitators always deal with student concerns relating to the course.	0.8	8.8	4.8	64.0	21.6	3.97 ± 0.83
Facilitators are always present for lectures/face-to- face.	0.0	4.8	2.4	59.2	33.6	4.22 ± 0.71
Facilitators always close at the allotted time.	25.6	40.8	10.4	18.4	4.8	3.86 ± 1.19
Facilitators promote critical thinking.	0.8	4.0	4.8	71.2	19.2	4.04 ± 0.69
Facilitators are accessible to students.	2.4	7.2	7.2	67.4	16.0	3.87 ± 0.85
Facilitators complete courses for the semester.	2.4	8.0	9.6	58.4	21.6	3.89 ± 0.92
Facilitators promote creativity.	2.4	2.4	10.4	65.6	19.2	3.97 ± 0.78

Note. SD=Strongly Disagree; D=Disagree; U=Uncertain; A=Agree; SA=Strongly Agree.

Respondents' Perceptions of Student Support Services

Perceptions regarding student support services (Table 5) largely espoused negative responses. The mean scores ranged between 2.05 ± 1.00 and 3.25 ± 1.24. Availability of library facilities (2.05 ± 1.00) scored least. Other services that had a mean score less than 3.0 were (a) fee payment is flexible (2.87 ± 1.28); (b) study rooms are available for use by students (2.64 ± 1.31); and (c) guidance and counselling services are available (2.30 ± 1.12). Postgraduate students were, however, somewhat satisfied with (a) access to results (3.20 ± 1.02); (b) knowledge of where to access information (3.13 ± 1.21); and (c) tackling registration challenges (3.25 ± 1.24).

Table 5

Respondents' Perceptions Regarding Student Support Services

Statement	SD %	D %	U %	A %	SA %	$M \pm SD$
Students' needs/problems are promptly addressed.	11.2	24.4	19.2	36.8	6.4	3.01 ± 1.16
Fee payment is flexible.	16.8	28.8	13.6	32.0	8.8	2.87 ± 1.28
Guidance and counselling services are available.	28.8	30.4	27.2	8.8	4.8	2.30 ± 1.12
Students know where to obtain a service/access information.	9.6	26.4	17.6	34.4	12.0	3.13 ± 1.21
Library facilities are available.	33.6	40.0	16.8	7.2	2.4	2.05 ± 1.00
Study rooms are available for use by students.	25.6	25.6	15.2	26.4	7.2	2.64 ± 1.31
Registration challenges are promptly attended to.	11.2	20.8	12.8	42.4	12.8	3.25 ± 1.24
Results are accessible to students.	9.6	8.8	39.2	36.8	5.6	3.20 ± 1.02

Note. SD=Strongly Disagree; D=Disagree; U=Uncertain; A=Agree; SA=Strongly Agree.

Logistic Regression Results of the Determinants of Postgraduate Students' Satisfaction

As shown in Table 6 below, the results of this study indicates that physical facilities, staff-students relationship, and facilitator quality were significant in determining students' overall satisfaction with the postgraduate programme. However, student support services were not significantly associated with students' satisfaction.

Table 6

Logistic Regression Results of the Determinants of Postgraduate Students' Satisfaction

Explanatory variable	Odds ratios	*p*-value	*SE*	95% CI for B
Facilitator quality (poor)				
Good	8.9586	0.002**	6.3139	(2.2507, 35.6584)
Physical facilities (poor)				
Good	0.0663	0.033*	0.0843	(0.0055, 0.8015)
Staff-Students relationship (poor)				
Good	0.1328	0.081***	0.1538	(0.0137, 1.2842)
Student support services (poor)				
Good	2.3020	0.106	1.1878	(0.8374, 6.328)
_cons	24.8042	0.083	45.9201	(0.6587, 934.019)

Note. Reference category in parentheses; *SE*=Standard error; CI=Confidence Interval; B=Boundaries.
* p<0.05 (5%). **p<0.01 (1%). *** p<0.1 (10%).

Discussion

In line with the six objectives of this study, in this section we discuss the association between students' characteristics and satisfaction, followed by their perceptions of each of the four domains examined in this study. We conclude by discussing determinants of postgraduate students' satisfaction.

Association Between Students' Characteristics and Satisfaction

The first objective sought to investigate the association between students' characteristics and their satisfaction with the postgraduate distance programme. Chi-square tests indicated that students' age, gender, and programme of study did not relate significantly with overall satisfaction, whereas their semester of study and location of study area were significantly associated with overall satisfaction. This is consistent with the findings reported by Illias et al. (2008) and Oluwunmi et al. (2016). This finding should not be taken lightly, even though it has been corroborated by other researchers; due to globalization and technological advancements, the demographic profile of students is changing at a pace faster than before, hence the demography of students should regularly be monitored by management of educational institutions to detect changes in the association between demography of students and satisfaction when they occur and address them.

Students' Perceptions of Physical Facilities

Objective two sought to ascertain postgraduate students' perceptions about physical facilities. With the exception of online modes of education, physical facilities are crucial to whether learners' educational

experience is positive or not. The educational experience of UCC distance education students depends on their study centres where face-to-face sessions are held. It is prudent to ensure that facilities at study centres mirror, as close as possible, facilities on university campuses. The most highly rated parameter in this regard was the location of the study area, followed by the structure of the building not being detrimental to the health and safety of students. Students were also concerned that the centre be free from excessive noise. The affirmation given to the location of the centre could be attributed to the primary benefit distance learning provides in terms of flexibility of time, convenience, and proximity to study location. Then again, the rating could be ascribed to the programme helping to address the challenges students face in trying to remain full-time workers while also pursuing higher education studies full-time on campus as the location of study centres are favourable. A noisy environment does not promote effective teaching and learning because it distracts the intelligibility of lecturers' presentation as well as the attention of students. It is therefore positive that this study found students perceived the study centres as not noisy.

The lighting in lecture rooms was affirmed to be in good condition, thereby promoting good visibility; students also found the floors of the lecture halls to be appealing. This indicated that adequate effort has been made to improve and maintain the internal lighting systems in the study centres. This is in line with Vidalakis et al. (2013) who stated that development of academic facilities is a key area that needs attention and requires universities to adequately invest in it. Lecture rooms fulfil a vital component of the academic training of the postgraduate student. As Farahmandian et al. (2013) explained, and consistent with the findings of our study, students care that lecture halls include adequate and efficient lighting, are attractively designed, and have adequate and efficient lecturing aids such as projectors.

Students' Perceptions of Staff-Students Relationship

Students reported positive perceptions regarding objective three, staff-students relationship. They indicated that administrative/support staff were polite, friendly, approachable, easy to contact, and patient in resolving students' problems. Positive relationships could prove to be a valuable resource for effective academic work in the College of Distance Education, UCC. They could also support the notion that the better the quality of the relationships, the more connected the students are to the University. Without these positive relationships, the University should expect a high student attrition rate. These findings confirm the results of the studies by Malik et al. (2010) and Deuren and Lhaden (2017) in which respondents rated the attitude of administrative staff highly.

Students' Perceptions of Facilitator Quality

Concerning students' perceptions of facilitator quality, the fourth objective, most students espoused good perceptions regarding facilitators' knowledge, teaching methods, and professionalism. Students responded positively regarding (a) punctuality, (b) promotion of critical thinking, (c) mastery of the course content, (d) assisting with student concerns relating to the course, (e) promotion of creativity through their teaching, and (f) their ability to complete courses for the semester even while always concluding classes at the allotted time. The findings are in tandem with that of Azarcon et al. (2014), Farahmandian et al. (2013), and Keelson (2011). In these studies, examples of things students were generally satisfied with included (a) lecturers' mastery and delivery of content, (b) teaching methods, (c) stimulation of students' thinking, and (d) willingness to help student. The findings in this study were to the benefit of the UCC distance learning programme since overall educational effectiveness depend on facilitators' quality and competence. The inability of the tutor to effectively master course content

results in failure to deliver curricula and consequently, the quality of teaching is compromised, and the syllabus may not be covered within the allotted time.

Students' Perceptions of Support Services

Perception of student support services, one of the most important components of distance education programmes, was the fifth objective of the study. Without student support services, distance education is not likely to be successful or closely mirror conventional education (Krishnan, 2012; Stewart, 1993). Responses relating to student support services were not favourable. Students reported that library facilities, study rooms, and guidance and counselling facilities were unavailable. They were also not impressed with the fee payment regime. These findings could prove to be costly to UCC's image, as students are likely to engage in negative word-of-mouth. When the image of the institution is affected, its survival is threatened because patronage and recruitment will be lowered. These results were inconsistent with the findings of Ghansah et al. (2015) in which support services were highly rated by students. However, they corroborated the findings of Abbasi et al. (2011) who revealed that students were dissatisfied with the support services.

Determinants of Postgraduate Students' Satisfaction

The sixth objective investigated which of the four domains determined students' satisfaction. It was revealed that physical facilities, staff-students relationship, and facilitator quality determined students' satisfaction with the postgraduate programme. Student support services however, were not significantly associated with students' satisfaction. This is consistent with the findings of Fosu and Poku (2014) that high calibre lecturers, staff-students relationship, and university environment were sources of satisfaction for university students. The theoretical framework proposed by Padlee and Yaakop (2013) on the determinants of overall students' satisfaction was also supported, as was that of Mansor et al. (2012). However, our findings were inconsistent with those of Kara et al. (2016). Above all, the study supports the thrust of Herzberg's two-factor motivation theory.

Conclusions and Implications

Evaluation of the postgraduate distance learning by students is useful in helping to improve teaching, learning, the general development of UCC and, most importantly, to keep the attrition rate of students to the barest minimum. Aspects of the programme that received satisfactory responses in this study should be maintained in the interim but improved upon with time. Unfavourable responses, on the other hand, especially concerning student support services and the condition of toilet facilities, should be critically looked at by management with the view to improving them. The favourable responses with respect to physical facilities, staff-students relationship, and facilitator quality notwithstanding, failure to correct the negatives revealed in the study may not auger well for the continuing existence of the postgraduate distance programme.

Since UCC distance education is such that students interact heavily with facilitators, support staff, and physical facilities from commencement to completion of their programme of study, the aforementioned will improve students' overall experience. This will leave them with little or no reason to be unimpressed, thus fueling positive perceptions about the institution. Whilst a positive image of UCC will form the basis of a stronger relationship between the students and their institution, and help lead to an almost perfect completion rate, students and alumni will be naturally persuaded to engage in

positive word-of-mouth to attract new students. This study adds to the literature on service quality, customer satisfaction, and higher educational quality delivery. It advances knowledge on tangibility aspect of the service quality dimensions (Parasuraman, Zeithaml, & Berry, 1988).

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Why do University Teachers use E-Learning Systems?

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Abstract

University teachers are the main players when it comes to integrating e-learning systems into higher education institutions. Prior studies have identified four main antecedents that explain teachers' technology acceptance in the educational context: (a) subjective norms (SN), (b) technological complexity (TC), (c) constructivist beliefs (CB), and (d) motivation for instrumental use (MOT). In this study, we proposed and tested the dual roles of MOT, one as a causal variable and the other as a mediating variable, to explain university teachers' acceptance of e-learning systems. To test the research model, we collected data from 174 teachers at a large public university in Malaysia using a self-administered survey. Our study shows that MOT mediates the direct effects of SN, TC, and CB on perceived ease of use (PEOU), perceived usefulness (PU), and behavioural intention (BI). This study offers important policy insight for university administrators who seek to enhance acceptance of e-learning systems among university teachers.

Keywords: e-learning, university teacher, behavioural intention, constructivist beliefs, motivation for instrumental use

Introduction

Integrating technology into teaching and learning is a transformative process with the potential to create a meaningful educational experience to increase students' learning performance. Such technology integration represents a challenge for university administrators in enhancing the quality of an educational programme (Naaj, Nachouki, & Ankit, 2012). Identifying what factors influence teachers' technology acceptance is important to understand how to smoothly integrate educational technologies into teaching and learning.

Prior studies have identified subjective norms (SN) and technological complexity (TC) as two important antecedents of a teachers' technology acceptance model (TAM) (Sánchez-Prieto, Olmos-Migueláñez, & García-Peñalvo, 2016; Teo, 2009, 2010; Teo, Milutinović, & Zhou, 2016). A recent study by Teo and Zhou (2016) showed that constructivist beliefs (CB) influence the behavioural intentions (BI) of teachers considering the adoption of educational technologies. Notably, research by Park, Lee, and Cheong (2007) extended the TAM by integrating motivation as an external factor to explain why university teachers adopt electronic courseware. Technology acceptance arises when university teachers are motivated to gratify their instrumental purposes to enhance job performance (Gautreau, 2011; Joo & Sang, 2013; Park et al., 2007; Steel & Hudson, 2001).

Despite the pervasive studies on teachers' technology acceptance, the focus has been on the direct effects of antecedents to TAM variables, i.e., perceived usefulness (PU), perceived ease of use (PEOU), and behavioral intention (BI) (e.g., Qin, Li, Zha, & He, 2017; Sánchez-Prieto et al., 2016; Teo, 2009; Teo, 2010; Teo et al., 2016). Most studies have viewed these antecedents as operating independently in educational technology acceptance. Notably, individual differences in motivation among teachers have rarely been explored empirically. Such motivation, which is also known as motivation for instrumental use (MOT), is an important antecedent explaining technology acceptance (Gautreau, 2011; Joo & Sang, 2013; Park et al., 2007). To address this knowledge gap, we draw on the idea that motivation is a complex phenomenon, in which MOT is not a standalone antecedent in educational technology acceptance. Additionally, prior studies have shown that among university teachers, motivation to use technology can be influenced by SN, CB, and TC (Ellemers, De Gilder, & Haslam, 2004; Friedrich, 2014; Kao, Wu, & Tsai, 2011). Consequently, we may assume that SN, CB, and TC can explain MOT, which in turn enables MOT to predict TAM variables. Stated differently, it is important to empirically assess the dual role of MOT: as a causal variable and as a mediating variable that influences the effects of SN, CB, and TC on TAM variables. Thus, the aim of this study is to examine the effects of antecedents, i.e., SN, CB, TC, and MOT, on technology acceptance among university teachers; the dual roles of MOT are also explored.

The site of the study was a university, which reported that its teachers had low levels of motivation when it came to using e-learning systems. Such an institutional setting was suitable for investigating individual university teachers' motivations since they would have had a specific e-learning system in mind when responding to technology acceptance variables (Teo & Zhou, 2016).

Literature Review and Development of Hypotheses

Technology Acceptance Model (TAM)

The TAM is a major research theory that explains user acceptance of information systems (IS) through a series of causal relationships, i.e., antecedents–beliefs–attitude–behavioural intention–actual behaviour, within an organizational context (Venkatesh & Davis, 2000). Two belief variables, namely, PU and PEOU, measure a user's subjective probability of engaging in IS adoption behaviour. PU measures a user's subjective opinion on whether an IS will improve job performance. PEOU measures the extent to which a user believes that adopting the IS will be effortless. Both belief variables have direct effects on attitudes, and the attitudes influence BI. Additionally, PU intervenes in the relationship between PEOU and attitudes, thereby making the TAM flexible for researchers to identify and manipulate the influences of antecedents on technology acceptance.

TAM studies have attempted to explain teachers' acceptance of information systems within the educational context. Consequently, the TAM for Pre-Service Teachers (TAM-PST) was developed, and it has been applied to explain user acceptance of information and communications technology mainly among pre-service teachers and service teachers (Teo, 2011a, 2011b, 2012, 2014; Teo et al., 2016; Teo & Zhou, 2016). SN and TC are the main antecedents for the TAM-PST. TC refers specifically to a teacher's perception of complexity when using an IS. Park et al. (2007) proposed and verified that motivation is another antecedent in the TAM that explains university teachers' technology acceptance in a higher-educational setting.

Motivation for Instrumental Use (MOT)

In the psychological communication literature, MOT is viewed as a major determinant of media usage (Sun, Sheng, Gu, Du, & Min, 2017; Joo & Sang, 2013). MOT is known as the purposive value from the utilitarian perspective; i.e., users are goal-oriented to seek benefits from media usage. Users can discern various forms of media and determine how to use media content to gratify their cognitive needs.

Motivated users tend to have a higher level of willingness to engage with their selected technology to satisfy their needs. In the higher-education context, MOT is an important driver to influence university teachers to adopt and use technology (Gautreau, 2011; Park et al., 2007; Steel & Hudson, 2001). That is, MOT represents individual differences of university teachers, i.e., teachers are motivated by diverse goals to integrate technologies to enhance their job performance (Park et al., 2007; West, Waddoups, & Graham, 2007).

Prior studies have verified the impact of MOT on PU and PEOU in technology acceptance (Joo & Sang, 2013; Park, 2010; Park et al., 2007). For example, studies by Park (2010) and Joo and Sang (2013) showed that such motivation affects PU and PEOU in the usage of new telephone technology. Users with instrumental based motives are inclined to view a particular telephone technology as useful and easy to use. In the higher-education context, Park et al. (2007) also verified that university teachers' motivation to use electronic courseware is positively related to PU, PEOU, and BI. From these studies, we may conclude that university teachers with instrumental based motives tend to view a particular technology as useful and easy to use. Thus, we formulate the following hypotheses:

H1A: Motivation for instrumental use is positively related to the perceived usefulness of an e-learning system among university teachers.

H1B: Motivation for instrumental use is positively related to the perceived ease of use of an e-learning system among university teachers.

H1C: Motivation for instrumental use is positively related to the behavioural intention of an e-learning system among university teachers.

Subjective Norms (SN)

The SN are an important antecedent for explaining technology acceptance in workplace settings (Venkatesh & Bala, 2008; Venkatesh & Davis, 2000; Kim & Nah, 2017). The SN represent individuals' perception of whether most people who are important to them think they should conform to a particular behaviour. Such influence can be divided into compliance, internalization, and identification.

First, the compliance effect arises when individuals perform a specific behaviour that is favourable in the opinions of important referents, which influences their technology acceptance (Venkatesh & Bala, 2008). In educational technology studies, the SN are not consistent in predicting the BI (or attitude) toward technology use among pre-service teachers, teachers at the pre-university level, and university teachers (Kreijns, Vermeulen, van Buuren, & Van Acker, 2017; Teo et al., 2016; Yuen & Ma, 2008). In general, Venkatesh and Davis (2000) argued that the compliance effect tends to be most prominent in mandatory settings. In the context of this research, the university has mandated that university teachers use e-learning systems in all courses. Thus, we formulate the following hypothesis:

H2A: Subjective norms are positively related to the behavioural intention of an e-learning system among university teachers.

Second, the internalization effect occurs because people tend to have the same opinion on whether important referents perceive a particular system as useful (Venkatesh & Bala, 2008). Thus, it is proposed that SN are positively related to PU in the TAM. Prior studies have verified that SN are positively related to technology use among pre-service teachers and teachers in instructional settings (Teo, 2010, 2012; Teo, Lee, & Chai, 2008; Yuen & Ma, 2008). Thus, we formulate the following hypothesis:

H2B: Subjective norms are positively related to the perceived usefulness of an e-learning system among university teachers.

Finally, an identification effect occurs when individuals intend to derive social recognition from their important referents. This phenomenon is manifested through the indirect effect between SN and PU (Venkatesh & Bala, 2008). It is described as how "individuals perceive their motivation and perspective to be psychologically interchangeable with those of others who share the same social identity" (Haslam, Powell, & Turner, 2000). For example, if most university administrators and influential academics share the same social identity concerning the use of e-learning systems, such social identification will induce university teachers to adhere to group norms (Ellemers et al., 2004) and perhaps express corresponding

levels of motivation to use e-learning systems. This direct effect is the precondition for exerting an indirect effect on PU. Thus, we formulate the following hypothesis:

> H2C: Subjective norms are positively related to motivation for the instrumental use of an e-learning system among university teachers.

Constructivist Beliefs (CB)

Preference represents the teaching beliefs of teachers (Aypay, 2011; Chan & Elliott, 2004). Such beliefs will affect teaching orientations, whether teaching or learning centred (Samuelowicz & Bain, 2001). Teaching-centred orientation is geared towards imparting information and transmitting structured knowledge to learners, whereas learning-centred orientation focuses on supporting students.

Constructivist learning is an important teaching and learning belief, and it involves instructional scaffolding for promoting a deeper level of understanding (Sang, Valcke, van Braak, & Tondeur, 2010). It is a student-centred approach, which encourages students to explore knowledge, express ideas, conduct group discussions, and construct their own understandings individually and independently.

The impact of teachers' CB on technology acceptance has been widely explored in the current literature (e.g., Judson, 2006; Overbay, Patterson, Vasu, & Grable, 2010; Teo, Chai, Hung, & Lee, 2008; Teo & Zhou, 2016; Tondeur, Hermans, van Braak, & Valcke, 2008; Wang, Quek, & Hu, 2017). These studies largely suggest that teachers' CB are associated with the extensive use of technologies to support student-centred curricula. Teachers can implement constructivist pedagogies by using technologies to engage students in cognitive learning activities and thus advance constructive learning. Recent studies have shown that teachers with high CB tend to integrate technology into their teaching (Overbay et al., 2010; Teo, Chai, et al., 2008; Teo & Zhou, 2016). It is possible that teachers with high CB are more likely to use e-learning because they are more willing to explore the pedagogical use of new technologies (Chai, 2010; Kim, Kim, Lee, Spector, & DeMeester, 2013). Thus, we formulate the following hypothesis:

> H3A: Constructivist beliefs are positively related to the behavioural intention of an e-learning system among university teachers.

Beliefs represent determinants of motivation for individuals who can rationalize their motives instrumentally (Friedrich, 2014). This argument is supported by the study of Kao et al. (2011), which confirmed that teachers' beliefs predict their motives for web-based professional development; i.e., the teachers are aware of the potential benefits of using an IS through the cognitive instrumental process. For teachers with high CB, the technology use must be compatible with student learning.

E-learning systems are effective tools for supporting a constructivist learning environment, as most e-learning systems are specially designed to support a learner-centred environment and promote autonomy (Kuo, Belland, Schroder, & Walker, 2014). Accordingly, e-learning offers flexibility and convenience in terms of location and schedule. E-learning allows students to pace themselves and collaborate. In other words, the instrumental benefit of using e-learning is the major role it plays in BI, particularly when teachers with CB view e-learning as consistent with their teaching beliefs (Keengwe, Onchwari, & Agamba,

2014; Nawaz & Kundi, 2011). Teachers will continue to be motivated to use digital teaching vehicles that can support their pedagogical approach (Wright, 2015). Thus, we formulate the following hypothesis:

> H3B: Constructivist beliefs are positively related to motivation for instrumental use of an e-learning system among university teachers.

Technological Complexity (TC)

TC refers to a users' perceived degree of difficulty in understanding and using an IS (Teo et al., 2016). A higher level of TC adversely influences a user's willingness to adopt an IS. TC is closely related to the user-perceived amount of effort that is required to complete a task. In an instructional setting, several studies have verified that TC influences pre-service teachers' PEOUs and intentions to use a particular technology (Teo, 2009, 2010; Teo et al., 2016). Thus, we expect the perceived TC among university teachers should adversely influence the PEOU and BI of an e-learning system, and we formulate these hypotheses:

> H4A: Technological complexity is negatively related to the perceived ease of use of an e-learning system among university teachers.

> H4B: Technological complexity is negatively related to the behavioural intention of an e-learning system among university teachers.

The perception of high difficulty of using a particular system may adversely affect motivation to adopt that system (Kao et al., 2011). If users perceive a system as difficult and confusing, they may not be able to evaluate the potential instrumental benefits. This argument is supported in a study by Kao et al. (2011), which showed that perceived difficulty is negatively related to web-based professional development among teachers. Thus, we formulate the following hypothesis:

> H4C: Technological complexity is negatively related to motivation for instrumental use of an e-learning system among university teachers.

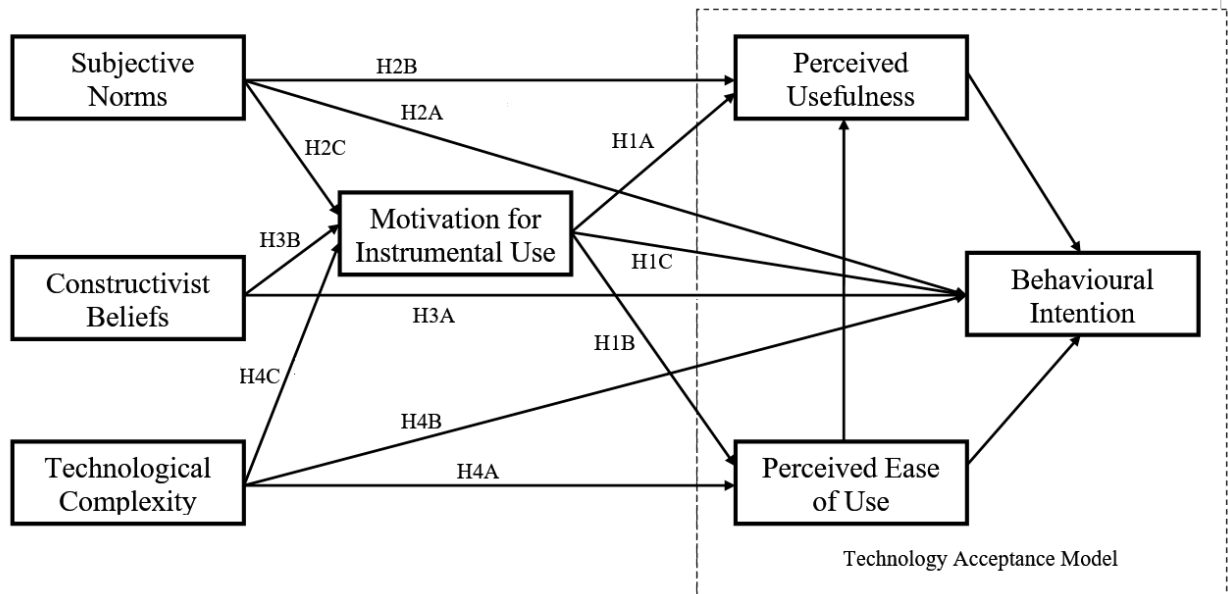Based on the above hypotheses, a research model is proposed (see Figure 1).

Figure 1. E-Learning Systems Research Model.

Research Questions

This study is designed to answer the following questions about the use of e-learning systems among university teachers:

> 1. Do subjective norms have a direct influence on motivation for instrumental use, perceived usefulness, and behavioural intention?

> 2. Do constructivist beliefs have a direct influence on motivation for instrumental use and behavioural intention?

> 3. Does technological complexity have a direct influence on motivation for instrumental use, perceived ease of use, and behavioural intention?

> 4. Does motivation for instrumental use have a direct influence on perceived usefulness, perceived ease of use, and behavioural intention?

Method

Measures

Instruments used in this research have been adapted from prior studies in the educational and technology acceptance literature. The BI scale was adapted from previous e-learning acceptance studies (see Gibson, Harris, & Colaric, 2008; Ma, Andersson, & Streith, 2005). The measures for MOT, PEOU, and PU were

adapted from a related study by Park et al. (2007), which investigated university teachers' acceptance of electronic courseware. SN and TC scales were adapted from educational technology studies (see Teo, 2010; van Schaik & Teo, 2013). Finally, the CB scale was adapted from the work of Sang et al. (2010). All items in the seven constructs were anchored on a 5-point Likert scale, which ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). All survey instruments were reviewed by two experts to determine their validity and clarity within the higher education context in Malaysia. The first expert was a professor of information systems and the second was an academician of e-learning and information systems. The survey instruments were modified slightly based on their feedback.

Participants

This study was a campus-wide investigation of university teachers' intentions to use an e-learning system. The selected higher institution was a large public university in Malaysia that has adopted the Moodle course management system. A self-administered questionnaire was developed, and questionnaires were distributed to lecturers door-to-door at the university. Informed consent was obtained from respondents before commencing data collection. In total, researchers received 178 completed questionnaires. Among them, 4 questionnaires were excluded because the amount of missing data exceeded 15%, leaving 174 available for analysis. Slightly over half (51.7%) of the respondents were male, while 48.3% were female. The majority of the respondents (48.8%) were between 31 and 40 years of age. Most respondents had more than 15 years of teaching experience (39.7%) and possessed PhDs (83.9%).

Data Analysis and Results

Common-Method Variance

Harman's single-factor test was performed to identify the common-method variance, which is mainly due to self-report bias. Self-report bias may occur if respondents who answer perceptual measures of independent and dependent variables at the same time give consistent responses to questions that are otherwise unrelated. Our analysis shows that the largest variance that can be explained by individual factors is 29.5%. A single factor neither emerges nor accounts for the majority of the variances among measures; thus, common-method variance can be ruled out.

Assessment of the Measurement Model

In PLS-SEM, the assessment of a measurement model seeks to verify construct reliability (i.e., indicator reliability and internal consistency) and validity (i.e., convergent validity and discriminant validity). The discriminant validity was assessed using the Heterotrait-Monotrait (HTMT) ratio (Henseler, Ringle, & Sarstedt, 2015). The HTMT ratio criterion uses a multitrait-multimethod matrix to establish discriminant validity. The HTMT ratio criterion is based on a relative measurement between the average correlations of indicators across latent variables that measure different phenomena and the average correlation of indicators within the same latent variable.

Our analysis shows that all psychometric properties are validated in this study (see Table 1). First, all composite reliability (CR) values are greater than 0.70, and all average variance extracted (AVE) values are

above 0.50, which are greater than threshold levels, thereby confirming the internal consistency and convergent validity for all constructs. All indicator loadings meet or exceed the 0.70 threshold, except for item CB7. However, item CB7 is retained because the internal consistency and the convergent validity of its construct are established (Hair, Hult, Ringle, & Sarstedt, 2013). Because all HTMT values are lower than the maximum threshold of 0.85, the discriminant validity is established (see Table 2).

Table 1

Results of Measurement Models

Construct	Items	Indicator loadings
BI CR = 0.93; AVE = 0.81	I plan to use the e-learning system continuously in the future.	0.88
	Whenever possible, I intend to use e-learning in my future teaching.	0.87
	To the extent possible, I intend to use the e-learning system to perform different teaching tasks.	0.94
PU CR = 0.90; AVE = 0.55	I am teaching in new ways since using the e-learning system.	0.72
	Students' performance is enhanced when using the e-learning system.	0.78
	I interact more with students when using the e-learning system.	0.80
	Some students participate on the e-learning system who do not participate in class discussions.	0.70
	Students like to use the e-learning system.	0.77
	I save time by using the e-learning system.	0.71
	The e-learning system is a central component of my courses.	0.73
PEOU CR = 0.89; AVE = 0.73	The e-learning system is easy for me to use.	0.86
	The e-learning system is easy for students to use.	0.92
	The e-learning system is convenient for students to access.	0.78
SN CR = 0.95; AVE = 0.85	People whose opinions I value will encourage me to use the e-learning system.	0.90
	People who are important to me will support me in using the e-learning system.	0.94

	People who are important to me think it is a good idea to use the e-learning system.	0.93
MOT CR = 0.90; AVE = 0.60	Keep up with technical change.	0.76
	Increase communication among students.	0.75
	Save time.	0.81
	Respond to student requests or interest.	0.79
	Learn more about the e-learning system.	0.76
	Help students learn to use the e-learning system.	0.79
TC CR = 0.93; AVE = 0.78	Learning to use the e-learning system takes up too much of my time.	0.89
	Using the e-learning system is so complicated that it is difficult to know what is going on.	0.89
	Using the e-learning system involves too much time.	0.87
	It takes too long to learn how to use the e-learning system.	0.88
CB CR = 0.88; AVE = 0.51	I make it a priority in my classroom to give students time to work together when I am not directing them.	0.68
	I involve students in evaluating their own work and setting their own goals.	0.71
	I believe that expanding on students' ideas is the effective way to build my curriculum.	0.78
	I prefer to cluster students' desks or use tables, so they can work together.	0.75
	I prefer to assess students informally through observations and conferences.	0.75
	I often create thematic units based on the students' interests and ideas.	0.71
	I invite students to create many of my bulletin boards.	0.58

Note. CR = composite reliability; AVE = average variance extracted; BI = behavioural intention; PU = perceived usefulness; PEOU = perceived ease of use; SN = subjective norms; MOT = motivation for instrumental use; TC = technological complexity; CB = constructivist beliefs.

Table 2

Heterotrait–Monotrait Criterion

	BI	CB	MOT	PEOU	PU	SN	TC
BI	–						
CB	0.40	–					
MOT	0.68	0.49	–				
PEOU	0.59	0.18	0.48	–			
PU	0.66	0.39	0.72	0.55	–		
SN	0.36	0.16	0.33	0.24	0.34	–	
TC	0.37	0.12	0.29	0.52	0.28	0.06	–

Note. BI = behavioural intention; CB = constructivist beliefs; MOT = motivation for instrumental use; PEOU = perceived ease of use; PU = perceived usefulness; SN = subjective norms; TC = technological complexity.

Assessment of the Structural Model and Mediation Analyses

We used bootstrapping with 5,000 resamples to estimate the structural model (see Table 3). In PLS-SEM, the structural model presents information about path analysis, explained variance (R^2), predictive relevance (Q^2), and standardized root mean square residual (SRMR). This study shows that BI is predicted by SN, MOT, PU, and PEOU, which results in an R^2 value of 0.51. The R^2 values for PEOU, PU, and MOT are 0.31, 0.46, and 0.30, respectively. The predictive relevance of all endogenous constructs is verified because all Q^2 values are greater than zero. The SRMR values for the saturated and estimated models are 0.075 and 0.077 respectively, which are less than the 0.08 threshold level, thereby suggesting an acceptable model fit (Henseler, Hubona, & Ray, 2016). Finally, all VIF values are less than 3.3, which indicates the absence of multicollinearity.

Table 3

Assessment of Structural Model

Endogenous constructs	R-square	Q-square
BI	0.51	0.36
MOT	0.30	0.15
PU	0.46	0.22
PEOU	0.31	0.19

Model Fit Criterion	Saturated Model	Estimated Model
SRMR	0.075	0.077

Relation	Path coefficient (*t*-value)	95% Biased corrected confidence interval	Conclusion
PU → BI	0.21 (2.76)***	(0.06, 0.36)	–
PEOU → BI	0.22 (2.73)***	(0.06, 0.38)	–
PEOU → PU	0.24 (3.15)***	(0.08, 0.38)	–
MOT → PU (H1A)	0.50 (7.90)***	(0.37, 0.61)	Supported
MOT → PEOU (H1B)	0.32 (3.77)***	(0.13, 0.47)	Supported
MOT → BI (H1C)	0.26 (3.34)***	(0.11, 0.41)	Supported
SN → BI (H2A)	0.12 (2.08)**	(0.01, 0.24)	Supported
SN → PU (H2B)	0.12 (1.732)n.s.	(-0.01, 0.25)	Not Supported
SN → MOT (H2C)	0.24 (2.70)***	(0.08, 0.44)	Supported
CB → BI (H3A)	0.12 (1.81)n.s.	(-0.02, 0.25)	Not Supported
CB → MOT (H3B)	0.38 (5.63)***	(0.23, 0.50)	Supported
TC → PEOU (H4A)	-0.37 (5.47)***	(-0.50, -0.23)	Supported
TC → BI (H4B)	-0.10 (1.43)n.s.	(-0.23, 0.04)	Not Supported
TC → MOT (H4C)	-0.24 (3.07)***	(-0.39, -0.09)	Supported

Note. BI = behavioural intention; MOT = motivation for instrumental use; PU = perceived usefulness; PEOU = perceived ease of use; SN = subjective norms; CB = constructivist beliefs; TC = technological complexity. ***p <0.01; **p<0.05; n.s non-significant

The results show that hypotheses H1A, H1B, and H1C are supported, indicating MOT positively influences PU, PEOU, and BI, suggesting that university teachers who are aware of their motives tend to view e-learning systems as worthwhile and easy to use.

Support for hypothesis H2A is confirmed, i.e., SN exert a positive impact on BI. This result suggests that university teachers comply with social influence to use e-learning systems in their teaching practices. Nevertheless, the hypothesis H2B is not supported in this study, i.e., SN are not related to PU. Finally, the analysis shows that H2C is supported, implying that SN positively influence MOT.

The study shows that hypothesis H3A is not supported, i.e., university teachers' CB are not related to BI. The finding suggests that for university teachers, CB do not have a direct relationship with integrating

technology into their teaching. However, the analysis shows that hypothesis H3B is supported, indicating university teachers with CB have a higher level of MOT.

The findings support hypothesis H4A, i.e., TC is negatively related to PEOU. However, TC is not related to BI, and thus hypothesis H4B is not supported. Finally, support for H4C confirms that TC is negatively related to MOT.

To examine the mediation effects, a series of indirect effect analyses were performed. Full mediation occurs when the indirect effects are significant, but the direct effect is not significant (Nitzl, Roldán, & Cepeda Carrión, 2016). Partial mediation exists when both the direct and indirect effects are significant. The results reveal that MOT mediates the following relationships: CB-BI, SN-BI, TC-BI, TC-PEOU, and SN-PU (see Table 4). The analysis of direct and indirect effects shows that full mediation occurs for relations CB-BI, TC-BI, and SN-PU, whereas partial mediation occurs for relations SN-BI and TC-PEOU.

Table 4

Mediating Analysis

Mediation	Direct effect	Indirect effect	95% Confidence intervals bias corrected (indirect effect)	Interpretation
CB → MOT → BI	$0.12^{n.s.}$	0.10^{***}	(0.04, 0.17)	Full mediation
SN → MOT → BI	0.12^{**}	0.06^{**}	(0.02, 0.15)	Partial mediation
TC → MOT → BI	$-0.10^{n.s.}$	-0.06^{**}	(-0.14, -0.02)	Full mediation
TC → MOT → PEOU	-0.37^{***}	-0.08^{**}	(-0.16, -0.02)	Partial mediation
SN → MOT → PU	$0.12^{n.s.}$	0.12^{**}	(0.04, 0.24)	Full mediation

Note. BI = behavioural intention; PU = perceived usefulness; PEOU = perceived ease of use; MOT = motivation for instrumental use; SN = subjective norms; CB = constructivist beliefs; TC = technological complexity. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{n.s}$ non-significant

Validation of Survey Results With University Administrators

We supplemented the survey analysis with face-to-face interviews with five university administrators who are department heads at this university. They were asked to rate their agreement from 1 (*strongly disagree*) to 5 (*strongly agree*) on six questions concerning the survey results. The first three questions asked the respondents' views on whether SN, TC, and MOT are important antecedents that explain university teachers' acceptance of e-learning systems. The next three questions asked the respondents' opinion on whether MOT would mediate the effects of SN, TC, and CB in university teachers' acceptance of an e-learning system. The means for the six questions were 4.0, 4.0, 4.6, 4.0, 4.0, and 4.2, respectively. The results imply all respondents consistently validated the survey results.

Discussion

As in many studies, the survey responses show that university teachers' SN, CB, and TC are significantly related to MOT, and the latter is related to TAM variables PU, PEOU, and BI. Surprisingly, only one of three antecedents, which is university teachers' SN, is significantly related to BI. The non-significant effects of university teachers' CB and TC on BI are not in accordance with prior TAM studies in educational contexts (Teo, 2011a, 2011b, 2012, 2014; Teo et al., 2016; Teo & Zhou, 2016). We identify one plausible reason for these non-significant relations: MOT may assume dual functions, namely, as a causal and a mediating variable in technology acceptance. The mediation analysis indicates that MOT fully mediates the relations CB-BI, TC-BI, and SN-PU, and partially mediates relations SN-BI and SN-PU. The mediating effects indicate that MOT cannot be separated when investigating the influences of SN, CB, and TC on university teachers' technology acceptance. The reason is that MOT plays an intermediate role (as a process factor) in the relationships between antecedents and technology acceptance. University teachers have higher levels of willingness and awareness of the instrumental benefits of accomplishing a task with technology.

Theoretical Contributions of this Study

This study makes several contributions to the educational technology acceptance literature. First, this study advances our understanding of the nature of SN, CB, and TC in influencing university teachers to use an e-learning system. We integrated MOT into an educational TAM based on an interdisciplinary literature review (e.g., Friedrich, 2014; Kao et al., 2011), from which new insights into the interrelationships among external factors (SN, CB, and TC) for MOT in the TAM were obtained. The supported hypotheses that were developed in this study augment the technology acceptance literature. Second, our study analysed causal mediating effects to offer a more thorough understanding of what drives BI among university teachers. Mediation analysis indicates that MOT absorbs all or some direct effects from SN, CB, and TC on TAM variables. The presence of mediators also clarifies the non-significant relations CB-BI, TC-BI, and SN-PU among university teachers.

Implications for Application

Creating a technology-friendly environment may be inadequate for motivating university teachers to integrate technology into teaching (Lladós-Masllorens, Aibar, Meseguer-Artola, Minguillón, & Lerga, 2017; Teo & Zhou, 2016). University administrators should understand why university teachers believe the use of a particular technology can contribute to their pedagogical objectives. This study offers several suggestions for improving technology use among university teachers.

First, this study suggests that university administrators should focus on developing university teachers' epistemological beliefs and their perceptions of potential instrumental benefits of using technology in teaching. University administrators may consider providing regular training and promotional campaigns to advance university teachers' epistemological beliefs, particularly their CB. Such actions may promote constructivist learning environments (Kennedy, 2016; Marra, 2005). Further training and orientation will enhance university teachers' MOT for using e-learning systems. Second, this study suggests that university administrators should instil a strong organizational culture that encourages the use of e-learning systems. If individuals view using e-learning in teaching as a form of social compliance with the organizational culture, this awareness may lead to greater group conformity and uptake of e-learning systems.

Furthermore, influential academicians in the university (or faculty) can be requested to lead the change by adopting an e-learning system. A university teacher's perception and motivation to use an e-learning system may be enhanced if the influential academicians actively demonstrate their belief in such systems.

Limitations of the Study and Future Research

There are several limitations in this study. First, this study has investigated the effect of MOT on behavioural intention to integrate technology into teaching. However, future studies may consider integrating the affective (or emotional) components of motivational factors to better understand intentions to use. Another limitation arises from the fact the survey was distributed door-to-door by one of the researchers. Only those university teachers present in their offices were requested to respond to the survey. Thus, our results may not apply to the wider target population. The third limitation is that conceptions of good teaching are affected by discipline and teaching context. Future research could focus on whether discipline differences affect the willingness of university teachers to integrate technology into their teaching. Lastly, our results may not apply to private universities because only public universities are required by the Malaysian Ministry of Higher Education to adopt e-learning in teaching activities.

Conclusions

Sustainable use of educational technology is of paramount importance for higher-education institutions due to the expensive investment required. To gauge university teachers' willingness to use such technology, a thorough examination of external factors is important for clarifying the relationships among PU, PEOU, and BI. Previous TAM studies were reviewed to develop a more comprehensive explanation of university teachers' acceptance of information systems. In this study, we advanced current understanding by identifying the dual roles of MOT, as both cause and mediator. Our results highlight that policy intervention must cover all antecedents (SN, CB, and TC) and MOT to enhance technology acceptance among university teachers.

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