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Contribution of Blended Learning Technologies and Teaching Practices to Student Success

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Abstract

Student success and the perceptions of success are growing areas of research. At the University of the Western Cape the impact that using a learning management system in blended learning approaches had on student success and perceptions of success was unknown. The research investigated perceptions of lecturers and students of the Arts Faculty regarding student success, and whether perceptions of student success, the use of technologies and blended teaching and learning approaches were interrelated. A mixed method approach was used, in which qualitative and quantitative methods were applied. All groups of participants agreed that the use of a learning management system to enhance a blended learning approach contributed to student success. These findings agreed with other research conducted by international scholars. More research that focuses on how technologies impact on the success of individual students, and the interrelatedness of technologies, learning approaches and student success is necessary.

Introduction

Online technologies, and in particular learning management systems, provide universities with opportunities to introduce blended learning approaches to programmes and courses. Blended teaching and learning combine Information and Communications Technologies (ICTs) with a variety of media, learning resources and delivery methods. When it was still regarded as a new, innovative method, research on blended learning focused on the technology and platforms used to deliver learning materials and experiences. However, little research considered students' roles in their own success and in the successful application of the technology. Unless the individual learning needs of students can be considered and met, blended learning might not deliver the academic advantages originally envisaged.

The primary objective of the present research was to investigate the perceptions of students and lecturers of the value of using blended learning technologies as part of the delivery of programmes at the University of the Western Cape (UWC) in South Africa. The focus of the research was on the perceptions of student success as a result of using the technologies, and the lessons that had been learned from adopting these innovative teaching and learning practices. The researchers analysed the impact of using technologies in the Arts Faculty from the point of view of the Centre for Innovative Education and Communicative Technologies (CIECT) at UWC. The

research underpins CIECT's involvement in encouraging the adoption of technologies and blended-learning approaches at the university. There is a need for research of this nature to add value to CIECT's effectiveness, and because the mandate of the Centre is to promote ways of improving teaching and learning at UWC. A critical analysis of perceptions and practices, such as the present research, should provide new insights into the impact that blended learning and teaching approaches have had, and on the perceptions of student success. The study also aimed to determine whether technologies, blended learning approaches, and perceptions of student success are interrelated. Although this was uncharted research at UWC, it supported CIECT's continual research on the efficacy of the blended teaching and learning practices that included the learning management system (LMS), iKamva.

The theoretical framework in this study was derived from a review of related literature. This framework was important to finding answers to the following question: *Does the facilitation of student interaction within online, blended learning environments impact the perception of student success?*

Literature Review

The scope of the literature review of this study is not intended to provide a comprehensive historical account of the perception of student success within online, blended learning environments. Instead, it focuses on literature published from 2010 on interventions and perceptions of students' success in relation to blended learning technology and emerging teaching practices. Inevitably, the dropout rate at any educational institution not only advances questions and perceptions regarding student success, but also determines the type of intervention that needs to be put in place to support students.

With the aforementioned in mind, in its 2018 Institutional Operational Plan (IOP), UWC envisioned plans to "develop an environment conducive to excellence in learning and teaching in support of student success and retention" (UWC 2018:10). In addition, UWC intended to focus on initiatives that would build an inclusive and supportive student environment. These initiatives saw an increase of activities, particularly directed at creating a culture of inclusivity at UWC, in the hopes of "incorporating multiple learning styles and strategies to facilitate student psychosocial support, retention and success" (UWC 2018:21). The Operational Plan created an awareness of and sensitivity to providing students with appropriate support and interventions that would contribute to their academic success. Such support included identifying at-risk students and directing interventions at vulnerable students, especially those in high-impact programmes (UWC 2018:36). In the discussions about technology in teaching and learning there was a perception that improving teaching practices and using new technologies would reinforce traditional face-to-face classroom engagement (UWC 2018:36).

The use of blended or hybrid learning across all faculties was acknowledged and had become standard practice. E-tools in use included course resources, tests, quizzes, polls and announcements (UWC 2018:36). In the 2018 academic year 1219 modules were developed on the institutional LMS, iKamva, by the CIECT (UWC 2018:37). This was a clear indication that faculties at the university were committed to supporting students' learning and success by engaging with technology (UWC 2018:37). Given the importance of the perceptions of student

success, the office of the Deputy Vice Chancellor (Academic) developed a First-Year Experience (FYE) Framework and an FYE Student Success Model that was piloted in 2019. This initiative aimed at strategic programming and focused on positive academic transitions. Another aim was to develop learning communities that would provide meaningful experiences for undergraduates (UWC 2018).

The aim of the research reported here was to investigate the perceptions of student and lecturers of iKamva, as well as their participation in the blended teaching and learning initiatives enabled by using the LMS. Kintu, Zhu and Kagambe (2017:4) suggest that the success of blended teaching and learning depends largely on the confidence and capacity of students as well as teachers to use and apply computer technology and online applications. A report of the Department of Higher Education and Training (DHET) outlines the success, throughput and dropout rate of students in South African universities between 2000 and 2016 (DHET, 2016:3). The intention of the report was to provide one set of data analytics as a resource when monitoring and evaluating Higher Education Institutions (HEIs), so that appropriate interventions could be sought to improve student success rates. In their analysis, the DHET concluded that students who studied through distance education should receive adequate support to provide them with a "reasonable chance of success" (DHET 2016:30).

Defining student success is not an easy task. Brunton et al. (2016:15) suggest that while the term is multifaceted and even problematic, it has positive connotations. Brunton et al. (2016:15) go on to describe student success as a process in which a student progresses through the early period of study and makes an informed decision either to continue studying at an institution, or to drop out. As a result, a variety of models have been used to assess student success rates in blended learning environments. For the purposes of this literature review we examine three different models used in measuring both the success of e-learning systems (ELS) and perceptions on student success.

Hassanzadeh Kanaani and Elahi (2012:10963) applied a comprehensive model for measuring the success of ELS. Their study found that the better the technical quality of an ELS, the greater the level of student/user satisfaction. Similarly, Freeze et al. (2019:176-179) applied the Information Systems Success (ISS) Model to measure the impact made on individual students in an online environment. The ISS Model included six constructs or dimensions, namely system quality, information quality, systems use, user satisfaction, individual impact and organisational impact. These authors postulate that the aforementioned constructs are rudimentary components that can determine the perception of success by students enrolled in eLearning courses. They concluded that an ELS should provide students with "needed, relevant, up-to-date information through a user friendly and interactive system" (Freeze et al. 2019:179).

On the other hand, Manwaring et al. (2017) used Structural Equation Modeling to gain a holistic understanding of student engagement in blended learning environments. In addition, they measured the students' perceptions of their blended learning experiences. Structural Equation Modelling is designed to investigate longitudinal relationships between emotional and cognitive engagement, and to determine whether student perceptions influence their learning engagement. These authors concluded that their study had provided a valuable

opportunity to gain a holistic understanding of student engagement and perceptions.

Three of the findings of that study are significant to the present discussion. First, that the learning environment as well as the students' own perceptions influenced how students viewed success. They found that "while emotional and cognitive engagement were correlated and they both led to the outcome of students' perceptions of learning and getting better at something, they were each uniquely influenced by different aspects of individual student and classroom characteristics" (Manwaring et al. 2017:29). Second, the location of the learning activity was less important to engagement and student perceptions than the actual pedagogical elements designed by an instructor (Manwaring et al. 2017:30). Third, when students were offered choices, their overall development was enhanced: Learning activities that provide learner choices, develop sociality, are perceived as important to the student and are seen as relevant or related to existing student knowledge are all associated with higher levels of both cognitive and emotional engagement (Manwaring et al. 2017:31).

While the three models mentioned above seem to be different, they were all used to assess the perceptions of success that students might have of their learning experiences. Each one considered student perception of success from a different viewpoint. The first model considered a comprehensive model for measuring the success of eLearning systems and how it affected student user satisfaction. The second model measured the success of information systems and the impact they made on individual students in an online environment. The third model mapped a holistic understanding of student engagement in blended learning environments.

It is evident from the research cited above that social interaction, teaching and learning are large contributors to interaction in a blended learning course. To determine whether the facilitation of student interaction in online, blended learning plays a pivotal part, it is suggested that "strategies that increase students' self-efficacy and self-regulation can aid them in perceived success within courses" (Blaine 2019:39). From the insights provided by the authors referenced above, the theoretical framework of this study emerged to answer the question: *Does the facilitation of student interaction within online, blended learning environments impact the perception of student success?* Blaine (2019:40) suggests that both students and lecturers need guidance and training on interacting with and in online programmes and other environments. He goes on to advise lecturers and university administrators not to assume that students automatically flourish in an online environment, as this is not always the case.

In an informed review of the literature on the topic of student perception, Hung and Chou (2015) found that students' learning in online environments needed organisation from their lecturers. Precise goals and learning objectives, unambiguous learning programmes, as well as clear expectations and easily available course materials are necessary for student success (Hung & Chou 2015:322, 323). Suggestions for such detailed groundwork to create learning environments align consistently with other research done on this topic. Hung and Chou (2015:323) conclude that a wide variety of technological tools should be used to deliver course materials in order to assist students with their learning. Training lecturers to use the available technologies to enhance their online teaching should be the focus of education institutions.

Owston, York and Murtha (2012) examined the relationship between student perceptions of blended learning and achievement. Their study investigated four questions that served as a guide to determine the relationship between students' perception of blended learning and their own achievement. The four questions asked were:

(1) How do perceptions and satisfaction with blended courses relate to achievement?

(2) How do perceptions of the convenience afforded by blended learning relate to achievement?

(3) How do perceptions of engagement in blended learning courses relate to achievement?

(4) How do perceptions of learning in blended courses relate to achievement?

While the research team established that students, perceptions are related to learning achievement those findings led to more questions.

An increasing number of studies have found that, in blended courses students' perceptions, satisfaction and achievement influence their outcomes. The ease with which students can navigate an LMS also contributes to positive perceptions. Al-Busaidi (2012:14, 15) concludes that there are four crucial factors that influence the success of LMSs in a blended learning environment, namely "perceived ease of use, perceived usefulness, actual use, and user satisfaction".

More recent evidence provided by Bager-Elsborg et al. (2019) suggests that the effective implementation of an LMS at a higher learning institution is a contributing factor to the perception of student success, and is related to the teaching-learning environments (TLE) to which students are exposed. These authors suggest that students are motivated to succeed when the TLE meets their basic psychological needs of connection, aptitude and independence. Overall, TLEs that are most effective take high-quality curricula, competent lecturers and tutors, constant student supervision and accountability, as well as a positive social climate at the learning institution into account. These constants all induce a positive perception of students' success.

The most striking result to emerge from the literature consulted is that critical analysis of the perception of student success is necessary, together with the need to determine students' perceptions of their blended learning experience (López-Pérez, Pérez-López & Rodríguez-Ariza, 2011). These researchers (2011:819-820) tested three hypotheses to find out whether there is a relationship between blended learning experiences, students' perceptions of success, and their actual level of achievement. The hypotheses were "The application of blended learning has positive effects on students' outcomes"; "The objective outcome (final grade) derived from a blended learning experience is correlated with the subjective outcome (perception of utility, satisfaction and motivation)"; "The utility perceived by students, their motivation and degree of satisfaction, are explanatory variables of the objective results (final grade) achieved by students in a blended learning experience". The hypotheses were accepted and the researchers concluded that e-learning activities reinforce and complement face to face classes, and that "the joint effect of the blended learning activities" was positive and influenced both students' perceptions and their final results (López-Pérez et al. 2011:824).

Apart from the importance of a critical analysis of the perception of student success, the dropout rate in HEIs in South Africa is of great concern. Many South African researchers have addressed this issue. A recurrent focus of research has been to determine whether effective e-learning strategies could change the perception that it is

ineffective learning strategies that influence the high student dropout rates, instead of other circumstance like students' social environments and economic situations. Inevitably, the dropout rate not only determines and advances questions regarding the perception of student success, but also raises urgent psychological, physical, institutional, biographical, social, financial and economic concerns. In order to understand 'dropout rate' in a South African context it is necessary to discuss research conducted by South African academics.

In response to the high attrition rates recorded by South African universities, in 2012 the University of Pretoria set up a steering committee to explore models to improve the success and retention rate at the university. The committee explored the possibility of designing a systems process to improve the whole student life cycle. Such an approach would demand the cooperation of the whole university as well as feeder high schools and external experts to improve the experience of undergraduates. In addition, it found that a combination of personal and academic factors accounted for the high dropout rate. These factors included affordability, lack of academic support, lack of career guidance, lack of self-discipline and commitment as well as individuals being first-generation students (Moodley & Singh 2015:95, 100). These authors believe that the themes that emerged from their investigation could contribute to the formulation of strategies and the ultimate reduction of dropout rates at all universities (Moodley & Singh 2015:110).

In another analysis on the dropout rates in South Africa, Ramrathan (2013) presents a conceptual framework to explore the personal, biographical and institutional concerns that influence student dropout in South African HEIs. Ramrathan's conceptual framework integrates a methodological orientation to inform the analysis of student dropout, with a conceptual mapping of the factors that potentially influence students to drop out, and the institutional policies of access and throughput management systems (Ramrathan 2013:214-215). That study included both a quantitative analysis of student patterns, trends, expectations, and predictability, and a qualitative analysis that focused on identifying factors that influenced individual student dropout. This mixed method approach allowed Ramrathan to understand student dropout from an "explanatory perspective of explaining particular patterns that may emerge through a quantitative analysis of this phenomenon or an exploratory perspective to establish the extent to which a particular factor or group of factors influences student dropout" (2013:215). Ramrathan (2013:218, 219) concludes that students should be regarded as individuals and not part of a group (rural, previously disadvantaged and so on) because each student is unique, and programmes need to be developed to suit the experiences of individual students. He suggests that using conceptual mapping will enable a shift of discourse from being race-based to focusing on students' experiences. The book *Going to University: The Influence of Higher Education on the Lives of Young South Africans* (Case et al. 2018) contributes to the subject of student success. The authors highlight two issues that form the core of this book, namely that the success of the contribution made by Higher Education (HE) to society and student success is reciprocal or co-dependent, and that influences beyond an HE institution affect students' perspective of success or failure (Case et al. 2018:4, 5).

Methodology

As mentioned above, this study investigated the perception of student success in the blended teaching and

learning environment of an LMS, namely iKamva, at the University of the Western Cape. The researchers sought to answer the following research questions: *How have blended learning technologies and teaching practices impacted students' and lecturers' perceptions of student success? How can departments in the institution contribute to the discourse on the perceptions of student success?*

A questionnaire was developed as the research instrument. There were no conflicting statements in the questionnaire so that students could respond according to their individual experiences in the different environments of e-learning. The questionnaire was made available online to elicit a response from students. Responses were measured using a 5-point Likert scale, namely, 1 = strongly disagree (never) to 5 = strongly agree (always). In addition, interviews were conducted with lecturers who were subject matter experts in order to explore their perceptions of the value of blended learning technologies in their disciplines. Through the open-ended interview questions, impartial and diverse responses were obtained.

The overall design of this research used a mixed-method approach, and triangulation was employed in which both qualitative and quantitative research components were explored. The study was exploratory with the intent to identify salient data that could assist in answering the research questions. In other words, different data collection techniques were applied, namely, asking respondents open-ended questions in interviews and a structured questionnaire. These data collection techniques were a useful way to observe and evaluate the student's online engagement.

In addition, the data collected from the interviews was useful to observe and evaluate the teaching practices aligned to the perception of student success. The aforementioned purpose was triangulation. This means that both the quantitative and qualitative data were analysed independently to see whether they yielded similar results or to be mutually corroborated.

Sampling Procedure

A total of five groups of students, selected from the 780 students registered for five subjects in the 2017–2020 academic year, participated in the research. The sample of students selected to complete the questionnaire was obtained by taking the average number of students enrolled in five subjects across year levels in the Arts Faculty from 2017 to 2020. The sample of modules represented the entire population of 240 online modules in the Arts Faculty. The subject areas selected were Anthropology, Sociology, English, Language and Communication Studies, and Geography. Six lecturers participated in the interviews, while 72 students completed the questionnaire. This research design was effective and could lay the groundwork that could lead to future studies investigating students' and lecturers' perceptions of the value of blended learning technologies and teaching practices to student success at UWC or any other institution of higher learning.

Data Analysis

The questions were designed to capture students' perceptions of the following areas of the iKamva web-based

learning environment: co-participatory activities, information structure and design activities. We used the median to measure the most frequent responses and the interquartile range (IQR) to determine the respondents' opinions. In the area of co-participatory activities (see Figure 1) the most frequent response (39%) indicated agreement with the idea that their online modules supported their learning experiences, which, in turn, effectively contributed to online discussions.

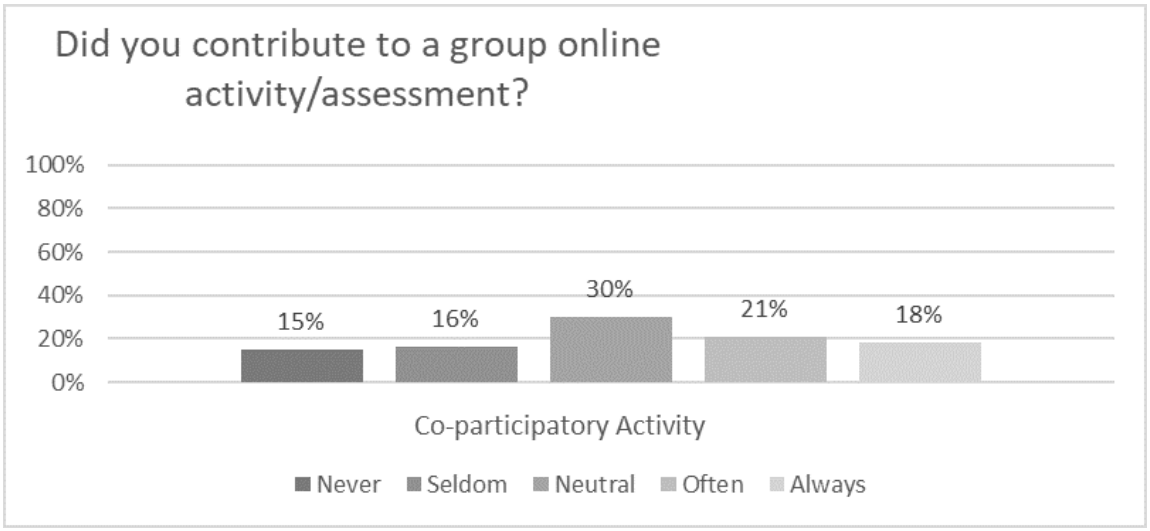

Figure 1. Co-participatory Activities

Thirty percent remained neutral, while 31% did not agree with the idea that their online modules supported their learning experiences effectively (Mdn=3, IQR=2). Opinion seems to be divided with regard to co-participatory activities. Many respondents (31%) expressed strong disagreement, but a roughly equal number (39%) indicated that they either agreed or strongly agreed.

Students were asked if they had contributed to a group online activity/assessment in their module, if they responded "Always" to this question they were asked to comment on an example of an online group activity or assessment. The following aspects were highlighted in some responses: multiple perspectives were revealed; discussions with classmates provided comparisons that helped students to understand work; discussion topics provided opportunities to clarify questions which were facilitated by both tutors and lecturer; and discussion topics enabled reflection and engagement with module content. A large number of students who responded "Always" indicated that they could interact with other students via the discussion forum and also share their concerns on this platform.

In addition, when asked if they had contributed regularly during online discussions the majority (60%) of respondents indicated that they had, whereas 40% indicated that they had not contributed to online discussions at all. When students were asked what medium they used to respond in their group discussions (co-participatory activities) the most frequent response (54%) was that they had contributed during online tutoring sessions. A significant percentage of students (33%) reported that they contributed during WhatsApp sessions while just 13% contributed on discussion forums (see Figure 2).

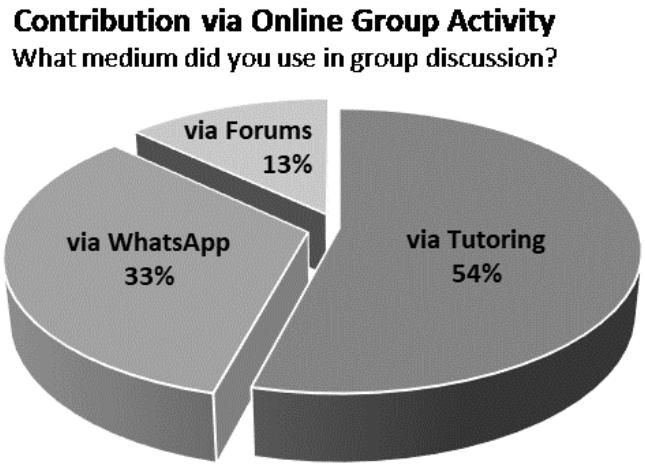

Figure 2. Contributions to Online Activities

In the area of information structure (see Figure 3 below) when students were asked if their online module was structured to support their online learning and was fully structured to support their learning style, the most frequent response (41%) agreed, 24% remained neutral, while 35% did not agree (Mdn=3, IQR=2). This suggests that there is divided opinion with regard to information and the structure of some modules.

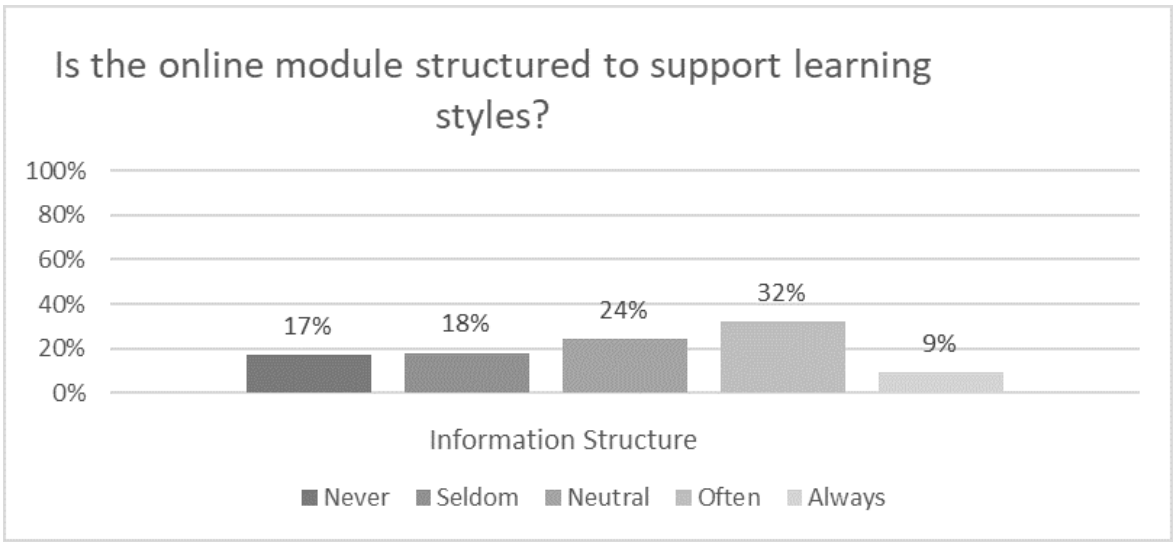

Figure 3. Information Structure

In the area of design activities (see Figure 4 below) students were asked if the online design of their modules supported their face to face learning and teaching experiences and assessments. The most frequent response (56%) indicated that students agreed that the design activities were structured and supported their online modules and were aligned to specific assessment tasks in which multimedia (videos, podcasts, etc.) were used in the modules to support face-to-face lectures, 24% remained neutral, whereas 20% did not agree (Mdn=4, IQR=2).

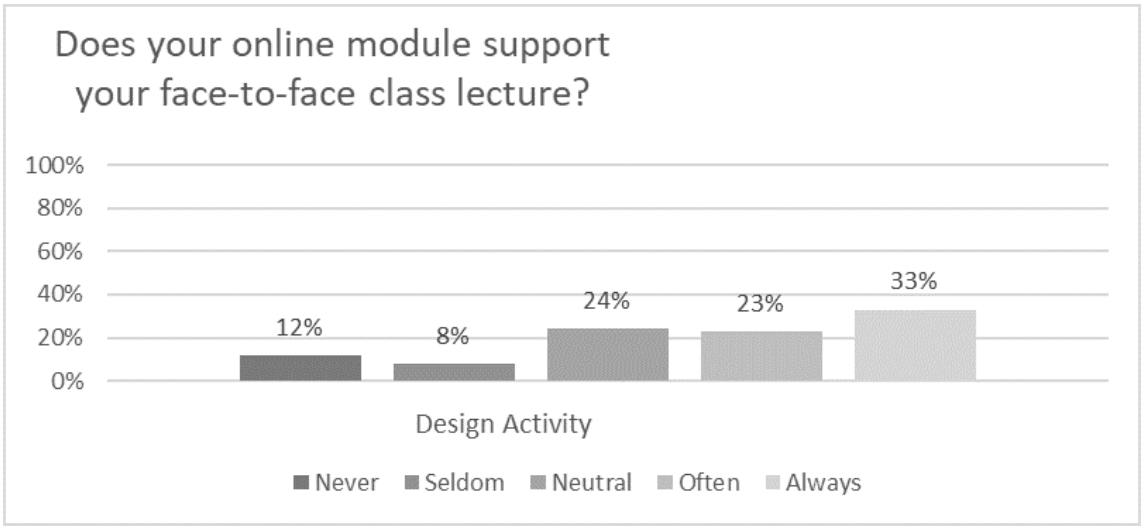

Figure 4. Design Activities

When students were asked if their lecturers had supported their learning experience with multimedia, the majority of respondents (77%) agreed, fewer than a third of the respondents (23%) disagreed; in addition, most respondents strongly agreed that the multimedia used had helped and supported their learning experience. It was generally agreed that the inclusion of the multimedia facets assisted with making connections and gaining understanding of the topics and concepts being studied at the time. This corroborates the idea that adding podcasts and other facets do provide for a different way of learning, and it seems that for some students it is easier to understand something by hearing it.

What follows is a thematic content analysis of how blended learning technologies and teaching practices affected lecturers' perceptions of student success. In order to determine if lecturer perceptions of student success are related to blended teaching and learning technologies, interviews were conducted. If participants agreed that their practices had had an impact on student success they were asked to elaborate with specific examples. In addition, the participants were also asked on how the institutions eLearning department had supported their own online journey, in relation to the development of content, communication and assessment. These are discussed in detail below.

Initially, the participants were asked about their use of online resources that they had incorporated into their online instruction as opposed to resources used during face-to-face instruction. The participants were also asked to comment on specific blended learning and teaching practices they had implemented and that might have contributed to their perception of student success. In addition, they were asked about their engagement with blended learning and teaching practices, particularly when using iKamva.

The interviews revealed that the respondents held both positive and negative opinions about blended and technological teaching and learning practices that had been introduced into their online courses. It also became evident that the success of their online modules was related to both the quality of the institution's LMS and the high degree of user satisfaction. This finding agrees with those of Hassanzadeh et al. (2012) in their research on a comprehensive model for measuring the success of an LMS. In addition, the present study revealed that

lecturers used a wide variety of technological tools to assist student learning, which substantiates research findings discussed in the literature review. Notably, Hung and Chou (2015:323) suggest that "instructors should consider using a wide variety of technological tools to deliver course materials and to assist with student learning", and increase the level of student success.

When lecturers were asked if they had found that their practices had impacted on student success, the overall response was positive. Participants indicated that by pursuing different teaching modalities they were able to meet different students' needs. This often meant that students responded positively and enthusiastically to the videos and audio aspects of the modules. Lecturers agreed that using the wide variety of tools found on the LMS had a positive impact on the success of students. Participants reported and affirmed that their usage of the iKamva tool helped them to have an impact on the success of their students. Lecturers validated the value of the LMS by reporting that the following had been applied in their course modules: short surveys to assess students' preferences; quizzes and assignment tasks; feedback on assessments; grading assessments; the Chat Room tool; and online exams (consisting of MCQ plus open-ended questions).

When lecturers were asked to provide specific examples of practices that had impacted on student success, the responses were generally very similar. The examples included a similar variety of resource tools on the LMS that they had incorporated into their teaching. One participant opined that the LMS had contributed toward student success because it made it possible for most students to have greater access to different course resources, such as PowerPoint slides from lecturers' notes, podcasts, and similar multimedia content. In addition, lecturers thought that a blended learning approach, that is, the combination of online interactive educational materials and the use of a variety of modalities, was beneficial. It provided both lecturers and students with opportunities to determine and plan the following: their own time, place of work, path, and pace of teaching or learning. Lecturers said that using the various platforms on the LMS assists students in many ways, such as time and energy, and financial expenses. These platforms freed up time for students to read and do activities related to their teaching and learning experiences online.

Our results share a number of similarities with Al-Busaidi's (2012:15) findings mentioned above. Lecturers reported that students appreciated video lectures because they contributed to their direct engagement with the material. In addition, in the absence of face-to-face lectures, the videos had helped them not to feel disconnected and they could watch the videos repeatedly. They intimated that videos and audio recordings were valuable teaching resources, and that it was different from just having face-to-face lectures.

Concluding Remarks

The correlation between responses given by students and lecturers is worth mentioning. It is evident that both students' and lecturers' perceptions of the web-based learning environment correlated with each other in the areas researched in this study. The findings of this study indicate that the students' perceptions of the success of co-participatory activities, the information structure, and design activities correlated with the lecturers' perceptions of student success. This paper has highlighted the importance of the effectiveness of interaction in

online courses and other environments to increase students' self-efficacy and self-regulation to help them succeed in their courses. This substantiates the claim of Kintu et al. (2017) that the success of e-learning and blended learning depends on students' as well as lecturers' confidence and capability to participate in blended learning activities. It also agrees that being competent in utilizing and applying computer technology and online applications leads to success. These findings add to a growing body of literature on our understanding of how blended learning technologies and teaching practices impact on students' and lecturers' perceptions of student success. In addition, the study contributes to information on how departments and/or faculties in HEI's can further contribute to the discourse on the perception of student success.

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