A Critical Evaluation of the Integration of a Blended Learning Approach into a Multimedia Applications Module *

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Abstract

The concept of blended learning is not new. While research articles have outlined blending learning approaches across a number of disciplines, research studies on how blended learning design principles are implemented into existing modules in the discipline of multimedia studies are limited. This research aims to address that gap by critically evaluating the integration of a blended learning approach into a multimedia applications module. The blended approach adopted is a pedagogical one which integrates synchronous online lectures with face-to-face learning in computer laboratories. Lecturers can determine whether a synchronous blended learning pedagogy is relevant to their own discipline and teaching practice by accessing this research. Objectives of the study include a critical review of the existing literature relating to blended learning and student experiences of blended learning in higher education (HE). A responsive case study is conducted to evaluate the effectiveness of integrating a blended learning approach into a multimedia applications module within GMIT and to evaluate the student learning experience. The methodology adopted for this study combines constructivism and pragmatism as a basis for a mixed methods design using a single responsive case study. The key areas examined in this study include introduction, literature review, methodology, design of the new blended module, research findings and analysis, conclusion and recommendations. Overall research findings indicate positive perceptions of the blend adopted in the areas of pedagogical, social and technical design. The results are also positive in relation to perceived differences in modes of delivery. Findings suggest that the optimum blend has been reached in that theory is delivered synchronously online and students also have face-to-face practical classes in laboratories. Results in relation to whether students learn more in the synchronous online lecture than if it was delivered face-to-face are inconclusive. Further research is recommended in this area.

Keywords: synchronous online learning, student perceptions, blended learning, multimedia applications.

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1. Introduction

Blended learning has become popular in Higher Education (Dang et al. 2016, p. 119). It emerges from an understanding of the relative strengths of face-to-face and online learning (Garrison and Vaughan, 2008, p. 6). McGee and Reis (2012, p. 8) suggest that while there is not absolute agreement within HE as to the exact make-up of a blended course, Institutions generally use the term “blended learning” to refer to some combination of on-campus class and online activities. Graham, Henrie, and Gibbons (2014, p. 13) also agree that models using this definition are the most prominent in the research. In an Irish context, Quality and Qualifications Ireland (QQI) suggest that “blended learning will always involve face-to-face learning. Providers engaged in blended learning will typically also deliver the face-to-face component” (QQI, 2018, p. 6). For the purposes of this research, a blended learning approach is defined as a pedagogical approach which integrates online lectures with face-to-face learning on campus.

Many research articles have outlined blending learning approaches across a number of disciplines, including a detailed thematic analysis of the most highly cited scholarship by Halverson et al. (2014). However, very few of the top-cited publications on blended learning have looked closely at the design process (Halverson et al., 2014, p. 23). Those that do, define the design process as a systematic structure to guide designers and instructors to make informed decisions about the design and implementation of blended learning. McGee and Reis (2012, p. 10) state that the process of blended learning design is often highlighted as one of re-design of a course, involving a change from traditional classroom methods to thinking about the options and appropriateness of choices using a blended learning approach. It eliminates the inflexibility of traditional education towards a more open education in which students are more involved in their learning and have more control over their learning (Scott, 2015, p. 12). While there are many frameworks and theorists on blended learning design (Salmon, 2004; Moule, 2007), none specifically relate to the implementation of a blended learning approach within the Irish HE system around multimedia applications and many of them do not include an evaluation stage. This

research study addresses that gap.

The aim of this research is to critically evaluate the integration of a blended learning approach into a multimedia applications module in GMIT. A responsive case study was conducted to critically evaluate the effectiveness of the integration of a blended learning approach from a student perspective in the areas of: 1) pedagogical design, 2) social design, 3) technical design and 4) perceived differences in modes of delivery. A responsive case study is described as a methodology that allows participants to contribute what they perceive as relevant data to assist in the planning of the next offering of a course (Bates, 2008, p. 98).

This research is limited to one module in GMIT entitled “Multimedia Applications” and one cohort of 40 students on the Bachelor of Science (BSc) in Business Information Systems (BIS), year 2. This is a responsive case study bound by the confines of this discipline, cohort and module in GMIT. The purpose of this study is not to generalise findings but rather to demonstrate a framework for other lecturers to follow if they decide that such an approach is relevant to their teaching practice.

The focus is on the design and delivery of a multimedia applications module using a blended learning approach, which involves synchronous delivery of a number of online lectures over the course of one semester, along with face-to-face practical computer laboratory-based classes. It is the first time for these students to experience synchronous online lectures. An instructional design model can be useful to provide a framework for the management of blended course design so that effective evaluation and reflection on the design and delivery a module can be planned for in a structured manner. For the purposes of this study, the generic model for educational design research put forward by McKenney and Reeves (2012, p. 77) has been chosen as a framework for the evaluation as it uses core ideas from the fields of instructional design, including systematic problem solving and planned but flexible iterative approaches. The model portrays the overall process from a researcher perspective. It includes the following features: 1) three core stages of analysis, design and evaluation, 2) a dual focus on theory and practice, and 3) indications of being use-

inspired through implementation and spread, and interaction with practice.

This paper begins with a review of the literature in relation to integrating a blended learning approach into modules in the HE system across many disciplines. The research methodology is then outlined, followed by the design of the new blended module, research findings, conclusions and recommendations.

2. Literature Review

Many benefits and challenges of blended learning are discussed in the literature. Four main themes emerged from the literature and these formed the pillars for the primary research. In this paper, benefits and challenges identified in the literature are discussed in the context of pedagogical design, social design, technical design and perceived differences in modes of delivery.

In relation to pedagogical design, blended learning can lead to different learning experiences. Bower et al. (2015, p. 10) suggest that students like the blended learning approach because they benefit from a broader range of experiences and have a greater capacity to contribute. As students progress through their studies at university, they become more independent in their deliberations and thus less attached to face-to-face lectures as the major source of knowledge (Owston et al., 2013, p. 39). A blended learning environment can help students develop a higher degree of self-regulation and it allows students to make more efficient use of their time by engaging in course content when they are not attending on-campus classes (Tseng and Walsh, 2016, p. 50).

The role of the instructor as a facilitator can affect student satisfaction with blended learning (Cho and Cho, 2014, p. 28). If a tool is thoughtfully designed and facilitated by the instructor, students are more likely to be highly motivated and satisfied to use it (Waha and Davis, 2014, p. 174). A study by Hung and Chou (2015, p. 322) suggests that the most important role of an online instructor is to act as an instructional designer, even though the instructional designer may not always be the online

instructor. It is also important for instructors to be enthusiastic, friendly and active in teaching in the blended environment (Evans, 2013, p. 114, Dang et al., 2016, p. 127). In a study by Gecer (2013, p. 364), students perceived the role of the lecturer as being a leader, a guide and a model. Indeed, student suggestions for improving the blended learning experience is to reward distinguished performance by teachers (Zumor et al. 2013, p. 102).

In relation to social design, it is important to include social interaction and linkage characteristics as part of any design process (Havelock, 1974, p. 11 – 20). Online learning can improve communication (Chmiel et al., 2017, p. 176). They suggest that nursing students prefer a blended mode because of the added benefit of the interaction with peers and teachers online. Similarly, a study by Zumor et al. (2013, p. 101) observed that students studying English as a Foreign Language (EFL) perceived improved communication among students and course instructors in the online environment and stated that blended learning was more effective than the traditional face-to-face mode of instruction. Students perceive blended learning to be less stressful and more effective than traditional in-class delivery (Shantakumari and Sajith, 2015, p. 323). However, Cunningham (2014, p. 39) suggests that "online students may feel isolated or excluded from the class as they are physically separated from the class".

In regard to technical design, user friendliness is cited as a critical factor in the blended environment (Wang et al., 2017, p. 112, Chen and Yao, 2016, p. 1670). Wang et al. suggest that students must be trained in advance on how to use the blended environment in order to reduce possible technical difficulties. Re-design of a module by reducing face-to-face class time and increasing the online learning component recognises that it may require more effort by students to get familiar with the new environment (Dang et al., 2016). In Ireland, QQI suggest that

> the infrastructure and resources required to support good quality blended learning are understood, planned, and routinely monitored and evaluated. These arrangements should consider that while online, learners are likely to be remote from the provider and from teachers and/or assessors (QQI, 2018, p. 10).

This type of quality assurance could determine the success or failure of the integration of a blended approach into a programme of study.

The time spend by instructors in troubleshooting technical issues for online students can impact the learning experience (Wang et al., 2017, p. 112). Teachers can become overly focused on remote students, prioritising their queries and spending time troubleshooting their technical problems and this might negatively affect the learning experience of the classroom students (Cunningham, 2014., p. 39). However, a study by Wang, Quek, & Hu (2017, p. 109) which was conducted in a graduate course at a teacher training institute contradicts this.

Internet connectivity is cited as a limitation to the use of blended learning in several studies (Zumor et al. 2013, p. 101, Atwater et al, 2017, p. 7, Waha and Davis, 2014, p. 176). Comments included problems with audio input and output, recording failures and poor quality recordings. Another study by Bower et al. (2015, p. 10) highlights network and system issues affecting the quality of the online experience, with evidence of poor audio quality and computer crashes.

In respect to perceived differences in modes of delivery, blended classes can offer benefits of convenience and flexibility (Wang et al, 2017, p. 111) and this flexibility can result in students having greater control over their learning (Scott, 2015, p. 12). Tseng and Walsh (2016, p. 47) observe that students in an English Literacy undergraduate programme found blended classes to be more convenient because they did not have to meet in class as often. This is similar to findings by Waha and Davis (2014, p. 175), Owston et al. (2013, p. 38) and Bower et al. (2015, p. 13) where students liked the flexibility and the convenience of online learning. A study by Chmiel et al., (2017, p. 176) suggests that nursing students also preferred a blended mode because of independence and balancing work commitments. However, Evans (2013, p. 110) suggests that the online format is neither better nor worse than the face-to-face format. In her study, although online students suggested that online courses offered them more flexibility, face-to-face classes included more support and better communication. Boelens et al. (2017, p. 11) summarise the dilemma:

Further work is required to gain more insight in the tension between providing maximum flexibility and autonomy for students on the one hand, and carefully taking into account the need for structure and guidance of (certain) students on the other hand.

3. Research Methodology

Constructivism embodied the ontological approach to this research. Its principal concern is with understanding the way in which individuals and social groups create, modify and interpret the world in which they find themselves (Cohen et al., 2018, p. 6). In this study, qualitative methods were used, most notably personal interviews, open-ended questions on questionnaires and a focus group to build up a deep picture of the student experience of the integration of a blended learning approach into the Multimedia Applications module. In terms of epistemology, a pragmatist paradigm was adopted, using both deductive and inductive approaches. Pragmatism is "practice driven" (Denscombe, 2008, p. 280) with a focus on "what works" (Cohen et al. 2018, p. 9). It is oriented to the solution of practical problems in the practical world. This research study viewed the quantitative data from the questionnaires and qualitative data from the questionnaires, focus group and personal interviews as complementary to the validation or invalidation of findings from this research to address the research aims. An outline of the research design used for this study is illustrated in figure 1.

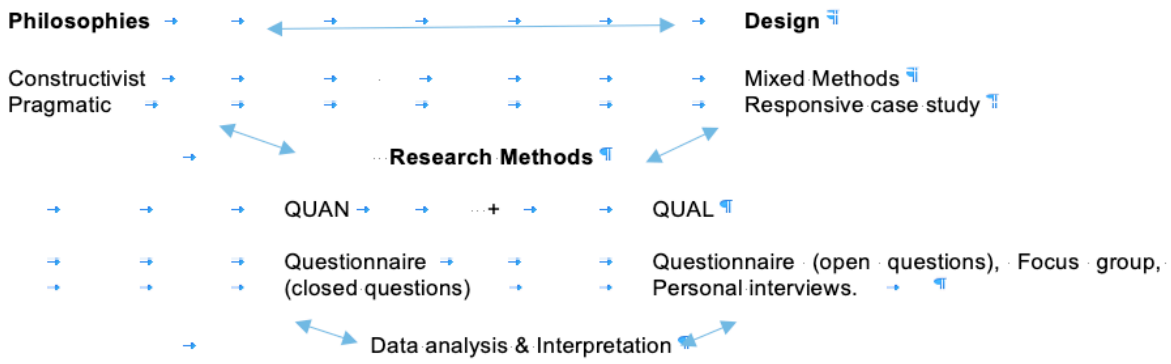

Figure 1. Research Design Summary (adapted from Creswell & Creswell, 2018, p. 5).

A mixed method design using a single responsive case study was used for this research. It was deemed suitable for the current study as it was fit for purpose from a philosophical point of view and allowed students to contribute what they perceived as relevant data to assist in the planning of the next offering of the Multimedia Applications module in GMIT.

Using a constructivist and pragmatist framework, a triangulation approach was used for data collection, including an online questionnaire, a focus group and a series of one to one personal interviews, as mentioned above. A mixed method convergent design was used to collect quantitative and qualitative data separately and then data was compared and contrasted (Cohen et al., 2018, p. 40).

Teddlie and Tashakkori (2009, p. 180 – 81) suggest that it is commonplace for mixed methods research to use more than one kind of sample. As the current study generated qualitative and quantitative data, it was considered appropriate to use a mixed method sample. The sampling procedure used was purposive sampling. In purposive sampling, researchers handpick the cases to be included in the sample based on their judgement of their typicality or possession of a particular characteristic being sought (Cohen et al, 2018, p. 218). This sampling method is selective and biased, but it gave access to students who had in-depth knowledge about the impact of the blended learning approach on their learning experience. In terms of the sample chosen for the questionnaire, complete collection sampling was used in which all the Business Information Systems class were invited to participate in the online survey. In parallel with the questionnaire sample, students were chosen from the complete collection sample to participate in the focus group and personal interviews. This was achieved using probability systematic random sampling.

Part 1 of the data collection was the distribution of a questionnaire to students. Responses were collected anonymously using SurveyMonkey. The questionnaire, designed around a five-point Likert scale, consisted of open and closed questions relating to four themes which emerged from the literature review: pedagogical design, social design, technical design and perceived differences in modes of delivery. Eight questions were asked around each dimension. In total, 33 students completed the

questionnaire. Part 2 of the data collection was a face-to-face focus group with 7 students using similar criteria to the questionnaire. It was audio recorded to enable the tone, pitch of voice and speed of speech to be heard. The final part of data collection was personal interviews with 3 students who had not previously participated in the focus group. These semi-structured interviews were also audio recorded. Data from the focus group and personal interviews was compared with the questionnaire data.

Ethical approval was sought and received from the Masters in Arts Teaching and Learning (MAT&L) Research Ethics Committee in GMIT prior to the commencement of data collection and analysis. The ethical application submission included a copy of the participant information leaflet, the informed consent form and the online questionnaire used in this research.

4. Design of the New Blended Module

The Multimedia Applications module is a mandatory five credit module which is delivered in year 2 of the BSc in Business Information Systems programme. The blend incorporated one synchronous online lecture at the beginning of each week which covered multimedia theory. This was followed by two face-to-face practical laboratory classes later in the week. The synchronous online lecture was delivered via Skype for Business. Students were e-mailed a link to the virtual room the day before the online lecture and when they joined the meeting, audio input was tested, and they interacted via a conversations window. The “live” lecture was also recorded and made available to students at the end of each week through the Moodle virtual learning environment.

1.1 5. Research Findings and Analysis

The following is a distillation of the main findings of integrating a blended learning approach into the Multimedia Applications module in GMIT.

In relation to pedagogical design, 85% of students surveyed indicated that blended learning improved their opportunity to access and use class content. Students commented that if they could not attend the “live” lecture, they accessed the recording at a later stage. In the focus group, Student G suggested that it gave them a variety of ways to learn. These findings suggest that the blend adopted, provided students with greater access to content, allowing those who could not physically attend to still participate and learn. It reinforces the research findings by Cunningham (2014) in relation to greater educational access through online classes. If students can access the learning materials at a time that suits them, it could result in more active learning as suggested by Bower et al. (2015). The results from 33 questionnaires are inconclusive in relation to whether students learned more in the “live” online lecture than if the lecture was delivered face-to-face as illustrated in figure 2.

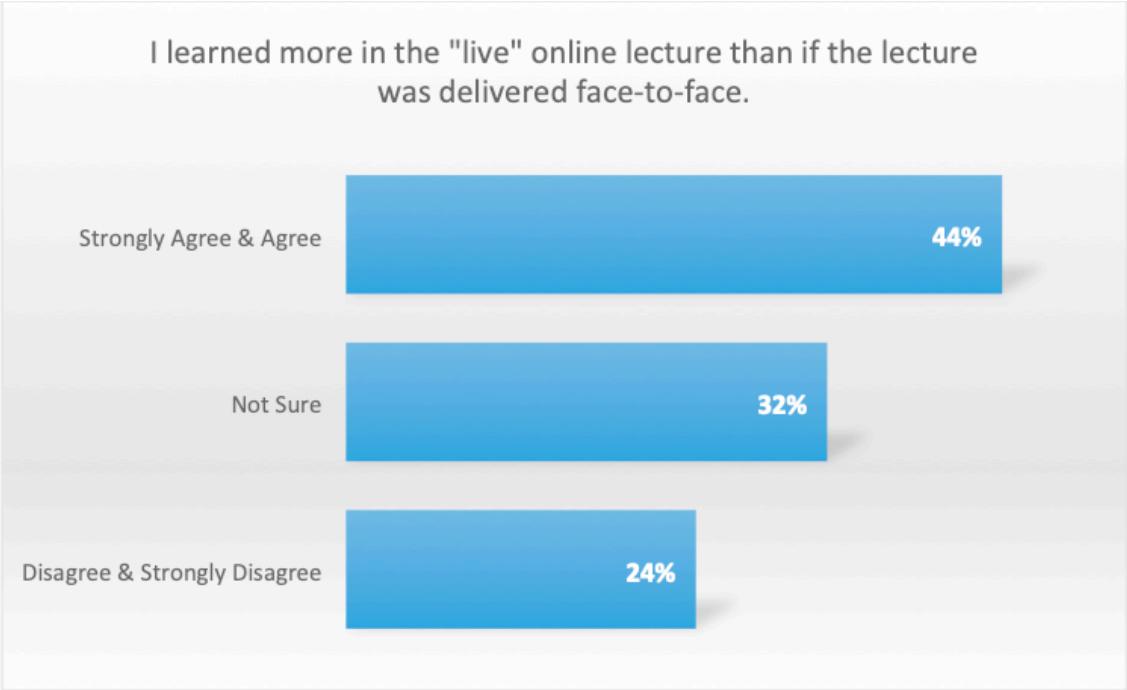

Figure 2. Question 2: Pedagogical Design

Students who felt that they learned more in the “live” online lectures cited reasons of better concentration, less distractions and ease of asking questions. In a personal interview, student 3 strongly agreed that they learned more in the online lecture,

stating “I don’t have to talk to people. I am more focused at home with no distractions of people around me”. In the focus group, student B stated that there was more interaction in the online lecture because most people were active in the conversations window. “In face-to-face practicals, everyone is focused on their own screens rather than interacting with others in the class”. Students who felt that they learned less in the “live” lecture cited reasons of more distractions and less engagement. Student 19 indicated that they learned more in a face-to-face class taking notes and actively listening.

In the area of social design, 68% of students disagreed/strongly disagreed that they felt socially isolated when they used blended learning as illustrated in figure 3.

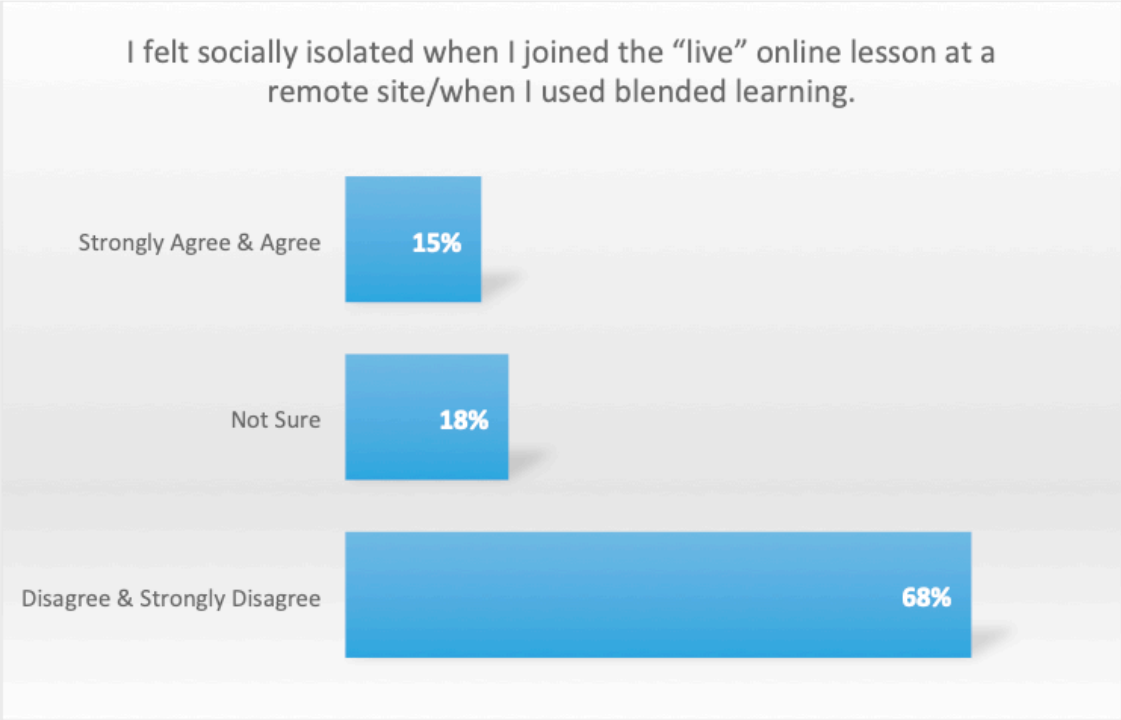

Figure 3. Question 12: Social Design

Student 26 who completed the questionnnaire stated that they did not feel socially isolated because they still had face-to-face lab sessions later in the week when they would meet everyone. In a personal interview, student 1 stated “no, I did not feel isolated because I could see everyone in the conversations window and their photos. I need to have the skill of attending online meetings in the business world after I

graduate from GMIT". This view was also reported by student G in the focus group. This a positive result as the success of the integration of blended learning into the Multimedia Applications module relies on the social interaction and collaboration between students and the lecturer.

The majority of students surveyed (73%), agreed or strongly agreed that blended learning was less stressful than traditional face-to-face classes. One student commented "you don't have the fear of people's judgement when you ask or answer a question in the online class". In a personal interview, student 3 commented "if you are having a bad day, you may not want to go to a face-to-face session". In other personal interviews, student 1 and student 2 suggested that it was less stressful because even if they were late, they could still join in the online lecture without disrupting the class. These are similar to findings by Shantakumari and Sajith (2015), where healthcare students perceived blended learning to be less stressful and more effective than traditional face-to-face class delivery.

With regard to technical design, the majority of students who completed questionnaires (53%) suggested that they were able to access the "live" online lecture without any problems as illustrated in figure 4.

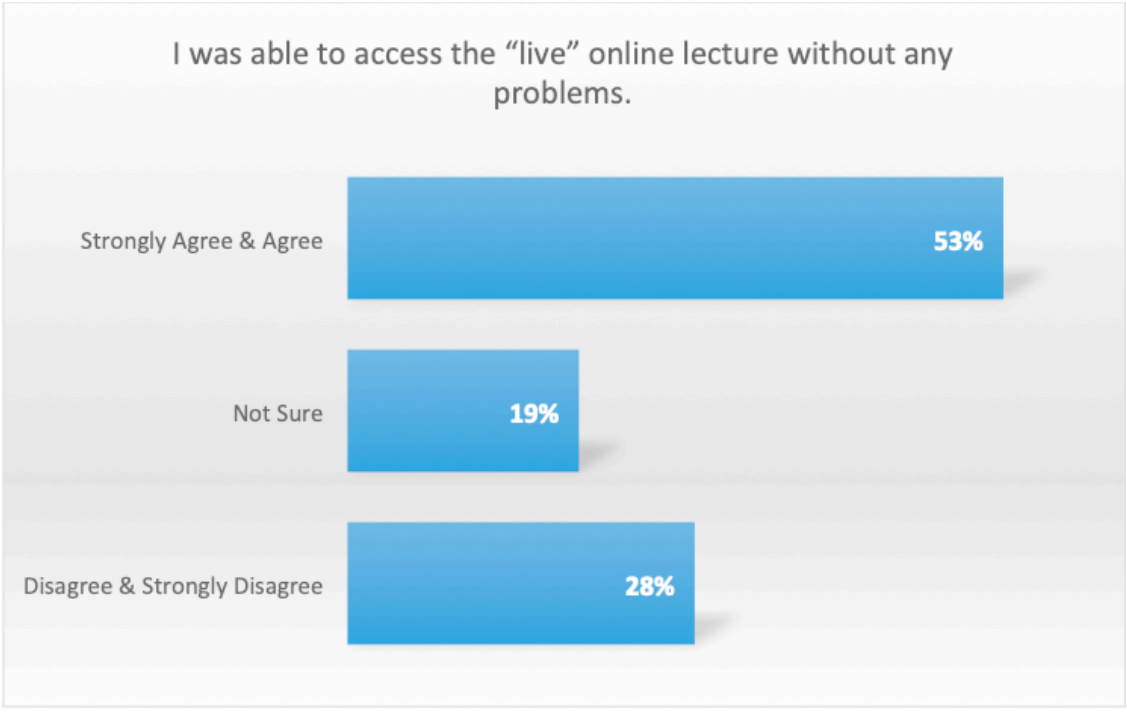

Figure 4. Question 18: Technical Design

One student (student 12) commented “I had problems with audio because my headphones would not work”. Another student (student 21) indicated that they had issues with their own Wi-Fi. In the focus group, student C indicated that they had problems in two of the online lectures with a “buffering” message on their screen. However, 94% of students surveyed claimed that they received enough information on how to access the online lecture initially and that accessing the online lecture was considered easy (85%). One student (student 31) commented “it was simple to follow the link in the email every Monday”. These results are similar to the findings of previous scholars (Wang et al., 2017, Chen and Yao, 2016) that user friendliness is important for student satisfaction.

The majority of students who completed questionnaires felt that slow internet connectivity was not a problem that they faced in using the blended learning (53%) while 34% disagreed or strongly disagreed and 13% were unsure. Two students skipped this question. One student (student 8) commented “most people have more than a 5mb connection that this would need to run seamlessly”. Another student indicated that their mobile internet worked fine. Student 30 stated that the picture would lag sometimes but they thought it was more an issue with the Skype for Business application rather than internet speed. In the focus group, student G stated that the internet connection in Glasan was slow but when they switched to 4G on their mobile, they had no problems. This result contradicts previous research by Waha and Davis (2014), Zumor et al., (2013) and Atwater et al., (2017) where internet connectivity was a limitation. However it does highlight that internet connectivity is a critical success factor in the implementation of a blended learning approach into the Multimedia Applications module.

With respect to the theme of perceived differences in modes of delivery, 72% of questionnaire respondents indicated that blended learning is more convenient for them than face-to-face learning as illustrated in figure 5.

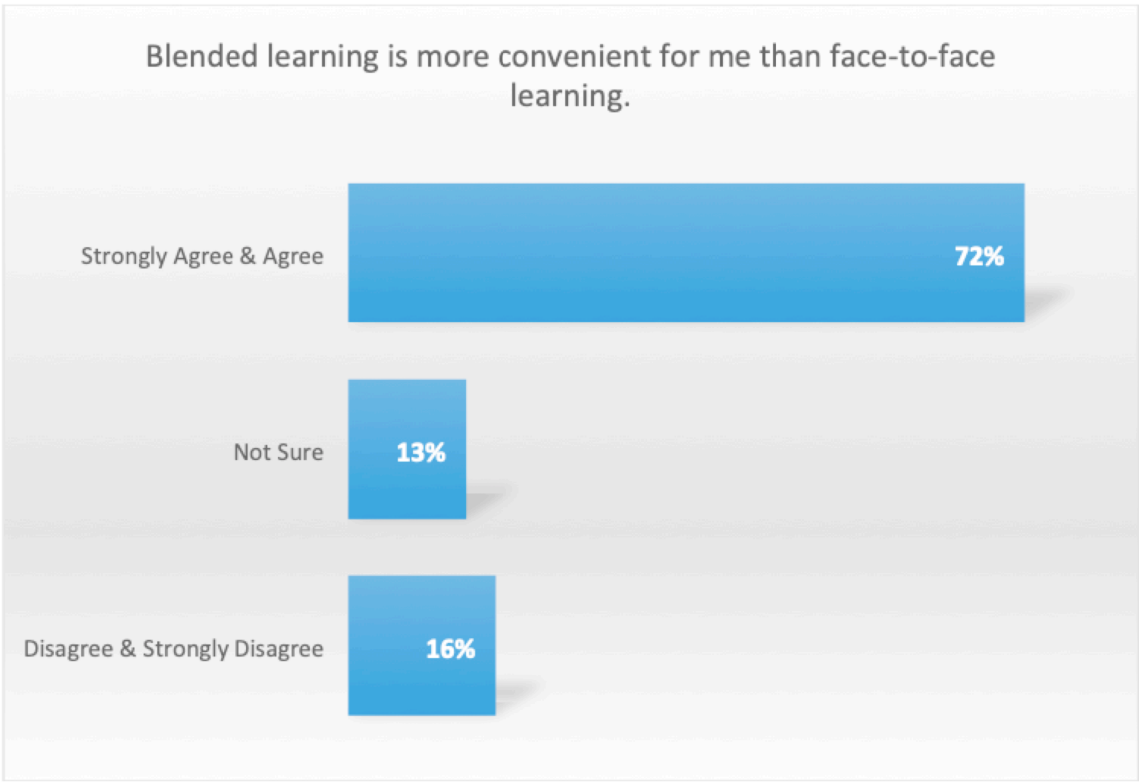

Figure 5. Question 28: Perceived Differences in Modes of Delivery

One student commented "for those commuting to college, blended learning is a brilliant way to attend lectures on time". Another student (student 3) indicated that if all of their modules were online, it would save them time and money. 94% of students surveyed suggested that blended learning offered them more flexibility and allowed them to make more efficient use of their time. In the focus group, student E stated that if they missed the "live" online lecture on a Monday, they accessed the recording on a Friday. "If I was travelling home for a basketball match, I would listen to the recordings on the train". These findings support the notion that blended learning offers flexibility and convenience to students as highlighted by previous scholars (Tseng and Walsh, 2016, Waha and Davis, 2014, Owston et al., 2013, Wang et al. 2017).

Results were mixed when students were asked if more practical lab sessions in the Multimedia Applications module could be conducted online. 45% agreed or strongly agreed, 39% disagreed or strongly disagreed and 15% were unsure. Student 5 commented "practicals are more confusing and people would get lost easily". Another student (student 27) stated "I think moving practical lab sessions online would be

detrimental to students who are struggling to understand the programs". In a personal interview, student 3 suggested that if you had a problem with using the video software, it woud be difficult to describe it in the conversations window. In the focus group, student G commented "it depends what you have at home. In practicals, using video software like Adobe Premiere, I like to use a big screen. I don't think it would work so well on my mobile". Student B stated "you need face-to-face practicals to show the steps in how to use the software but the online lecture is good for the theory part". These results could imply that the blend adopted (i.e. one theory synchronous lecture online and two practicals in a lab face-to-face) may be the optimum one in relation to the Multimedia Applications module. However, as noted by Waha and Davis (2014) and Shantakumari and Sajith (2015), the "right blend" varies across different content areas and lecturers need to be cognisant of this in their particular discipline. Getting the online and face-to-face balance is critical to the success of integrating a blended approach into a module.

The next section of this paper summarises key research findings, highlights the most significant conclusions and makes recommendations arising out of the research.

6. Conclusions and Recommendations

The aim of this research was to critically evaluate the integration of a blended learning approach into a multimedia applications module in GMIT. In the area of pedagogical design, the integration of a blended learning approach has proved a useful experience for students. It provided them with an opportunity to access and view the content a number of times and they found it easy to ask questions via the conversations window in the synchronous lecture.

The positive results of this study illustrate the importance of a lecturer creating a positive blended learning experience both online and in the classroom which has been highlighted in the past by Dang et al. (2016) and Gecer (2013). Students need and appreciate clear guidance through the blended learning process. Finding the right blend is also crucial to its successful integration into any module. In this study,

students were positive in relation to the blend adopted so one “live” lecture and two practicals seems to be the optimum one in relation to the Multimedia Applications module. However, for other modules and discipline areas it may vary as noted by Waha and Davis (2014) and Shantakumari and Sajith (2015).

In the area of social design, students did not feel socially isolated when accessing the synchronous online lectures. This may be due to the fact that photos of other students were visible and they could communicate via the conversations window at any time. They also met for two lab sessions each week. Results from this study show that students who may not be confident asking questions in a face-to-face environment participated more in the online lecture through the conversations window. Therefore, a blended learning approach can improve communication for some students as highlighted by previous scholars (Zumor et al., 2013, Chmiel et al. 2017). The majority of students in this study felt that blended learning was less stressful than face-to-face learning.

In relation to technical design, the majority of students were able to access the online lectures without any difficulty. However, where problems did arise they were in relation to audio connection and occasionally Wi-Fi connection. Results from this study highlight the importance of communicating possible technical issues to students at the start of the process, minimising such problems, and helping students solve them. Issues of internet connectivity and student access to broadband are crucial to the integration of the blend as previously highlighted by Waha and Davis (2014) and Atwater et al, (2017).

In relation to perceived differences in modes of delivery, students in this study highlighted convenience and flexibility as two of the main advantages of the blend adopted in the Multimedia Applications module. It allowed them to make more efficient use of their time and they could review content “live” or at a later stage. Previous scholars have also highlighted convenience and flexibility as benefits (Tseng and Walsh, 2016, Wang et al, 2017). One other benefit highlighted by students in this study but not in the literature was the opportunity of blended learning to reduce the cost of commuting to college. This may open up educational opportunities for potential students who are not able to travel.

Recommendations arising out of this study include 1) research of group needs for future blends, 2) timetabling for blended learning, 3) access, 4) technical support, 5) assessment and 6) further studies. For this study, the lecturer decided on the blend in advance of the module commencing. In a future iteration, the information from this study could be used to inform the decision on the blend. This could involve researching the class needs before the module commences (e.g. grade point averages, programme level, age) and involve the students in deciding what blend would be appropriate for their particular group and module. An example of the flexibility of this type of Universal Design for Learning (UDL) was evident in the research by Waha and Davis (2014, p. 174) where all students had equal access to online tools and materials and they could mix them to suit their needs. They also had the option to attend face-to-face sessions.

Timetabling is a key influencing factor for any lecturer who would like to adopt a blended learning approach. In this study, the synchronous online lecture was on Monday 11am and this suited the students as they had no class before this time so they could travel to college later. However, it would not make sense to have them in a lecture from 10 – 11 for one module and then have a synchronous online one from 11-12 as they would not gain the advantages they mentioned as part of this study (i.e. flexibility, convenience). Scheduling of the lecture is therefore a key factor where all of their other modules are being taught face-to-face. In the focus group, some students recommended that the synchronous online lecture could take place on a Friday in preparation for the practical classes the following week. From a lecturer perspective, a dedicated timetabled room in the college for delivery and recording of online lectures is important. The majority of teaching staff share offices so from a noise level perspective, it is not a suitable environment for recording lectures.

Access to content is a critical success factor for integrating a blended learning approach into a module. The more options that a lecturer can provide students, the more flexibility it gives them. In this study, making the recording of the “live” lecture available afterwards was important to students because 1) if they missed the lecture they could catch up, (2) it allowed them to revise content and 3) it allowed them to go at their own pace. Recommendations for a future iteration of the blend is to record the face to face practicals as they are happening in the laboratories and upload them to

the virtual learning environment so that students can access them afterwards. This would help them with project work.

In relation to technical support, it is recommended that a manual or guide to troubleshooting technical issues should be prepared and the learnings from this study incorporated. It could be a video, document or both and become part of the introductory session for students at the beginning of the module when the technology is being demonstrated and tested.

As part of the results of this study, some students commented about the importance of the online lecture/meeting as a skill for the outside business world. In this context, it is recommended that in the next iteration, the online lecture/meeting will become part of the assessment process of the module. For example, students could set up and conduct an online revision lecture for other students. In this way, it encourages students to collaborate as part of their learning and refines their skills for industry when they graduate.

Further studies in the area of blended learning could include an examination of class size in relation to the blend adopted. Is there an optimum class size for blended synchronous learning? In this study, the class size was 40. Would the results differ if the same strategy was implemented for a larger cohort of students on a higher degree programme? Further research could be carried out in this area.

This case study has provided in-depth information in relation to the integration of a blended learning approach into one module in GMIT entitled “Multimedia Applications”. While results are not generalizable from a scientific perspective, this was not the purpose of the study. It has provided a descriptive account of one cohort of 40 students on the Bachelor of Science (BSc) in Business Information Systems (BIS), year 2, experiencing a blended learning approach for the first time. Learnings from this study can contribute to the knowledge among lecturers in other schools and institutes who would like to implement a similar blended learning approach.

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