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AN EXPLORATION OF FIRST-YEAR UNDERGRADUATES' PREPAREDNESS AND EXPERIENCES IN BLENDED COURSES

Research in Progress

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Abstract

Despite their advantages, blended approaches have been met with mixed results by learners. There is a general view that learners who are known as Digital Natives or Millennials, are technologically savvy. Research, however, suggests rather that they possess poor levels of digital literacy and have demonstrated some degree of avoidance towards e-learning tools (Boyd, 2014; Chigeza and Halbert, 2014; O'Connell and Dymont, 2014). This study thus intends to explore learners' preparedness in adapting to blended courses. We hypothesize that learners' depth of engagements in blended activities is influenced by learners' characteristics. We further hypothesize the influence of learning facilitators and the learning environment in moderating learners' engagement. We aim to contribute in a theoretical and empirical manner by testing the proposed framework based on past literature. Expected practical contributions include enriching teaching practices to better cater to students' needs, and improving on blended techniques, allowing learners to learn in a more effective manner.

Keywords: Blended Learning, Community of Inquiry, learning engagement

Introduction

E-learning has increased in importance in recent years, leading to an integration of technological and pedagogical innovations aimed at producing effective learning experiences (Melzer and Schoop, 2015). One genre of approaches is known as blended learning. In this research, blended learning is defined as an approach that strives to strike a balance between face-to-face contact time and online activities (Bocconi and Trentin, 2014; Graham et al., 2013). Its techniques commonly employ a socio-constructivist approach, aiming to create a constructive, innovative and effective learning experience for learners. Blended learning techniques are stated to be favourable as they give learning facilitators numerous opportunities to innovate for learning and allowing students to learn according to their styles and preferences (Arbaugh et al., 2008; Bocconi and Trentin, 2014).

This study explores the preparedness of first-year students' to utilize blended learning and the effectiveness of blended approaches in facilitating their transition to higher education. The four objectives of this study are as follows. First, to explore and understand first-year students' preparedness for blended approaches in a university context. Preparedness refers to the four students' characteristics of interest: self-efficacy, self-regulation, social competence, and digital competence. Second, to explore the effects of learners' preparedness in accordance to their level and depth of learning engagements.

Third, to explore the differing roles of learning facilitators on learners' engagements. Fourth, to explore the influences of the learning environment on students' engagements.

This study is motivated by conflicting results from past literature on students' digital competencies. There is a general view that students who are also known as Digital Natives or Millenials are technologically savvy and have a high expectation that technology will play a significant role in their education. Research, however, suggests that while learners may be technically competent using fashionable tools such as social media, they have poor levels of digital literacy and therefore are not well-prepared for e-learning tools (Boyd, 2014; Chigeza and Halbert, 2014; O'Connell and Dymment, 2014).

In a blended learning environment, this lack of preparedness may have a significant impact on the individuals' level of engagement and depth of learning. It is frequently reported that such unprepared learners are not able to proactively participate and exert critical thinking skills (Parkes et al., 2015). We postulate that this should be explored further to discover where digital learners behaviours and digital literacy skills have deficits. Strategies can then be developed to overcome these shortcomings thereby enabling learners to fully adapt and interact in the blended learning environment. Furthermore, it is important to consider the influence of instructors' roles and the context of the learning environment on learners' engagement. These issues are pertinent at this juncture to improve learning, to help ease their transition, to encourage their interest, and to reduce unnecessary attrition (Dziuban et al., 2016).

In order to address the objectives outlined above, we will be adapting the Community of Inquiry framework by Garrison et al. (2000), which focuses on identifying the essence of purpose and interactions of three presences (i.e. cognitive, teaching, and social), in allowing learners to experience "deep and meaningful learning" (Garrison and Vaughan, 2008). The framework will be utilised to aid in addressing the influence of the main learning presences in conjunction with learners' characteristics. We will be conducting our study on a blended course, with an enrolment of approximately 1000 students per semester, which first-years have to undertake as a requirement for a business degree. The current blended approaches employed in this course still emphasizes face-to-face contact times in lectures and tutorials. Tutorials are conducted in a flipped classroom manner. This course also incorporates a number of e-learning tools for collaborative and self-regulated learning, as shown in Table 1.

Tools	Purpose	Learning Techniques
Piazza	As a discussion forum for course-related content and queries	Self-regulated learning/Collaborative learning
PeerWise	To allow students to create, share, evaluate and discuss assessment questions	Collaborative learning
Code Avengers & Excel Training	Assessed online practical assessments	Self-regulated learning
Blogger	For an assessed group assignment	Collaborative learning
Powtoon, MoveNote, Moovly, iMovie	To create a video as part of a group assignment	Collaborative learning
Learning Management System (Canvas)	Includes: distribution of lectures and tutorials materials, interactive e-book, videos, group formation, quizzes, grading, and discussion forums.	Self-regulated learning

Table 1. Summary of e-Learning tools and Purpose

The remainder of this paper is organized as follows. We first present the theoretical background, research framework, and hypotheses resulting from our literature review. We then proceed to detail the proposed methodology for our study. We will then conclude this paper with our study outlook, expected contributions and limitations.

1 Theoretical Development and Hypotheses

1.1 The Research Framework

The Community of Inquiry (CoI) is a well-known framework for discussing blended learning from a socio-constructivist perspective. Blended learning has the ability to facilitate community conditions, for instance, providing a stabilizing and cohesive environment that balances open communication and vast access to information on the internet. It also allows for appropriate learning characteristics, such as, collaborations, open discussions, critical debates, negotiations or agreements. It also facilitates reflective elements of learning by providing opportunities for multiple forms of communications (i.e. synchronous and asynchronous) to meet individuals' specific learning needs (Garrison and Vaughan, 2008).

The CoI framework is grounded on a comprehensive base of research in teaching and learning in higher education. It is essentially constructed to help understand the dynamics of deep and meaningful online learning experiences, which can also be applied in understanding blended learning designs (Garrison and Vaughan, 2008). The framework consists of three main presences. The teaching presence focuses on the learning instructors' primary responsibilities in designing the educational experience and facilitating learning in a meaningful manner. Cognitive presence, on the other hand, focuses on the extent to which learners are able to construct meaning and higher order of learning through sustained reflection and inquiry. Thirdly, the social presence emphasizes on giving learners the ability to project themselves socially and emotionally through visual cues and mediums of communication used; open communication and social cohesion (Garrison et al., 2010; Reynolds et al., 2014).

With regards to blended learning activities, there is emphasis on the importance of the availability of these three presences online and offline, which brings attention to the educational design of effective learning environments for students. According to the Learning Environment, Learning Processes, and Learning Outcomes (LEPO) framework, the learning environment consists of 3 subcategories: curriculum design, learning design, and technology design. Curriculum design focuses on the course learning objectives, syllabus, lesson plans, and the desired learning outcomes. The learning design emphasizes on how and where learning takes place, what are the appropriate learning tasks, and how learning tasks should be facilitated in the learning environment. Technology design, on the other hand, concentrates on the appropriate technological affordances in facilitating learning tasks. These three subcategories are important for consideration as they influence the level and depth of student engagements, and should be designed with learners' characteristics in mind (Phillips et al., 2012).

Accordingly, we propose a research framework that meets our study objectives by incorporating the elements of the CoI framework as shown in Figure 1 below. The factors and its relationships, shown in Figure 1 will be discussed in the following sections. We will begin with a discussion on learners' characteristics and their engagements in blended activities, followed by the influences of learning facilitators and the learning environments.

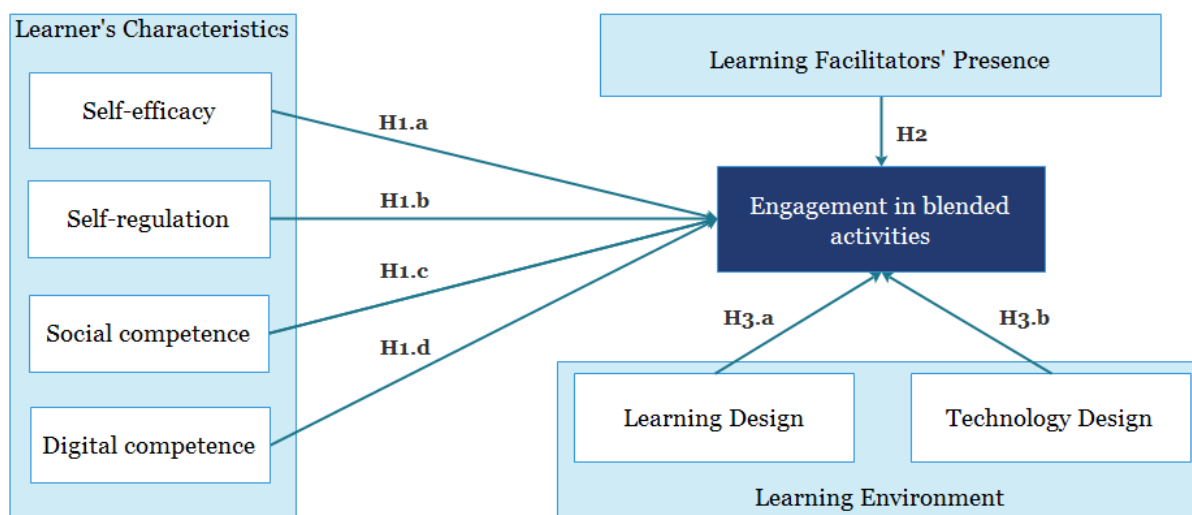


Figure 1. Research Framework

1.2 Learners' Engagement in Blended Activities

Active engagement allows students to learn course content more effectively, and thereafter, to expand the knowledge gained by creating new ideas or critically connecting existing ideas to create new solutions (Strachan and Liyanage, 2015). The degree of learning is also dependent on how learners make use of all the learning resources available (Krause and Coates, 2008). Blended approaches, for instance, flipped classroom, is structured to encourage learners to be part of and interact with a community of inquiry, where learners are encouraged to be actively and meaningfully involved in discussions to exert critical thinking behaviours in order to increase chances of high-quality learning (Arbaugh, 2014; Hung and Chou, 2015; Krause and Coates, 2008).

In blended approaches, the learner needs to engage in both online and offline learning activities. These include collaborating with peers, interacting with learning facilitators as well as working independently. The cognitive and behavioural emphasis for active learning includes learners communicating, discussing or critically evaluating information shared with others (Draghici et al., 2014). Independence, in the e-learning sense, focuses on individuals' ability to self-regulate their learning and perform four common forms of online engagement: information access, interactive learning, networked learning, and materials development (Cheng and Chau, 2015).

With increasing use of technology in learning activities, research has demonstrated that a large proportion of courses are heavily dependent on online learning, rather than face-to-face learning (Porter et al., 2014). Learners need to take the initiative to drive their learning progress and to be proactively involved in the available learning activities online (Rahimi et al., 2015). However, there is research indicating that some learners struggle to adapt to blended approaches (Monteiro and Morrison, 2014; O'Connell and Dymont, 2014). In this study, we concentrate on four characteristics of learners, followed by the influence of learning facilitators' presence and learning environment in moderating learners' engagement.

1.3 Learners' Characteristics

The learner's characteristics which this study will be focusing on are as follows: self-efficacy, self-regulation, social competence, and digital competence.

Self-efficacy refers to individuals' perceived expectation of their ability to perform in different situations; solving a task or achieving a goal (Klassen and Usher, 2010). Self-efficacy in learning is reflected by individuals ability to adapt to new learning approaches by increasing the use of cognitive strategies (Blaschke, 2014; Hatlevik et al., 2015; Klassen and Usher, 2010). Research suggests that students who indicate high levels of self-efficacy frequently perform well in academic achievements and overall learning satisfaction (Yu et al., 2010). Learners with high self-efficacy will also have a higher positive expectation of success and hence will be more motivated to accept the challenges encountered in tasks (Stolk and Harari, 2014). On the other hand, learners with low self-efficacy are more likely to either participate passively or to drop out (Shen et al., 2013). They were also less likely to collaborate with others and were less likely to exert critical thinking skills (Shea and Bidjerano, 2010). This is also evident in the e-learning context. Students with high self-efficacy would be more motivated in not only learn by embracing and using technology, but also likely to be more keen on experiencing the advantages that e-learning tools offer to support to their learning (Lee, Hsiao, & Purnomo, 2014; Wan et al., 2008). Accordingly, we hypothesize that:

H1.a: *For students whose perceived self-efficacy is higher than average, self-efficacy will significantly influence these learners' engagement in blended activities.*

This is followed by **self-regulation**, known as a behavioural skill management (Shea and Bidjerano, 2010), that demonstrates one's ability to control one's performance during the whole learning process (Stolk and Harari, 2014). This behaviour requires individuals to have an appropriate level of academic maturity to be able to handle the flexibility and freedom provided through blended learning (Tabak and Nguyen, 2013). Learners should be able to monitor and adjust their learning schedules accordingly to avoid being overwhelmed by all the offline and online activities presented at hand (Shea and Bidjerano, 2010). Learners that demonstrate low self-control tend to fall behind in their learning. This is also apparent in their overall learning performance (Tabak and Nguyen, 2013). Accordingly, we hypothesize that:

H1.b: *For students whose perceived self-regulation is higher than average, self-regulation will significantly influence these learners' engagement in blended activities.*

As many recent studies continually emphasized the importance of collaborative learning as an effective instructional method, learners' **social competence** is vital in allowing them to integrate their thinking, feeling, and behaviour in order to either interact comfortably with peers and instructors, or to perform "outcomes valued in the host context and culture" (Topping et al., 2000). The process of collaborative learning aims to encourage learners to go through the four phases of inquiry which potentially leads to critical thinking (Garrison et al. 2010; Liao et al. 2015; Reynolds et al. 2014). With regard to blended approaches, students' lack of willingness to interact and construct knowledge with others hinders the aims of constructive learning as activities are increasingly done in a collaborative manner (Shea and Bidjerano, 2010). This situation typically occurs among first-years in university (Sheard et al., 2010). Thus we hypothesized that:

H1.c: *For students whose perceived social competence is higher than average, social competence will significantly influence these learners' engagement in blended activities.*

Digital competence essentially focuses on learners' ability to adapt to new requirements of evolving technologies (Janssen et al., 2013). This includes abilities to participate actively and meaningfully in learning activities: allowing them to understand better, to create content by using the right tools for right purposes, encouraging them to synthesise the information found, and hopefully transform what they have learnt into positive learning outcomes (Hatlevik et al., 2015; Mohammadyari and Singh, 2015;

Parkes et al., 2015). It is important to explore this factor as research has indicated that although Digital Natives have access to a wide range of emerging technologies, not all of them are competent in using technology strategically and specifically for learning purposes (Boyd, 2014; Chigeza and Halbert, 2014; O'Connell and Dymont, 2014). Learners rather expressed frustration and discomfort in using e-learning tools. Their digital incompetence was also evident by the choices made in applying less efficient functionalities and methods in completing assignments (O'Connell and Dymont, 2014). Results in Parkes et al. (2015)'s study also indicate that students mainly possess and are confident with basic to moderate technology skills (Parkes et al., 2015). We thus hypothesize that:

H1.d: For students whose perceived digital competence is higher than average, digital competence will significantly influence these learners' engagement in blended activities.

1.4 Learning Facilitators' Presence

Learning facilitator's presence encompass of both the support provided to learners and their availability online and offline. With regards to aiding learners' transition to various e-learning tools, technical support by learning facilitators is seen to be crucial in encouraging students to use e-learning systems continually (Renner et al., 2014). Students who receive timely and adequate technical support from learning instructors expressed fewer frustrations with their learning and in its process (Sipilä, 2013). They also expressed more confidence in using technology more meaningfully for learning purposes (Selim, 2007). Furthermore, the mixed bag of learners with differing levels of digital competence would require teaching facilitators to possess a wide technological knowledge to support learners with differing levels of engagement in various technology (Donaldson, 2014).

Learning facilitators' availability is also vital in facilitating purposeful collaborations and learning in both online and offline learning environments (Garrison et al. 2010; Kaendler et al. 2014; Reynolds et al. 2014). Students' level of discussions and participations increased when learning instructors gave timely feedback and regularly participated in discussion forums (Hung and Chou, 2015). Nevertheless, the importance of learning facilitators' role in facilitating social interactions is critical in creating a positive online learning environment, which in turn promotes academic engagement among learners (Cho and Cho, 2014). Thus we hypothesize that:

H2: Learning facilitators' presence is significantly important in facilitating learners' engagement in blended learning activities.

1.5 Learning Environment

A typical learning environment consists of three main elements: curriculum design, learning design, and technology design (Phillips, McNaught, & Kennedy, 2012). This study will be focusing mainly on learners' perception of the learning and technology designs.

Learning design centres on how the course curriculum can be taught and the types of course activities that can be appropriately blended (Arbaugh, 2014). Indicators of learning activities include: the types of activities (e.g. teacher-centred, learner-centred, learner-content, learner-learner), the content of the activities and its relevance to learning goals, the frequency and duration of activities, and the context in which these learning activities take place (Tsai et al., 2011). Learning tasks can be diversified as e-learning tools offer the ability to incorporate multimedia, e-content, and opportunities to interact in different channels synchronously and asynchronously. This provides learning facilitators opportunities to incorporate numerous information and interactive activities (e.g. simulations and games) into their learning designs, catering to a diverse set of learners (Bocconi and Trentin, 2014). The ability to provide multimodal information that is rich in content is beneficial though it may lead to possibilities of cognitive overload (O'Donnell et al., 2012). Cognitive overload occurs when different modes of information being processed differently, leading to splitting cognition, hence distracting students from their learning

(Limperos et al., 2015), and in some instances, decrease their learning participation (Reynolds et al., 2014). Accordingly, we hypothesize that:

H3.a: *Learning design will significantly influence learners' engagement in blended activities.*

Technology design, on the other hand, focuses on task-technology fit by incorporating the appropriate design requirements of the learning elements. This includes the design of technology to fit learning tasks (Daneshgar et al., 2012; Sun and Wang, 2014), and to create a community of inquiry where learners and instructors are able to interact and engage with one another. Nevertheless, the importance of technologies offering appropriate functionalities in aiding learning facilitators to deliver the learning tasks and resources, and allowing students to engage in their learning creatively and effectively. Technologies that offers various user-friendly and effective functionalities, fitting the purpose of learning are stated to increase learners' participatory behaviours, leading to overall satisfaction (Sun et al., 2008). Task-technology fit also influence the types and depth of learning engagements (Matthews et al., 2011). We hypothesize that:

H3.b: *Technology design will significantly influence learners' engagement in blended activities.*

2 Research Method

This research will be employing the sequential explanatory mixed methods approach. This approach includes collecting and integrating quantitative and qualitative data (Creswell, 2014), with the aims of providing insights to validating and explaining the proposed model in Figure 1. The outline of our research method is presented in Table 2.

Data Collection	Purpose	Analysis Method & Software
Quantitative online survey	Consisting of statements, accompanied by 5-point Likert scale, to explore students' competencies and engagement behaviours.	Structural equation modelling with partial least squares approach. Factor analysis will be conducted beforehand, to account for potential interaction effect of the research model. Software: MPlus 7.4
User data from Learning Management System (i.e. Canvas)	To complement survey data by offering insights to user's behaviour and online discussions in LMS.	Text analysis and coding of user behaviour. Thematic analysis of online discussions with an interpretive approach. Software: NVivo 11
Focus Groups	To offer further insights to results derived from the survey and also insights to factors that were not initially considered for this study.	Thematic analysis with an interpretive approach. Software: NVivo 11

Table 2. Summary of Data Collection Methods

This form of research aims to provide researchers with causal explanations (Myers, 2009) and a more comprehensive understanding of the research problem. The sequential explanatory mixed methods approach begins with a quantitative research followed by analysing the results, and then, building on the findings, to explain them in greater detail with qualitative approaches (Creswell, 2014). The quantitative phase of our study focuses on the empirical testing of our proposed research model. We have referred to well-established scales for validity measures and adapted them to the context of our study.

For reliability measures, the survey will also include instruction manipulation checks to detect participants that do not read and follow the survey instructions (Oppenheimer et al., 2009). A pilot survey was conducted beforehand to evaluate the feasibility of the survey. We then proceeded to distribute the survey to our target group over a period of 5 months, from July to November 2016. This pool of participants will then be invited to participate in our focus groups. The focus groups will be conducted in a semi-structured manner where the researcher will initially pose questions derived from the survey results, though new questions may arise during the group discussion (Myers, 2009). This study also aims to collect user data from Canvas Learning Management System used at the university as an objective measure to support our study findings and to avoid common method bias (Janson et al., 2014).

3 Expected Contributions

This research aims to contribute to the following: First, to discover learners' competencies in adopting e-learning tools and engaging in blended learning techniques. Second, to provide more insights on learners' thoughts on learning facilitators' roles and support, and the resources provided in the learning environments. Third, to contribute in a theoretical and empirical manner, by testing the proposed framework based on past literature. This research also aims to contribute to two practical aspects. Firstly, this research may potentially help contribute to the educational community of practice by providing data and evidence-supported insights to facilitate improvements in teaching practices. For instance, creating awareness and contributing to discussions on the importance and potentials of emerging technologies for education, how these technologies best fit to the learning objectives, activities, and design. Secondly, with the awareness of learners' input; identifying areas that are beneficial, difficult, or would like more improvement in, enrich learning institutions by allowing teaching practices to better cater to students' needs, and offer necessary techniques and opportunities for students to learn in a more effective manner.

4 Limitations and Future Research

Our paper is not without limitations. First, even though this study will be focusing on a particular course in the University of Auckland for data collection purposes, New Zealanders are generally known to be rapid adopters of new technology (Wright, 2015). However, as the nature of learners enrolled in the chosen course consists of both domestic and international students with a wide range of cultural backgrounds, it may help to generalize data to a certain extent. In addition, the university has international recognition of educational standards at tertiary level. Results from the data collected hence can have a high transferability rate to other parts of the world. Another potential limitation of this study may be that, although the course, in general, has a gender-neutral balance, the chances of females responding to the survey and follow-up focus groups may be higher than males. Furthermore, this research only focuses on learners' experiences in blended courses. Further research should consider learning facilitators' point of view and their experiences in implementing blended approaches. Their personal account of observations and interactions with learners will give more insights into the findings of this study.

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