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LINKING BETWEEN LEARNER CONTROL AND SELF-EFFICACY OF ONLINE LEARNERS IN A NEW ZEALAND POSTGRADUATE ONLINE PROGRAMME

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Abstract

This paper describes a research-in-progress study on the link between *learner control* and *self-efficacy* of postgraduate students in an online programme at a New Zealand university. Even though students are familiar with computers and Internet usage, learning online may still pose a challenge, especially for inexperienced online learners. By enabling learners to control their own learning, their interactions increase along with their self-efficacy and a sense of belonging to the learning community, all of which contribute to better academic outcomes. However, few studies have looked at the link between *self-efficacy* of online learners and *learner control* in a real online setting. To do so, students in a postgraduate online programme embedded with *learner control* were selected as the sample group. The preliminary findings showed a positive relationship between these two variables, though not as strong as expected. Follow-up research is being undertaken with a larger sample group.

Introduction

Although online learning has become increasingly common in higher education over the last decade, not all students are confident and some students still find the absence of face-to-face interaction challenging. Despite using computers and technology in their daily life, learners feel less confident about studying online, especially the first time. Such feelings may be justified as Ratliff (2009) suggests they may not have enough necessary learning and technology skills for university and online learning. For example, the technology skills to compose essays, prepare presentations, analyse data, and do research work. However, this should not be the case because characteristics of online students have changed to include a higher proportion of high school graduates. They are younger and more familiar with computer technology than those in the past (Kennedy, Judd, Churchward, Gray, & Krause, 2008). Nevertheless, many of these students still find it hard to adapt and perform well in university online classes because of the demands and stress of the transition from secondary schools to tertiary education (Chemers, Hu, & Garcia, 2001). Some students even struggle to cope with the complexity of an online environment and often have doubts about their learning performance (Saadé & Kira, 2009).

In order to deal with online learning, students must have certain skills such as critical thinking skills, collaboration skills, academic writing skills as well as computer and Internet skills (Harrell, 2008). It is important to not only possess these skills, but be also able to apply these skills when needed. Moreover, they must be efficacious in dealing with a learning environment that is different from the traditional classes in which they have previously studied. Some studies show that students with higher confidence in themselves or higher self-efficacy are more likely to perform well and persist in online courses (e.g., Hayashi, Chen, Ryan, & Wu, 2004; Multon, Brown, & Lent, 1991; Pajares, 1996; Swan, 2001). However, not all students have the high self-efficacy needed to deal with an unfamiliar online environment, particularly students in their first year of learning (Berge & Huang, 2004). These students often experience cognitive overload during the first week of their studies due to disorientation, new teaching/ learning methods, unfamiliar subjects, and the challenge of working with unfamiliar technology (S. L. Chang & Ley, 2006; Whipp & Chiarelli, 2004). For these reasons, many learners

may feel uncertain, frustrated, and anxious as they try to adjust themselves to the learning environment. In some cases, they can become de-motivated and may procrastinate because they feel overwhelmed, nervous, and worried about a teaching approach that requires more self-regulated learning (Kekkonen-Moneta & Moneta, 2002; Lim, 2004). Thus, more technical and psychological support is often needed for online students (Thorpe, 2002).

Self-efficacy

The term *self-efficacy* was coined around forty years ago by Albert Bandura (1977b). Since then, research in this area has been steadily growing. Bandura (1997) defines self-efficacy as a personal belief in their abilities to accomplish a specific activity or task. It is a judgment of confidence about the performance (Lorsbach & Jinks, 1999). Self-efficacy is not the same as ability or motivation, but they are all strongly related (Chowdhury & Shahabuddin, 2007; Kozlowski & Salas, 2010; Vancouver & Kendall, 2006). Indeed, self-efficacy is the personal determination of one's own ability to deal with each different task. Notably, this determination is not based entirely on actual past experience or existing ability and skills but also on students' perceptions of their own knowledge and ability relative to the task or situation (DeTure, 2004). Self-efficacy is specific to the context of a situation and generally influenced by four main sources: enactive mastery experience, that is, hand-on experience; vicarious experiences, that is, other persons' experience; social persuasion, that is, appraisal or feedback from others; and physiological and affective states, that is, stress, emotion, mood, pain and fatigue (Hodges, 2008). Mastery experiences are considered to be the most significant source of efficacy (Bandura, 1977b). Once established, enhanced self-efficacy is generalized to other situations with the strongest effect taking place in activities that are closest to those in which self-efficacy has been improved.

In education, self-efficacy is a key contributing factor to students' success because it influents learners' behavior and option they choose.(Pajares, 2002). Self-efficacy influences several aspects of performance that are important to learning in the terms of the effort put forth and the persistence in accomplishing a task (Zimmerman, Bandura, & Martinez-Pons, 1992). Bandura (1997) argues that individuals develop particular beliefs about their ability to handle a specific situation. Multon, Brown and Lent (1991) specify that self-efficacy can alter students' perceptions of their learning environment. In other words, students can perceive their learning environments either positively or negatively. Students who have low self-efficacy are more likely to get low grades and give up easily when frustrated or faced with difficult tasks (Lim, 2004). Indeed, Lorsbach and Jinks (1999) noted that inefficacious learners tend to put in less effort to accomplish a goal set. As a result, their chance of succeeding is less, and in consequence of their self-efficacy will become even lower.

However, self-efficacy and persistence increase when students accomplish activities or tasks. Self-efficacy is not only a good predictor of learners' academic outcomes but efficacious learners also tend to adapt and cope well (Alivernini & Lucidi, 2011), even when they have little prior online experience (Swan, 2004). Despite that, efficacious students still may not be motivated to put forth effort if they feel that little is being learnt about the topic or what is left to learn has small value compared to what is already known (Nilsen, 2009).

As mentioned earlier, self-efficacy is specific to a situation or task. For this reason, when the situation changes, it must be considered cautiously (Hodges, 2008). For example, the transition from a secondary school to a university or a change in learning method form traditional face-to-face to online learning might affect students' self-efficacy. They can become de-motivated and overwhelmed. Pajares (2002) concludes that self-efficacy is considered to play a significant role in performance of online learners. However, the relationships amongst self-efficacy, academic outcomes, and other variables are complex because many factors like learners' previous success with online learning systems, online learning technology anxiety, instructor feedback and pre-course training can influence these relationships (Bates & Khasawheh, 2007). Therefore, more research to understand how

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self-efficacy influences online learners' academic outcomes is needed.

Learner control

Learner control is a concept previously applied in a classroom to enhance the learning process. The concept was first used in connection to technology-assisted instruction by Mager and his colleagues (Mager & McCann, 1962). In distance education, Candy (1991) introduced a similar concept of control in adult learners which later was integrated with Moore's theory of *transactional distance* (1997) by Jon Dron (2006) to be the concept of *transactional control*, another aspect of learner control. Learner control can differ depending on the technique used and background theory applied since it is multidimensional (DeRouin, Fritzsche, & Salas, 2005). In general, learner control is the extent to which students can choose what, when, where, and how to learn (Kraiger & Jerden, 2007). As reviewed by DeRouin et al. (2005), it is divided into several types including learner control of: (1) pacing, (2) sequence, (3) task difficulty, (4) optional content, (5) method of presentation incentives, (6) learner control with advisement, and (7) learner control and hypermedia. Since the emergence of the Internet and the World Wide Web, online learning has expanded rapidly with the power of hypermedia that enables non-linear navigation. Online students, then, can be given more opportunity to make their own choices and be in charge of their learning pace, sequence, and content (Milheim & Martin, 1991).

Lawless and Brown (1997) indicate that the ability to control one's instructional sequence can enhance learning, heighten attitudes, and increase self-efficacy. Some researchers attest that high levels of learner control can improve students' performance (e.g., Chou & Liu, 2005) because students are engaged in greater levels of interaction. These interactions, especially with people, including their classmates and instructors, can make students feel more efficacious from activities they and their classmates have accomplished, as well as the feedback they have received from peers and instructors and emotional states such as satisfaction and a sense of belonging (Piccoli, Ahmad, & Ives, 2001).

Previous studies have shown that the sense of control students have gained while interacting with instructional media and content can turn into satisfaction, enjoyment, and confidence (Luskin & Hirsen, 2010). However the effects of user-controlled online environments on students' self-efficacy are not consistent. On the one hand, findings show no differences in students' self-efficacy between non-interactive multimedia and interactive multimedia classes. For example, Maag (2004) found that students in an interactive multimedia online lesson showed no knowledge and self-efficacy gain compared to the control group but they were more satisfied with the interactive tools. On the other hand, some research has reported an improvement of students' self-efficacy in a user-controlled online environment. Ebner and Holzinger (2007), for instance, found that games did enhance learning, motivation, and self-efficacy with a factor called joy. Likewise, Chang and Ho (2009) found that students with the learner control version had higher test scores and self-efficacy levels than those in the programme-controlled version. In the same way, Jaffe's findings (1997) showed that the degree of interaction affected students' self-efficacy. However, those effects were not significantly different. This discrepancy of findings may occur because the online learning environment is complex, and the increase of students' self-efficacy can be caused or influenced by many factors other than levels of learner control.

Methodology

This study has been framed by Bandura's self-efficacy theory (Bandura, 1977a, 1977b). Building on previous research this study uses a quantitative approach to establish whether there is a significant link between *learner control*, the independent variable, and *online learning self-efficacy*, the dependent variable.

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The methodology was strengthened by the process of piloting the survey that would inform the later study. The pilot study had two phases: the construction of the data collection tools and the data collection. In the first phase, extraneous variables; age, gender, computer skills, and previous online experience were identified as they can influence the observed variables. In order to measure variables, independent, dependent, and other related variables, the questionnaires were constructed using items generated from the reviewed literature and validated tools. It comprised four sections: (1) demographic data, (2) a self-report of learners' computer skills for academic purposes (CSAP), computer skills for social purposes (CSSP), previous experience in online learning environment (OnlineExp), and experience with *learner control* (LC) whilst studying in the recent online programme, (3) an *online learning self-efficacy* (OLSE) scale, and (4) open-ended questions for qualitative data.

For this study, the population frame was online learners in an online programme at a tertiary institution in New Zealand. The purposive sample group was learners in an online programme where levels of learner control were embedded within the course design. Students studying for a postgraduate diploma in an initial teacher education programme were selected as the pilot group since this programme had compulsory online papers that met the research criteria. More importantly, these online papers were intentionally designed to maximise the learner control approach. For example, learners were encouraged to do a group project in their own ways and/or they were allowed to complete different tasks, choosing their own order within a flexible time frame.

To assess the relationship of these two variables, a bivariate correlation, Pearson's product-moment correlation coefficient (r) was calculated to demonstrate the direction of this relationship and the effect size. The statistical significance of the coefficient determines whether the relationship between observed variables was unlikely to happen by chance and, in this case, indicated whether learner control in online courses is correlated to students' online learning self-efficacy.

Preliminary findings and further work

Among 112 students in the postgraduate programme, 31 students responded to the pilot questionnaire making the response rate just under 30%. The sample group (n=31) comprised of 7 males and 24 females, and approximately 75% were aged between 25 and 45 years old. They reported themselves as intermediate or advanced users. About 84% described themselves as having some or a lot of online experience. Only two participants had no online learning experience at all.

As shown in the previous research in progress, the preliminary results of the pilot study showed that a correlation between levels of learner control and online learning self-efficacy did exist but was not statistically significant (Taipjutorus, Hansen, & Brown, 2012). However, several missing values were noted. So, to determine if there was any effect due to these, the data analysis technique was modified. Missing values were substituted by predicted values from the regression analysis or expectation-maximization (EM) method (Vaus, 2002). Then, Pearson's product-moment correlation coefficient was recalculated. The result $r(32) = 0.393$ was significant at $p < 0.05$.

Though, the strength of the relationship improved, the value of the coefficient was still moderate. One reason might be that Pearson's product-moment correlation coefficient is suitable only for linear relationships, and there is the possibility that these two variables are not linearly correlated. It is also possible that the investigated relationship might be more complex than the design for the preliminary study allowed for, further work is needed.

To explore this relationship in depth, another collection of data is planned for a more diverse sample in terms of learner control experience. An independent t-test will be performed to determine whether online learning self-efficacy of students in high and low levels of learner control is significantly different. An analysis of variance (one-way ANOVA) will also be used to determine whether mean

differences between subgroups are statistically significant. Other variables such as age, gender, computer skills and prior experience in online learning and online learning self-efficacy will be examined to see if these variables have an effect on the investigated relationship, since the Coefficient of Determination (r2) is 15.44% from this study indicates that other variables are impacting on measures.

In addition to the quantitative data, qualitative data will be used to provide further insights to the findings from the quantitative analysis. Thematic analysis will be employed to identify specific themes that are consistent with the concept of learner control and Bandura's self-efficacy construct. Open coding will be used to organise and identify some of the emerging themes. The result of this analysis will also be triangulated with the results from the quantitative analysis of this research.

Conclusion

This paper describes research-in-progress that focuses on the link between learner control and self-efficacy of postgraduate students participating in a tertiary online programme. Based on Bandura's self-efficacy theory, a correlational research design was employed. After preliminary data were gathered and analysed, results showed a moderate and positive correlation between observed variables. Further work is needed to understand more about this relationship.

The overall aim of this study is to enhance the learning experiences particularly for first time online students. Results may prove useful for educators and developers in shedding some light on how to make online students more comfortable and confident in unfamiliar and complex online environments. Novice and inexperienced online students who possess low confidence in their ability might find it easier to interact, collaborate, and thus succeed in online courses when learner control is integrated into the online learning environments from the beginning as part of the course design.

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