Positive User Engagement in the Deployment of Learning Management Systems

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Abstract

Online e-learning platforms have become near-ubiquitous in the tertiary educational sector, with all major institutions in New Zealand providing students access to a learning management system (LMS), along with other e-learning tools intended to enhance learning. From an institutional perspective, there is generally an expectation that students and teachers adopt the use of these tools and adapt their methods of participation in the learning process accordingly. This expectation is often reinforced by an organisational requirement to use the provided LMS for certain tasks such as dissemination of learning materials, assessment submission, grade reporting, and teacher-student communication. However, in order for the LMS to succeed in its function of enhancing the learning process, users must be willing to engage with it. This article examines how factors related to positive engagement contribute to the process of successfully implementing a new LMS, supported by relevant literature. Key factors relevant to success include student and teacher training, learning context, prior tech literacy, ease-of-use and accessibility, and perception of utility. These are used to analyse an ongoing LMS development project at a private training establishment in New Zealand, along with analysis of data from questionnaires and conversations with teachers and administrators involved in the project. Finally, recommendations are made for future implementation strategies and further research to be conducted on the LMS project.

Keywords: educational technology, e-learning, LMS, student engagement

1. Introduction

With blended learning and flipped classroom approaches to teaching gaining mindshare over the past decade, there has been a growing need to develop more effective ways to promote engaged participation of learners in independent, self-directed study. A body of research shows that student engagement with learning is a predictor of academic success (Williams & Whiting, 2016). Though there is no standard definition in the literature, in this context engagement refers to the purposeful interactions that students have with educational activities and conditions (Coates, James, & Baldwin, 2005). Self-directed engagement is a critical component of the blended learning and flipped classroom models, as pre- and post-class learning is necessary to fully reap the benefit of in-class practical activities (Wang, 2017). John Hattie (2015) argues that "…when teachers see teaching and learning through the eyes of their students, and when students become their own teachers then outcomes and engagement are maximized" (p. 79). However, as the traditional learning process modernizes, becoming more student-centred and less classroom-focused, students bear an increasing share of the responsibility to manage their own learning.

One common approach to supporting and monitoring student engagement in learning online is the use of learning management systems, or LMS (Coates et al. 2005; Walker, Lindner, Murphrey, & Dooley, 2016). LMS are network-based virtual learning platforms; specific features vary from system to system, but all present users with a network-accessible learning environment (Coates, et al., 2005) that is meant to enhance the teaching-learning process, facilitate communication between teachers and students, and perform related administrative functions (Holmes & Prieto-Rodriguez, 2018).

The purpose of this paper is to identify factors promoting willing, or positive, LMS engagement in both students and teachers. After discussing the methodology and limitations of data collection and analysis, the results of the literature review are reported. The results section also includes an outline of the LMS development project and associated student and faculty questionnaire responses and faculty discussion feedback. Finally, the discussion section presents an analysis and critique of the LMS development project using the factors for success identified in the literature; conclusions regarding the need for future research are also included.

2. Methodology

Published literature on this topic was reviewed to identify factors affecting willing participation in the adoption and development of a new LMS. An outline of a current and ongoing LMS implementation project is presented from the perspective of the EdTech coordinator responsible for its planning and execution. The purpose of its inclusion is to summarise initial planning decisions and the scope of the project and provide a context for the related questionnaire data and teacher feedback.

In January 2019, a pair of questionnaires created in Microsoft Forms were circulated among Aspire2 International (henceforth referred to as A2i) teaching staff and students in the faculties of English, Business and Hospitality. Respondents were asked to comment on their experience and attitude towards e-learning and LMS use. The purpose of collecting this feedback was to inform the initial development plan, and it provided an interesting view into who A2i's LMS users are. During the research process, conversations were held with the faculty participating in the preliminary LMS course trial, including teaching staff responsible for the development of courses in the LMS as well as A2i's Director of Studies. These conversations occurred in one-on-one interactions with the A2i's EdTech coordinator as well as a group discussion arranged for this purpose. Participants were encouraged to speak candidly about their experiences developing content for the LMS component of their face-to-face courses. Verbal consent was given by participating staff to anonymously include their comments in this study.

The organizational data was analysed for the presence of factors identified in the literature as important to LMS success, specifically in the areas of respondents' prior experience, technological competency, engagement during initial deployment, and perceptions of LMS use. This was then interpreted to provide insight into possible future planning and resourcing, and the need for further research.

Limitations of Data Collection Methods

LMS project data collection methods were not originally intended for academic publication. Responses to the questionnaires and conversations were collected on an opt-in basis. There was no set sample size, and participants were asked to self-identify attitudes, skills and perceptions. Conversations with faculty were both scheduled and unscheduled and did not strictly adhere to

a script. For these reasons, this paper avoids drawing concrete conclusions where there is no additional support from literature.

3. Literature Review

As with any educational tool, deployment of a new LMS presents both opportunities and challenges to educators. The LMS allows for the centralisation of digital-domain learning resources and many also have assessment and grading tools that seek to improve and streamline the assessment of learning. Modern LMS can facilitate the collection and analysis of cohort data that may have been impractical to engage in previously (Henrie, Bodily, Manwaring, & Graham, 2015). Class management, record-keeping, learning resource management, and other administrative functions are also typical features of modern LMS (Coates, et al. 2005). Interestingly, the advantages LMS offer to teachers/administrators - in contrast to those for learners - have resulted in criticism that LMS are too focused on the instructor rather than the actual learning process (Holmes & Prieto-Rodriguez, 2018).

However, as experienced educators may bear witness, the introduction of new educational theories, practices and tools can create frustration among stakeholders (Judge & Murray, 2017). Teachers, specifically, tend toward scepticism when faced with potentially disruptive innovation (Walker, et al., 2016; Westera, 2015). There may be a perception that the change will result in a negative impact on learner achievement, more work, a decrease in efficiency, or unnecessary confusion. Westera (2015) supports this perception as at least somewhat historically justifiable, listing a number of past media technologies such as educational film and school radio. Initially touted as revolutionary breakthroughs in education, practical limitations meant that few lived up to the hype from a pedagogical standpoint. In any case, it is difficult to criticise teachers for being averse towards the adoption of new, unproven technological tools and methods when many in the past have not lived up to expectations.

Citing several studies on teacher and/or student perceptions of LMS use, Holmes and Prieto-Rodriguez (2018) observe that current research does not show a clear consensus as to which group is more open to LMS adoption. The assumption that younger learners are more fluent in or accepting of technological educational solutions may not be wholly justified; neither can teachers be portrayed as simply resistant to change. The authors state, "that LMS are used to enhance the learning process rather than simply information transfer, both staff and students need to perceive value in participating in these collaborative components" (pp. 21–22). In other words, positive engagement (i.e., the willing participation of users) is necessary for successful implementation and adoption of a new LMS. Further, teachers and students may have different, even mutually exclusive factors driving their engagement. Therefore, when possible, both groups' needs must be addressed in order to maximise uptake.

In their review of the state of literature on the topic in the early part of this decade, Zanjani, Nykvist and Shlomo (2013) evaluate seven studies related to tech adoption to identify factors contributing to the effectiveness and success of e-learning systems. From their research, the authors observe that after an initial introductory period, a significant portion of students stop using the e-learning tools offered. Thus, the authors establish two distinct but related areas of concern: initial LMS adoption and its continued use.

It may not be surprising that prior computer literacy and experience are important factors in determining whether students have a positive experience when starting to use an LMS (Zanjani, et al., 2013). This is supported by other research indicating the importance of training and familiarising students with their LMS (Henrie, et al., 2015). According to Zanjani et al. (2013),

there are four main factors critical to promoting continued use by students after the initial adoption period.

(i) The attitude of teaching staff toward e-learning is one of the most influential factors on continued student engagement.

(ii) Important LMS design considerations should include ease of use, accessibility, navigability, interface design, and interactivity.

(iii) Learning resources should be useful, accurate and comprehensive, fun, and relevant to outcomes.

(iv) Finally, external factors like access to computers, the reliability of the network, and troubleshooting assistance are vital. Peer/social influence may also be an external factor affecting individuals' choice to continue using the system, indicating that an atmosphere of positive engagement can be contributory to overall adoption and continued usage. The authors note in their conclusions that it is critical that teachers are aware of the factors essential to success, and that LMS planning is conducted with this in mind.

From the teachers' perspective, perceptions of an LMS are often influenced by its features and perceived utility in both the teaching/learning process and administration or student management. One study indicates that LMS features with administrative functions — such as gradebooks — can distract from the teaching process, especially when users encounter difficulty using them (Walker et al, 2016). In general, teachers found that when LMS features did not function as expected, the learning process was negatively affected. Therefore, it is critical that teachers understand how to navigate and use their LMS interface correctly. Further, they must be listened to; giving teachers and other affected stakeholders opportunities to share their opinions on LMS implementation can help drive adoption and acceptance (Coates et al, 2005; Walker et al, 2016). Finally, time and resource management are identified as important to success, both in terms of providing users with adequate training, and by establishing means of improving the quality of learning content offered through the new LMS (Walker et al, 2016).

4. Outline of A2i's LMS Project

In October of 2018, work began on the implementation of a new learning management system at A2i, a registered private tertiary establishment based in Auckland, New Zealand. The purpose of the new LMS project was to replace the previous LMS, an implementation of Moodle called MyNtec, which had been deemed no longer fit for purpose. One of the criticisms of the old LMS was its inconsistent adoption across faculties. The new LMS chosen was Canvas, and a full-time position was created to plan and begin the rollout of A2i's existing course offerings via the new LMS.

The decision was made to stage the deployment of courses gradually over the 2019 school year. Staff orientation and training began in December 2018 and continued through February 2019. The initial course planning and development stage saw the creation of a Canvas development team comprising teachers from each of the various faculties and departments participating in a Canvas course trial. In the second term of 2019, ten trial courses were launched via Canvas, including offerings from the ESOL, Hospitality and Business faculties as well as the Academic Support department. These courses were developed by teaching staff with assistance from A2i's EdTech coordinator. The trial courses were meant to begin the process of developing LMS course design capability in teaching staff and test the features Canvas offers.

To reach the organisational goal of eventually offering an LMS component for each of A2i's face-to-face courses, the Canvas development team will build out an increasing number of courses over the next four terms, ideally completing the implementation of basic content for each course in Canvas by mid-2020. At that point, course developers will begin an iterative design process using feedback from teachers and learners to revise and improve learning resources and course layout. This will occur alongside the integration of Canvas with A2i's student management and customer relationship management systems. This integration will allow teachers to better utilise Canvas' assessment and grading tools, improve data collection, and streamline the administration of Canvas users.

5. Findings

Feedback from A2i stakeholders

According to data from the student questionnaire, a significant majority of responding students (n=208) identified as tech-friendly (79.8%), with roughly the same proportion possessing more than one internet-capable device (81.3%). Almost all have a reliable internet connection at home (91%). However, only one in four have experience with formal online (i.e. distance) learning (26.4%), and of those, attitude towards the utility and enjoyability of their specific online course are a mixture of positive (69.1%) to neutral (29.1%). Only one responding student indicated a negative perception of their online course experience.

Of the students who responded, roughly half indicated they had used an LMS in the past (56.2%). Of that number, nearly all found it had been useful (88.9%). However, fewer found it enjoyable as well (59.8%). Three out of four students indicated that they saw the traditional classroom learning context as necessary for their educational goals (74%). The remainder were neutral or unsure (16.8%) or disagreed (9.1%). A2i's students remain open-minded to digital learning methods and materials, with the majority (70.1%) indicating they wished their teachers would use information technology and online resources more often in the classroom. Significantly, only 11% stated that they found online learning boring and/or a waste of time.

In comparison with the student questionnaire, fewer responding faculty (n=20) identified as tech-friendly (70%). Half indicated they felt their level of technological literacy was about average (50%) with 40% self-identifying as above average or very tech-literate. Only two teachers self-identified as below average. Teachers were more likely than students to have prior experience with online learning (55%) and also tended to have a more positive perception of their experience (81.8%). Teachers were more likely to have previous experience using LMS in a teaching role (65%) than as a learner (45%). LMS-experienced faculty generally responded favourably when asked about their experience with aspects of LMS use related to accessibility, feature set, training and organisational expectations. However, they were split when asked about their students' LMS use, with the plurality (46.1%) indicating they perceived low student engagement with the LMS.

Feedback from faculties

In face-to-face conversations (n=6), teaching staff with previous experience with MyNtec commented on Canvas' improved interface and ease of use compared with the old LMS. Features in the new LMS that were positively received include its interface, the ability to set dates and times for publication of resources in advance, and the ability to integrate external

teaching tools, such as Quizlet. Several users also stated that the ability to reuse/repurpose content once implemented in Canvas was going to be useful in the future. While all users had some positive perceptions of the new LMS, there were some common problems voiced by many teaching staff regarding the failure of many of their students to engage with the content presented. Several teachers mentioned they thought that when students did engage with learning in their Canvas course, it was beneficial to

(a) their ability to participate in classroom learning sessions or

(b) their skill development.

However, they were critical of the amount of work they had to put into course development in light of the fact that few of their students spent much time using the system.

When discussing reasons for lack of student engagement, teachers mentioned factors including possible resistance to change or lack of engagement in self-directed study, a cumbersome or unintuitive interface, and difficulty logging into the system. Teacher-proposed solutions to improve student engagement in the future involved negative feedback to students (e.g. criticising failure to engage). One teacher suggested showing students the analytical tools available to teachers, demonstrating that teachers are able to monitor students' LMS activity. An-other method that some teachers had used during the trial was to directly message students who had not been engaging in the learning content provided in the LMS course.

Negative perceptions related to teachers' own use of the system were less uniform. For teachers without prior experience using LMS to develop courses, complaints included unsatisfactory training or insufficient technological competence resulting in stress as they struggled to develop expertise in using the system. One teacher felt that the number of options available in the course developer interface made it overwhelming to navigate. Other teachers commented on potential authenticity issues when students submit work online, and the necessity of duplicating work with the Moodle LMS still in production use.

6. Discussion and Conclusions

A2i's initial experience in the first stages of its new LMS deployment appears to reflect common themes presented by the literature reviewed. Insufficient data currently exists to state conclusively that teachers' perceptions of low student engagement is the result of the new LMS or the method in which it has been implemented. Similarly, it is unreasonable to make any determinations about the failure or success of A2i's efforts to develop its new LMS at this early stage. Clearly, a circle can be drawn around the perception of lack of student engagement; this was an issue faced by the previous LMS, and it remains a concern.

This aside, there are other factors that suggest optimism for long-term success. From the January 2019 questionnaire results, it appears that A2i's student body identifies as generally tech-competent. While not universally experienced with online learning platforms, they perceive a benefit to the use of digital learning methods and materials and are open to the prospect of a new LMS as long as the traditional face-to-face learning context is maintained. If accurate, these self-identifications should be positive factors in longer-term engagement. Teachers also generally responded favourably in the questionnaire, though a more comprehensive survey with a larger sample size will need to be conducted to provide reliable data in this area.

The implications for A2i's LMS project to be drawn from the literature are as follows:

a) LMS planning must be undertaken with both long- and short-term considerations;

b) Positive long-term engagement relies upon factors that begin to affect the outcome before students even begin to use the system;

c) Teacher attitudes may be very important in supporting the academic atmosphere around LMS use. If teachers do not engage with the system voluntarily and enthusiastically, how can students be expected to?

d) Finally, although an LMS can add value to the learning process, the quality of learning materials and the method of their presentation to the student is a critical factor in the successful implementation of an e-learning solution.

This is supported by Holmes and Prieto-Rodriguez (2018), whose research shows that students value the flexibility of access to course materials via the LMS but become frustrated if learning content is of poor quality or difficult to find within the system.

7. Recommendations

It will be necessary for A2i to dedicate more resources toward developing staff capacity. Evidence from teachers' conversations and the literature show that teachers' concerns of time management and workload when developing new learning tools are a factor in the success of the LMS project. Teacher training in the new LMS features must be sufficient and staff given time to explore and trial system features, so they feel comfortable prior to using it to deliver a course. If teachers are expected to develop LMS content for the courses they deliver, it stands to reason that the educational institution must promote awareness of instructional design concepts, tech literacy and e-learning. To achieve the long-term goal of providing an LMS component for all face-to-face courses, all teaching staff must be given the opportunity and support necessary to gain competency in using the new LMS.

To inform A2i's future planning for its LMS project, there are several questions that bear further research. First, does data analysis confirm teachers' perceptions of low student engagement during the course trial? Research in this area is planned for the rest of the 2019 school year, using the data collection tools available within Canvas as well as further teacher and student questionnaires. The questionnaires will also seek to discover how users perceive the new LMS in comparison to the old system. Secondly, how does student LMS engagement compare with engagement in face-to-face learning sessions and self-directed learning? Can a distinction be drawn between the two, and if so, what are the aspects of the LMS that contribute to this distinction? Initial research seems to suggest that it can be difficult to compare the medium of instruction as it relates to student satisfaction and academic achievement, and in fact the medium may be irrelevant in this context (Henrie, et al., 2015). Finally, how will future engagement during widespread deployment compare to student engagement during the trial period? The focus of the trial period was to begin the process of developing staff capacity in LMS course development and explore the features of the new LMS. Later research will need to focus on improving student engagement, the efficacy of negative reinforcement, and emerging trends in digital learning such as mobile learning and gamification.

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