Association for Information Systems
AIS Electronic Library (AISeL)

MWAIS 2018 Proceedings | Midwest (MWAIS)

5-2018

The Impact of Guided Learning on Student Achievement and Retention in an Online Course Environment: A Reflection on Introductory MIS Courses

Shaun Moore
Oakland University, samoore@oakland.edu

Amy Rutledge
Oakland University, rutledge@oakland.edu

The Impact of Guided Learning on Student Achievement and Retention in an Online Course Environment: A Reflection on Introductory MIS Courses

Dr. Shaun Moore
e-Learning and Instructional Support
Oakland University
Rochester, MI 48309
samoore@oakland.edu

Amy Rutledge
Department of Decision & Information Sciences
Oakland University
Rochester, MI 48309
rutledge@oakland.edu

ABSTRACT

With the rise in popularity of online education, there is also a growing concern regarding the disparity between student achievement and retention in online courses versus those in the traditional classroom. Advances in the capabilities of Learning Management Systems (LMSs) have made it possible to facilitate more interaction and engagement with students through the technology which has shown to reduce the disparity further. This paper discusses how the application of guided learning via adaptive release has impacted students and faculty in the online sections of an introductory Management Information Systems 1000 (MIS 1000) course. Our initial experience indicates that when applied to the online course, it further forces some self-regulation, engages the student in the course, serves as an early warning system to allow faculty intervention, and increases student achievement and overall retention.

KEYWORDS

Online courses, guided learning, adaptive release, introductory MIS course, computer-based training, computer science education.

INTRODUCTION

Online learning has become a major focus for higher education, and it will only become more important as the years go on (Martin, 2012; Wang et al, 2011). Ensuring that the quality of online instruction meets that of the traditional classroom instruction seems to be a challenge for most (Isken, 2014). Most online instruction is conducted through a Learning Management System (LMS) such as Moodle, Blackboard, or Canvas. Many LMSs have guided learning functionality, such as the adaptive release feature in Blackboard or the requirements, prerequisites, and lock module feature in Canvas. In Moodle, this is made possible through two features: activity completion and restrict access. These features allow the instructor to unlock various content only after the student has met specified criteria, such as completing a task (e.g., watching a video or turning in an assignment), or achieving a specific score or level of proficiency on a quiz or assignment. The process ensures that students follow the instructor's specified path to learning the lesson or unit.

At Oakland University, we annually teach sixteen sections of Management Information Systems 1000 (MIS 1000) Business Problem Solving with Information Technology – a basic Microsoft Office course required by all business majors. Four of the sixteen sections are taught online, while the others are taught face-to-face as hands-on courses in a computer lab. It became apparent that the outcome of the online instruction was not equal to that of the face-to-face courses. A far larger proportion of students failed the online courses entirely. Furthermore, a larger proportion of students scored lower on some of the more difficult assignments.

In this paper, we describe the past and current course structure for online instruction, followed by a brief review of current online literature with respect to instructional design best practices and guided learning. Next, we discuss the application of the guided learning approach to our online courses and its outcome when compared to its equivalent face-to-face sections. Finally, we conclude with a discussion of lessons learned and other possible methods to further improve instruction for online courses using guided learning.

LITERATURE REVIEW

Research shows that an inherent problem exists with student retention and overall course achievement in online courses when compared to the traditional classroom. Students are more likely to fail or withdraw from online courses than from face-to-face courses (Xu and Jaggers, 2011; Moore, Bartkovich, Fetzner, and Ison, 2003). A student's ability to self-regulate, the degree to which they take responsibility for their own learning, pace, and achievement in the online environment, is important to their overall success in the course (Rakes & Dunn, 2010; Sun, Tsai, Finger, Chen, and Yeh, 2008; Yukselturk and Bulut, 2007). Moreover, literature shows that in the online environment, student learning and achievement are directly linked with interaction and total time within the course (e.g., usage) (Rafaeli and Ravid, 1997; Ryabov, 2012). Careful use of instructional design concepts in the making of the online course is also a factor in student success (Allen, 2007; Steen, 2008). Ritter, Nerb, O'Shea, and Lehtinen (2007) propose that "the order that material, for acquiring both facts and skills, is presented or explored by a learner can strongly influence what is learned, how fast performance increases, and sometimes even whether the material is learned at all."

Using guided learning via adaptive release tools found in most learning management systems, instructors can control the sequence of content to the student learners. The use and effectiveness of guided learning and adaptive release in online courses has not been thoroughly studied. Thus, this paper addresses the use of guided learning and adaptive release to further engage the student in the material, as well as attempt to overcome the student's lack of ability to self-regulate. We examine the efficacy by comparing the before and after and its effect on students and faculty.

GUIDED LEARNING

In MIS 1000, we use Moodle heavily, in not only fully online and blended courses, but also in face-to-face courses. One nice aspect of using an LMS like Moodle is that you are able to guide the students learning using gates in the system. For instance, you can ensure that all students click on a link, take a quiz, or watch a video in your course before proceeding onto a different item.

We have used this in various ways to help guide MIS students learning. At the beginning of each course, to ensure they understand the important information, they must complete a syllabus quiz. Before they can complete the syllabus quiz, they must have first clicked on and viewed the syllabus. The system will show the link for the quiz, but it will not be available for them to click on until they view the syllabus. Any required steps will be listed under the item so the student knows what they have to do in order to access that item.

Setting this up in an LMS will differ based on the system, but most have similar settings. In Moodle, you use the activity completion and restrict access settings. This is essentially a two-step process. The first step is to decide what content needs to be tracked that the students have completed. We use activity completion to have Moodle mark items as completed based on a set of criteria specific to that item. For files such as a syllabus or presentation, the system can only tell if the student opened them. Other activities such as quizzes, forums, and assignments, have more criteria options to be marked as completed. You can tell the system that a student must upload an assignment, or receive a certain quiz grade, or post a certain amount of times to a forum to have the activity marked as completed. Moodle will display checkboxes to the right of all items that have activity completion enabled. This provides a helpful visual guide for students, showing them clearly via a checked or unchecked box whether or not they've completed that item.

Once you have activity completion setup, the second step is to restrict the access of a different item in the course until they have completed previously required items. You can restrict it based on one or many different items, depending on your need. For instance, in order to be able to submit a word document file to an assignment tool, you could make that tool open up only after the student has viewed an assignment sheet, and gotten a first draft approved in a previous assignment.

Using these methods of gating content to guide student learning has proven invaluable in our courses. It helps both the student and the instructor in multiple different ways that we have tracked.

STUDENT IMPACT

Not all students are intrinsically motivated to learn their course material. We have had many students over the years who want to skip right to the homework without completing prerequisites such as reading. Even meticulous, motivated students can miss an announcement or specific instruction about an assignment. When there is a sequence involved, such as completing one task first before another, this adds more levels of complexity and places for things to go wrong. It may even cause students to complete steps in the wrong order if they are able to, and consequently get a lower score because they have not completed required prerequisite material.

Using guided learning can help steer a student down the exact path the instructor has intended, with no way for them to get the steps of the sequence wrong. To ensure a student is prepared for the technology requirements of our courses, we add quick surveys to the top of our courses that the students must complete, in order, before moving on to any of the actual course content. This lets them know about the required course package, where to buy it and sign up for an account, and asks them to verify via a survey response that they have done so before moving on. We ask them to save all of their files to cloud storage. This helps not only the student, as they have access to their files on any computer with internet access, it also helps the instructor, as the students have no excuse for not having access to a file if their main computer goes down. They must also verify they have this setup, and what cloud storage solution they are using before completing any homework. There are other quick surveys to ensure they have the required software installed, and are using the optimal web browser.

While this may sound daunting, they are very short activities that the students can quickly complete, and it ensures that they are all on the same page, have the required software and accounts, and can successfully begin the course in a way that will lead to optimal student success. Having done this for years, we have never received complaints from students about locking them into a path for certain content. On the contrary, they find it much easier to follow the clear organization and complete their required tasks.

Guided learning can be used in creative ways to reach students who may not be reachable by other means. In a previous semester, Dr. Moore had a few students in his online course that were still regularly logging in, but not completing some required assignments, and were falling behind. He had emailed them multiple times through different channels and not gotten a response. He used the restrict access feature to display a very large message at the top of the Moodle course that only the individual struggling students could see. Each one saw their own message, asking them to check their email and contact the instructor. All three did thanks to this method, and two of them ended up turning their grade around and passing the class. Creative uses of guided learning can help with retention and student completion.

FACULTY IMPACT

Instructors who have taught the same course multiple times quickly come to recognize when and where student questions will pop up. They have no doubt made tweaks to assignments to make them clearer, or spent more time in class or in a video explaining an assignment. No matter what methods are used, not all students will be reachable, and this is where guided learning really helps instructors. Making a clear path that students must take will allow the course to run much smoother, and save the instructor valuable time as they will be answering less questions about the course, and having to spend less time redirecting students. If the LMS has detailed activity completion reports, it also makes it easier for instructors to review what students have completed which items, without having to dig through confusing logs. Instructors can use these overview reports as an early alert system, letting them see which students are not completing assignments so they can reach out in an attempt to help guide the student back on track.

It is not uncommon to have a detailed assignment sheet that students must read through that will explain all the requirements of a major assignment. Using guided learning can ensure that a student at least clicks on the assignment sheet before moving on to the next step. We have used this in courses where students have to have a topic approved as a part of the assignment. Students cannot submit a topic for approval until they have read the assignment sheet, so their first steps are locked in place. Later, when the first draft of the paper is due, students cannot submit the draft if they have not had their topics approved. This has prevented students from moving forward with the project if they have not had their topics approved, something that had happened regularly in the past before using the guiding learning path.

Guided learning can be used to ensure that students not only read feedback on an assignment, but acknowledge it. For a required paper in the course, we have given detailed comments to students on a draft of the paper they turn in. In the past, it was clear by reading the final draft and seeing the same mistakes that many of the students had not bothered to read the comments. Looking at the Moodle logs had confirmed this almost every time we were suspicious of it. So for subsequent

semesters, we setup a reflection assignment that was due after feedback was given. It was gated so that only students who had turned in a draft and had received feedback could open it. In the reflection, students had to acknowledge not only the number of comments the instructor put on their paper, using the New Comment feature in Microsoft Word, but they also had to detail their revision plans. Finally, the students could not turn in their final draft unless they completed the reflection assignment, and received a passing grade.

Instructors can use guided learning in creative ways to help motivate students. Dr. Moore sets up hidden videos in each week of his course. These hidden items, called Easter eggs, contain humorous videos that Dr. Moore either filmed himself or found online. If a student completes each of the required items for that week, and every item is marked as complete by Moodle, a hidden Easter egg link will open up, which has its access restricted to be viewable only to those students who have met the specific criteria and completed all the required items for that week. This has had a motivating effect on students, as it encourages them to complete items in the course to find hidden links.

DISCUSSION

While using guided learning in an LMS is a wonderful way to keep students on track, it is not always a perfect system. An LMS is limited in how it can track certain student activities. One activity that is particularly problematic to track is reading. For one, the reading may not even be digitally accessible, such as required chapters in a print textbook. For the reading that is available on the LMS, there is no good way to check if the student has actually read it, or just opened up the page to display the text. In Moodle, for resources such as files or web pages, the only completion tracking option is to see if the student had clicked to view it. The program cannot track outside of that.

There are programs that have attempted to overcome this. Some publisher software will attempt to track if a student is still active on a webpage where their digital text is shown. They do this in various ways, none of them perfect. One way is they check to see if the page has been scrolled down after a period of time, and if not, they don't consider the student to be actively reading. Students could easily get around this though. The only real way to verify students have read is to require some sort of quiz or assignment afterwards that will test their knowledge on what they have read. That steps a bit outside of the bounds of guided learning though, so it is not necessarily something we are suggesting as a best practice.

Not all activities have technical tracking limitations. For instance, we have used videos in our online courses, requiring students to view the videos before they continue on to the content for that week. By default, all the LMS can track is if the student clicked on the video. The system cannot guarantee the student has even clicked the play button, or if they have, that they stuck around to watch the video instead of going off to get some lunch and return later when the video has played out. There are technologies that can be used to get around this limitation. One method is to use a paid program such as TechSmith's Camtasia. H5P has some free technology that can do something similar. These pieces of software allows you to embed questions in your videos, and then save them as SCORM packages, which interact with an LMS and feeds scores into a gradebook. Using this method, instructors can insert questions about the content of their videos throughout the video. Then, they can have the LMS only mark the video as complete if the student has watched it through to the end, and gotten all of the questions in it correct. This method has made our online courses run much smoother, as it not only ensures that students are watching the weekly introduction videos, which explain many of the concepts and assignments for the week, but it allows students to interact with the contact, and answer questions in the video to reinforce the concepts covered.

LIMITATIONS AND FUTURE RESEARCH

While this exploratory study only looked at a few MIS 1000 courses, we have plans to gather data on additional MIS courses and sections in an attempt to quantify the time-savings impact on us as faculty, as well as outcomes and retention impact on our students.

As technology advances, the options for guiding student learning will only get better. As it stands now, there are some amazingly easy and effective ways to help steer students down a specific learning path, helping with retention and completion. While it may take instructors a bit more time on the front end to setup these completions and restrictions, it will ultimately save them a lot of time on the back end they would have normally spent answering questions and trying to get students back on track.

REFERENCES

1. Allen, M. W. (2007) Designing successful e-learning. San Francisco: Pfeiffer. Retrieved from http://www.ukmc.lt/mokymas/_common_/_media/310/Designing_Successful_e-Learning.pdf
2. Isken, M. W. (2014) Translating a lab based spreadsheet modeling course to an online format: Experience from a natural experiment, *INFORMS Transactions on Education*, 14, 3, 120-128.
3. Martin, F. G. (2012) Will massive open online courses change how we teach? *Communications of the ACM*, 55, 8.
4. Moore, K., Bartkovich, J., Fetzner, M., and Ison, S. (2003) Success in cyberspace: Student retention in online courses, *Journal of Applied Research in the Community College*, 10, 2, 107-118.
5. Rafaeli, S, and Ravid, G. (1997) Online, web-based learning environment for an information systems course: Access logs, linearity and performance. Retrieved from http://mis.huji.ac.il/papers/mmm.paper.htm
6. Rakes, G.C. and Dunn, K.E. (2010) The impact of online graduate students' motivation and self-regulation on academic procrastination, *Journal of Interactive Online Learning*, 9, 1, 78-93.
7. Ritter, F. E., Nerb, J., O'Shea, T. and Lehtinen, E. (2007) In order to learn: How the sequence of topics influences learning, Oxford University Press, Oxford, New York. Retrieved from: https://gpreview.kingborn.net/260000/44fb0e98462c4b43a5a3aec1b8264903.pdf
8. Ryabov, I. (2012) The effect of time online on grades in online sociology courses, *MERLOT Journal of Online Learning and Teaching*, 8, 1, 13–23.
9. Steen, H. L. (2008) Effective elearning design. *MERLOT Journal of Online Learning and Teaching*, 4, 4, 526-532.
10. Sun, P. C., Tsai, R. J., Finger, G., Chen, Y. Y., and Yeh, D. (2008) What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction, *Computers & Education*, 50, 1183-1202.
11. Wang, M., Jia, H., Sugumaran, V., Ran, W., and Liao, J. (2011) A web-based learning system for software test professionals, *IEEE Transactions on Education*, 54, 2, 263-272.
12. Xu, D. and Jaggars, S. S. (2011) Online and hybrid course enrollment and performance in Washington State Community and Technical Colleges, Community College Research Center, Columbia University. Retrieved from: https://eric.ed.gov/?id=ED517746
13. Yukselturk, E. and Bulut, S. (2007) Predictors for student success in an online course, *Educational Technology & Society*, 10, 2, 71-83.