

Using Learning Analytics to Evaluate Course Design and Student Behavior in an Online Foundations of Wine Science Course

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ABSTRACT: This study evaluated the approach to course design employed to transition a course from face-to-face to online delivery. Traditional lectures were initially replaced by audio recordings, and subsequently to purpose built eLearning video lectures with online resources aimed to engage, stimulate, support and enhance student learning. Descriptive learning analytics, together with student grades and student based learning and teaching evaluations, indicated the use of audio recordings had a negative impact on the perception of course organization, learning strategies, and course quality. The restructured course with purpose built online video lectures was considered by students to be superior to audio recordings and equivalent to face to face delivery. Despite student perceptions there was no difference in student learning outcomes.

Keywords: learning analytics, online learning, learning outcomes, student engagement.

1 INTRODUCTION

Learning analytics (LA) refers to the measurement, collection, analytics and reporting of data about the progress of learners and the context in which learning takes place (Siemens, 2012). The Learning Analytics in Higher Education Review states, LA could make significant contributions to: quality assurance and improvement; retention rates; assessing and acting upon differential outcomes among the student population; and the introduction of adaptive learning (Scatler, et al. 2016). Adaptive learning systems are emerging to help students develop skills and knowledge in a self-paced way. Clickstream data can be used by educators to evaluate how content is used and how effectively it supports student learning. LA has the potential to transform the way learning outcomes and impact are measured and to inform the development of modern approaches to achieving excellence in teaching and learning. This study used LA to evaluate student engagement, learning behavior and outcomes in a Wine Business course as it transitioned from face-to- face to online.

2 COURSE STRUCTURE AND STUDENT DEMOGRAPHICS

Foundations of Wine Science (FWS) comprises both theoretical and practical components of a Wine Business program. Prior to 2016, the theoretical component of FWS was taught via traditional face-to-face lectures, in 2016, the program transitioned to simple online delivery of lectures as audio recordings (recorded lecture slides with audio). As, a consequence of reduced student evaluations of learning and teaching in 2016 the course content for 2017 was redesigned to include purpose built eLearning video lectures with additional online resources including study guides, tutorials, discussion boards and learning interactives. The majority of FWS students were international ($\geq 85\%$), predominantly from China; a significant proportion of whom had limited English literacy.

Demographics impact the way in which students interact, navigate and engage with online materials, providing insight into patterns of behavior for learners.

3 LEARNING ANALYTICS AND STUDENT BEHAVIOUR

Transitioning this course from face-to-face to audio lectures and purpose-built eLearning video lectures did not impact students' final grades; (72.2, 71.1, 71.7, percent respectively). Data from student evaluations of learning and teaching identified a positive shift in engagement when course content moved from audio to purpose built eLearning video lectures. The LA data revealed 55% of students accessed the video lectures, while 100% of students accessed lecture notes in PDF format. The lower percentage of video views may reflect the high percentage of international students in the course and their learning preference for text based materials rather than non-closed captioned video. These data highlight the value of providing learning resources in a variety of formats to accommodate student learning preferences. The provision of closed captions/transcripts may expand the value of video lectures. When moving to the eLearning video lecture format, discussion boards were introduced to enable students to engage with the lecturer. A total of 24 posts were made to the discussion board with 82% of students viewing these within 2 hours of posting. Although less than 10% of students were responsible for the majority of posts, 76% of students engaged with the discussion board in a timely manner. Interestingly a large proportion of students re-engaged with posts several times perhaps indicating they were reflecting and clarifying their understanding as the course went on. The fact that posts were not anonymous may also have influenced the extent of active student participation in discussion boards (Roberts & Rajah-Kanagasabai, 2014). Moving to a new LMS afforded improvement in course structure reducing the number of clicks required for course navigation (from 4 to 1-2). The data indicated course announcements, assignments, discussions and marks were the most highly viewed pages. In contrast, feedback was viewed by less than 25% of students, indicating there may be value in encouraging students to engage with feedback to provide the necessary remediation to meet their learning outcomes.

4 CONCLUSION

The LA indicate that students undertaking FWS have a range of learning preferences, with the majority of students preferring text-based resources. This was not surprising, given the high proportion of foreign and ESL students (>85%). Improvements in student evaluations from 2016 - 2017 may be attributed to: improved quality of video lectures (engaging images, captions, high production value); simplified structure; and increased diversity in learning resources.

REFERENCES

- Roberts, L. D., & Rajah-Kanagasabai, C. J. (2014). "I'd be so much more comfortable posting anonymously": Identified versus anonymous participation in student discussion boards. *Australasian Journal of Educational Technology*, 29(5), 612-625.
- Scatler, H., Mullan, J., & Peasgood, A. (2016). Learning Analytics in Higher Education: A review of UK and International practice. JISC.
- Siemens, G. (2012). Learning analytics: Envisioning a research discipline and a domain of practice. Paper presented at the 2nd International Conference on Learning Analytics and Knowledge (LAK12), Vancouver, Canada.