Using a Glossary Random Entry Tool on Moodle online learning sites to improve students' engagement – A pilot study

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Making online learning material visually stimulating to students is vital for student learning. Engaging with interactive material that captures the students' attention and develops their interest can be particularly challenging for core 100-level papers. This paper reports an initiative to design a highly visual 'key-concepts' component for the Moodle online learning environment to stimulate students' interest and improve engagement. Key concepts were generated from the 100-level paper -Applied Sciences for Health Professionals - and then presented through a Glossary Random Entry function. The design of each key concept is short, highly visual and easy to understand. We report initial usage statistics of the component compared to other items on the learning site and conclude that the introduction of a highly visual 'key-concepts' does stimulate student interest and engagement with the online learning site.

Keywords: Health Science, Key concepts, Glossary Random Entry, Moodle

Introduction

The origin of this explorative project grew out of a belief that first-year students studying life science papers faced considerable cognitive overload with the 100- level papers. For first-year university students, information overload is a commonly reported issue and particularly pertinent for Health Science papers with heavy content. Students are expected to learn and recognise basic key concepts covering a breadth of topics including microbiology, genetics, nutrition and chemistry and be able to apply them to human health scenarios

Online learning has increased dramatically through the expansion of the computer-mediated learning environment. The cohorts of first year science students are sometimes overwhelmed by the quantity of essential information required for their learning. As educators, it is important we ensure online learning environments do not compound this issue further. This study explores how information overload may be reduced and student interest stimulated.

Many researchers have focused on how to motivate and engage learners in online environments (Dixson, 2010; Jeffrey, Milne, Suddaby & Higgins, 2012; Richardson & Newby, 2006). It is essential to capture students' attention at the start of the course, together with clear content structure and guidelines. Previous studies have shown that optimizing course related technology can facilitate early learning experiences, and improve student engagement, (Chen, Lambert & Guidry, 2010). By drawing attention to specific essential information, learners

may be able to visualize and distinguish between more relevant and less relevant information. Stimulating student curiosity and emphasizing relevance may optimize learning through increased student engagement.

In their study, Wong, Leahy, Marcus and Sweller (2012) argued that short sections of information are more effective in creating e-learning resources for students, mainly due to the innate ability to learn by observing, and avoiding long sections which would overload working memory capacity. In addition, diagrammatic and graphical representations have been suggested to reduce the working memory load (Cox, 1999; Zhang & Norman, 1994). In terms of the design of the 'key concepts' component the aim was to present shorter segments of information in order to decrease cognitive load.

Aim

The objective of this project is to develop a highly visual 'key-concepts' component for the Moodle online learning environment to generate students' interest and improve engagement early on in a student's tertiary learning journey.

Method

The key concepts from each topic area from the paper BHlthSci 100-level paper– Applied Sciences for Health Professionals, were selected and presented in a visually attractive way on the Moodle online learning environment by using colours, pictures and tables. The selected key concepts are peer-reviewed by other teaching staff involved within the same paper to ensure appropriate key concepts from each subject area are highlighted, and that they correspond to learning outcomes.

Through the Glossary Random Entry function, key concepts are displayed in a short form, and rotated each time the student refreshes the page. They are linked to associated Power Point presentations and short videos which the students may then access further if they wish. In addition, students will be able to search for the key concepts within a specific topic area, since all of the key concepts are categorised and tagged, based on topic and the date when created.

Output

The tool was developed through the Glossary Random Entry function in the Moodle online learning environment. Selected key concepts are randomly presented on the Homepage. Each time students refresh the screen, a new concept appears. As shown in Figure 1, the Key Concepts appear on the left side of the Homepage, where it is easily visible. The information displayed is short, colorful and highly visual (Figure 1) it does not require further clicking and students will be able to read the information each time they log in to the paper's site. Some of the key concepts were developed with extra links to redirect students to further information if they wish (Figure 2). This online glossary creates a searchable archive of resources. The content is linked to each topic and the date it was created, which makes it simpler for students to locate resources, the major benefit being keeping links and materials off the main course pages. Further key concepts have been added, with sufficient number (about 50 presently) allowing for low level repetition throughout. Repeated information can reinforce students working memory and, ultimately their learning process. This placement on the Moodle online learning environment is likely to reduce extraneous cognitive load within the limit of learners' learning capacity. After a three month trial (July to September 2013), we analyzed students' activity on the Moodle online learning site for this paper (through capture of participants' activity data of 270 students). A far higher number of views for "Key Concepts" were recorded when compared to other online activities, such as course administration, or accessing tutorial files; 716 views for 'Key Concepts' compared to 87 views for 'Tutorial files' (see Table 1). Student discussion groups at the end of the semester will further investigate students' perception of this newly developed study tool.

Table 1: Online activities analysis (Number of students = 270)

Types of activities	"Key Concepts"	Course Administration	Tutorial files	"Did you know?"
Number of views	716	126	87	66

Future work

To take this project further, the next step is to ask for students' participation in the development of the key concepts. The learners themselves will be encouraged to post online their own designed key concepts, so they can be viewed by other learners in the same group. A questionnaire will be added to reveal suggestions and comments from users.

A further development using the Glossary tool is designed to capture students' curiosity, and contains current updated science stories closely related to the individual topics students are learning. This aims at high end learners, who are likely to require extra relevant information within the course to sustain their active learning. This section will be updated each week of the course. By meeting a range of learning needs with the Moodle online environment, students will be more motivated and engaged in their learning process.

Figure 1: Sample of Key Concept location on the Stream site

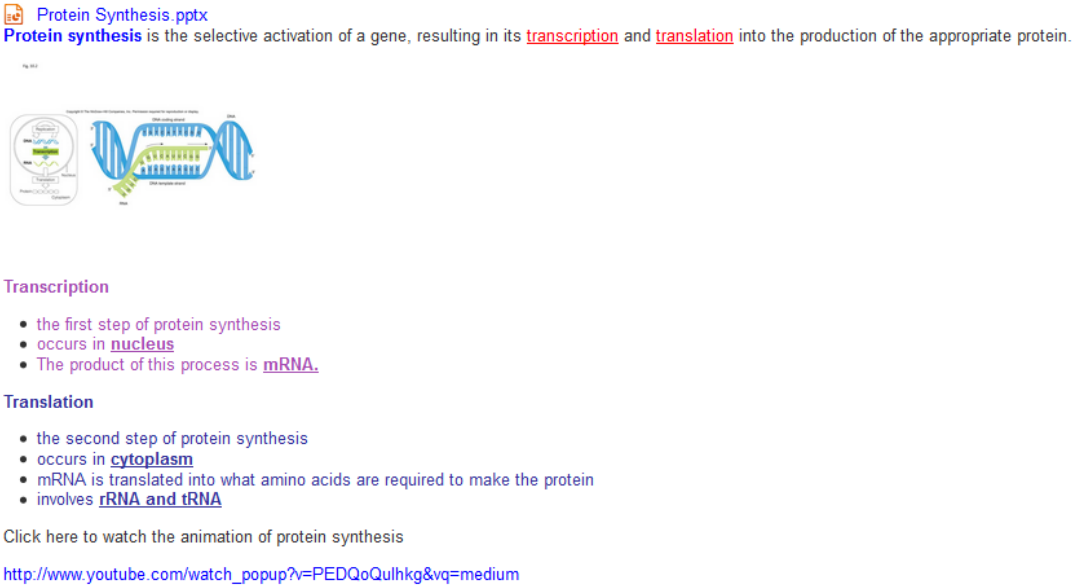

Figure 2: Key Concept sample

Conclusion

This paper records the initial development of a simple visual construction of key concepts through the Glossary Random Entry function in the Moodle online learning environment. Repeated exposure to the key concepts, may help students learn difficult concepts present in the Applied Sciences courses, encourage first year students to engage more actively with the Moodle online learning environment, and, ultimately further improve their learning experience with retention of the health science concepts, and an optimal successful outcome in their core 100-level papers.

References

Chen, P. D., Lambert, A. D., & Guidry, K. R. (2010). Engaging online learners: The impact of web-based learning technology on college student engagement. *Computer and Education*, 54, 1222-1232.

Cox, R. (1999). Representation construction, externalised cognition and individual differences. *Learning and Insruction*, 9, 343-363.

Dixson, M. D. (2010). Creating effective student engagement in online courses: What do students find engaging? *Journal of the Scholarship of Teaching and Learning*, 10(2), 1-13.

Jeffrey, L. M., Milne, J., Suddaby, G. & Higgins, A. (2012). Strategies for engaging learners in a blended environment. Ako Aotearoa-The National Centre for Tertiary Teaching Excellence. http://www.akoaotearoa.ac.nz/blended-approaches-learner-engagement

Richardson, J. C. & Newby, T. (2006). The role of students' cognitive engagement in online learning. *American Journal of Distance Education*, 20 (1), 23-37.

Wong, A., Leahy, W., Marcus, N., & Sweller, J. (2012). Cognitive load theory, the transient information effect and e-learning. *Learning and Instruction*, 22, 449-457.

Zhang, J. & Norman, D. A. (1994). Representations in distributed cognitive tasks. *Cognitive Science*, 18, 87-122.

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