Reducing the confusion and clicks and its impact on learning

Rebecca Scriven
Edith Cowan University,
Australia

Carol Crevacore
Edith Cowan University,
Australia

With the increased importance placed on first-year university units to transition, retain and engage new students, there is a need to carefully design the navigation within a unit of study. The importance of reducing confusion for new students and the cognitive load placed on them during their first experience of university learning may assist with retention.

This paper presents a collaborative project between a first-year Unit Coordinator and Senior Learning Designer to redesign the navigation of a core communications unit in a Bachelor of Science (Nursing) degree. The purpose was to reduce the confusion over what was required of the students each week and to reduce the number of clicks and scrolls through the weekly content, allowing students to focus on the content itself.

Keywords: usability, design principles, retention, learning design, first-year experience

Introduction

Globally, there is an increased pressure on universities to improve student outcomes and retain students. By providing first-year students with the support to facilitate a positive university experience and guiding them through the process of transitioning from high school into tertiary education, some improvements can be made in retention numbers (Kift, 2014).

However, increasing student numbers and the diversity of student groups in age and cultural background, has made student retention a challenge for both academic and non-academic staff. First-year students can vary greatly in both social and academic skills. Making students feel comfortable in these first experiences of university study can be challenging but it is a crucial element towards student success (Kift, 2014).

The aim of this project was to lessen the confusion for first-year students, allowing them to concentrate on their learning rather than spending valuable time deciphering course content and finding resources.
The first-year unit in this project introduces professional nursing communication and conduct skills. It teaches oral and written communication skills needed to become a successful health care professional, equipping students with the skills to handle and manage difficult nursing situations. Academic writing and literacy are introduced at a foundation level in the unit and are consolidated as the students move forward in the course. For many students, it is the first time they have encountered academic writing and researching.

The number of students enrolled in the unit can range from 500-700 students, depending upon the semester, including both on-campus and online students. The unit is taught across two campuses, to metropolitan and rural students. A typical nursing student enrolled in this unit is a mature age, female returning to study, often raising a family and working part-time. There are a large number of international students in the unit. Many students in the cohort are first-in-family to study at university. Many have never used a Learning Management System (LMS) before, therefore their first experience navigating through the Information and Communication Technology (ICT) systems used by the university and encountering the LMS can be a confusing one.

Based upon previous student feedback, the Learning Designer and Unit Coordinator worked to design a way to reduce the confusion and streamline the navigation of the content and weekly learning activities. In the development of the new navigation, usability and design principles such as simplicity, consistency and efficiency were applied (User Experience Professionals Association, 2014). The new navigation model was implemented at the start of the semester and student feedback was collected after four weeks of teaching. The feedback was then used to improve the design for the remainder of the semester.

Time for a change

A Learning Management System is a software platform used to deliver online learning content and manage the student learning (Bradford et al, 2007). The LMS used by the university to deliver the learning content for this unit is Blackboard Learn. This LMS has a navigation structure which cannot easily be modified. There are pedagogical restrictions in the design options within the content sections, the most common way of presenting the content is item by item, cascading down the length of a screen. Bates (2018) stated an LMS does an adequate job for managing content but does not allow for a transmission model of teaching where instructors can have control over the content development and management. Bates states that the LMS is a convenience for institutions, providing them with a secure environment for storing a course, but does not allow for innovation in teaching (Bates, 2018).

Data collected from student feedback and anecdotal feedback provided to the Unit Coordinator and sessional teaching staff over previous years revealed that students felt confused about what was required of them each week. This feedback was mirrored in other first-year units in the course. Finding the weekly content and then determining what was required and in which order, proved to be a stumbling block for many students. The number of clicks required to get to the content was an obstacle and students reported their frustration at having to scroll down on each module page to find the content they needed. This is one of the legacies of the LMS, as over years it has become a "digital filing cabinet" of learning materials (Bates, 2018). Each content item is displayed on a page or within a folder, making levels of information that can be hard for students to navigate through.

The weekly image maps

The Learning Designer and Unit Coordinator began by mapping what was required from the students for each week of the semester. There were a large number of tasks and learning activities to be completed each week before attending a weekly tutorial class. The learning tasks included watching a number of short interactive lectures; completing a worksheet to bring to the tutorial; reading journal articles; and completing a formative quiz. Online students were required to complete all the tasks and work through an online tutorial activity. Optional "homework" activities are available but not formally assessed. Students are encouraged to complete all activities in order to ensure success in their assessments. As there is no face-to-face lecture content delivered, the information of what is required each week needs to be made explicit within the content area of the LMS. Previously this information had been delivered via the announcements area of the LMS, but students remained confused as the information was not linked directly to the weekly learning materials.

Dawley (2007) states the organisation of the content in a course can prove the difference between the success and frustration for the student. A well-organised unit design can provide students with the visual clues for thinking about the organisation of the content and this can carry through to their retention of the content. The time a student spends in a course should be used for learning, rather than navigating and deciphering how the course works and where the content is stored (Dawley, 2007). A novice online learner can be prone to cognitive overload where content does not follow a linear or logical sequence (Clark and Mayer, 2016).

The Unit Coordinator requested a design that included everything needed for the weekly materials to be located in the one place, with no scrolling or clicking into subfolders to locate the materials. The Learning Designer investigated a way to display a diagram which would step students through the requirements for the weekly learning activities. A visual course map can be useful to students allowing them to view a hierarchy of the course materials, providing an orientation to the course content (Dawley, 2007). A visual representation was required, that would enable users to easily navigate the materials, giving obvious signposts and visual clues, allowing users to get where they needed to go without becoming frustrated. After researching different infographic and timeline designs, a "weekly image map" was developed, which used a timeline sequence, stepping students through the requirements for the week.

In the design of the timeline white space was used to lessen the confusion and draw the viewer directly to the information along the central timeline (Golombisky and Hagan, 2010). Icons were selected and used to represent each weekly activity. The icons were chosen to give a visual clue as to what each activity involved. Based on the principles of usable design, using the same icons consistently in the weekly maps allows the student to become familiar with what is required each week at a quick glance (User Experience Professionals Association, 2014). Originally, the design for the timeline and icons was to make the icon itself a clickable hyperlink leading to a resource. However, the variation in the number of resources for each activity did not allow this in the design. A text hyperlink was added next to each icon to describe the resource. By adding a text link for each

resource, the image map became a one-click map, which was part of the original specifications. The text on the map was underlined to act as a visual clue to students, indicating the text elements are hyperlinks.

The Unit Coordinator requested that each weekly image map be made a different colour to allow students to differentiate between the weekly maps. Colour can be used as an organisational tool, indicating what goes together (Golombisky and Hagenm, 2010). In this case, it was used to differentiate between the weekly image map. It also is used to draw the user's attention to a focal point and help the user follow the colour through the design.

To create an image map that could be easily edited by the Unit Coordinator, the map was developed as a clickable Portable Document Format (PDF) file. Ideally, to display a graphic online, a Cascading Style Sheet (CSS) and Hypertext Markup Language (HTML) would be used. The LMS was able to display an image within the unit but did not allow for the interactivity of hyperlinks within the image. Developing a graphic using CSS and HTML code was not achievable in the project timeframe. The Unit Coordinator was also unfamiliar with HTML coding therefore any future updates and maintenance of the maps would not be sustainable. A PDF image map however could be displayed in the LMS and easily edited using PDF software, which was available and familiar to the Unit Coordinator.

In order for the design to become sustainable for future semesters, the hyperlinks were added as permanent links, rather than direct links within the version of the unit. This drove the decision to store the materials outside the LMS. The weekly learning resources, were stored outside of the LMS in a cloud-based storage area and permanent public links were used within the map to access the resources. Figure 1 shows the first iteration of the weekly map which was implemented in weeks one to four in the unit.

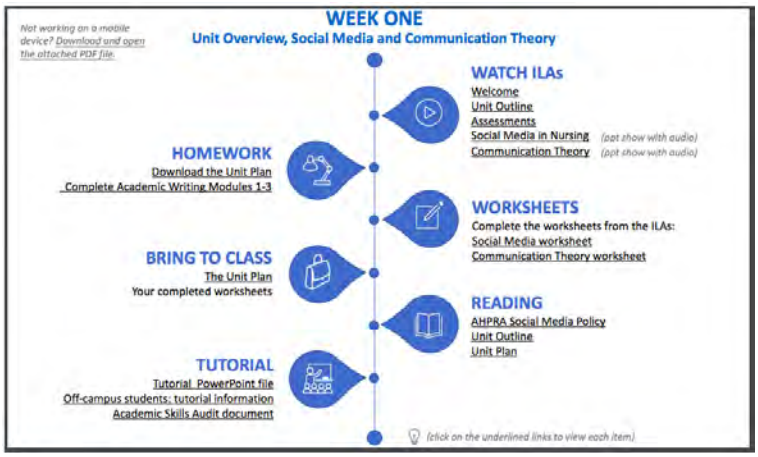

Figure 1: Week one image map

Once the design of the image map was complete, the map was replicated in other areas of the unit. The assessment and revision sections of the unit site were displayed in an image map to ensure the information for students appeared in a consistent manner throughout the site (see Figure 2).

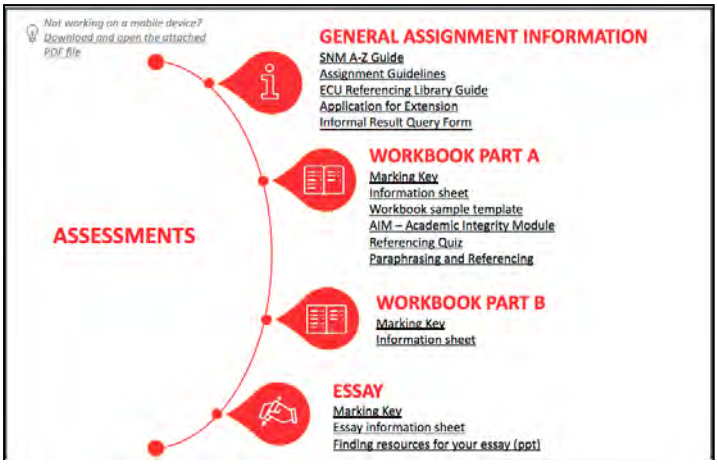

Figure 2: Assessment image map

Student Feedback

A survey distributed in week four of the semester gathered feedback on the weekly image map design. Approximately 250 surveys were completed, and the majority of the student feedback was extremely positive with many commenting that they were finding the unit the easiest to navigate compared to their other units. The students liked having everything in the one place and found it very clear and easy to access the materials. Some students commented that they liked to print out the weekly map and use it as a visual checklist of what needed to be completed, ticking off the elements as they completed them. Some examples of positive comments included, "User friendly compare (sic) to other units. Two thumbs up!", and, "everything is perfect and I can say that it's the best amongst the blackboards I've encountered". Comments relating to the image map itself included, "So good because everything is in one place and it's easy to tell what task you're up to!", and, "it works for me, a lot easier to understand than it was before". Some students repeating the unit had experienced the previous version of navigation, before the image maps were implemented. Sessional teaching staff also provided feedback on the differences between the two version of the unit. These students and staff both commented that they found the unit much easier to navigate after the changes were made and were very happy with the improvements.

The initial feedback from students via email and posted to the online discussion board showed there were some issues the Learning Designer had not foreseen. Testing the image map in various browsers had not revealed these issues. Students were able to feedback more details about the internet browser application and version they had used to access the map, and via which hardware device and operating system also. Some combinations of browser software and hardware device did not display the image map as it had been intended. One Macintosh browser application displayed the learning materials within the same frame as the map, rather than opening them fully within the browser window. As computer platform or browser issues arose, students were given the instructions to resolve them. Often updating their browser software or using the alternative link to download the PDF version of the image map, solved these issues. The weekly image map did not function as intended when students accessed it using the LMS mobile application software. The image map displayed in the application, however the hyperlinks were not clickable by the user. To inform students of this issue, a note was added to the image map with instructions for opening the attached PDF version of the map.

One issue that occurred across all browser applications was there seemed no way of forcing the hyperlinks to the learning materials to open in new or separate tabs from the image map itself. There are varying opinions amongst web designers as to whether external links should be displayed in a new browser tab or window, with some preferring to keep users within a site and others preferring external links opening in new browser tabs (UX Movement, 2012). The PDF image hyperlinks did not allow the option of opening the link in a new window or tab. Many software browser applications allow users to set their own preferences for opening external links in new tabs. The students were informed that they would need to use the back button in their browser to return to the image map. This issue did not hinder the students and was not mentioned in the feedback.

Improvements made based on feedback

At the end of the survey, students were asked, "does the flow of the weekly map work for you or can you suggest another format?". From this open-ended question, the Unit Coordinator and Learning Designer determined if any improvements to the image map could be made. In response to the feedback, quality improvements were made to the maps from week five to the end of the semester.

A change requested by students was to add the time required to complete the short interactive lectures and learning activities. This aligns with research in the area of time management for online students, with online students not understanding how much time to allocate to different learning tasks and preferring to have clear guidance about how to manage their time (Bach, 2007). The design of the map was altered after week five to include the approximate time required to complete the learning activities (see Figure 3, point 1).

Another request from students was to provide a copy of the recording in the multimedia file format MP4. This feature was included in the improved design, giving the option of downloading and viewing the original file or the multimedia file format MP4 version. An issue associated with the MP4 version was that the hyperlinks included within the presentation did not work on playback within the cloud storage platform. To inform students of this issue a note was added to the image maps and students were informed of the issue by the Unit Coordinator (see Figure 3, point 2).

Another suggestion was to change the ordering of the items in the timeline. The order in which the Unit Coordinator and Learning Designer had placed the activities was based on their perception of what needed to be

done weekly but this was not congruent with the logical order according to the students. Students requested a slight change, wanting the quiz and homework activities moved to the final positions in the timeline (see Figure 3, point 3).

There were a number of queries regarding the quiz activity asking whether the marks for the activity would be recorded. The Unit Coordinator requested the title of the quiz activity change to include the word "ungraded", to clarify that the quiz activity was ungraded and was an optional learning activity for students to test their knowledge at the end of the weekly module. The quiz instructions included this information and were displayed once the quiz was opened. Adding it also to the image map seemed to reassure students, before they opened the quiz itself.

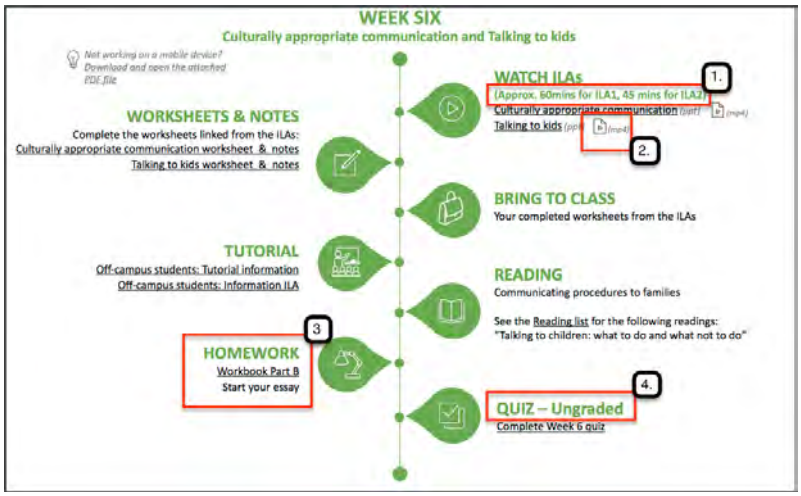

Figure 3: Changes made to the weekly image map

Conclusion and future directions

This paper highlights the development of an alternative way of displaying weekly learning materials to first-year students. An image map was designed to overcome the confusion felt by students when using a learning management system for the first time, and to minimise the number of clicks and scrolls required to access the information which is normally displayed in a long page design dictated by the learning management system. The basic principles of design and usability, as well as online navigation were used to design the image map. Initial feedback from teaching staff and students has been very positive. Quality improvements were made based on student feedback. Future directions include the fine tuning of the map to eliminate the need for updates after each teaching period and to explore different ways of displaying the map in the LMS, to overcome issues encountered surrounding different display depending on browser software and hardware platform used.

References

Bach, S., Haynes, P., & Smith, J. (2007). *Online learning and teaching in higher education*. Maidenhead, Berkshire, England: Open University Press.

Bates, T. (2018, July 23). Why is innovation in teaching in higher education so difficult? 3. Learning management systems. Retrieved from https://www.tonybates.ca/2018/07/23/why-is-innovation-in-teaching-in-higher-education-so-difficult-3-learning-management-systems/

Bradford, P., Porciello, M., Balkon, N., & Backus, D. (2007). The blackboard learning system: The be all and end all in educational instruction? *Journal of Educational Technology Systems*, *35*(3), 301-314.

Clark, R., & Mayer, R. (2016). *E-learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning* (Fourth edition. ed.). Hoboken, New Jersey: Wiley. doi:10.1002/9781119239086

Dawley, L. (2007). *The tools for successful online teaching (IGI global research collection)*. Hershey: Information Science Pub. https://doi.org/10.4018/978-1-59140-956-4

Golombisky, K., & Hagen, R. (2010). *White space is not your enemy: A beginner's guide to communicating visually through graphic, web & multimedia design*. Amsterdam: Focal Press/Elsevier.

Kift, S. (2014). Student success: why first year at uni is a make-or-break experience. The Conversation. Retrieved from http://theconversation.com/student-success-why-first-year-at-uni-is-a-make-or-break-experience-21465

User Experience Professionals' Association. (2010). Principles for Usable Design. Retrieved from http://www.usabilitybok.org/principles-for-usable-design

UX Movement. (2012, January 31). Why External Links should open in new tabs [Blog post]. Retrieved from http://uxmovement.com/navigation/why-external-links-should-open-in-new-tabs/

Please cite as: Scriven, R. & Crevacore, C. (2018). Reducing the confusion and clicks and its impact on learning. In M. Campbell, J. Willems, C. Adachi, D. Blake, I. Doherty, S. Krishnan, S. Macfarlane, L. Ngo, M. O'Donnell, S. Palmer, L. Riddell, I. Story, H. Suri & J. Tai (Eds.), Open Oceans: Learning without borders. Proceedings ASCILITE 2018 Geelong (pp. 499-504). https://doi.org/10.14742/apubs.2018.1941