A simple time-management tool for students' online learning activities

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Student time-management practices are a significant contributing factor to success in tertiary education, particularly in online and blended learning. In courses where many tasks are set to involve students continuously, a learning management system can be used to structure and assist time-management. This paper reports on the successful development and testing of a simple time-management tool that can assist students within an LMS.

Keywords: time management, progress, participation, retention, learning management systems

Background

Time management is an important skill for students studying in online and blended learning environments (Britton & Tesser, 1991). In a highly technical course, such as the introductory programming course used as a setting for this study, failure rates are often high (Biggers, Brauer, & Yilmaz, 2008) and affected by students dropping out before completing (Kuinnunen & Malmi, 2006). To increase retention, students can be given regular, small-scaled assessable work throughout a course, but this increases the need for greater time-management.

Figure 1: The progress bar

To encourage student time-management, a simple tool called the *Progress Bar* (**Figure 1**) was developed, which visually summarises tasks that the student is to complete. This tool is integrated into a learning management system (LMS) and automatically draws together information about the current student's participation in various activities such as quizzes, assignments, discussion forums and accessing resources.

This paper begins with a review of time management literature, focusing on online and blended learning in a tertiary setting. A description of the context where the Progress Bar was evaluated is then given. In the next section, work completed to develop the Progress Bar and measure its impact is described. Results from this evaluation are then reported. Finally the results are discussed and future work is suggested.

Importance of time management

Time management is a task that many tertiary students have difficulty with; according to Vaughan (2007, p. 86) "Time management is a struggle for many undergraduates. This struggle can be particularly acute in a blended course where online activities are required to be completed between face-to-face classes." This challenge is even more a problem for overseas students studying in Australia (Alam & Collings, 2005).

Table 1: Results from Britton & Tesser (1991) examining the importance of time management

Variable	Correlation to final GPA
Time Attitudes	0.39
Short-range planning	0.25
SAT entrance score	0.20
Long-range planning	-0.10

To understand how important time management skills are, Britton and Tesser (1991) conducted a four year study that measured the time-management practices of students as they began tertiary study, and correlated this against their success at the end of their degree program (summarised in **Table 1**). They found that short-range planning and positive time-management attitudes were better predictors of final grade point average than entrance scores. Ironically, this study found that long-range planning was negatively correlated to success, indicating that students who plan for the short term (days or a few weeks) are more likely to succeed than students who plan in a wider time window.

Dabbagh & Kitsantas (2005) found that the Web-based pedagogical tools of a learning management system (such as calendars, projects, discussions and course information) can support self-regulated learning. A statistical analysis of student survey responses found a significant effect from these tools on time management and planning.

Context of testing

The Progress Bar was piloted in a first year, university IT course which involved 139 students studying online (72%) and in a blended learning setting (28%). Teaching was conducted through *workshops* which included short periods of didactic teaching followed by practical exercises, a cycle which repeated several times in each weekly workshop. Text and captured video recordings were presented to online students. Formative exercises conducted in workshops involved small programming exercises, discussions and searches for online course-related information. Summative assessment consisted of weekly quizzes, each with a small incentive value, and five electronically submitted assignments. The summative assessment was designed to encourage continuous involvement in the course. At the end of the semester, a traditional, paper-based exam was used.

Details of workshops and summative assessment items were released in a scheduled manner, roughly two weeks ahead, which allowed students to conduct short-range planning.

With several tasks to complete each week, throughout the semester, it was felt that students would require assistance to manage their time and their progress in the course.

Work undertaken

The Progress Bar was conceived as a tool to provide a simple representation of tasks that students needed to complete in a course. In this section, details of the Progress Bar and how it can be used are described. Following this, a description is given of how the Progress Bar was tested, specifically in relation to impact on retention and measured student attitudes.

Development of progress bar

The Progress Bar was developed as a *block* for the *Moodle* learning management system. One or more Progress Bar blocks can be placed on a Moodle course page. In the context of this study, a single Progress Bar block was used and placed in a prominent, top-left location on the course page, obvious to students.

The Progress Bar is passive, in that it shows progress that takes place in other, pre-existing activities and resources of the LMS. It draws on information already stored in the LMS database. In itself the Progress Bar is not used to create activities, and does not maintain any student information.

Figure 2: Selecting tasks to show in the progress bar

To add tasks to the Progress Bar, the instructor will first create the activity or resource as they normally would. The instructor then selects the task from a list (as shown in Figure 2) in the block configuration, and checks the date and time associated with the task. The selected tasks are then presented as sections of the Progress Bar, organised chronologically (as shown in Figure 1). Student participation in tasks is checked when the student visits the page and is indicated using colours: green for complete, red for incomplete and overdue, and blue for incomplete but in the future. An indication of the current relative point in time is indicated.

Measurement of impact and student attitudes

To measure the impact of the Progress Bar on student retention, participation rates in the assignments and exam were measured and compared to those of previous semesters.

To measure student attitudes, a survey was conducted, after the final assignment deadline and before the exam. This anonymous questionnaire was conducted through Moodle's Feedback survey module; to maximize the number of responses the survey activity itself was added to the Progress Bar. The survey contained seven questions related to the Progress Bar, including five five-point Likert scale statements, a question asking what content students felt should be shown in the Progress Bar and the potential to add a free-form comment.

Results

Retention

As shown in Figure 3, retention in the first semester of 2009, where the Progress Bar was used, improved somewhat from two previous offers. Most notable is that the number of students dropping the course in the first weeks is much less pronounced, possibly as a result of more effective communication of requirements. As the Progress Bar is only one method used to encourage maintained participation in the course, this preliminary result needs to be backed up with additional studies in other courses.
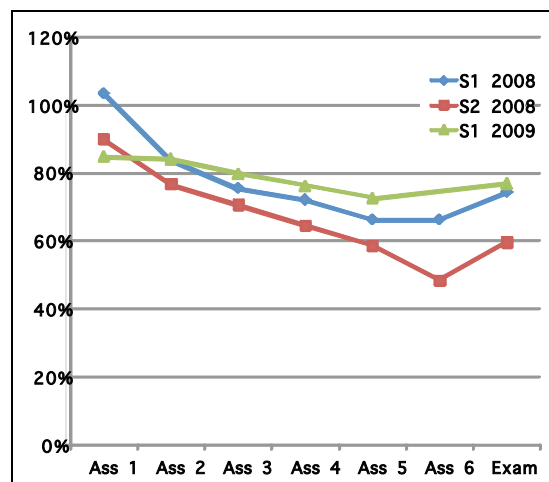

Figure 3: Participation in assignments and the exam

Student attitudes

Seventy-six survey responses were recorded, corresponding to a response rate of 55% when measured against initial enrolments (*n=139*), and to 75% when measured against the total number of active students at the time of the fifth and final assignment (*n=101*).
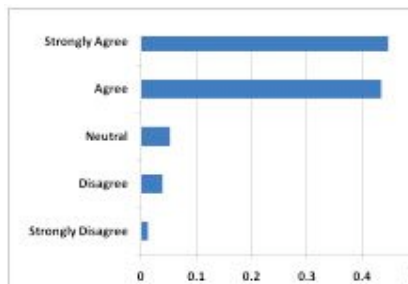

Figure 4. The progress bar was an obvious sign of my progress in the course
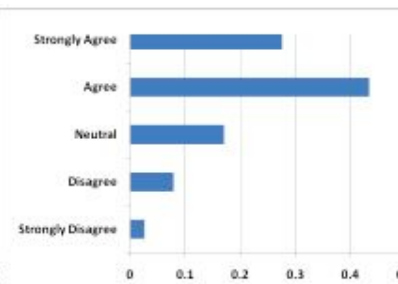
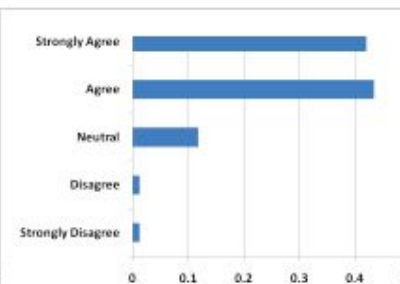Figure 5. The progress bar helped me manage my time by showing me what I needed to complete in the course

Figure 6. I would be happy to use the progress bar in other courses

In response to the first question (Figure 4), 88% of respondents (*SA=34, A=33*) agreed that the Progress Bar presented an obvious sign of their progress in the course. One student commented, "The progress bar was a great indicator for me. If I didnt (sic) realise the next workshop was available the progress bar would be right in my face telling me when it was".

More importantly, 71% agreed (SA=21, A=33) that the tool helped them manage their time (Figure 5). One student commented "the progress bar actually reduces stress as I know at a glance exactly what work is required to 'keep up', and if I fall behind then I also know what is required to catch up". Not all respondents agreed, though; one commenting, "Not really sure the progress bar really helped at all because I usually use the study schedules as a guide".

Strong support was also evident for making the Progress Bar available in other courses (Figure 6), with 85% (SA=32, A=33) answering that they would be happy to use the tool in other courses. Several students believed that other courses should use the tool: "The progress bar should be implemented in all subjects, especially for external students. Everytime you log in you [know] exactly where you are at and if something knew (sic) and important has been posted you immediately check to see what it is."
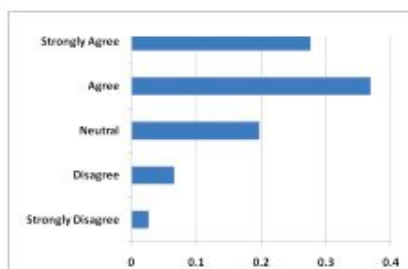

Figure 7. I felt compelled to make the progress bar all green
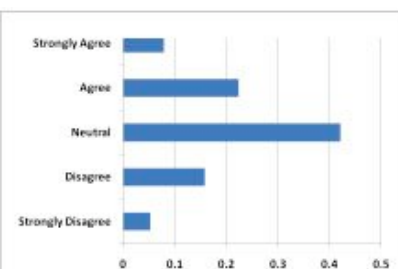
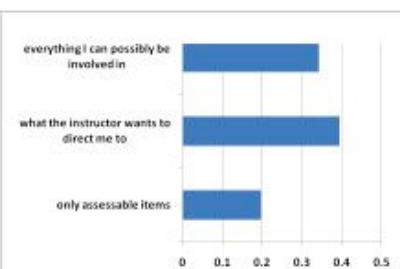Figure 8. I would like control over what items are represented in the progress bar

Figure 9. I think the progress bar should show

The motivation for creating the Progress Bar was to draw on students natural tendency to seek completeness. Some indication that this is true can be gleaned from the responses to the forth question (Figure 7), to which 65% agreed (*SA=21, A=28*) that they felt compelled to make the progress bar all green. Free-form feedback included "I liked this idea. it made me feel compelled to reach deadlines".

The next two questions were included in the survey to test the popularity of a possible future development for the Progress Bar. This concerns allowing students, rather than instructors, to decide the content of the bar. When asked whether students would find this a useful development, respondents were neither strongly for nor against such a change. As seen in Figure 8, 21% (*SD=4, D=12*) did not want such control over the tool, while only 30% (*SA=6, A=17*) said they did. Forty-two percent (*N=32*) were undecided, with another 7% not responding to this question. When given the choice (see Figure 9), a

minority of 20% (*n*=15) would display only assessable items, and 34% (*n*=26) would include everything they could possibly be involved in. Reflecting the neutral outcome to previous question, a further 39% (*n*=30) would default to what the instructor had set as content. One student wrote, *"wouldn't change a thing,"* while another would opt for "maybe two bars, one for assessable items and then everything else".

Discussion

As the use of the tool was intended to improve students' time-management, retention rather than student outcomes, was measured. The use of the Progress Bar seems to contribute to student retention, although this contribution is not entirely distinguishable from other possible influences.

As evidenced by the survey feedback, the Progress Bar was well received by students. Students indicated that the tool was effective in communicating requirements and helped them manage their time. There was no outspoken demand for student control over the content of the Progress Bar, with most seemingly content to let instructors set content. Students were also very clear in indicating support for the Progress Bar to be used in their other courses, some suggesting that it should be made mandatory for externally-taught courses.

Future work

Work is underway to share the Progress Bar with the Moodle Community. Currently the block code is available for trial and comment from the Moodle Modules and Plugins database (de Raadt, 2009). The block has been granted a repository so other programmers can contribute to its source; this has not yet been established. Since the block has been posted requests have been made to add different activity types. Also, a number of database access, internationalisation and colour-blindness accessibility issues have been raised.

Enhancements to the configuration of the block are being considered. In the configuration list, tasks are not ordered within their resource/activity type, and order is needed. Currently, when an activity is first listed, the Progress Bar suggests a deadline based on an activity's deadline, but then maintains its own deadline. Linking the Progress Bar to the activity's deadline would remove this redundancy. For Progress Bar blocks with many tasks displayed, the potential for a moving time window is being considered.

In subsequent discussions with instructors and students there was also a suggestion to create a "root" Progress Bar for individuals spanning all courses they are currently enrolled in. The feasibility of this change is uncertain at this stage.

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