Identifying the characteristics of e-learning environments used to support large units

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The AUTC Large Classes Project articulates specific strategies aimed at improving student learning in large classes. Successful teaching involves good practice in the design of learning activities and assessment, the provision of feedback and support materials for learners. These practices apply to small and large classes, however in large classes the expanding student numbers increase the complexity of teaching these students. At the University of Western Sydney there are 40 units that have student enrolments exceeding 400 students up to over 2000 which all utilise the e-learning environment to support a range of blended learning and teaching activities. This paper will present an institutional case study of how the online environment is used with large classes using the strategies outlined in the AUTC Report.

Keywords: large classes; blended learning; professional development; online student support

Introduction

Large classes are prevalent in Australian universities (AUTC Project 2001 - Teaching Large Classes, 2003). In guidelines prepared by the AUTC Project Team, there were specific strategies to help teaching staff improve the quality of the student learning experience in large classes. Project data was collated in 2001 from 24 participating Australian universities on practices, emerging issues and strategies used to deal with the demands of teaching large classes. The University of Western Sydney (UWS) was a participating university of that project and currently uses the AUTC guidelines in staff development activities for teachers of large classes. At UWS there are 40 units that have student enrolments exceeding 400 students up to over 2000 which all utilise the e-learning environment to support a range of blended learning and teaching activities. How do these units apply the AUTC strategies and techniques in an online context?

From the literature, the design and support requirements of large classes are different to those of small classes (AUTC Project 2001 - Teaching Large Classes, 2003). One study of the use of a Learning Management System (LMS) with a first year on-campus unit with 230 students showed there was great diversity in age, tertiary entrance score, family higher education experience and comfort level with technologies (Steel, 2009). In a large class of over 2000 students the diversity intensifies greatly and students in these classes need to be shifted from passive, note-taking roles through the effective use of technology (Twigg, 2003). This is consistent with the AUTC Project Team findings that with increased diversity of the student population there is increased complexity of teaching which impacts on the academic's ability to effectively motivate students, be organised and provide quality learning.

The diversity of students in large classes also requires diversity in resources that meet individual needs. Green (1992) recommends providing students with additional resources to develop personal study skills and a choice of resources to meet the needs of the individual. In the online environment the distribution of resources to support student learning is well known in the literature (Garrote & Pettersson's (2007), Biggs (1999), McCarr (2009) and Kehrwald (2008)). In large classes this is particularly important, as is the need for students to feel part of a community of learners. Students can feel a greater sense of connectiveness and coalescence when opportunities for communication are in place (Palloff & Pratt, 1999). The use of discussion forums to enhance the communication between teacher and student and between students, with the aim of building a learning community in these large classes, must have a purpose and value outlined

to students and be planned as spaces where students can build trust, mutual respect and support for each other (Salmon, 2000).

The AUTC guidelines outlined that large classes inherently have large numbers of teaching staff and described the importance of ensuring cohesiveness of the curriculum and the results showed the use, in a number of units, of dedicated teacher only content spaces and teacher only discussion topics to foster this cohesiveness which works towards ensuring an equitable learning experience for all students in a unit (AUTC, 2003).

UWS is an on-campus teaching institution with a strategic direction to enhance face-to-face programs with supporting e-learning environments. The e-learning system is an integral part of the learning environment for students with 93% of taught units having an e-learning site.

This paper will present an institutional case study of how the online environment is used with large classes using the strategies outlined in the AUTC Report. For the purposes of this study a large unit has been identified as a unit with an enrolment of over 400 students. The objectives of this study were to revisit the AUTC guidelines for large class teaching by reviewing what is happening online in each large unit at UWS against the guidelines.

Method

A report was generated from the LMS to identify e-learning sites that had more than 400 student enrolments. This report identified 40 undergraduate units in Autumn semester 2009 across all 3 colleges at UWS from the discipline areas identified in Table 1. All units in the study were core units with 60% in 1st year, 30% in 2nd year and 10% in 3rd year.

Business related (including, accounting, law, economics and business management)	Science related (including chemistry, biology and health science)	Social science and humanities related (including education, psychology and cultural studies)	Mathematics and physical sciences related (including statistics and engineering)
13 units	14 units	10 units	3 units

Table 1: Distribution of disciplines of 40 large units in case study

This study was conducted at the end of the Autumn semester using a copy of the original LMS sites. An institutional framework (Rankine & Malfroy, 2006) to explore how the LMS is being used was applied to this study to categorise activity under the sections of content, communication, assessment and explicit learner support. Along with the manual review of each site, the LMS tracking reports provided additional supplemental data. Each site using online discussion was analysed further to determine how the use of discussion was being used to support students and assessment in that unit. Tracking reports from each site were reviewed to establish what tools students were using most. The reports also provided data on how often the unit outline/learning guides for the units were accessed as these two documents are the most important resources for students.

Results and discussion

The results from this study show that there is diversity in the way in which the sites are designed and their inclusions of content, learner supports and activities to engage and support students in their learning. Every site provided a unit outline or learning guide and nearly all sites provided lecture notes to students. There was a rich array of links to scholarly journal articles, websites, podcasts and You Tube videos. A large majority of sites (90%) were more than a document repository. There was varied usage of discussion board activities for communication purposes and every site showed extensive use of announcements to students. A common feature across the sites was the usage of assignment dropboxes, practice quizzes and formative assessment tasks. Another common feature was the links to internally provided explicit learner supports such as checklists, guides on essay writing, referencing and instruction guides for completing assessment tasks.

Table 2: Results of analysis of 40 e-learning sites for large units at UWS

Review framework	%	Most common findings
Content		
Unit Outline/ Learning Guide	100	A unit outline and/or a more detailed learning guide
Lecture Notes	95	Notes on modules, workshops, seminars and/or tutorials. Dedicated teaching staff area for notes and resources
Media used in lectures	20	Lectopia (in pilot in the review period) recordings of lectures Audio recordings of actual lectures
Links to scholarly information (readings)	67.5	Direct links to journal articles or links to book chapters and articles in the UWS Copyright Repository
Links to content	85	Discipline-specific links Current issues and events and industry specific content Videos (including You Tube links) and podcasts Interactive websites with tutorials, quizzes, animations, diagrams
Interactive resources	25	Weekly Captivate material with associated self-test Flash activities Topic based audio and/or video files Case study movies and/or Skills development movies (clinical skills in Nursing units) Media library with audio descriptions
Communication		
Announcements	100	Multiple announcements throughout the semester
Chat	13	Common room only in most cases and not configured for particular purposes or groups or for scheduled times
Discussion	58	Group discussion for collaboration (21.7% of units using discussion) Discussion on weekly readings Weekly debates on issues Discussions on social issues and events Building unit glossary items and definitions Teaching staff only discussion space Other purposes outlined in Figure 2
Mail	43	Students encouraged to send a mail message to staff if an enquiry of a personal nature
Assessment		
Assignment drop box	32.5	A variety of different types of assignment types
Quizzes	45	Quizzes for assessment purposes (does not include practice quizzes and those that do not have assessment marks)
MyGrades	83	Grades were released to students for multiple assessments in the majority of sites
Templates, practice activities and past exams	55	Tutorial questions and solutions Model assignments (some at a variety of grading levels) Marking criteria and standards Assessment task templates Practice quizzes Past exam papers and solutions
Reflective Learning Journal	5	Weekly reflective journals
Surveys	18	Feedback from students
Explicit Learner Support		
Text-matching software	33	Turnitin is linked into the LMS Assignments submitted online through Turnitin for plagiarism reporting and assessment Students submit their assignment for their own plagiarism report before submission of their assessment task as a hard copy or through Assignment tool in LMS
Links to student support materials (internally provided)	97.5	Weekly checklists of blended learning activities Tutorials, guides and/or quizzes on essay writing, referencing, researching, grammar and style Instruction guides for assessment tasks Student Learning Unit and e-learning support available Information about Peer Assisted Study Sessions (PASS) Discipline based support resources Other purposes outlined in Figure 2
Links to student support material (externally provided)	47.5	Links to publishers' websites for learning resources, quizzes and interactive activities, such as MyWriting Lab, MyLaw Lab, (Pearsons), Active Book

The 40 undergraduate units in Autumn semester 2009 that were reviewed for this report were from the discipline areas of business; science; social science and humanities; and mathematics and physical science. Figure 2 shows the results as percentages for all units in each discipline for content, communication, assessment and explicit learner support.

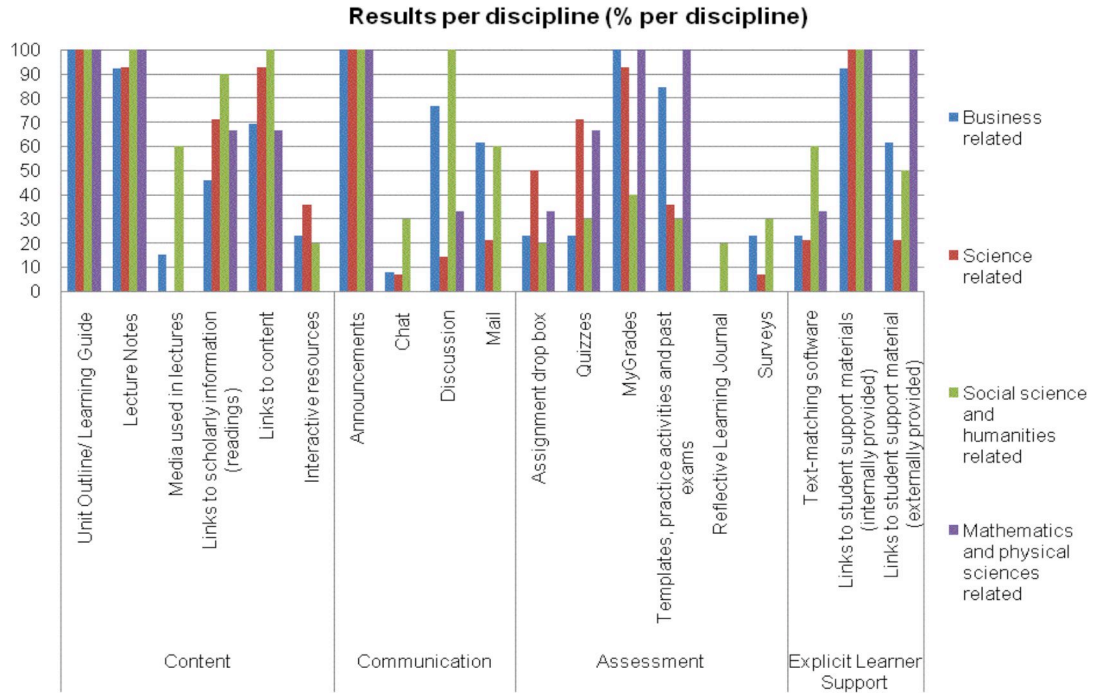

Figure 2: Discipline specific results

Teaching large classes with a range of learning resources

The AUTC Large Class Teaching Guidelines recommend that students are provided with access to a welcoming environment that provides them with essential course information and a range of learning resources. In this study, each unit site had a unit outline and/or a more detailed learning guide available for students. Across the semester, students were accessing the unit outline on average 6.1 times and the more detailed learning guide 6.5 times. Each site contained an enormous amount of content files ranging from lecture notes, discipline-based resources and learner support resources.

All of these 40 units used the enterprise-wide e-learning system with varying degrees of online presence: 40% modest online presence; 47.5% significant online presence; 7.5% web dependant and 5% wholly online. The provision and distribution of learning resources was consistently high across the discipline areas with some instances of interactive and rich media resources. Integrated within the learning resources were instances of learning portfolios where students undertake a ranged of self-directed learning activities (SDLA) to add to their portfolio for assessment. These activities also included individual reflective journals, weekly discussion on readings and case studies.

The use of links to websites was very high at 85% with educational materials such as interactive tutorials, animations, podcasts and links to YouTube videos. This finding is consistent with Green (1992), Biggs (1999) and Kehrwald (2008) viewpoints that learner supports are valuable to learners because they allow them to build their own understanding from a variety of sources so that their learning is a personal construct and enables them to define their learning in their own terms. The use of weblinks ranged from 1-84 weblinks in these unit sites giving an average of 22.8 links per unit.

McGarr (2009) views podcasts as enhancing the flexibility for learners as the podcast can be put onto a mobile device. Consistent with the AUTC guidelines, McGarr (2009) suggests podcasts aid revision and comprehension as students can replay as many times as they wish. In 25% of unit sites, there were some great interactive resources created predominantly by teaching staff themselves using Captivate, Flash and audio and video software.

In reviewing the 40 unit sites, it was found that only 10% of these unit sites could be classified as document repositories as they only contained documents and in some the MyGrades tool. All other sites provided some use of communication, collaboration, assessment and/or learner support.

Reducing student anonymity in a large class

In a large class, students may feel anonymous and the AUTC guidelines recommended strategies for fostering involvement by students. Figure 3 shows the types of discussion topic/purposes in the study. Some units had one default discussion topic in which all discussion for the unit was conducted whereas other units structured their discussion into a variety of topics for different purposes in line with Salmon (2000). The purpose of discussion topics, predominantly were of a supportive nature (eg questions about assessment tasks, peer assisted study support, etc.) and provided a counselling support role with students supporting each other out-of-hours (Thorpe, 2008; Hannon, 2009). The findings of the study also shows consistency with the AUTC guidelines in that every unit site was making use of the announcement facility in the LMS so students were receiving rapid, consistent and up-to-date information and reminders.

Online collaboration was in place in 15% of units through the use of online group assignments and formal group discussions for set collaborative tasks such as issue debates or discussion on readings. The use of discussion boards was higher across units in the business and social sciences disciplines. Discussion board activities included weekly entries about readings and debates of current issues. Over time this percentage of collaboration may increase as university graduates are expected to be proficient in working cooperatively in disperse teams, making best use of communication technologies (Baskin, et al, 2005).

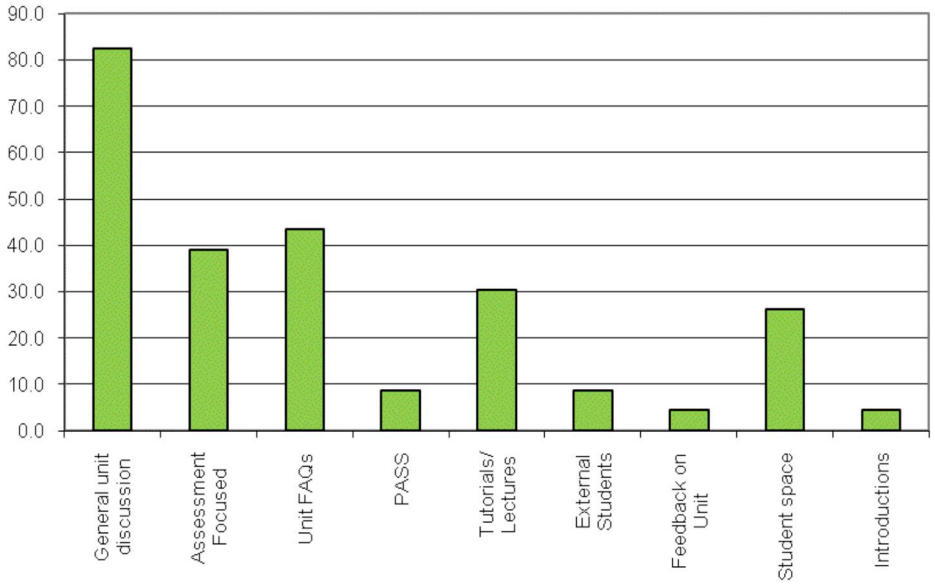

Figure 3: Types of discussion usage for communication and administration as a percentage of the 58% of units using discussion

The review identified many units that had added a discussion topic for each of the assessment tasks in the unit providing students with an opportunity to discuss with other students the tasks and to ask questions of the teaching staff. UWS has a Peer Assisted Study Support (PASS) program and a number of units had discussion topics set up for the PASS mentors to provide support to students online. The Tutorial/Lecture topics were found to provide opportunities for students to seek clarification or to further discuss the issues/topics covered in lectures and tutorials. Some units at UWS provide distance packages for a small number of external students and therefore the inclusion of a dedicated topic for these students provided them with support from other external students and access to teaching staff for their own specific purposes. To enhance the ability for students to feel part of a community of learners and to personalise large classes, some units had topics specifically for students to talk to each other consistent with the viewpoint of Palloff & Pratt (1999).

The discussion tool was in the top 3 accessed tools in 87% of the sites using discussion which is consistent with the findings of Dawson et al (2008) where the discussion tool, along with a content page (file) were the dominant tools.

In one unit, it was found that students had access to an online tutor who responded to all enquiries on the discussion board and provided more one-on-one tutoring for students identified early in the semester as 'at risk'. The use of an online tutor is suggested by James (2007) as a way of providing students with short turn-around responses to their questions and concerns. In a number of units, the teaching staff were supported by administration staff for returning assignments to students, answering administrative type questions on the discussion board and uploading grades. Twigg (2003) argues that not all tasks required in a unit need to be dealt with by academic staff and that other alternatives such as tutors, administration staff or peer mentors may be a more inexpensive option to consider so that the academic can concentrate on academic rather than logistical tasks.

Planning and conducting assessment

The AUTC guidelines suggests there can be a place for computerised testing for the purpose of assessing basic knowledge and skills and as a way of reducing the marking load. In 62.5% of units reviewed in the study, quizzes were used for assessment purposes (45%), practice quizzes and mastery tasks. In units with quizzes for assessment, there was an average of 3.5 quizzes due to the use of weekly quizzes in a number of units.

With 45% of these units using quizzes for assessment tasks, it was found that low marks were assigned to them thereby not high weightings when there is a risk of collusion or the identity of the person completing the quiz cannot be assured as argued by Kremer (2004). In the quizzes used for assessment, there was a maximum weighting of 20% for a quiz down to a minimum of <1%. Weekly quizzes, in each case, ranged from 2.5 to <1% in weighting.

Question sets and question alternates were used in 98.4% of quizzes used for assessment. Quizzes configured in this manner offset some security concerns through the use of randomised question sets so each student would receive a different combination of questions. It was also found that in 47.6% of the quizzes used for assessment, a timed duration had been set limiting the students' opportunity to collude or research the answer. Student ownership of their learning process through the use of feedback in progress tests or practice tests is consistent with the need for students to practice and personalise their learning and if the use of multiple choice testing forms a small part of the assessment mark they may act as a motivator for students to learn material on an ongoing basis. Twigg (2003) suggests online quizzes as a way of automatic grading, providing feedback and recording progress in place of weekly homework grading. The use of weekly quizzes is in line with the AUTC guidelines and the viewpoint of Thorpe (2008) that assessment tasks are critical in the few weeks of semester and that study tasks should be included during this period.

A number of units had a Unit Orientation Quiz that was not assessable but on completion of the quiz students received extra support materials using selective release or as a mastery task only with no assessment weighting applied. The purpose of the Unit Orientation Quiz, in the units where used, was to ensure students had read the unit outline and understood the assessment requirements, attendance requirements and UWS policies such as student misconduct and plagiarism.

Assignments were used in 32.5% of these 40 units with an average of 2.9 assignments per unit submitted online. There was a range of assignment types from project documents, presentations, debate summaries, research, annotations, case notes, reviews and critiques, concept maps and reports, completed workbooks, poster and essay development stages.

The tracking data within the LMS, showed a high number of students accessing the release of grades function and high access levels of this facility was evident in most sites. The release of grades was one of the third highest used tools and is a strategy consistent with the AUTC guidelines as it provides affordances for teaching staff in managing grades especially with multiple teaching staff at UWS across multiple campuses. The high access levels could be construed as students waiting for the release of grades and feedback on their assessment tasks and checking this tool every time they accessed the LMS.

Explicit learner support

There was a wide range of learner supports, as outlined in Table 2. An interesting finding was the large number of unit sites that had discussion topics for each of the assessment tasks in the unit and that these were highly utilised by students. As suggested by Twigg (2003) students are able to receive assistance, not just from their tutor but from students as well. This helps them feel part of a learning community which she sees as crucial to their persistence, learning and satisfaction.

In 97.5% of units, learner support was available online to students with the common forms listed in Table 2. The one unit site that did not provide any learner supports was a document repository type of site but this site did make available past exam papers and solutions, thus this was a small way of providing learner supports. In reviewing externally provided student support materials, it was found that 48% of these large units were using publisher's websites but it was evident that these were used for non-compulsory activities in all but one unit where the tasks were assessable.

Conclusion

The results of the pilot study show that the AUTC Large Class Teaching Guidelines are relevant to a university that has extensive e-learning activities. The findings of the study will be used to update existing professional development available to UWS staff teaching large units and has resulted in the planned development of exemplar sites showcasing the diverse ways in which e-learning sites can be set up for large classes. These exemplars will be useful to teachers of all large classes not just those with classes above 400, and will be based on: affordances for the teaching staff to help them effectively and efficiently manage the administrative tasks associated with teaching large numbers of students; models of structuring discussion to meet particular student needs and purposes; the use of synchronous chat with large students numbers; the use of the online environment for small group work in large classes; and the use of varieties of e-media types to allow students to personalise their learning based on their own individual needs.

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