

Blackboard utilisation in engineering courses and digital divide - the case of FET/UB

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ABSTRACT: Blackboard is a computer-based learning platform that enhances communication between educators and learners mostly in higher education institutions. However, it is through its optimum utilisation that the potential benefits it offers can be fully realised. This article presents a study that was carried out at the University of Botswana, Mechanical Engineering Department, to analyse the utilisation of Blackboard by both learners and educators from the students' perspective. A discussion of the challenges and potential strategies to overcome them is also presented. The results of the study indicate that there is still a large proportion of learners and educators who scarcely utilise the Blackboard learning platform as a tool for effective teaching and learning.

INTRODUCTION

It goes without saying that in the past few years, education has gone from a concern of governments to an imperative for change on which the very future of both individuals and nations rest. The world is undergoing dramatic and unprecedented changes in this age of increasing globalisation. The knowledge and information technology revolution, as well as many growing social and economic trends, have changed how people live, how organisations do their business, and how well countries perform in the global economy. Key among factors is the creation of a high-skilled workforce with the ability to access, adopt, apply, and create new knowledge and technologies. National education and learning systems thus play a major role in improving a country's development competitiveness. It becomes imperative for countries to create competitiveness, not just of physical infrastructure and materials, but of human skills on the individual, organisational and community levels. This implies new challenges for developed, as well as developing countries' education and learning systems to educate more, better, and over a lifespan [1].

LEARNING MANAGEMENT SYSTEM IN A HIGHER EDUCATION ENVIRONMENT

Learning platforms vary considerably, but each should provide a range of ICT-based functions. These include providing a platform for course development work and automatic testing of students to see if knowledge transfer is really occurring [2]. A secure Learning Management System protects private training resources, such as procedure and policy manuals and other sensitive files. It retains records and monitors learners' progress, allowing one to measure whether training investment is really worth it. Modern Learning Management Systems support interactivity and multimedia, making learning more effective and interesting [3]. It provides content management, that, enabling teaching staff to create, store and repurpose resources and coursework, which can be accessed on-line. Curriculum mapping and planning is also possible through provision of tools and storage to support assessment for learning, personalisation, lesson planning, etc. Communication tools such as email, messaging, discussion forums and blogs should be adequately provided.

GENERIC FEATURES OF A LEARNING MANAGEMENT SYSTEM

Considerations to be made on selecting a competitive Learning Management System include ease of implementation with minimum programming. The system should have a robust feature set or can be a collection of documents for on-line viewing. It should also have basic capability to support multimedia files such as Flash, streaming video and audio narrations, and should be a Web native solution, using open standards like HTML, SQL and HTTP. The product should be widely accepted in a variety of industries, rather than being a limited niche product. The Learning Management System should support instructor-led training, self-paced automated training, as well as classroom (off-system) training. It can also support skill groups or certifications, so one can track learners' progress toward a defined goal. The Learning Management System should be capable of seamlessly pulling together content from various sources and formats.

STRUCTURE AND FEATURES OF BLACKBOARD LEARNING PLATFORM

The Blackboard Learning Platform is an all-inclusive package, complete training system with all the streamlined tools needed to develop and track live training. These features include a secure hosted environment with full menus, a complete management guide for quick setup, a content authoring guide, on-line multimedia Help system and flexible learning templates and the latest in best practice. It also has technical support from software developers [4]. The other exciting feature about Blackboard is the capability to re-use existing training materials. One can re-use learning material such as procedures manuals, charts, diagrams, forms, Web pages, PowerPoint presentations, movies and audio files. Often these materials can be used and tracked as learning objects with no changes at all. In other cases, one can adapt content to a faster, more interactive format. Either way, Blackboard allows one to re-use learning content as many times as may be desired. Figures 1-3 below show the tools under tab categories of Build, Teach and Student View.

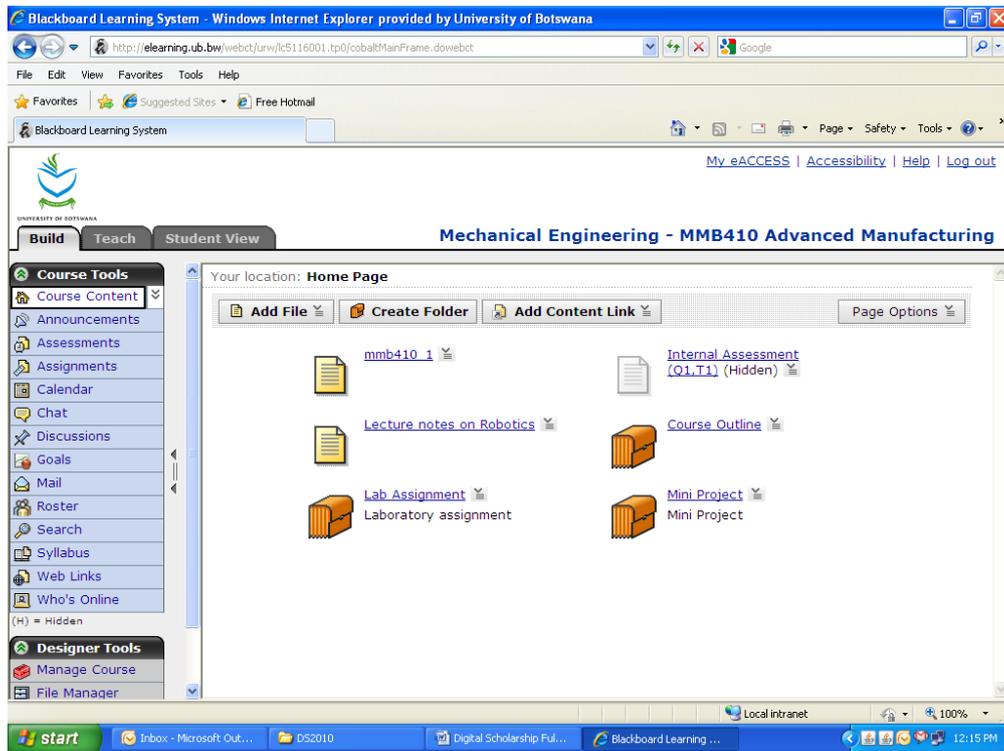


Figure 1: Build.

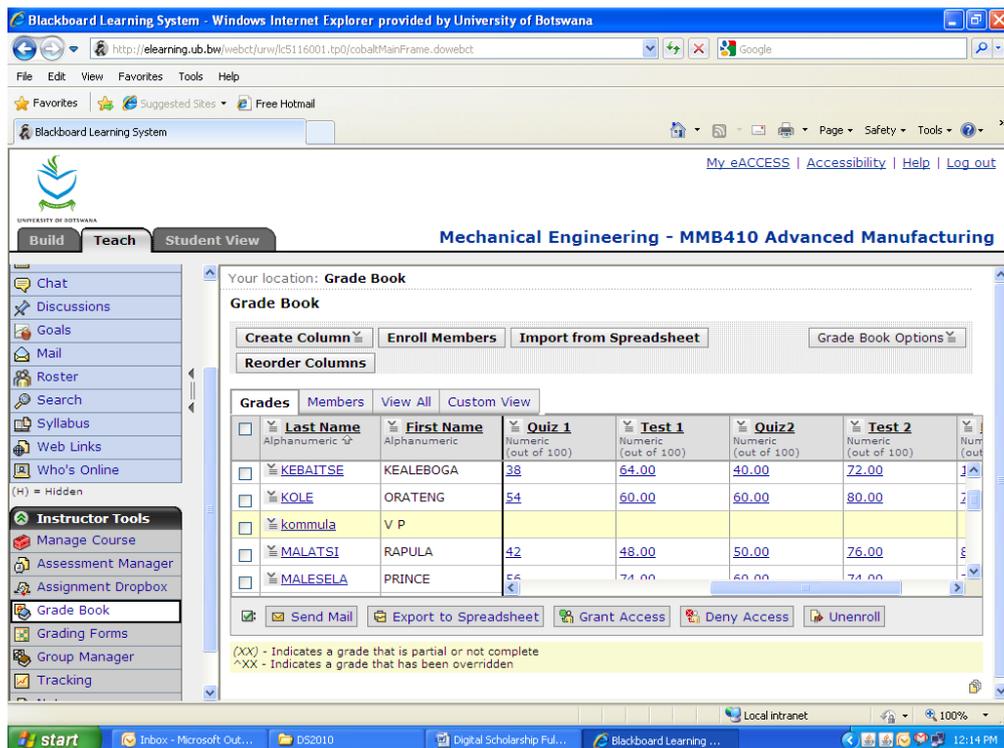


Figure 2: Teach.

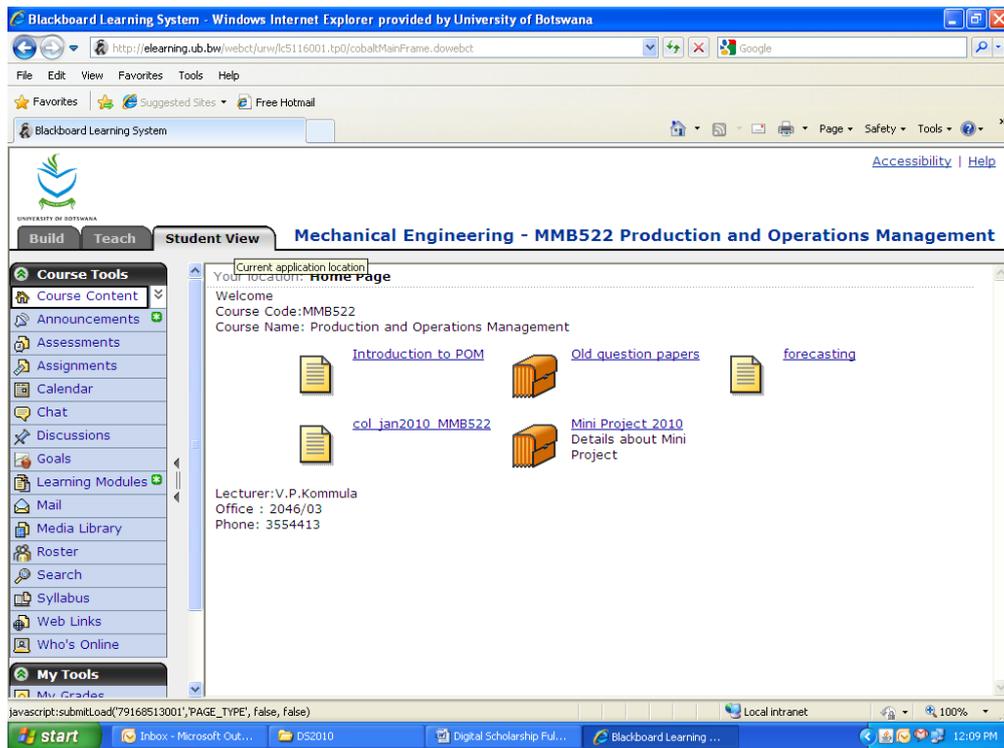


Figure 3: Student View.

THE CASE STUDY

To assess the utilisation of the Blackboard platform for teaching and learning at the University of Botswana, the authors carried out an investigation through sampling the Department of Mechanical Engineering, levels 200 (MMB 221 - Computer Aided Drafting) and 500 (MMB 522 - Production and Operations Management) classes in particular.

A detailed questionnaire was prepared for this purpose and used to collect data from students. Data were collected under such categories as use of Blackboard tools for learning, communication, assessments, proficiency of using Blackboard, difficulty in using Blackboard, effectiveness of Blackboard as a learning platform, and provision of training for students on using Blackboard.

Open ended questions, which formed part of the questionnaire, were also used to capture the nature of problems faced by students regarding usage of Blackboard platform, and what they perceive to be potential solutions to enhance effective utilisation of Blackboard as a platform for learning and teaching. Figures below summarise data collected [5][6]. Data is presented as percentages of respondents under each category of interest.

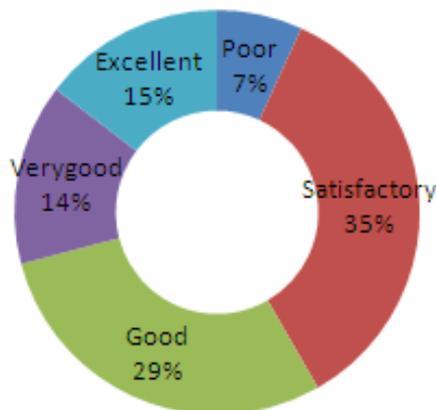


Figure 4a: Learning (200).

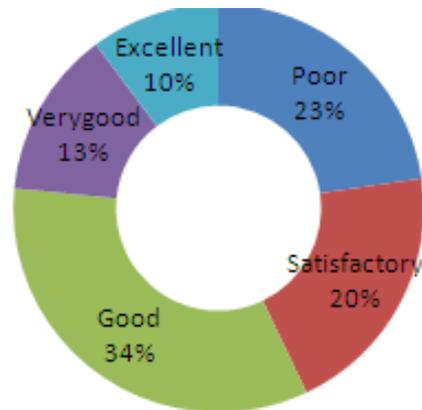


Figure 4b: Learning (500).

The learning section of the questionnaire collected information regarding students' average usage of Blackboard to access teaching material from lecturers, and viewing of course outlines and grades. The above graphical representation of data indicates that level 200 students have a higher average usage of Blackboard than level 500 students.

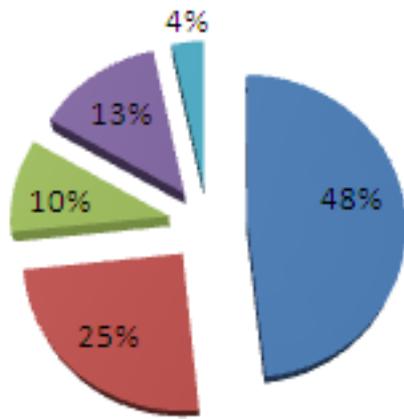


Figure 5a: Communication (200).

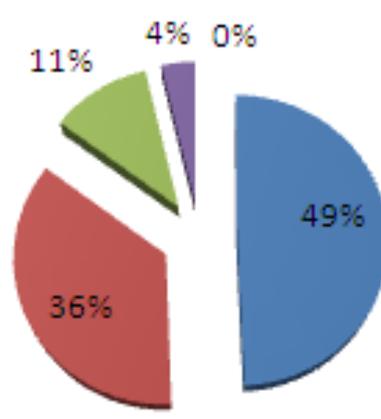


Figure 5b: Communication (500).

Under communication, information was collected on Blackboard usage by students to communicate and chat with cohorts, and to discuss course matters with lecturers. The graphical analysis indicates that both level 200 and 500 student groups' scarcely use the Blackboard for this purpose.

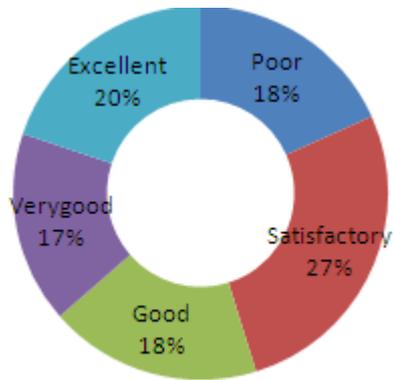


Figure 6a: Assessment (200).

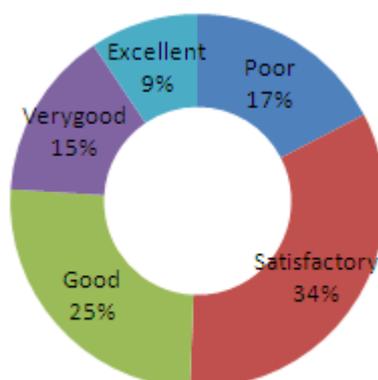


Figure 6b: Assessment (500).

This part of the questionnaire sought to gather information on Blackboard usage to check up assignments, submit assignments, and check internal marks in the Blackboard. Analysis of data indicates that level 200 students have a higher usage of Blackboard for this purpose than their level 500 counterparts.



Figure 7a: Proficiency (200).

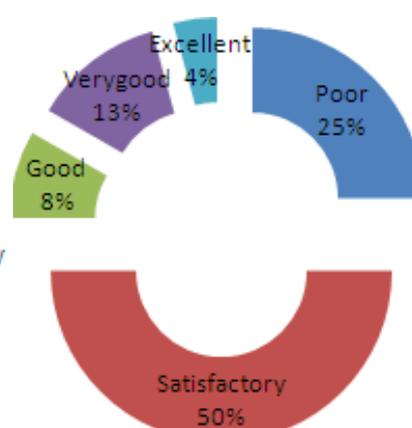


Figure 7b: Proficiency (500).

Under proficiency, data were collected to assess students' ability to use the majority of Blackboard tools. Analysis results indicate that level 200 students have a higher proficiency with Blackboard than level 500 students, although the majority of students are in the poor and satisfactory zones for both groups (75% for level 500 and 40% for level 200).

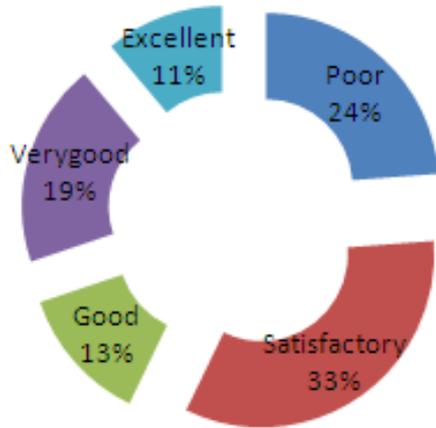


Figure 8a: Application (200).



Figure 8b: Application (500).

This section of the questionnaire sought to collect information on the number of courses that are on-line from students' point of view), and whether or not lecturers are encouraging them to use the Blackboard. Data distribution indicates that 61% of level 500 students fall in the good to excellent zone, against 43% for level 200 in the same zone.

This indicates that above 50% of level 500 courses are on-line and lecturers are encouraging students to use the Blackboard, and less than 50% of level 200 courses are on-line and encouragement from lecturers to use the Blackboard is low.



Figure 9a: Difficulty (200).

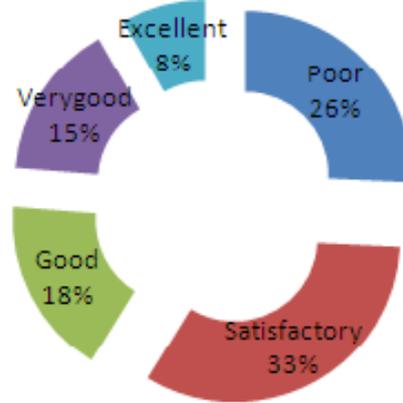


Figure 9b: Difficulty (500).

This part of the questionnaire sought to identify difficulties students face with accessing and using Blackboard. Information sought includes user friendliness of the platform, availability of laboratories/computers on campus, and network availability. Analysis of data indicates that both groups have difficulty with Blackboard utilisation, with a 59% of students for both groups falling in the poor and satisfactory zones.

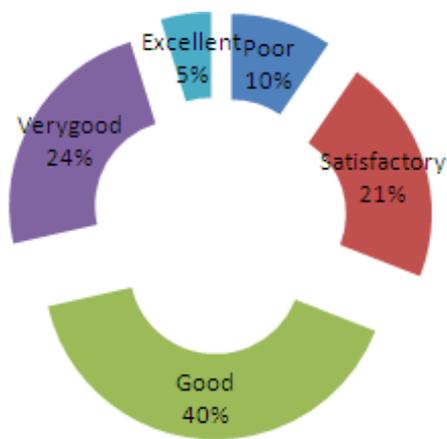


Figure 10a: Training (200).

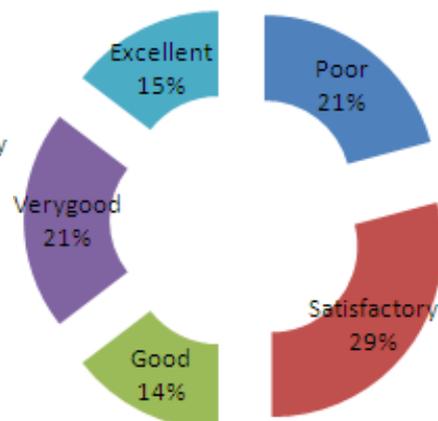


Figure 10b: Training (500).

The training section of the questionnaire collected information on availability and effectiveness of training provided to students on the use of Blackboard. Data collected indicate that 50% of level 500 students fall in the poor to satisfactory zone, with 31% of level 200 students falling in the same zone; 36% of level 500 fall in the very good to excellent zone, with 29% of level 200 falling in the same zone.

DISCUSSION ON RESULTS

The disparity in responses between levels 500 and 200 students indicates that there are factors that may affect one group more than the other, and similarities in other aspects also serve to validate the findings. The high average usage of Blackboard for learning at level 200 indicates that a good number of level 200 lecturers are using the Blackboard more extensively for the purpose of teaching and learning than their level 500 counterparts. This is validated by the fact that level 200 students were found to use the Blackboard much more than level 500 students to check up and submit assignments and to check internal marks. Results also indicate that level 200 students have a higher proficiency with Blackboard than level 500 students, although the majority of students are in the poor and satisfactory zones for both groups (75% for level 500 and 40% for level 200). This trend may be indicative of the perception of the course lecturers toward Blackboard effectiveness as a platform for teaching and learning. Ironically, more 500 level courses seem to be on-line, which may mean that the high student activity on Blackboard at level 200 is only in a few courses that are on-line, and lecturers are promoting Blackboard usage.

The analysis of results also indicates that students are facing difficulties with accessing and using Blackboard. Laboratories available for students to use are neither adequate nor adequately equipped. Network availability is identified as another obstacle to effective usage of the platform and wireless network and bandwidth expansion can, in their view, enable them to access Blackboard from outside the university. Training for students is also perceived as inadequate in their view, which pose a challenge for course lecturers to plan training sessions for their classes in collaboration with CAD.

CONCLUSIONS

This study has investigated the extent to which eLearning facilities provided by the University are utilised to enhance teaching and learning. The results indicate that the facility (Blackboard platform) is not being fully utilised due to reasons that include inadequate laboratories and functional computers, network problems, inadequate training for students on how to use the platform effectively, unavailability of some courses on-line, and lack of encouragement by course Lecturers to use Blackboard as a platform for teaching and learning. The results from the case study classes are deemed to be representative of the experience of the entire student body to a large extent. These challenges, if addressed amicably by responsible authorities, can greatly enhance teaching and learning activities in our institution and see the University achieving its strategic goal of being a centre of academic excellence in Africa and beyond.

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