Sustainable use of MOODLE as a Learning Management System within a School Context

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Abstract

Education Queensland (EQ) schools are increasingly using Information Communication Technologies (ICTs) for student learning and other school functions. EQ is also incorporating ICT applications to streamline school management practices. This research examines the implementation of a Learning Management System (LMS), MOODLE (Modular Object Oriented Dynamic Learning Environment) at a large semi-rural high school. The use of MOODLE is in response to EQ key ICT objectives outlined under the State Government’s 2007 Smart State policy. The research used an exploratory case study methodology to examine the implementation of MOODLE at the school. Sustainability literature was used to examine the key measures to identify changes in ICT practices at the school by students, teachers and other school staff.

Findings from the research revealed that students quickly incorporate LMS features for learning and other purposes. Students’ familiarity with technology influenced the use of new applications and wider application use across the system. Also it was found that teaching practices changed in response to implementing a localised LMS, MOODLE, which in turn resulted in an increased use of the site. The literature identified that a sustainable implementation of ICT practices requires five essential markers to be considered. Identified through this research were the technical considerations in provisioning LMS as well as staff considerations that facilitated enabling use of the LMS. It was concluded from the findings that localised control is a critical component to assure continued growth and sustainability of the LMS. Results from this research are being used to develop a framework for EQ schools to develop their own localised ICT practice within the school community.
Glossary of terms

It is important for this research that the meanings and use of key words, terms and concepts that are used, be made clear because many terms are specific within the context of the research undertaken. This preliminary section describes the terms commonly used in this dissertation as they have particular meaning in the context of this research.

Blackboard

Blackboard is a Learning Management System (LMS) that is used by Education Queensland. The Blackboard Learning System is a web-based server software platform. Features include course management, a customizable open architecture, and a scalable design that allows for integration with student information systems and authentication protocols. It may be installed on local servers or hosted by Blackboard ASP Solutions. Its main purposes are to add online elements to courses traditionally delivered face-to-face and to develop completely online courses with few or no face-to-face meetings.

Information and Communication Technologies (ICTs)

Information and Communication Technologies (ICTs) include those technologies that are used for accessing, transferring, gathering, manipulating and presenting information. These technologies include computers, the Internet, telephone and other electronic devices. The use of ICTs can facilitate information sharing and the development of new knowledge. ICT is also used to refer to the singular expression, Information and Communication Technology.

Learning community

This dissertation will use the meaning of learning community as defined by Sévigny & Prévost (2006, p. 3): “A learning community is a territorial entity in which the population--individuals as well as public/non-public organizations— is mobilized to foster a state of permanent alertness. Members of the public undertake discussions, through ICTs and other means, then try the most productive approaches to development, which as a consequence contributes to collective knowledge. In addition to promoting the use of ICTs, a learning community project can stimulate public participation in community activities, redefine community governance, and give rise to a relational strategy that can generate the knowledge, distinctive competences, and collective capabilities that influence the direction of community development.”
Learning Management System - LMS

This research has adopted the definition of an LMS by Ellis (2009, p 1):

“An LMS… is a software application that automates the administration, tracking, and reporting of training events. A robust LMS should be able to do the following:

- centralize and automate administration
- use self-service and self-guided services
- assemble and deliver learning content rapidly
- consolidate training initiatives on a scalable web-based platform
- support portability and standards
- personalize content and enable knowledge reuse.”

Managed Operating Environment - MOE

MOE within this context refers specifically to the environment operated within all Queensland State Schools. The main objective of the Managed Operating Environment is to provide a standard operating environment for all state schools. This project intends to develop and implement the next version of the standard operating environments for servers and workstations. The proposed features and functions are:

- a proxy solution to facilitate local caching and reduce bandwidth usage
- automated patch management
- remote software deployment
- remote server administration
- enhanced wireless security through certificate and RADIUS services
- the latest anti-virus and spy ware protection (SAV10)
- regionally-based user accounts to enable cross-network access and facilitate secure, simplified sign-ons
- Microsoft Office Professional 2003
- an accredited training program for technical support staff, leading to the issue of the Orange Card. (Education Queensland, 2009b)
MOODLE
MOODLE is a free software package for producing Internet-based courses and websites.
“You are allowed to copy, use and modify Moodle provided that you agree to: provide the source
to others; not modify or remove the original license and copyrights, and apply this same license to
any derivative work” (MOODLE.org, 2008).
MOODLE can be installed on any computer that can run PHP (Personal Home Page) and can
support an SQL type database (for example MySQL). It can be run on Windows and Mac
operating systems and Linux derivatives (Red Hat or Debian GNU). It is the modular nature of
this software that allows specific applications to be trialled within an individual site
(MOODLE.org, 2008).

Microsoft Office Sharepoint Server - MOSS
MOSS in this research context refers to the site-based intranet that can be incorporated within the
local school community acting as an intranet. Intranets are similar to websites, but they are
private and secure. They are used internally within organisations throughout the globe to
communicate important information among employees (Education Queensland, 2007)

OneSchool
The OneSchool program involves the design and deployment of a comprehensive, flexible and
sustainable information management system in Queensland state schools. The OneSchool
program is not just about securing a technology replacement for the current school-based system,
but is concerned with delivering a comprehensive, flexible and sustainable information
management system that will meet the future needs of the Department and schools (Education
Queensland, 2009a).

Online communities
Online communities are communities that feature electronically-based two way communication
and often people identify with each other in discussing common issues.

Professional development
Professional development is the practice of teachers maintaining or developing new skills.
Professional development is facilitated for teachers from internal or external providers depending
on need and expertise. It is critical to building the capacity, capability and sustainability of
Education Queensland (EQ)’s workforce.
Portal
A portal is a website containing information about a community, generally created by either commercial or institutional organizations, with little input or opportunity for interaction by members of the broader community.

RAID
“A RAID 1 creates an exact copy (or mirror) of a set of data on two or more disks. This is useful when performance read or reliability is more important than data storage capacity. Such an array can only be as big as the smallest member disk” (Moodle.org 2008).

Sakai
Sakai is a free open source Learning Management System used by educational institutions or corporations. Sakai is a community of academic institutions, commercial organizations and individuals who work together to develop a common Collaboration and Learning Environment (CLE). The Sakai CLE is used for teaching, research and collaboration. Sakai is a Java-based, service-oriented application suite that is designed to be scalable, reliable, interoperable and extensible (Sakai.org, 2009).

Sustainability
Sustainability is the ability of an educational ecosystem to maintain scholastic processes, functions, diversity and productivity into the future (Vota, 2009).

Sustainable Practice
Sustainability in this context involves finding ways to support groups as they learn about technology, as they identify ways that technology can be used to address organizational and community level problems, and as they develop plans to take on projects involving technology (Merkel et al, 2005, p34)

Virtual network
A virtual network is a group of individuals that discuss common topics and through interactions may develop formal or informal networks. It is the social aggregations that emerge through the Internet when enough people carry on these public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace (Rheingold, 2002)
Web 2.0

The term Web 2.0 covers a range of technologies, services and trends underpinned by the growth of a critical mass of Internet users. It is about using the Internet as a platform for simple, light-weight services that leverage social interactions for communication, collaboration, and creating, remixing and sharing content. Typically, these services develop rapidly, often relying on a large community of users to create and add value to content or data. The availability and ease of use of Web 2.0 tools and services has lowered the barriers to production and distribution of content. Some examples of Web 2.0 services include: social networking sites, blogs, wiki’s, social bookmarking, media sharing sites, rich Internet applications and web “mashups” (BECTA, 2008).
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List of Abbreviations

EQ: Education Queensland
BECTA: British Educational Communications and Technology Agency
UNESCO: United Nations Educational, Scientific and Cultural Organization
UDEP: United Nations Environment Programme
OECD: Organisation for Economic Cooperation and Development
MACER: Ministerial Advisory Committee for Educational Renewal
ICT: Information and communication technologies
LMS: Learning management system
NDSHS: Noosa District State High School
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Finally to my late father Peter “I kept my promise and completed.”
Declaration

I declare that the work presented in this dissertation is to the best of my knowledge and belief, original, except as acknowledged in the text and that the material has not been submitted either in whole or in part for a degree at this or any other university.

The submission of this dissertation is in partial fulfilment of the requirements of the Doctor of Education at the Central Queensland University.

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