LEVERAGING OPEN SOURCE SOFTWARE IN THE EDUCATION MANAGEMENT AND LEADERSHIP TRAINING

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ABSTRACT
The development in information technology has now moved from the first wave that emphasises on computer technical skills to the second wave which focuses on the application and management aspects This paper aims to investigate the use of learning management system among future school heads in education management and leadership. The study was conducted in two phases. The first phase focused on developing a learning management system using open source software - *Moodle*. This phase emphasized on the processes involved in designing and developing the learning management system prototype called *E-Headship*. The second phase evaluated participants' suitability in becoming future school leaders and managers through the use of *E-Headship* for the National Professional Qualification for Headship (NPQH) programme. *E-Headship* was then evaluated in terms of the applications of the learning management system. Sixty (60) participants from Institut Aminudin Baki (IAB) - an institute for training school administrators took part in the study. The data were analyzed using descriptive statistic focusing on reporting of the results in percentile, means, standard deviation and frequency. As it compared the performance results of two groups, a simple T-test was also performed. The results revealed that *e-Headship* has succeeded in promoting teaching and learning strategies to a higher degree. It is hoped that the use of such prototype will help the education institution in designing and developing better programmes that could benefit the participants at large.
Keywords: open source software, education, leadership, management, learning management system, school administrators

INTRODUCTION

The first wave in information technology which emphasises on computer technical skills has now moved to the second wave which focuses on the application and management aspects (Adams & Morgan, 2007). The second wave in online learning technology emphasises more on the administration and management of information technology. In other words, online learning explains how man manages technology in their daily lives. Ready-made software and system are abundant in today's market but the problem remains: how are developing countries use the available software with a budget that fits their pockets? A study has found out that Free Libre Open Source System (FLOSS) is very potential in using open source system and also has contributed to the education system (Ghosh, 2004). A research in Bhutan discovered that poor developing countries have to fork out a substantial amount of their GDP to obtain legal licence and original software (Ghosh, 2004).

Based on the research mentioned, profit is not the main factor in developing open source software. Only 13% of open source users use it to gain profit. Most designers and software users agree that between 70% to 78% use open source based on social principle which is knowledge sharing and learning and developing new skills. Therefore, choosing to operate on open source is a wise decision for non-profit government and non-government agencies (Preston et al, 2010). The main challenge in online technology applications in education management and administration is adapting matters which are related to educational administration policy of a country, pedagogical approaches and learning theories. The understanding of using technology in management and

administration is mostly geared towards the uses of technology in industrial management and not in education. This inevitably call for an effort in developing the technology for online learning that adapt pedagogical approaches and embrace learning theories. In this scenario, there is a need to involve experts in the education field to select the content materials. Research shows that the use of open source in education can benefit the education field. Educators and webmasters could design and mould it in accordance to the needs of the institution (Gosmire et al. 2009)

This paper describes the use of learning management system among future school heads in education management and leadership. The study was conducted in two phases. The first phase focused on developing a learning management system using open source software - *Moodle*. This phase emphasized on the processes involved in designing and developing the learning management system prototype called *E-Headship* for the National Professional Qualification for Headship (NPQH) programme. The NPQH Programme is a one-year course on management and administration leadership designed for school leaders held at Aminuddin Baki Institute, Ministry of Education, Malaysia. The second phase was on the evaluation of participants' suitability in becoming future school leaders and managers through the use of *E-Headship.* It was evaluated in terms of the applications of *E-Headship.*

Open source software - MOODLE

The technology development and advancement accelerates globally. The existence of Microsoft which revolutionised computer software is a mark of that advancement. There is no doubt that computer system designers made a great fortune from their work and gained massive popularity. However, not all system designers design for profit. For instance, *Moodle*, an open source software, which was developed by Martin Dougiamas is one of the examples of software that emphasises on online learning which does not operate on profit. Martin Dougiamas is an educationist who has smartly combined the pedagogical knowledge of education and computer technology together which enriches the education of the 21st century. From *Moodle*, individuals or organizations are given the permission to download the software free of charge and the downloading comes with license (William, 2006). The system is equipped with all aspects of online learning such as the ability to store learning resources, communication and activities that are based on certain learning topics (Williams, 2005). The interesting features of *Moodle* includes downloading and sharing of documents, developing content in HTML, forum or discussions, quizzes, grading, formatted questionnaire, journal writing and other features which are seen as important to the development of online learning.

The programme, *Curriculum, Technology and Education Reform (CTER)* which was executed by College of Education, University of Illinois in 1998 uses *Moodle* (Gosmire, 2009). The programme has successfully produced post graduates who mastered three areas of education: curriculum, technology and reformation in education. The findings encompassed that most in-service teachers gave favourable feedback towards the online learning programme. The CTER programme combines various teaching methods that could promote learners' acquisition of knowledge. Another advantage that was brought in by online learning is the fact that it has changed the society's perception on lifelong learning. Online learning has allowed learners to learn in a virtual world. This, in turn has increased the number of diploma holders as well as those who try to get a degree while working. It has also increased the number of professionals who gained a second degree. This proves that online learning is widely accepted (Norazah, 2002). Although initially the online learning is viewed as any other method of learning, the perception is gradually changing. Many countries see this as an alternative mode in developing and training their human resource. Furthermore, ICT is seen as a 'push factor' that could solve many educational problems across the countries in the world (Levin et al. 2009).

METHODOLOGY

This section details the design and development of the learning management system, using *Moodle* for management and school leaderships, *E-Headship* the National Professional Qualification for Headship (NPQH) programme. The study was conducted in two phases. The first phase focused on the development process of *E-Headship.* The second phase stressed on evaluation of participants' suitability in becoming future school leaders and managers through the use of *E-Headship* for the NPQH Programme. The participants were the NPQH candidates at the Aminuddin Baki Institute (IAB), Ministry of Education, Malaysia. IAB is a training institute on management and educational leadership. It was evaluated in terms of the applications of *E-Headship*.

The process of designing, developing, implementation and evaluation of *E-Headship* was based on the model of Holistic Cycle (Norazah, 2002) and web development model for education (Perrin & Mayhew 2000). The conceptual framework is shown in Figure 1.

In the first phase, during the design process of *E-Headship*, it was ensured that all technical aspects such as the registration process, the main menu, updating content materials, links and arrangement, graphic and user guide were user friendly and learner centred. In setting up the *e-Headship* format, *Dreamweaver* software was used and the PhP configuration system was modified using *Moodle*. In the development of the teaching and learning content, softwares such as Microsoft PowerPoint, Microsoft Word, Flash and Raptivity were used.

In the second phase, the evaluation of *E-Headship* was done in terms of the applications the leaening Management system. The applications involved were the accessibility, registration process, e-content, interactivity and forum/quizzes. Sixty (60) participants who were the NPQH candidates took part in the study. The data were analyzed using descriptive statistic focusing on reporting of the results in percentile, means, standard deviation and frequency.

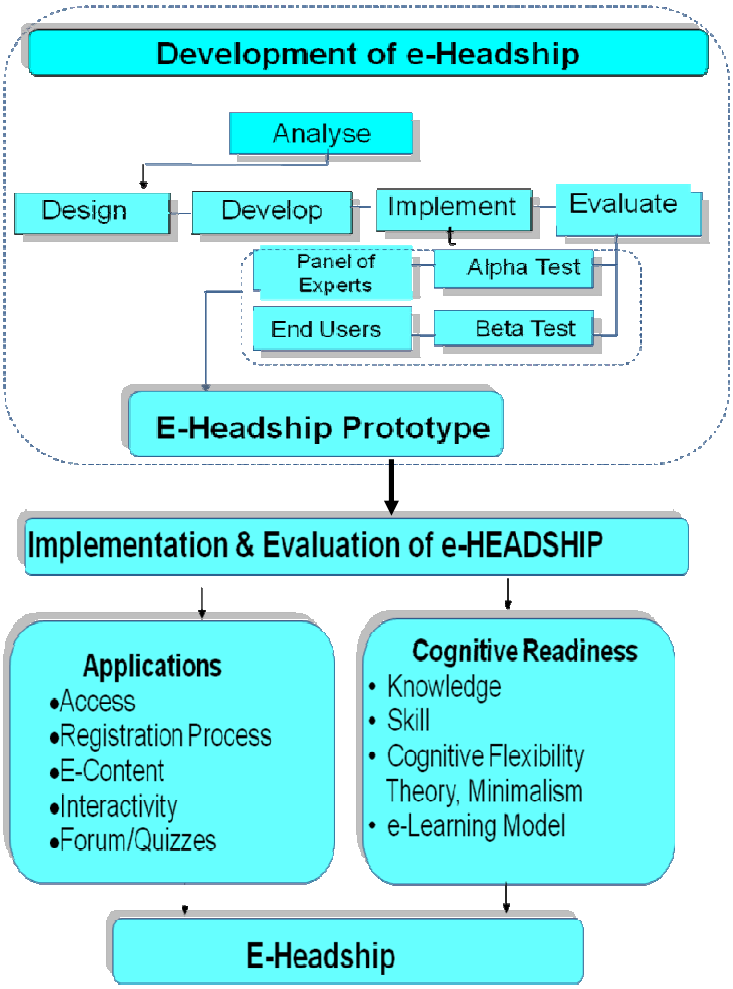

Figure 1 E-Headship Conceptual Framework

FINDINGS

The research findings are as follows:

Accessibility of *E-Headship*

In this research, the interface menu system used was based on *Moodle*. Amendments were made to suit the needs of the NPQH Programme as well as to adhere to the suggestions made by the experts of the system and NPQH content. Figure 2 shows one of the interfaces of *e-Headship*.

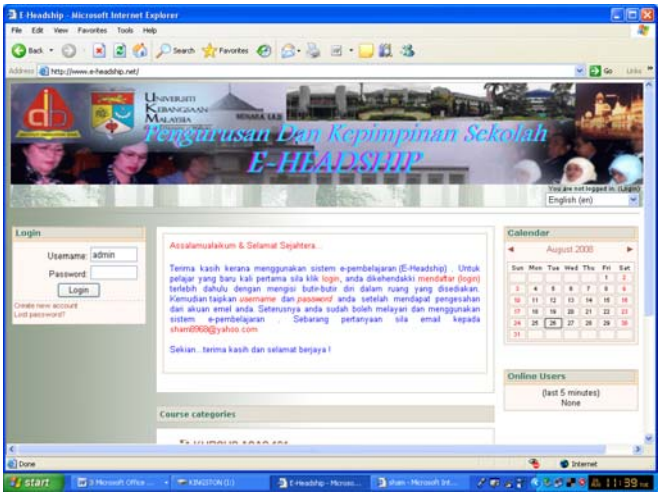

Figure 2. The Interface of *E-Headship*

Table 1: Data distribution the accessibility of *E-Headship*

ITEM	Mean	Std-Deviation
E-Headship is user-friendly.	4.03	.414
E-Headship module is easy to use.	4.17	.379
Access for *E-Headship* is smooth and fast.	4.03	.615
E-Headship has clear instructions.	4.07	.521
E-Headship has easy to understand user- guide	4.10	.548

Based on Table 1, the respondents agreed that *E-Headship* was user friendly (mean 4.03), the menu system was easy to use (mean 4.17), *E-Headship* is quick access system (mean 4.03) and it has clear instructions (mean 4.07).

***E-Headship* Registration System**

Moodle is equipped with registration system to ensure that the recorded information system and participants data were well kept. Figure 3 shows the registration system of E-Headship that was developed using Moodle format. It takes into account the safety features as well as users' information accessing this system.

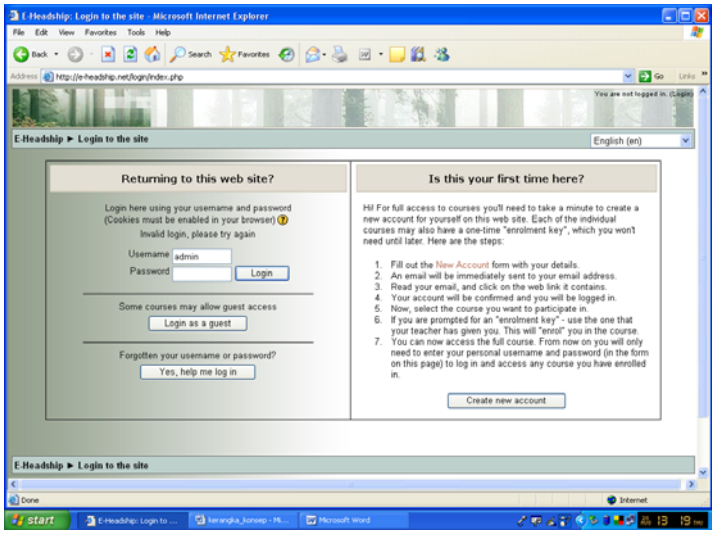

Figure 3 Registration system of *E-Headship*

Table 2: The data on *E-Headship* registration process

ITEM	Mean	Std-Deviation
E-Headship registration system has easy to understand instructions.	4.07	.583
E-Headship registration system does not require high skill technology.	3.97	.615
E-Headship registration system is user friendly.	4.03	.556
E-Headship registration system is simple and easy to acquire.	4.00	.587
E-Headship registration system is smooth running.	4.13	.507
E-Headship registration system is effective and quick to access.	4.03	.490

Table 2 showed that the respondents agreed that the registration system was easy to understand (mean 4.07), does not need high technology skills (mean 3.97), user-friendly (mean 4.03), simple and easy to use (mean 4.00), efficient (mean 4.13) and effective and quick to access (mean 4.03).

E-Headship Content

The teaching and learning content of *E-Headship* is one of the most important aspects in the development process. The content must adhere to the needs of the school leaders and managers and in line with the courses covered in the education management and leadership -NPQH. Figure 4 shows the list of courses in *E-Headship*.

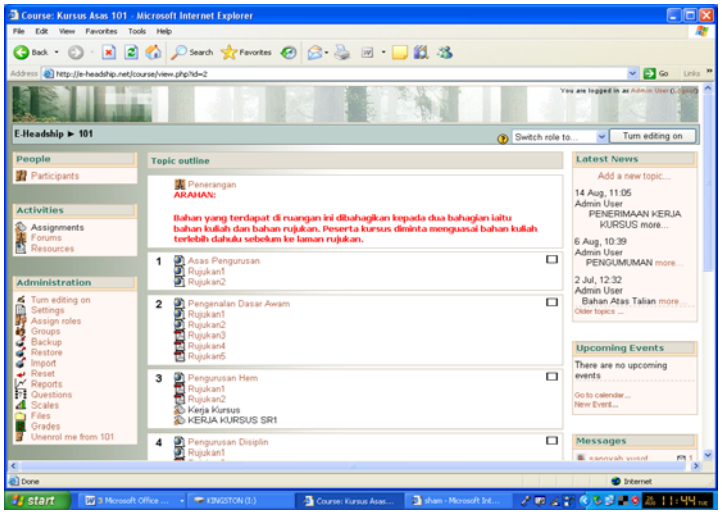

Figure 4 The list of courses in *E-Headship*

Table 3: *E-Headship* learning content.

ITEM	Mean	Std-Deviation
E-Headship content is developed to suit my level of knowledge.	4.00	.371
E-Headship content can increase self-motivation towards learning.	4.17	.531
E-Headship content requires minimum time to access.	4.03	.490
E-Headship content satisfies the objectives of the course.	4.07	.450
E-Headship content increases my understanding of the subject matter.	4.13	.434
E-Headship content uses technology that suits my ICT skill level.	4.17	.461
E-Headship content provides links to broader online information.	4.10	.403
E-Headship content is organized systematically.	4.13	.434
E-Headship content diversifies my learning methodology.	4.13	.507

Table 3 showed that the respondents agreed that the *E-Headship* content is suitable with the level of their ICT skille. (mean 4.00), provides self motivation (mean4.17), requires minimum time to access (mean 4.03), the content suits the objectives of the course (mean 4.07), increases understanding (mean 4.13), uses appropriate technology (mean 4.17), provides suitable links (mean 4.10), systematically arranged (mean 4.13), and enables diversity of learning methodology.

E-Headship Forum, Quiz and Discussions

Online communication and interactivity between learners and lecturers play very important roles in determining the effectiveness of a learning management system. This is due to the fact that students were not able to meet

face-to-face with the lecturer all the time. *E-Headship* is equipped with chatting and messages modes to ensure smooth communication between students, education administrators and lecturers. Figure 5 shows the chatting room in *E-Headship.*

Figure 5 Forum and Messages in *E-Headship*

Table 4 Respondents' feedback on the *E-Headship* Forum and Quizzes

ITEM	Mean	Std-Deviation
The forum in *E-Headship* helps in my learning process	4.00	.455
E-Headship quizzes increase my understanding of the subject matter.	4.00	.455
Discussions in *E-Headship* help my understanding of a topic.	4.13	.507
Discussions in *E-Headship* help to increase communication with course-mates.	4.03	.556
Discussions in *E-Headship* help students exchange information.	4.00	.525
Discussions in the forum help me in understanding a topic quicker.	4.10	.548
Forum in *E-Headship* helps to quicken the information delivery system.	4.17	.461
Forum, quiz and discussion in *E-Headship* learning supports my classroom learning	4.07	.583

Table 4 shows that the respondents agreed that the forum helps in their learning process (mean 4.00), the quizzes incorporated in the forum increase their understanding of the subject matter (mean 4.00), Discussions in *E-Headship* help their understanding of a topic (mean 4.13), help to increase communication with course-mates (4.03), help students exchange information (4.00), help them in understanding a topic quicker (4.10) and helps to quicken the information delivery system (4.17). The results also showed that the Forum, quiz and discussion in *E-Headship* supports their classroom learning.

CONCLUSION

Many learning institutions have implemented efficient learning management system from the open source software. Research findings on the perception of the future school heads in education management and leadership towards *E-Headship* are encouraging and remain very positive. They perceived the learner-to-content interaction, learner-to-learner interaction, learner-to-instructor interaction in the *E-Headship* positively. The studies by Gosmire et al (2010) also reveals similar positive interaction. The design and development of *E-Headship* has succeeded in promoting teaching and learning strategies to a higher degree. These findings are parallel with many studies on the effectiveness of the integration of technology in the teaching and learning process (Gregory & Beyrer (2010), Effandi et.al (2007) and Uys (2010) & Dell et al (2010). Their studies revealed that web-based learning could increase learning motivation. Therefore, opting for open source is in line with the mission of higher learning institutions (Kovalik & Hosler (2010 & Wilburt (1997). By incorporating the theories of learning and teaching strategies, *E-Headship* dship has succeeded in enticing and encouraging school administrators to further explore the function of ICT in education.

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