

Factors that could affect e-learning adoption by educational institutions in Papua New Guinea

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Abstract

Educational institutions around the world are embracing the use of e-learning to facilitate their teaching and learning activities, a development made possible by the rapid expansion of information and communication technologies. These institutions are using learning management systems such as Moodle. This paper discusses some of the factors that could affect e-learning adoption by institutions in Papua New Guinea. These factors need to be addressed for successful adoption and further development.

Keywords: adoption, developing countries, educational institutions, e-learning, factors, information and communication technology, learning management system, MOODLE, Papua New Guinea.

Introduction

The rapid expansion of Information and Communication Technology (ICT) has provided a range of tools that could be used to facilitate teaching and learning activities in educational institutions. A web-based system called a Learning Management System (LMS) is used as an e-learning platform to deliver courses online. E-learning can be defined as the use of ICT including a LMS to improve teaching and learning processes (Iahad, Madar, Oye, & Rahim, 2012; Smart & Cappel, 2006).

Divine Word University (DWU) has embraced the adoption (implementation and usage) of e-learning through the use of an LMS called Moodle (short for Modular Object-Oriented Dynamic Learning Environment) (Daniel, 2013). Moodle is an learning platform designed to provide institutions including educators, administrators and learners with an integrated system that is robust and secure to create personalised online learning environments (Moodle, 2019).

This paper will discuss some of the main factors (from literature) that could affect e-learning adoption by institutions in Papua New Guinea (PNG). These factors need to be addressed for successful adoption and further development. These factors will now be discussed, starting with strategy.

Strategy

Having a well-defined strategy that supports the use of ICT in education is necessary, which would usually contain guiding principles and aims for e-learning adoption (Afshari, Kenayathulla, Idris, Ibrahim, & Razak, 2013; Central Piedmont Community College, 2016). The strategy provides a general direction for the institution and various components to achieve a desired state in the future. This means that e-learning should be part of an organisational strategy for harnessing the power of ICT to enhance teaching and learning. Without a strategy, there would not be a systematic approach towards planning for e-learning development and other related activities that need to be carried out for successful adoption.

Managerial leadership

An effective managerial leadership of the institution is essential for implementing e-learning systems. Such managerial leadership provides overall direction and planning for the success of the institution. Commitment and support from managerial leadership must involve readiness to embrace change as part of the organisational strategy for improvement and long-term success in a rapidly changing environment (Afshari et al., 2013). Further, commitment and support are required from all the staff concerned, especially academic staff, who will use the LMS to implement online or blended course delivery. Commitment and support from everyone would encourage teamwork and collaboration, which could then strengthen successful e-learning adoption (Singh, O'Donoghue, & Worton, 2005).

Infrastructure

Having a reliable infrastructure is a necessary requirement and therefore, the institutions need to invest in such an infrastructure that would adequately support e-learning systems (Afshari et al., 2013; Ansong, Lovia Boateng, & Boateng, 2017; Singh et al., 2005). The infrastructure includes necessary hardware (e.g. computers), software (e.g. database management systems) and computer networks with a robust data centre. The infrastructure also includes reliable access to electricity. Infrastructure also includes how well technology is adapted to the best teaching and learning practices (Ansong et al., 2017). If such an infrastructure is inadequate, then it would be difficult to implement e-learning and its benefits would be minimal.

Human capacity

The institutions need to have adequate ICT staff with relevant knowledge and skills to implement e-learning systems (Afshari et al., 2013; Singh et al., 2005). The required staff could be recruited or existing employees provided with further training to manage the implementation, provide ongoing system support and maintenance. The staff should possess or are equipped with technical, organisational and managerial skills and knowledge to be able to understand how technology could be used to facilitate teaching and learning processes through the use of e-learning systems.

Financial resources

Having access to adequate resources affects the adoption of technology (Ansong et al., 2017). Since technological resources are quite expensive, adequate financial resources must be available and accessible in order to establish a reliable infrastructure, and recruit or train the required staff to implement e-learning systems. Financial resources are also required to keep current with changes in the educational and technological environments (Afshari et al., 2013).

Perceptions and attitudes

Staff attitudes (perceptions) can affect the way they embrace the adoption of e-learning (Afshari et al., 2013; Iahad et al., 2012). Their perceptions can have an impact on staff use of the LMS (Iahad et al., 2012), which suggests that perceptions can influence willingness to interact with the LMS tools. Further, the staff attitudes can influence their behavioural intentions to use an LMS, which implies that if the staff have positive attitudes then they would be willing to learn and use e-learning to their advantage.

Training and support

Once e-learning systems (LMSs) are installed, the staff (especially academics) must be trained to use the e-learning facilities for maximum benefits. Therefore, staff training is a vital component of e-learning developments and therefore, the staff must know how to use the LMS to deliver courses and be able to use it effectively to gain maximum benefit. “Inadequately trained lecturers using e-learning in educational environments can become an obstacle in a finely balanced learning process and can lead to problems in application use and in the negative perception of students’ on the use of e-learning courses” (Singh et al., 2005, p. 18). This now leads to the discussion of issues raised.

Discussion

It is important to note that the PNG institutions need to address all the factors for successful adoption or further development of e-learning. These factors cannot be isolated as they are interdependent and must be addressed with equal importance. For instance, investing in infrastructure alone will not lead to successful adoption if the staff members are not adequately trained to use the LMS.

It is essential that the institutions have a strategy with objectives, key performance indicators (KPIs) and plan of actions to implement e-learning and have it adopted by staff to improve their teaching and learning. The strategy should be aligned with the institution’s vision and mission, which is then aligned with the various government development strategies and plans such as PNG Vision 2050 and PNGDSP 2010 – 2030. The objectives should be SMART (specific, measurable, achievable, relevant and time-oriented). The strategy must be complemented by relevant policies and operational plans with specific goals and activities, which describe how e-learning will be implemented to achieve the institutional vision and the aspirations as mentioned in the various government plans.

It is also necessary that managerial leadership provide overall direction for the future of the institution. E-learning implementation as a strategic objective is crucial as this will help secure support and commitment from the managerial leadership. Their commitment and support are required for the success of e-learning initiatives from start to completion. Such commitment and support are needed in terms of funding, motivation and continuous dialog with staff. Commitment and support are also needed from all staff concerned (especially academic staff) who would be using the LMS to facilitate teaching and learning activities. Commitment and support can be gained when all concerned including ICT staff have a common understanding about the potential benefits. Such understanding can be developed through awareness and information sharing activities. Further, managerial leadership needs to be ready to embrace technological changes and benefit from these changes.

It is important to note that without the necessary infrastructure, it will be difficult to setup e-learning. The required infrastructure should be established to provide a deployment environment for effective installation and functioning of the LMS. DWU has established the required internal infrastructure to run the Moodle LMS, which is now being used by both staff and students. Such infrastructure must be sustained and kept reliable and available for the continued use of e-learning.

It is important to note that technological resources are quite expensive, and therefore, access to adequate financial resources is essential for the implementation of a reliable infrastructure and setup of an LMS. It is also necessary to recruit or train the required staff to facilitate the process of implementation and use of an LMS. Adequate resources are also needed to provide maintenance, support and training in a rapidly changing environment.

Further, without adequate technical knowledge, it would be difficult to setup e-learning and have it adopted successfully. Thus, relevant staffing with the necessary skills and knowledge are required to establish the infrastructure and installed the e-learning systems. They are also needed to provide the necessary training and support. It is, therefore, essential to recruit the people with the skills and knowledge or current staff provided with further relevant training.

It is also important that the academic staff know how to connect to the network and use the LMS. Thus, training and support are required for the sustained use of e-learning. Staff would also be able to develop a wide range of ICT skills as they use technology to manage their teaching activities. DWU engaged international educational developers to provide training on the use of the Moodle. In-house training is also provided by the Centre for Teaching and Learning (CLT) on how to edit course settings, add resources (e.g. PowerPoint slides) and activities (e.g. setting up quizzes and assignments), setup the Moodle gradebook and the use of other tools provided by the LMS. The staff are also encouraged to search on the Internet and help each other how to use the system.

Further, all staff concerned should have the right attitudes and be ready to accept changes. Their attitude and perceptions about e-learning can determine whether they will be inclined to use the LMS or have difficulties in embracing such technologies. It is, therefore, essential for the institutions to raise awareness and help develop the right perceptions and attitudes towards technology.

Conclusion

The technological advancement is changing the way educational institutions conduct their teaching and learning activities with the increasing use of LMSs such as Moodle to deliver courses online. This paper discussed the factors such as strategy, managerial leadership, infrastructure, human capacity, financial resources, perceptions and attitudes, and training and support, which could affect e-learning adoption by educational institutions in PNG. The paper also highlighted that these factors must be addressed collectively together so that e-learning systems can be implemented and have them successfully adopted by all concerned for maximum benefits.

References

- Afshari, M., Kenayathulla, H. B., Idris, A. R., Ibrahim, M. S., & Razak, A. Z. A. (2013). Factors affecting the effective implementation of e-learning in educational institutions. *TOJSAT*, 3(3), 111-119.
- Ansong, E., Lovia Boateng, S., & Boateng, R. (2017). Determinants of e-learning adoption in universities: Evidence from a developing country. *Journal of Educational Technology Systems*, 46(1), 30-60.
- Central Piedmont Community College. (2016). 2015 – 2020 strategic plan for online learning Retrieved 16 April 2019, from <http://www.cpcc.edu/learning/strategic-plan/online-learning-goals/cpcc-online-strategic-plan.pdf>
- Daniel, M. (2013). E-learning @ Divine Word University. *Contemporary PNG Studies: DWU Research Journal*, 19, 63-78.

Iahad, A. N., Madar, M. J., Oye, N. D., & Rahim, A. N. (2012). The impact of e-learning on students' performance in tertiary institutions. *International Journal of Computer Networks and Wireless Communications*, 2, 121-130.

Moodle. (2019). About Moodle Retrieved 27 May 2019, from https://docs.moodle.org/37/en/About_Moodle

Singh, G., O'Donoghue, J., & Worton, H. (2005). A study into the effects of e-learning on higher education. *Journal of University Teaching and Learning Practice*, 2(1), 11-24.

Smart, K. L., & Cappel, J. J. (2006). Student's perceptions of online learning: A comparative study. *Journal of Information Technology Education*, 5, 201-219.

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Future paper

This paper can be extended by including other factors, which are not discussed here.

Author

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