Empirical Study on Knowledge Management Practices in Creating Quality Knowledge for Students through E-Learning

Isam Syed Arshad, Talha Muhammad, Ma Xiao-Li

Graduate School of Management, Kulliyyah of Economics and Management Sciences, International Islamic University Malaysia.

Abstract- This paper examines the aspects of creating quality knowledge through e-learning environment, how Knowledge management is related to education, correlation between education Knowledge management and student learning results and; how developing communities of practices would help effective transfer of tacit knowledge in students learning results. An efficient system of Knowledge management contains creation and transfer of explicit and tacit knowledge. Study suggests that in education; e-learning environment can come in handy if more attempts are to be made in converting quality explicit knowledge from educator's tacit knowledge through filtering information quality during conversion process. Learning content should be standardized by the evaluators (Group of students or Individuals) in cognitive structures. Moreover, the study investigates the correlation between e-learning and student learning results. Data for this study were collected by means of questionnaires by the students and educators of two Malaysian Universities and were evaluated by multiple regression analysis method. Analysis revealed the measurement of information quality through e-learning can be used to fore see student learning results, and the correlation between them is positive.

Index Terms- (KM) Knowledge Management, (CoPs) Communities of Practices, (IK) Instruction Knowledge, (LMS) Learning Management Systems.

I. INTRODUCTION

Universities are organizations committed to achieve numerous objectives as whole, one such is to transfer knowledge to learners (students) by different mediums (lectures, books, debates, online LMS, etc). Knowledge Management is any process of creating, acquiring, capturing and sharing knowledge to enhance learning and performance in organizations (Prusak, 1997). Frame work of Knowledge management in education help develop identifying opportunities in improving student learning results. Process of learning is where students take in information and convert it into knowledge, to measure the cognitive and behavioral changes along with tangible improvement in results during the learning process of students, a learning audit is necessary (Garvin, 1993). The measurement and summarizing of student learning results (Knowledge, skills, performance or achievement) has become a major reference point for academic standards (James et al, 2002). A third of KM technologies generally focus on result oriented applications of knowledge (Sallis & Jones, 2002). This action oriented notion of

knowledge results in curriculum development and assessment; therefore the successful knowledge gained by the students requires the need for assessment. Assessment prompts students to improvise their learning pattern and helps faculty filter and reconsider their teaching perspectives to improve student learning results. Teaching perspective reflects educator's beliefs and values held in correspondence to the learner's role in the exchange of knowledge (Heimlich & Norland, 2002).

The process of KM promotes participation, communication, interaction and Student learning. The core concerns of promoting KM in education is to be rigorous in connecting KM methods to learning results (Petrides & Nodine, 2003). Learning results is the ability of a learner to use knowledge from learning activities; the activities are generally taken as knowledge, skills, or attitudes (Phillips, 1994). To ensure and increase student learning quantity and quality of instructions should be created (Hallinan, 2000) and Instruction knowledge can be created through e-learning system. To ensure high quality instruction knowledge created through e-learning system for students to acquire the requisite knowledge and skills: KM process begins with creation and transfer with two core concepts about knowledge (Tacit and Explicit).

Tacit Knowledge is the backdrop against which all actions are understood, (Polanyi. 1966) consisting of competencies, beliefs and values, experiences, ideas and relationships which turn out to be very challenging to codify and articulate. Whereas in comparison explicit knowledge can be easily codify in formal language of instruction from educators to learners, resulting in educators trying hard to represent their own individual knowledge. The current study examines E-learning environment attempts to provide a platform where both Tacit and Explicit Knowledge can be sustained and used to its full potentials to provide positive learning results for the students.
.

II. LITERATURE REVIEW

A. Knowledge Management in Education

Educational institutions are in continuous pressure from both external and internal sources to increase accountability (External being government, parents and employers interested in positive student learning results). To be able to enhance student learning and development, Institutions find it beneficial to adapt KM programs to accelerate their performances and outcomes. An Educational institution; to be specific: University merely relies on an individual expert to transfer both explicit and tacit knowledge - to help improving student learning results; the challenge remains precise and limited. In order benefit the

organization as a whole, transformation of explicit and tacit knowledge residing in the same educator to other educator's: knowledge management can lead to improvements in sharing knowledge. KM in education is an approach which enables individuals within the organization to help develop a set of skills and practices to systematically collect information and share (Petrides & Nodine, 2003).

Theoretically KM can benefit Universities in five areas: curriculum development, administration, research, student and alumni services and classroom enhancement (DeDiana & Aroyo, 1998). KM practices by educators are useful in educational institutions such as enabling experts to create and share quality knowledge for students to enhance their learning. The process of learning involves student to take in information and translate it into knowledge. Defined as process of acquiring knowledge from experience, study, improvisation or instruction (Miller & Findlay, 1996). Learning activity on e-learning environment comprises of educators materials which is coded knowledge, disseminating this knowledge to the learner through e-learning is a complex task.

To make work more effective and jobs rewarding, working staff of educators from various departments in the University come together to address common needs which concerns unified goal of sharing knowledge. They are called, "communities of practice" (CoPs) (Lave & Wenger, 1991) and have proved to be one of the most efficient means of containment of tacit knowledge within the organizations. CoPs are also identified as KM enablers due to their ability to innovate.

B. Knowledge Management in E-learning

The potential of KM practices through e-learning environment can be used to create quality knowledge for student learning by Universities. According to (Alavi & Tiwana, 2003) Four types of KM processes, are: knowledge application, knowledge storage, knowledge transfer, and knowledge creation. Universities encourage educators to create knowledge, Information Technology and e-learning can be used for knowledge creation process. According to (Welsh, 2003) e-learning is the use of computer network technology, mainly over the internet, to deliver information and instruction to individuals.

E-learning is manual content for learning experiences enabled by electronic technology (National Governors Association, 2001). E-learning systems are virtual, enabling learner to interact with learning materials posted by the instructors. KM in e-learning connects learner to other learners, educators and students with knowledge and information (Corrall, 1999).

Design of e-learning material also plays a vital role in creating quality knowledge for learners, issue arises when these designs are poorly constructed by e-learning providers (Ivergard & Hunt, 2005). Created knowledge on the e-learning platform should be alters, revised and improvised accordingly to the requirement of the learners: students should be able to easily use, access and utilize the system and the content information (Howell & James et al., 2003). According to (Svensson, 2004) it is not easy to design or recreated e-learning material, he emphasize more on other supports to intensify learning. Limited usability and disorganization of online course inhibits learners ability to attain knowledge (Smulders, 2003).

C. Creating Quality Knowledge through the E-learning environment

The entire purpose of KM in education is to enhance student learning (Petrides & Nodine, 2003). According to (Carroll, 1963) prime condition to insure student learning is the quality of material or instructions. By increasing the competency and confidence of educator we directly improve the quality and quantity of learning content which raises student learning results (Newmann, 1993). E-learning compromises of both printed and digitally encrypted material resulting in delicacy of importance with the quality of e-learning. Contents are usually produced by course developers, publishers or educators, thus requiring a production expert's team for fewer errors on digital media.
Serious consequences can be endured by publishing poor content into online learning environment for student and institution (Thiessen & Ambrock, 2004). Educators are required to ensure the course content delivered to the learners is of high quality, they need to recheck, correct and republish to enhance positive student learning results.

D. Knowledge conversion through CoPs to enhance Student learning

Knowledge transfer helps improve practices among CoPs and proven effective knowledge transfer can be measured among CoPs for efficiency (Wolford, 1999). CoPs theoretically are bonds of trusted knowledge sharing among group of people in or out of any organization around the world (Wenger, 2002). CoPs should work together time to time to find compatible solutions to common problems relating to the transfer of tacit knowledge by reflecting and evaluating them (Brown & Duguid, 1991). The main issues concerning transfer of tacit knowledge are:

- Tacit Knowledge – Is the knowledge coming from years of experience and practices. Valued by all, is generally very hard to codify and contain; illustrated by the individual (educator) and partially absorbed by the learner (Student or other educators).
- Although extremely hard to transfer in whole, but part knowledge gained by the learner or junior educator gets hard to sustain and often gets mixed with new ideas and methods when practiced. In order to successfully contain more and more tacit knowledge it is advisable to build CoPs which would allow members to practice and exchange knowledge (Grayson & O'Dell 1998).

The foreseen challenge for Universities is to architect a learning environment which can give learners a chance to browse, understand and capture knowledge (Duguid, 1993). Explicit knowledge on the other hand can be segmented and simplified for the learners by the members of CoPs. Universities should be encouraged to redesign its administrative structure in relevance to support CoPs. Limitation of authority and dense bureaucracy among CoPs should be delineated (Supovitz & Christman, 2003). In order to support , enhance and develop CoPs and positive student learning Universities should architect a simplified structure; support and strategies.

III. DISCUSSION

The regular demand and need for improvements in student learning results, Universities are investigating and learning new

ways to understand ways to be more effective in collecting, creating and sharing knowledge.

A sample of 150 questionnaires was collected from two reputed Universities in Malaysia. The hypothesis testing for this study was conducted using stepwise regression for which data was collected randomly through survey questionnaire by both students and educators. This technique is appropriate and considered acceptable for exploratory research (Vannatta & Mertler, 2005) mainly due to lack of availability of theoretical foundation for aligning regression analysis differently. This study tries to highlight KM practices of e-learning outcomes to student learning and how CoPs help improve them. To further the in-depth of the study different perspective of the aspects should be considered:

1.) Educators Implications at Malaysian Universities: This study compromises educators examining many aspects of the relationship between knowledge transfer through e-learning environment and student learning results.

2.) Student Perceptions at Malaysian Universities: The study demonstrates that student tend to learn and grasp more of tacit knowledge coming from the educator if the knowledge is more virtual on e-learning system.

3.) Education content material at Malaysian Universities: The study surveys the means of creating and measuring quality e-learning material is updated and improvised on regular basis, allowing students to browse and improve learning results

4.) CoPs at Malaysian Universities: They study suggest the need of development of CoPs to sustain tacit knowledge among educators and learners to improve learning.

In contemporary times approaches to acquire knowledge consists of three major theories. They are the behaviorist theory, cognitive theory and social learning theory (Ormrod, 1999). This study however focuses on cognitive theory. These three theories should in fact be used as the foundation guide to architect classroom environments (Ormrod, 1999). Professionals in the line (Angelo, 1999; Palomba & Banta, 1999; Huba & Freed, 2000) recommends measures of multiple assessment to classify what students learning and point out mistakes and weaknesses. This assessment would help demonstrate accurate results and would also help illustrate precautionary measures to be taken in future development of e-learning**.**

IV. CONCLUSION

To conclude, this study was conducted to examine educators at the University and their ability transfer knowledge to the students by the mediums of e-learning. This study, tries to highlight the Knowledge transfer process through simplified modern way of e-learning environment. It is unarguable that educators or instructors find it hard codifying tacit knowledge into quality explicit knowledge for students. Educator's role in University is not limited to classroom; in fact improving learning content and developing information material for the student through e-learning process can enhance student learning result. This study demonstrated relationship between CoPs and e-learning on student learning results, which is mostly positive. The study through e-learning illustrates medium to convert tacit

knowledge into explicit knowledge to some extent. To support and develop CoPs, Universities should be encouraged to provide them with support, strategies and proper structure with strong foundations (Supovitz & Christman, 2003).

REFERENCES

[1] Angelo, T. A. (1999) 'Doing assessment as if learning matters most', AAHE Bulletin, 51(9),pp. 3-6.

[2] Alavi, M. and Tiwana, A. (2003) 'Knowledge Management: The Information Technology Dimension', in Easterby-Smith, M. and Lyles, M. A. (eds.) The Blackwell handbook of organizational learning and knowledge management. Oxford: Blackwell Pub, pp. 105.

[3] Banta, T. W. (1996) 'Has assessment made a difference?' in Banta, T.W., Lund, J. P., Black, K. E. and Oblander, F. W. (eds.) Assessment in practice: Putting principles to work on college campuses. San Francisco: Jossey-Bass.

[4] Brown, J. S. and Duguid, P. (1991) 'Organisational learning and communities-of-practice: toward a unified view of working, learning and innovation', Organisation Science, 2(1), pp.40– 57.

[5] Brown, J. S. and Duguid, P. (1993) 'Stolen Knowledge,' Educational Technology Journal, Special Issue on Situated Learning in Focus, 33(3), pp. 10-15.

[6] Carroll, J. B. (1963) 'A model of school learning' , Teachers College Record, 64, pp. 723-733.

[7] Corrall, S. (1999) 'Knowledge Management: Are we in the Knowledge Management Business?'

[8] Dediana, I. and Aroyo, L. (1998) 'Knowledge Management for Networked Learning Environments: Applying Intelligent Agents'.

[9] Garvin D. (1993) 'Building a Learning Organization' , Harvard Business Review July-August, pp. 78-91.

[10] Hallinan, M. T. (2000) 'Ability Group Effects on High School Learning Outcomes' , Paper presented at the 95th Annual Meeting of the American Sociological Association, Institute for Educational Initiatives, University of Notre Dame.

[11] Heimlich, J. E., Norland, E. (2002) 'Teaching Style: Where Are We Now?' , New Directions for Adult and Continuing Education, 93, pp. 17-25.

[12] Howell, S. L., Williams, P. B. and Lindsay, N. K. (2003), 'Thirty-two Trends Affecting Distance Education: An Informed Foundation for Strategic Planning'.

[13] Huba, M. E. and Freed, J. E. (2000) Learner-centered assessment on college campuses: Shifting the focus from teaching to learning. Boston, MA: Allyn and Bacon.

[14] Ivergard, T. and Hunt, B. (2005) 'Towards a learning networked organization: human capital, compatibility and usability in e-learning systems', Applied Ergonomics, 36(2), pp. 157-167.

[15] James, R., Mcinnis, C. and Devlin, M. (2002) 'Assessing Learning in Australian Universities: Ideas, strategies and resources for quality in student assessment' , Published by the Centre for the Study of Higher Education, the University of Melbourne, Victoria, 3010, Australia, and the Australian Universities Teaching Committee.

[16] Lave, J. and Wenger, E. (1991) Situated Learning: Legitimate Peripheral Participation. Cambridge: Cambridge University Press.

[17] Mertler, Craig A. and Vannatta, R. A. (2005) Advanced and multivariate statistical methods: practical application and interpretation. 3rd ed. Glendale, CA : Pyrczak.

[18] Miller, E. and Findlay, M. (1996) 'Australian Thesaurus of Education Descriptors' , Australian Council for Educational Research, Melbourne.

[19] NATIONAL GOVERNORS ASSOCIATION (2002) 'A Vision of E-Learning for American' s Workforce' , Commission on Technology & Adult Learning, pp. 4.

[20] Newmann, F. M. (1993) 'Beyond common sense in educational restructuring: the issues of content and linkage' , Educational Researcher, 22, pp. 4-13.

[21] O' Dell, C. and Grayson, C. J. Jr. (1998) If Only We Knew What We Know. The Free Press.

[22] Ormrod, J. E. (1999) Human learning. 3rd ed. Sydney, New South Wales: Merrill, Prentice Hall Australia Pty Ltd.

[23] Palmoba, C. A. and Banta, T. W. (1999) Assessment essentials: Planning, implementing, and improving assessment in higher education. San Francisco: Jossey-Bass.

[24] Petrides, L. A. and Nodine, T. R. (2003) 'Knowledge Management in Education: Defining the landscape' , Institute for the Study of Knowledge Management in Education.

[25] Phillips, L. (1994) The Continuing Education Guide: the CEU and Other Professional Development Criteria. Iowa: Kendall/Hunt Publishing Co.

[26] Polanyi, M. (1966) The Tacit Dimension. Doubleday

[27] Prusak, L. (1997) Knowledge in Organizations. Oxford: Butterworth-Heinemann, Newton, MA, pp. 135-146.

[28] Sallis, E. and Jones, G. (2002) Knowledge Mangement in Education. London: Kogan Page.

[29] Smulders, D., (2003), 'Designing for Learners, Designing for Users' , E-Learn Magazine, Association of Computing Machinery.

[30] Supovitz, J. A. and Christman, J. B. (2003) 'Developing communities of instructional practice: Lessons for Cincinnati and Philadelphia', CPRE Policy Briefs, pp. 1– 9, Pennsylvania: University of Pennsylvania.

[31] Svensson, L. (2004) 'Challenges for work-integrated elearning: The case of the Swedish Academy of County Administrators' , Journal of Workplace Learning, 16(8), pp. 492-502.

[32] Thiessen, J. and Ambrock, V. (2004) 'Value added - the editor in design and Development of online courses' in Anderson, T. and Elloumi, F. (eds.) Theory and Practice of Online

[33] Welsh, E., Wanberg, C., Brown, K., Simmering, M. (2003) 'E-learning: emerging uses, empirical results and future directions', International Journal of Training and Development,7(4), pp. 245-58.

[34] Wenger, E., McDermott, R. and Synder, W. M. (2002) Cultivating Communities of Practice: A Guide to Managing Knowledge. Harvard Business Press, Cambridge, MA.

[35] Wolford, D. (1999) 'Ford' s best practice replication process: A value-based KM process that works' , Knowledge Management Review, 10, pp. 12-15.

AUTHORS

First Author – Isam Syed Arshad. Master of Management, Graduate School of Management, Kulliyyah of Economics and Management Sciences, International Islamic University Malaysia. isamarshad@gmail.com.

Second Author – Talha Muhammad. Master of Management, Graduate School of Management, Kulliyyah of Economics and Management Sciences, International Islamic University Malaysia. talhalhr2000@yahoo.com.

Third Author – Ma Xiao-Li. Master of Business Administration, Kulliyyah of Economics and Management Sciences, International Islamic University Malaysia. shmilyuyu@gmail.com.