IADIS International Journal on Computer Science and Information Systems
Vol. 7, No. 2, pp. 57-68
ISSN: 1646-3692

EFFECTIVE SKILLS TRANSFER THROUGH A LEARNING MANAGEMENT SYSTEM: A CASE OF ELECKOM CORPORATE SERVICES

Ray M Kekwaletswe. *Department of Information Systems, University of the Witwatersrand, Johannesburg, Republic of South Africa.*

Gaoussou Doukoure Abdel Kader. *Department of Informatics, Tshwane University of Technology, Pretoria, Republic of South Africa.*

ABSTRACT

Africa in general is said to still be lagging behind the developed nations in terms of workforce skills, and South Africa is not an exception. The problem of skills inadequacy, it is argued, has a negative effect on enterprises as it presents hurdles to the country's economic development objectives. Small, medium and large organizations tend to suffer from the said issue. In the context of South Africa, parastatals, as vital enterprises to the growth of the economy are also exposed to the adverse effects of relevant skills shortage. To this point, parastatals have to continual find ways to curb the inadequacy of relevant skills. This paper aimed to show how relevant skills, in a large South African parastatal, could be transferred among employees through a Learning Management System. This is done by following a case study method on the ways in which ElecKom corporate services promotes and facilitates relevant skills transfer through its adopted learning management system. Following the interpretivist research paradigm, Activity Theory underpinned the study. The paper concludes that the issues of relevant skills shortage may be curbed through knowledge and skills transfer using learning management systems as enabling tools, so long as the systems are contextualized sensitive to the organizational culture and the background of employees.

KEYWORDS

Activity Theory, Knowledge, Learning Management Systems, Parastatal, Skills Transfer, South Africa

1. INTRODUCTION

The term "Skill" often refers to both an individual's qualifications and his experience (Daniels, 2007). The Skills Development Act of 1998 and government's Skills Development Strategy for Economic and Employment Growth in South Africa (established in 2001) had for

objectives to implement mechanisms for delivery on the issue of skill shortages in the country. Daniels (2007) explains that one of the reasons South Africa is still lagging behind developed nations in terms of workforce skills is due to the fact that the South African government itself has in many aspects failed to precisely and effectively define what skills shortages entails. In this light, the South African department of Labor and the Sectorial Education and Training Authorities (SETAs), state that a skill is considered scarce where there is a lack of qualified and experienced people, currently or anticipated in the future, either because such skilled people are not available or because they are available but do not meet employment criteria (SA Department of Labor, 2005).

In this paper, the terms skills and knowledge are used interchangeably and refer to an employee's progress towards having the capacity to perform at an expected and improved level. Public owned enterprises have been key to many African economies development in general and in South Africa's context in particular. A parastatal is described as an organization, agency, owned, controlled wholly or partly by the government (Richards and Nwanko, 2001). The government's pronounced involvement in shaping South Africa's economy resulted in the creation/establishment of a large number of state corporations early in the 1920s.

The research problem driving the paper is that in South Africa, medium to large enterprises tend to all suffer from skills shortages. Parastatals, which are vital to the country's economy, are not shielded from the issue. This is especially pertinent if one considers that parastatals are faced with the colossal task of dealing with skills shortages as they ought to remain relevant and competitive in the knowledge based economy. Organizations recognize that competence of their human resources is a critical factor for their prosperity in the context of global competition, thus, find it necessary to invest in training ventures and skills development of their employees (Knowledge Resources, 2005). The importance of scholarly research on the topic of Skills transfer, improvement and knowledge sharing is, hence, still evident. In the case study, a South African parastatal, *ElecKom's*, human resource unit lamented about the company having to deal with skills shortages in key categories. The unit added that a sharp decline in technical and artisan skills throughout South Africa over the past decade was hurting the parastatal as much as other public and private sector companies (Lünsche, 2006).

In this paper, a learning management system (LMS) is argued to be an ideal training and skills transfer tool. LMSs are typically designed to deliver and manage instructional content, assess individual learning goals and collect and present data for supervising learning processes (Watson and Watson, 2007). In a study analyzing the purpose and value of Learning Management Systems, Barron (2000) explains that in order for organizations to adopt an appropriate learning solution, it is essential to focus on the motives for purchasing a LMS. He cites a Bersin & Associates report where the top three reasons stated as being the key motivators for purchasing Learning Management Systems were the management of training administration (47%), the management and deployment of e-Learning (41%) and finally the consolidation of training information (37%). This paper presents Learning Management Systems as alternatives that organizations could explore when attempting to deal with the issue of workforce lack of skills. It is argued that, by promoting and facilitating skills transfer, improvement and knowledge sharing throughout an organization, an LMS can continuously provide employees with a consistent learning and skills sharing environment, thus contributing to skills improvement and workforce development.

The rest of the paper is outlined as follows: first an overview of the *ElecKom* situation is given. A more in-depth description of learning and learning management systems then

follows. The empirical evidence and findings are then presented and discussed. This is followed by an interpretation of how skills transfer could be achieved through a learning management system.

2. THE ELECKOM SITUATION

Ranked 213th out of 250 on Platt's *Top 250 Electricity Utilities*, ElecKom Holdings Ltd is among the largest power utilities in the world. It owns and operates various coal-fired, gas-fired, hydro, pumped storage as well as nuclear power stations. This is an organization that operates over 26000 kilometers of transmission lines, and sells power to more than 6000 industrial, 18000 commercial, 7000 agricultural and over 3 million residential customers (Platt, 2010). ElecKom has been a consistent and reliable supplier of power to South Africa and its neighboring countries. Despite these facts, the parastatal seems to suffer from the same criticism in the media that is often associated with state-owned entities in South Africa (Calldo and Du Plooy, 2008). Reports in the media, both local and international, often portray government enterprises in a negative light; e.g., power blackouts in early 2007, legal woes, board leadership battles, etc. It is only when ElecKom finally started preparing to address its expansion needs that the executive management realized that the company was lacking expertise and experience in terms of its organizational workforce (*ibid*., 2008). The conclusions of their study pointed to the fact that aging combined with badly maintained power stations and a looming major skills shortage would lead to a power crisis in the years to come.

ElecKom executive management, being aware of these realities, decided that as a learning organization, the company had a responsibility to facilitate the process of employees improving their skills set (ElecKom, 2004). After a long and complex procurement process, a Learning Management Solution called SABA was hence acquired for the effective management of training at ElecKom in 2008. This was done as the company aimed to develop its human resource capital, and effectively manage human components including performance, competency and talent management (ElecKom, 2004).

3. LEARNING AND LEARNING MANAGEMENT SYSTEMS

Learning is an indispensable activity in the knowledge-based economy we live in. Firms must constantly be alert and capable of adapting to fast change by constantly promoting learning and should evolve and transform themselves rapidly. In this light, adopting innovative information and communication technologies could play a key role in the development of new learning mechanism and platforms (Ibrahim and Kamel, 2003). In effect, considering the current knowledge based economy, firms need to put an emphasis on Learning as a vital activity if they are to remain competitive. In this light, it is important that organizations take the initiative and adopt information technology in order for them to support learning activities effectively.

Atkinson (1968) defines learning as the acquisition or transformation of existing knowledge, behaviors, skills, values and sometimes leads to the synthesis of different types, sources of information. In this light and for the purposes of the study, the learning

organization was considered as a company that facilitates the learning of its members and continuously transforms and adapts itself to new business and organizational contexts (Pedler et al, 1997). ElecKom considered that adopting a LMS would reinforce its claim that the company is indeed a learning organization.

Markham (2004), describes Learning Managements Systems (LMS) as tools which allow instructors and students to share instructional materials, make class announcements, submit and return course assignments and communicate with each other online using "*an integrated set of web-based tools for learning and course management*". Learning Managements Systems typically play a central role in the Web-based e-Learning scenario (Recesso, 2001). These information systems are designed to facilitate administrative tasks as well as student participation in e-Learning materials. Learning Management Systems are typically designed to deliver and manage instructional content, assess individual learning goals, as well collecting and presenting data for supervising learning processes. The current study emphasizes LMS as a learning tool that could affect skills improvement endeavors in organizations.

4. THEORETICAL FRAMEWORK AND RESEARCH METHOD

As a research analytical framework, the Activity Theory considers information systems projects, endeavors as collective work activities. Engestrom (1987) describes the activity theory as a psychological meta-theory, or a framework that considers human activities as complex, socially situated phenomena grounded in historical and cultural contexts. He further adds that activity theory emphasizes the notion of human interaction with its environment through the use of various mediating artifacts such as language and physical tools which may enable or facilitate human activities. Activity theory was adopted as the theoretical framework or lens underpinning this study.

According to the founders of this theory an activity is the way in which the subject (individual or a group) moves towards an object with the purpose of obtaining certain results or objectives (Vygotsky, 1979). Mediation tools such as an LMS for instance can be used to support the object transformation into the expected outcome or result. The below figure illustrates Activity Theory in a nutshell:

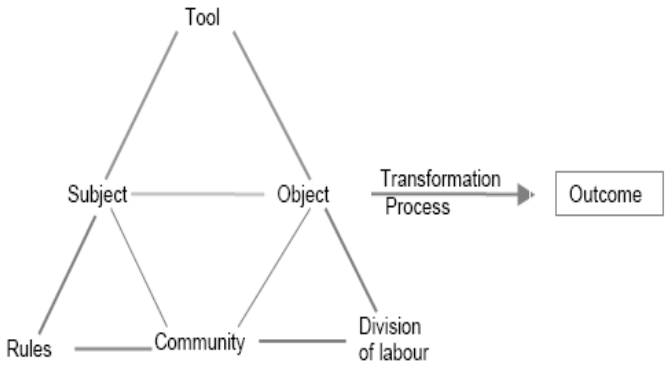

Figure 1. Activity Theory (Engestrom, 1987)

Mlitwa and Van Belle (2010) explain that the Activity Theory puts the activity at the center of any activity system. The present study focused on the way employees interact with the LMS and how the tool affected them and contributed to improve their skills. Learning and its associated action within a LMS context via the training the Learning Management Solution provides to employees were considered as the central activity in an Activity Theory based context. ElecKom's organization context, its rules and its organizational culture were considered as the mediators in our study. The identified actors were individual employees interacting with the SABA LMS for training purposes. The unit of analysis was the activity of learning and skills improvement, where an LMS was argued to be an enabling tool. The research strategy adopted was a case study at ElecKom corporate as it is a method used to narrow down a very broad field of research into one easily researchable topic. This is made even more pertinent if one considers that ElecKom is probably the largest parastatal in South Africa.

The study adopted the interpretive paradigm to understand how employees use and interact with learning management system during training and learning activities, and hence improving their skillset in a variety of professional areas. In the case study, a qualitative research approach was adopted and followed during data collection, analysis and interpretation. The empirical data was gathered through open-ended questionnaires, semi-structured interviews and direct observation of participants doing mundane business tasks, during training workshops and skills development sessions. Open-ended questionnaires allowed participants using the LMS to provide their actual understanding Learning Management Systems and their views about it. Face-to-face semi-structured interviews were also conducted with participants. The aim of the interviews was to determine the user's experiences and their opinions on their organization's new Learning Management System. Because of the study's interpretative paradigm, the data collected was non-numeric and qualitative in nature. Thematic and content analysis of empirical evidence was followed - with the data collected categorized according to themes derived from literature and the activity theoretical framework.

5. STUDY LOCATION, ASSUMPTIONS AND LIMITATIONS

The study was conducted at ElecKom's Business Application Solution Center (BASC), which falls within the parastatal's corporate division. The following figure situates BASC in the ElecKom organization context:

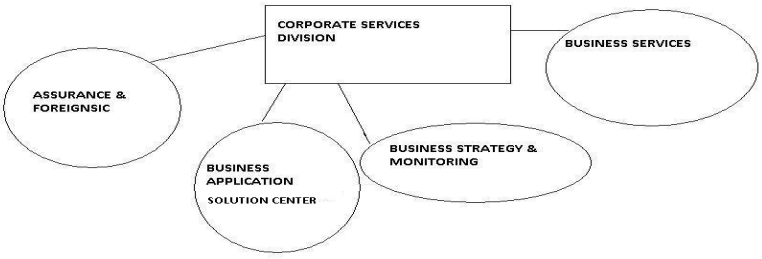

Figure 2. Corporate Services Division Organizational Structure

BASC's role is to provide centralized strategic shared services across ElecKom for project and application management. It is a unit which basically provides the company with enterprise wide IT software solution services. The main assumption in this study was that empirical evidence collected at any one of ElecKom's business division would be virtually identical and lead to the same conclusions as in all other business units. This as the LMS solution in place was the Learning software suite utilized throughout each of the organization's divisions and business unit. This assumption could infer a certain form of convenience sampling from the researcher; hence limitations to this approach need to be understood. In effect, restricting the location scope of the study to the Business Application Solution center could have led to the under-representation of other business units at ElecKom. Taking in account the fact that most business units have a similar workforce structure throughout the organization, the sample used can be considered as accurately representative of ElecKom's workforce in general.

6. ANALYSIS OF SKILLS TANSFER AND PERCEIVED BENEFITS AT ELECKOM AFTER ADOPTION THE LMS

ElecKom has in the past purchased numerous software packages and products to meet its learning needs. When examined at a micro level though, the solutions in place proved rigid as opposed to the dynamic environment ElecKom operated and still operates in. This resulted in an escalation of training and training related costs and contributed to an almost inexistent systems synergy. This was not deemed in line the ElecKom business model.

It is with this in mind that the implementation of a standard enterprise Learning management System (LMS) was required to enable the overall management and successful delivery of all ElecKom's learning initiatives throughout the entire organization (ElecKom, 2004).

The overall object of the project was to acquire and implement the most applicable and suitable eLearning infrastructure with which ElecKom would be able to service the learning needs of its employees and other national and international customers. As part of its skills strategy, ElecKom had decided upon a blended approach to learning which would require the management and delivery of traditional classroom training as well as e-Learning or where appropriate a combination of both. The following elements motivated the decision: South

African legislative requirements; the ability to manage and project learning requirements within ElecKom; the need to manage the training process; the need to allow employees to actively partake in their own learning process (from sweeper to engineer); the integration between formal learning and industry requirements; International best practices; the facility to offer focused delivery according to organization skills requirements (skills plan); the implementation of governance and standards under ElecKom control; and the repositioning of ElecKom formal training and education system (ElecKom, 2004).

In light of all the preceding factors, the parastatal hence opted for the adoption and implementation of an enterprise wide LMS, solution to facilitate the management and achievement of these objectives. The product purchased was the SABA learning management software suite.

ElecKom also hoped that the implementation and usage of the system would result in substantial cost savings as well as the opportunity to offer learning to a wider set of employees with reduced costs and time constraints.

6.1 Empirical Evidence and Findings

On the issue of skills transfer it immediately became apparent that skills transfer, through the usage of the SABA Learning Management System could be considered effective at ElecKom. This, as employees acquired new skills through completion of courses on online systems - for instance, on Microsoft office products or any other subjects of learning. Some of these skills included technical but also soft skills.

The data retrieved in the midst of questionnaire data analysis and direct observations pointed to the fact that through usage of the LMS, ElecKom employees indeed obtain new skills sets. One example that illustrated this was the case of an employee who went through Microsoft Office 2010 training on the SABA LMS and acquired new Microsoft Excel productivity related skills. The below section presents a data sample during observations of employees where the objective was to understand how an employee interacts with the Learning Management System solution in a typical learning situation. The following sequence of events occurred at ElecKom BASC offices in Midrand, Johannesburg on September 5th 2011.

In this first instance, after ElecKom's Microsoft Outlook enterprise wide implementation, the subject (employee A) received a system generated email notification from the LMS administrators. The notification specified that a workflow had been automatically triggered. This as to schedule the employee for e-Learning training on Microsoft Outlook 2010 at around 12:20pm. Below is an edited version of the email that was sent to subject:

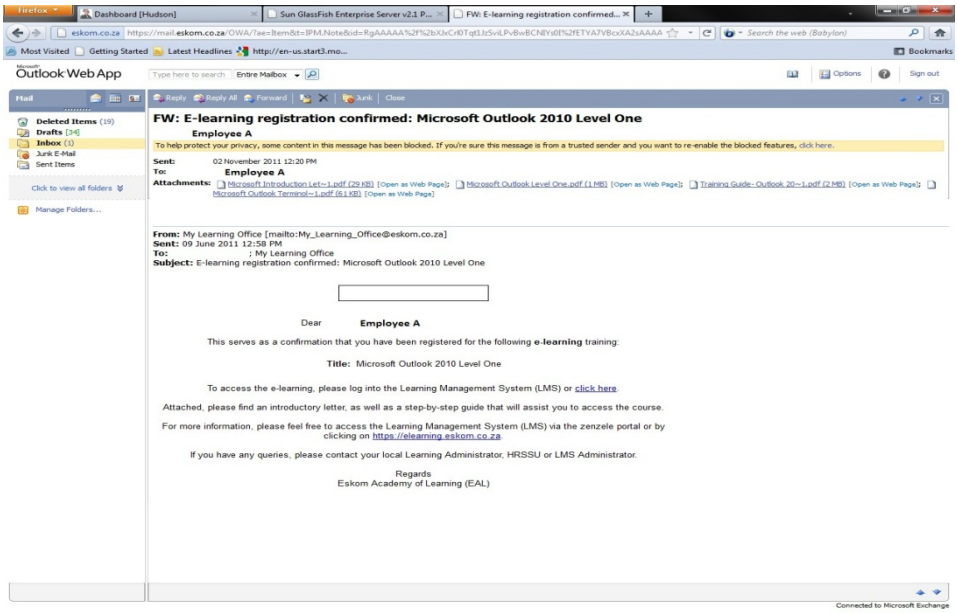

Figure 3. LMS generated email for employee course registration

Attached to the mail received by the employee in question were files that contained introduction and overviews to the course manual. The purpose of these attachments was to provide the subject with the option of reviewing the material offline before completing the course online. This feature is practical in cases where the system is down or unavailable and the users for some reason cannot access the LMS web interface. From this point, employee A followed the link to the company's Learning Management System on the ElecKom intranet and was directed to the LMS home page.

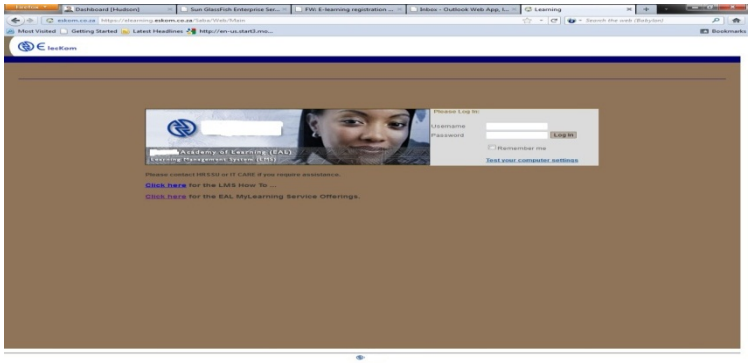

Figure 4. LMS Home page (login screen)

After logging in to the system, the employee was then presented with a personalized view of the system, and could conduct his learning activities as preferred.

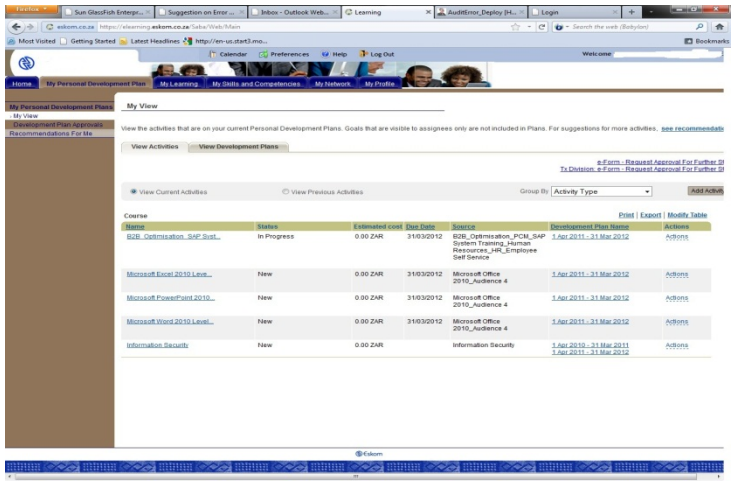

Figure 5. Employee personalized view of his learning activities

In general, employees felt comfortable with the LMS and considered that it indeed contributed to facilitate skills improvement and knowledge sharing. Participants made a few suggestions to improve the LMS though. They felt that if SABA is to better improve its efficiency, meet company learning objectives and satisfy employees (users0, administrators need to look closely at aspects such as personalization of the learning experience, attribution of certificates or qualifications after completion of certain courses etc.

Knowledge sharing vial the LMS was also apparent as in instances, employees exchange training materials retrieved from the SABA LMS interface, and collaborate to complete courses in other instances. The observations clearly highlighted in cases where for instance an employee would refer his colleague back to material downloaded from the LMS interface. Another not so obvious example of what could be considered as knowledge sharing included the instances where an employee had difficulties completing one of the courses and had to get assistance from his colleagues. This indicated to the researcher that there was at the very least some type of a knowledge sharing culture or through the direct or indirect usage of the LMS solution.

From an employee perspective, the SABA interface was considered as an important means for them to improve as a workforce, and its value was generally recognized. Employees reported that they usually accessed the training material via the LMS web interface, and went through the reading material on the LMS solution while at the same time completing tasks and assignments during allocated business training hours. Users have shown to have varied experiences with the interface but the majority related that it felt the system was easy to use as the training it provided typically involved simple task such as basic Novell GroupWise administration or more recently Microsoft Outlook archiving etc.

6.2 Perceived Benefits and proposed Conceptual Model

Informed by the top-management perspective, the following table shows a summary of the benefits considered to have been obtained after adoption of the LMS suite:

Table 1. Benefits obtained from the adoption of the LMS suite

Tangible Benefits
1. Reduced costs by automating learning management processes and optimizing expenditures
2. Improved organizational competence by efficiently measuring and closing competency and certification gaps
3. Reduced time-to-competence and speed-to-market by delivering the right learning at the right time
4. Ensured compliance and proof of compliance with regulatory requirements
5. Sales and channel readiness to speed time-to-quota and streamlining new product introductions
6. Customer education to generate new revenue streams and improve customer loyalty
7. Regulatory compliance to reduce cost of compliance and compliance risks
Intangible Benefits
1. Improvement of organizational performance
2. Alignment suppliers and partners
3. Delivery of a consistent message/product
4. Improved customer satisfaction
5. Attraction of skilled workers
6. Improved speed/access to training
7. Development of a flexible, competent, collaborative and innovative workforce

Evidence, nonetheless, showed that while both employees and top-management perceived the LMS positively as an effective tool that enabled skills improvement in the organization, most also agreed that the course content needed to be more relevant to employees specific work tasks. Based on this case study, in the aim to facilitate skills transfer via a LMS in organizations as means to deal with skills shortages, an activity theory framework based on Mlitwa and Van Belle's (2010) concept was derived. It is illustrated in the figure below:

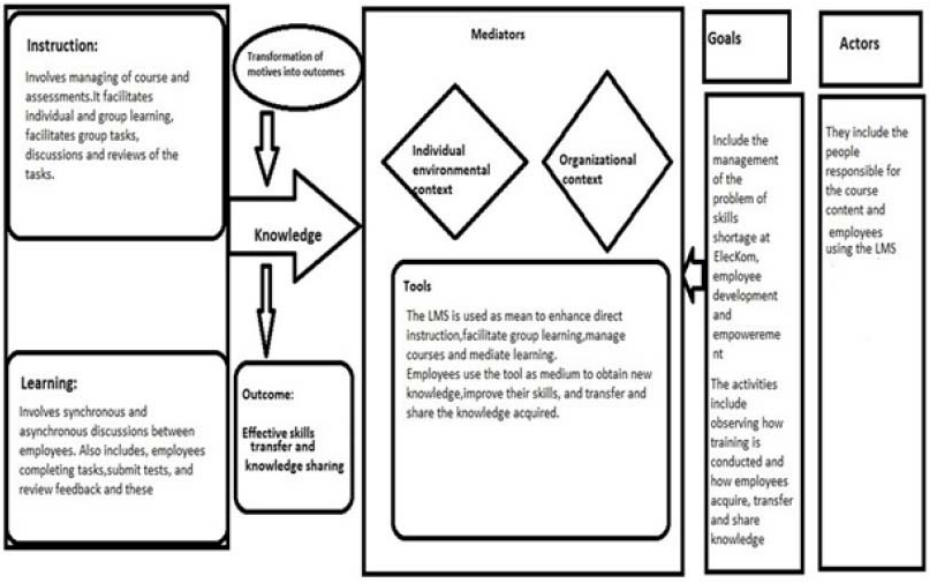

Figure 6. Learning management Systems work activity as applicable at ElecKom
(modified from Mlitwa and Van belle, 2010)

In effect, this activity framework proposes usage of Learning Management Systems as a means to enhance direct instruction, promote group and individual learning for employees as they seek to obtain new knowledge, improve their skillset, transfer and share the knowledge acquired. The obvious ultimate aim of this model is to achieve effective skills transfer and facilitate workforce quality improvement in organizations through the use of a Learning Management System.

In the model above, instruction is considered as a crucial element organizations need to emphasize on. It involves around actual management of courses and assessments by instructors and learning officers. It also recommends a blended approach to learning when and where applicable. In this conceptual framework, instruction is considered to be most effective when it facilitates not only individual but also group learning.

The activity of learning also plays a central role in the proposed model. This as it involves the synchronous and asynchronous aspects of the learning actions employee learners engage in. Learning activities should not be neglected as they play an essential part in knowledge and skills flow throughout the organization.

The mediators are considered as a critical in this proposed framework. This as the environmental context within which employees learn on their own as well the overall organizational context where employees interact while conducting their learning activities all have an influence on the manner in which the LMS is used as a tool. In effect, a Learning management System should be used as a means to enhance direct instruction, promote group and individual learning. A Learning management systems implementation should always keep in its scope of objectives the need for employees to not only obtain new knowledge, but also the improvement of their skill-set and the promotion of knowledge sharing throughout the concerned organizations.

7. CONCLUSION

This paper showed how ElecKom facilitated skills transfer and knowledge improvement using a learning management system as a consistent learning environment and a tool to curb relevant skills shortage. It also described how employees used the environment to perform training activities. Through a case study at one of Africa's largest power utility, empirical evidence shows that LMS may indeed be a useful and enabling tool, in dealing and addressing employee knowledge and skills related problems. Organizational workforce quality could be improved, but emphasis should be put on convincing employees of a LMS's value. In this light, tailoring the learning content to the worker's skills and business needs is important, if employees are to truly grasp and understand not only the abstract but also tangible benefits a Learning Management system can provide. The paper concludes that the issues of relevant skills shortage may be curbed through knowledge and skills transfer using learning management systems as enabling tools, as so long as the systems are contextualized sensitive to the organizational culture and the background of employees.

REFERENCES

Atkison RC and Schiffrin RM (1968). *Human memory: a proposed system and its control processes* in K T and J W Spence (eds.) *The Psychology of Learning and Motivation vol 2*. London; Academic Press

Barron ,T. (2000) *"The LMS Guess." Learning Circuits.* Accessed online (20/08/2011) at http://www. Learningcircuits. org/2000/apr2000/barron.html

Calldo, Du Plooy. (2008). *Eskom: Skills Fact,* Solidarity Research Institute.

Cavell S. (2002). *Knowing and Acknowledging, Must We Mean What We Say*? Cambridge University Press. 238–266.

ElecKom ELearning Programme Office (2004). *ElecKom eLearning Business case Version, 2004*

Engestrom, Y. (1987).*Learning by expanding: An activity-theoretical approach to developmental research*, Helsinki, Helsinki yliopisto.

Daniels, R.C. (2007). *Skills Shortages in South Africa: A literature Review, DPRU Working Paper 07/121*. University of Cape Town, South Africa.

Department of Labour. (2005). *State of Skills in South Africa 2005*, Department of Labour, Pretoria.- HICSS vol. 5, pp.155

Gaousou, DAK and Kekwaletswe, RM, (2012). Effective skills transfer through a learning management system: A case study at ElecKom corporate services. In the proceedings of the *IADIS Information Systems International Conference March 10-12,* Berlin, Germany, pp 282-298.

Ibrahim, M and Kamel, S. (2003). Effectiveness and applicability of Internet-based training in the Corporation-Case of Egypt. In the proceedings of the *36th Annual Hawaii International Conference on System Sciences*

Knowledge Resources (2005). *Education, Training and Development Policy Guidelines.* Accessed online at www.kr.co. za/Publishing/Templates/**Skills**.../ETD%20Policy.doc on November 21st 2011.

Lünsche (2006). Skills *Shortage hits Eskom Power Plants* Viewed online at http://www.fin24.com/Companies/ Industrial/Skills-shortage-hits-Eskom-power-plants-20110629 Accessed June 30th 2011

Markham, S. (2004). *Learning styles measurement: A cause for concern* Viewed online at rg.csse.monash.edu.au/ techreps/learning_styles_review.pdf Accessed 13 May 2011

Mlitwa, N. and Van Belle, JP (2010). *A proposed interpretivist framework to research the adoption of learning management systems in universities*. Accessed online 13 May 2011 at http//:www.ibimapublishing.com/ journals/CIBIMA/cibima.html.

Nwanko, S. and Richards, D.C. (2001). Privatization: The myth of free market orthodoxy in sub-Saharan Africa, *International Journal of Public Sector Management*, 14(2): 165-179.

Pedler, M., Burgogyne, J. and Boydell, T. (1997). *The Learning Company: A strategy for sustainable development*. 2nd Ed. London; McGraw-Hill.

Recesso, A. (2001). Prospect of a Technology-Based Learner Interface for Schools. *Educational Technology and Society* 4(1).

Vygotsky, LS. (1979). *Mind in society: Development of higher psychological process*. Cambridge, MA: Harvard University press.

Watson, W. R., and Watson, S. L. (2007). An argument for clarity: What are learning management systems, what are they not, and what should they become? *TechTrends*, 51(2), 28-34.