IST-Africa
IST-Africa 2015 Conference Proceedings
Paul Cunningham and Miriam Cunningham (Eds)
IIMC International Information Management Corporation, 2015
ISBN: 978-1-905824-50-2

Evaluating Preparedness for Social Networks Integration into Learning: A Case Study of Inoorero University

Julius MURUMBA[1], Elyjoy MICHENI[2], Alice NJUGUNA[3]
[1]*Inoorero University, P.O. Box 60550-00200, Nairobi, Kenya*
+254 (020) 0722892973, Email: j.murumba@gmail.com
[2]*The Technical University of Kenya, P.O. Box 52428, Nairobi, 00200, Kenya*
+254 (020) 0722790482, Email: elyjoymicheni@gmail.com
[3]*KCA University, P.O. Box 56808-00200, Nairobi, Kenya*
+254(020) 8070408/9, E-mail: alice@kca.ac.ke

Abstract: The advancement of Information Communication Technology in recent years and the increase in the number of social networking technologies, has led to educators facing complex choices and challenges when it comes to exploiting the advantages these technologies offer. This hampers the use of social networks to enhance and complement teaching. This may be attributed to lack of knowledge and preparedness for integration, which in turn hinders successful integration of social networks into education systems. The objective of the study was to evaluate the preparedness for social networks integration into teaching and learning for universities. The study also investigated challenges faced in integrating these technologies. A case study approach was taken with the collection of data from lecturers at Inoorero University using the census method. Data was analyzed and presented using frequencies, percentages and tables, by use of SPSS. The study concludes that there is preparedness for social networks integration into teaching and learning at the university. The findings of the study can be used to develop a benchmark for integrating social networks into teaching and learning, and can aid professionals in the education communities in policy development and research.

Keywords: Social networks, pedagogy, Integration, preparedness

1. Introduction

Information and Communication Technology (ICT) has become one of the basic building blocks of modern society. As a result, the Higher Education environment is changing in response to economic pressures, government policies and changing behaviors' influenced by greater ownership of new technologies. These technologies afford us the ability to convey concepts in new ways that would not otherwise be possible, efficient, or effective with other instructional methods [1]. These technologies do not only help us teach old material in new ways, but they also help us teach new material in new ways. Many educational systems and institutions of higher learning are under increasing pressure to use the new and emerging ICT such as social networks to teach students the knowledge and skills they need in the 21st century. This is encouraging institutions to review key aspects of their delivery of learning and to reassess what is delivered, to whom and in what ways [2].

Kenya has installed fiber optic technology which is expected to boost and reduce the cost of internet communication and other ICT services in the country. Resources that can be accessed through inter-networked environments include innovative curricula, teacher-created lesson plans, and interactive tools such as visualizations and simulations that use real-world datasets [3][4]. When this technical infrastructure is combined with Web 2.0 the

result is a collaborative network for teaching and learning transcending location, time, and educational context. This allows users such as teachers, and students to access, create, connect, and share knowledge in ways that can fundamentally transform educational practice and deepen learning in various disciplines [5]. Thus, the new ICT tools have fundamentally changed the way people communicate and do business, and have the potential to transform the nature of education, where and how learning takes place and the roles of students and teachers in the learning process [6]. Universities in Africa are increasingly recognizing the educational value of the Internet and social media for teaching and learning purposes. Nafukho et al [7] observed that as the world undergoes rapid social and technological changes, more focus is turning to open learning and distance education as the system likely to characterize the twenty-first century. Furthermore, Universities are expected to contribute to society by widening access to higher education, continuing professional development, applied research, contributing to local economic impact, and improving social inclusion [8]. Integration of social networks into learning will widen our picture of education [9].

Inoorero University was founded in 1983 and was originally known as the Kenya School of Professional Studies. The institution transformed into a University in 2009, offering a variety of certificate, diploma and degree courses in ICT, Business, Information Science and Law [10]. The University has embraced ICT in teaching and learning, with some courses being offered online on the virtual campus through the Moodle platform. The internet infrastructure at the university is developed, with various connections through ADSL, Fiber internet and 3G mobile internet, all of which have high bandwidth, enough for reading, chat, and normal quality video transfer. Members of this University community use the Internet with the majority having joined at least one social network. Most popular social networks at the University include social bookmarking tools, Facebook, Google+, Youtube, Wikipedia, slide share and Tweeter.

1.1 Conceptual Framework

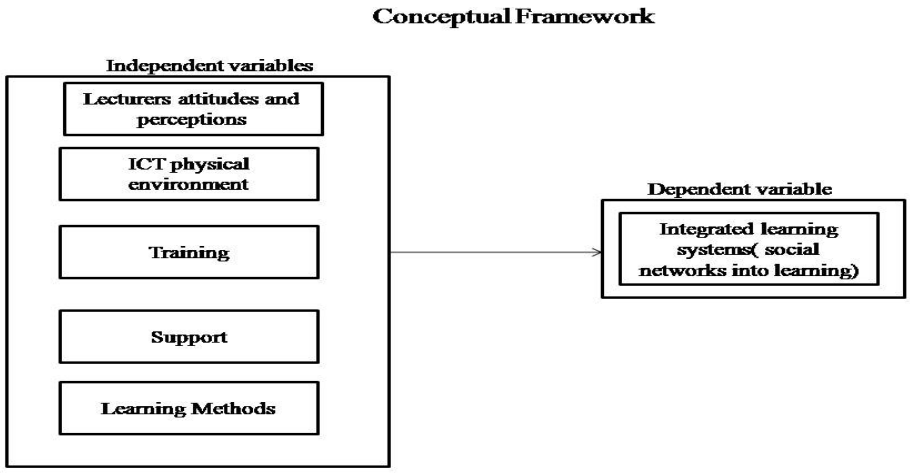

Figure 1: Conceptual Framework for integrating social networks into learning. (Source: Researcher)

This research is an attempt to closely examine and better understand preparedness of institutions for social networks integration into learning. The study attempts to measure the degree to which social networks integration in learning is influenced by lecturers' attitudes and perceptions, the ICT physical environment, training and support. The conceptual framework consists of the above stated factors which the researcher posits to have an effect on social networks integration into learning. The framework consists of sets of two variables; independent variables and dependent variables. Integration of social networks in learning formed the dependent or observed variable while the lecturer's attitudes and

perceptions, the ICT physical environment, training and support formed the independent variables. These factors may be moderated through monitoring and evaluation.

2. Objectives of the study

The specific objectives of the study were:

i. To determine the perceptions and attitudes of lecturers at Universities in Kenya towards the integration of social networking technologies in teaching and learning.
ii. To evaluate preparedness for social networks integration into teaching and learning.
iii. To investigate challenges faced in integrating social networks into learning.

2.1 Research Questions

The research aimed to answer the following questions

i. What are the perceptions and attitudes of lecturers at institutions of higher learning in Kenya based on a case study in Inoorero University towards the integration of social networks in teaching and learning?
ii. Is there preparedness for social networks integration into teaching and learning?
iii. What challenges are encountered in integrating social networks into teaching and learning?

3. Methodology

The strategy, plan and structure of conducting this research involved a case study. A case study involves a careful and complete observation of a social unit, which is either a person, institution, family, cultural group or an entire community and emphasizes depth rather than the breadth of the study [26]. The research was undertaken over a period of seven months, April to October 2014 and reviewed relevant literature using the diffusion of innovations and technological pedagogical content knowledge theories. The research engaged a qualitative approach, because the design, development, implementation and evaluation of online and social network technology supported learning systems require thoughtful analysis and investigation of how the attributes and resources of the Internet are utilized [27]. Data was collected from all the possible units in the location of study using the census method, and all the elements or cases of the field of study area were to be enumerated. This is justified by the fact that the size of the universe was considerably small. All the forty lecturers at the university were targeted for data collection, thus the sample size for the research was forty. Research Instruments consisted of structured questionnaires which respondents could fill independently with little assistance from the researcher.

4. Technology Description

4.1 Social Networks Infrastructure

A new era of teaching and learning is on the rise, and consists of mainly a student-centered, technologically and socially rich environment. This era embraces the perception that high quality education is shaped by changes in the characteristics of learners and the ways in which they use new technologies to exchange information [11]. The new technologies include blogs, wikis, multimedia sharing services, content syndication, podcasting and content tagging services [12]. Kenya realized the importance of ICT in education; as a result, the government set up ICT structures at all levels of education in order to build an ICT-literate community [13]. The country's ICT Policy aims at creating an e-enabled and knowledge-based society by 2015. The Kenyan government also introduced an eLearning Policy which aimed at bringing about a paradigm shift in formal education to promote lifelong learning. Though initially designed for social interaction, social networks have not

only become an important component of these e-learning systems but are also being used in classroom settings and other aspects of learning.

4.2 Pedagogical Integration of ICT

Many institutions of higher learning in Kenya have improved the availability of technology, the infrastructure and support required to maintain and utilize it. The demands for students to leave school prepared for life in an increasingly complex and rapidly changing world have resulted in many descriptions and lists of skills proposed as the basis of 21st Century learning. The ability to creatively and responsibly use information technologies appears as a requirement for many school leavers [14]. [15]. The pedagogical integration of ICT must be understood as integration such that the student learns and socializes through a multitude of interactive and communication channels. Pedagogical integration of ICT means not only the implementation of networks and equipment, but also the use of a set of innovative technological techniques such as audiovisual, information processing and telecommunications to enhance learning at schools and in continuing education programs and for economic, social and cultural development [16].

4.3 Cultural School Characteristics

Cultural school characteristics are defined as the basic assumptions, norms and values and cultural artifacts that are shared by school members, which influence their functioning at school. School culture encompasses the vision, plans, norms and values that are shared by school members [17]. Pelgrum et al [18] noted that effective ICT integration depends on the perceptions and vision of school leaders rather than teachers' ICT skills. Thus, school culture has a mediating role that influences teachers' actions, beliefs, and attitudes [19]. Palak et al [20] take the argument further, stating that the strongest predictor of future ICT use were teachers' attitudes toward it. Devos et al [21] argued that the three underlying aspects of cultural school characteristics are innovativeness, goal orientedness and leadership: 1) Innovativeness reflects the staff's attitude towards educational innovations and to what extent they adapt themselves to changes and have an open attitude towards educational innovations. 2) Goal orientedness reflects to what extent the school vision is clearly formulated and shared by school members. 3) Leadership reflects to what extent the principal engages in supportive behavior

4.4 Government Policies and Integration of ICT in Education

Through its organs such as Parliament and the Ministry of Education, the Government plays a high level role of establishing a policy for online technologies learning integration and usage in institutions of higher learning. When such a policy is in place, the Government can set up infrastructure such as provision of electricity, computer hardware and software that are necessary for integration. The Government can also plan for and support integration through training programmes in order to enhance capacity in universities. The Kenyan Government, through the Ministries of Education, Science and Technology and Information and Communication Technology, has developed several policy and strategy documents to guide the integration of ICT in education (National ICT Policy, 2006; Sessional Paper No. 1 of 2005 and Kenya Education Sector Support Programme, 2005-2010). The integration of ICT in management in Kenyan institutions of higher learning has been driven to a large extent by the entrenchment of ICT integration in education through the launch of the National ICT Strategy in Education (2006) and the launch of the National ICT Integration and Innovation Centre at the Kenya Science Campus in Nairobi, which have created awareness of the place of ICT in education [22].

5. Developments

This study is anchored on the Innovation Diffusion Theory (IDT) and Technological Pedagogical Content Knowledge Web 2.0 (TPACK 2.0) theoretical frameworks. The Innovation Diffusion Theory offers a framework for identifying issues that affect diffusion of innovations for end user computing technologies such as social networks. TPACK 2.0 is the guiding principle underpinning pedagogy using web 2.0 technologies and is relevant in discussing social networks integration into learning at institutions of higher learning.

5.1 Innovation Diffusion Theory

This study focuses on the integration of online technologies and social networks into college education, and is therefore related to the general area of innovation diffusion. Innovation of Diffusion Theory is a theoretical perspective on technology acceptance. Its primary intent is to provide an account as to how technological innovations move from the stage of invention to widespread use or not. An innovation is an idea, practice, or object that is perceived as new by an individual or another unit of adoption [23]. Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system [23]. The diffusion of innovations theory by [23] has been viewed as being the most appropriate for investigating the adoption of technology in higher education and educational environments [24]. In diffusion research involving technological innovations [23] used the word "technology" and "innovation" as synonyms. According to [23], a technology is a design for instrumental action that reduces the uncertainty in the cause-effect relationships involved in achieving a desired outcome. In technological innovations, it is composed of two parts: hardware and software. Hardware is taken to be the tool that embodies the technology in the form of a material or physical object, while software is the information base for the tool [23]. Adoption is a decision of full use of an innovation as the best course of action available and rejection is a decision not to adopt an innovation [23]. Innovation, communication channels, time, and social system are the four key components of the diffusion of innovations.

1) Innovation: An innovation is an idea, practice, or project that is perceived as new by an individual or other unit of adoption [23]. An innovation may have been invented a long time ago, but if individuals perceive it as new, then it may still be an innovation for them. Uncertainty is an important obstacle to the adoption of innovations.

2) Communication Channels: Communication is a process in which participants create and share information with one another in order to reach a mutual understanding [23]. This communication occurs through channels between sources. A source is an individual or an institution that originates a message, and a channel is the means by which a message gets from the source to the receiver [23]. [23] states that diffusion is a specific kind of communication and the communication elements involved are; an innovation, two individuals or other units of adoption, and a communication channel. Examples of communications channels are mass media and interpersonal communication.

3) Time: According to [23], including the time dimension in diffusion research illustrates one of its strengths, since in the innovation-diffusion process, adopter categorization, and rate of adoptions all include a time dimension.

4) Social system: Diffusion of innovations takes place in the social system, and is influenced by the social structure of the social system [23]. The nature of the social system therefore affects individuals' innovativeness, which is the main criterion for categorizing adopters.

5.1.1 Rate of Adoption

[23] divides the technology or innovation adopters into five categories depending on the speed of uptake: innovators, earlier adopters, early majority, late majority and laggards. This is shown in Figure 2 below.

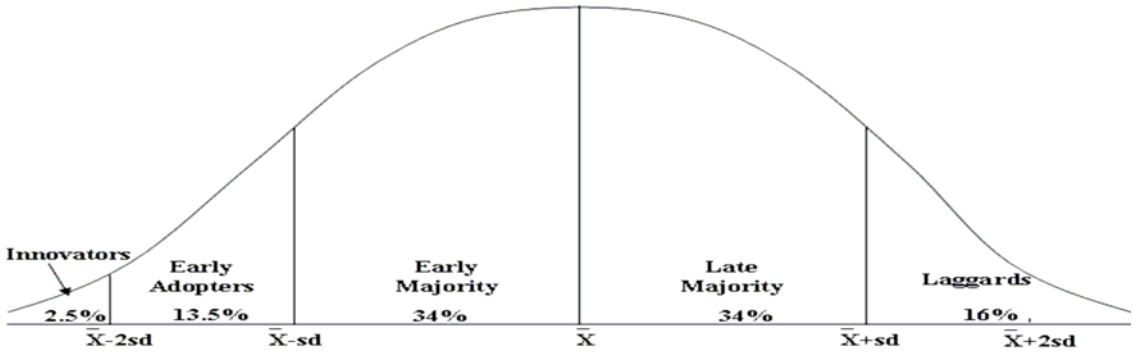

Figure 2: Innovation adopter categories (Adapted from [23])

The five Innovation adopter categories are: **1) Innovators:** According to [23], innovators are the first individuals to adopt and experience new ideas. Innovators are willing to take risks, have the highest social class, have great financial liquidity, are very social and have closest contact to scientific sources and interaction with other innovators and are also the gatekeepers bringing the innovation in from outside of the system. **2) Early Adopters:** This is the second fastest category of individuals who adopt an innovation, and usually consists of individuals have the highest degree of opinion leadership among the other adopter categories. [23] argued that since early adopters are more likely to hold leadership roles in the social system, other members come to them to get advice or information about the innovation. **3) Early Majority:** Early Majority tend to be slower in the adoption process, have above average social status, contact with early adopters, and seldom hold positions of opinion leadership in a system. They are deliberate in adopting an innovation and they are neither the first nor the last to adopt it. **4) Late Majority:** The late majority includes one-third of all members of the social system who wait until most of their peers adopt the innovation. Although they are skeptical about the innovation and its outcomes, economic necessity and peer pressure may lead them to the adoption of the innovation. **5) Laggards:** Individuals in this category are the last to adopt an innovation. As [23] stated, laggards have the traditional view and they are more skeptical about innovations and change agents than the late majority. Moreover, they do not have a leadership role, have limited resources and lack awareness-knowledge of innovations. They first want to make sure that an innovation works before they adopt.

5.2 Technological Pedagogical Content Knowledge Web 2.0

Technological Pedagogical Content Knowledge 2.0 (TPACK 2.0) model proposed by [25] offers new approaches for treating a complex task, like enhancing teachers' knowledge and skills necessary to support productive integration of Web 2.0 technologies in the classroom. The TPACK 2.0 model consists of three knowledge elements which constitute it, namely Web 2.0 technologies, Content and Pedagogy and sees them not as isolated but as a complex relationship system. It defines three new dimensions, areas of knowledge; a) Pedagogical Content Knowledge, b) Technological Content Knowledge, and c) Technological Pedagogical Knowledge. Figure 3 presents an adaptation for Web 2.0 technologies, called TPACK 2.0.

It includes the knowledge of the pedagogical affordances of Web 2.0 technologies and how they can be used to support specific pedagogical strategies or goals in the classroom such as fostering inquiry learning, supporting collaborative or reflective learning.

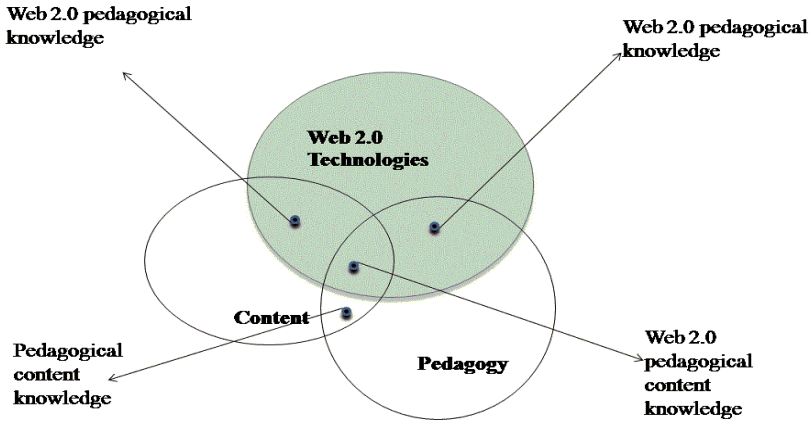

Figure 3: TPACK for Web 2.0 technologies (TPACK 2.0 model) adapted from [25]

6. Results

The analysis, presentation and interpretation of findings were done with the purpose of answering the questions asked at the beginning of the research. 33 questionnaires were returned duly filled, making a response rate of 82.5%, which is an adequate response rate for statistical reporting. Data descriptive statistics such as frequencies and percentages was used to analyze the data. Integration of social networks into teaching and learning is influenced by factors such as the institutions physical ICT infrastructure, support, training, and individual lecturer's perceptions and attitudes. This led to the formulation of research questions stated above in order to evaluate the preparedness for social networks integration. The analysis of these factors shows that they are independent variables which prevent or enable social networks integration. Therefore, the relationships among them are compared with the aim of constructing them into the conceptual framework.

6.1 The perceptions and attitudes of lecturers towards the integration of social networks in teaching and learning

84.8% respondents indicated they utilize social media for teaching and learning while 15.2% indicated they do not utilize social media. A simple chi square test gives $\chi 2 = (28–16.5)2/16.5+ (5–16.5)2 /16.5 = 16.0$. The critical value we are supposed to exceed at $\alpha = 0.05$, 1 degree of freedom is 3.84. Since the calculated $\chi 2$ value is greater than the critical value, we can conclusively say that the respondents were significantly more likely to answer yes than no. Further, 89.4% of the respondents indicated they have fun using social media, 66.7% indicated they are comfortable interacting with student groups on social media and 84.9% indicated that expert knowledge can be communicated using social media. An example is a programming lesson uploaded on You Tube. The findings indicated that the respondents have a positive stance towards integration of social networks into learning. As noted by [28], there is a direct connection between teachers' pedagogical beliefs and technology usage, since technology skills are unlikely to be used unless they fit with teachers' existing pedagogical beliefs**.** The pedagogical beliefs of the lecturers had an effect on their perceptions of technology use, and their attitudes towards technology adoption.

6.2 Is there Preparedness?

90.9% of the respondents indicated that the ICT physical environment and tools of the university makes it easy to use social networks, while 9.1% indicated it does not. Here, $\chi 2 = (30–16.5)2/16.5+ (3–16.5)2 /16.5 = 22.1$. Since the calculated $\chi 2$ value is greater than the critical value, we can conclusively say that the respondents were significantly more likely

to answer yes than no. 63.6% of the respondents indicated there was support for internet connection difficulties, and 54.5% indicated support for software difficulties was available. 69.7% of the respondents indicated they have the resources necessary to access social media. Like the respondents in this study [29] observed that institutional and technical factors are critical to teachers' attitudes towards and understanding of technology, and that knowledge sharing forms an important part of an institution's culture. The majority of the respondents (66.7%) indicated they were comfortable interacting with student groups on social media for academic purposes.

6.3 The challenges encountered in integrating social networks into learning

Despite the achievements revealed by the respondents in integrating social networking technologies for teaching and learning processes, some challenges and issues appear to be associated with the use of social media. 81.8% of the respondents indicated they experienced difficulties while 18.2% indicated they did not experience any difficulties. The chi square value $\chi 2 = (27–16.5)2/16.5+ (6–16.5)2 /16.5 = 13.4$. Since the calculated $\chi 2$ value is greater than the critical value, we can conclusively say that the respondents were more likely to answer yes than no. Furthermore, 5.8% of the respondents cited privacy concerns as a challenge, 57.5% indicated too many social media accounts to manage is a challenge while 60.6% indicated distractions were a challenge. Thus one may agree with [30] who observed that although learners at universities used social media for among others sharing their learning experiences, research, academic events and getting latest information they also faced problems such as electricity failure, low bandwidth of the internet, lack of infrastructure like computers and laptops, leakage of privacy, cyber-bullying and physical problems like backache, fingers' joint pain, dry face and blurred vision due to longer use of computer.

6.4 Tests of Association between Social Media Usage Variables and Integration

This level of analysis aimed at determining whether there was any association between the independent variables and the dependent variable. In order to accomplish this, the Chi Square Test of Independence which tests the association between two sets of categorical variables, were computed. The independent variables that were tested for any association with integration of social networks into teaching and learning were attitudes and perceptions, resources to access social media, institutional characteristics, training and support, and challenges. Table 1 below contains the chi-square score for the table (labeled Pearson chi-square), the table's degrees of freedom, and the p-value associated with the obtained chi-square score.

The findings indicate a statistically significant relationship between Attitudes & Perceptions and Integration ($\chi 2=4.897^{a}$, df =1, p=0.027 which exceeds the critical value of 3.84 at $\alpha = 0.05$). This implies that the association did not occur by chance but rather indicates that integration is influenced by attitudes and perceptions.

Table1: Chi Square Test of Independence- Attitude & Perceptions, Support, Preparedness and Challenges versus Integration (Source: Researcher)

	Pearson Chi-Square ($\chi 2$) value	df	Asymp. Sig. (2-sided)
Attitudes & Perceptions versus Integration	4.897^{a}	1	.027
Institutional characteristics, training & Support versus Integration	8.192^{a}	1	.004

Access to resources versus Integration	.287[a]	1	.592
Challenges versus Integration	4.591[a]	1	.032

The relationship between Institutional characteristics, training & support and Integration showed a statistically significant relationship (χ^2=8.192[a], df =1, p=0.004) implying the association is also not by chance and that institutional characteristics, training and support had an influence on integration. This could be explained by support for software difficulties and internet connection difficulties being available. Challenges and Integration demonstrates a statistically significant relationship (χ^2=4.591[a], df =1, p=0.032). This implies that the challenges encountered such as privacy concerns and distractions affected integration most likely in a negative way. The findings were not significant for having access to resources that enable use of social media (χ^2=.287[a], df =1, p=.592), implying that having resources necessary to access social media did not influence integration of social media into teaching and learning.

The overall relationship between variables influencing integration of social networks and the integration was statistically significant. This implies that this association did not occur by chance but rather that attitudes and perceptions, and institutional characteristics, training and support, and challenges were favorable for the integration.

7. Business Benefits

Integrating social network tools such as social bookmarking tools, Face book, Google+, YouTube, Wikipedia and Slide share into learning is beneficial to students since there is a likelihood of better engagement and motivation, better instructional materials, better communication and interaction, increased family involvement and application of real world skills. There are benefits for teachers too such as enhanced professionalism and collaboration among colleagues, and opportunities to build relationships with students [31].

8. Conclusion

The study concludes that attitudes and perceptions, the ICT infrastructure, training, support and challenges have an influence on the adoption and use of social networks for teaching and learning. The lesson learnt was that social media is not a new concept but is being used in university communities mainly for social interaction, thus there was the need for adoption of appropriate frameworks to facilitate re-purposing it for utilization in learning. The study having explored the preparedness for social networks integration into teaching and learning at universities in Kenya based on a case study in Inoorero University, recommends advocacy for preparedness in terms of ICT infrastructure development, institutional support, training and fostering school cultures' which motivate teachers to use appropriate innovative online technologies to enhance teaching and learning. The researchers encourage further research on use of social networks in learning methodologies such as instructivism, constructivism, cognitivism, objectivism and behaviorism.

References

[1] Klopfer, E., Osterweil, S., Groff, J., & Haas, J. (2009). The Instructional Power of digital games social networking simulations and How Teachers Can Leverage Them. *using the technology of today,in the classroom today*.

[2] JISC. (2011). *JISC e-Learning programme*. Retrieved 2013, from JISC e-Learning programme: www.jisc.ac.uk/elearningprogramme

[3] Barker, L. (2009). Science teachers' use of online resources and the digital library for Earth system education. *Joint Conference on Digital Libraries* (pp. 1-10). New York: ACM.

[4] McArthur, D., & Zia, L. (2008). From NSDL 1.0 to NSDL 2.0: Towards a comprehensive cyberinfrastructure for teaching and learning. *International Conference on DigitalLibraries* (pp. 66-69). Pittsburgh, PA: ACM.
[5] Greenhow, C., Robelia, B., & Hughes, J. (2009). Learning, teaching, and scholarship in a digital age. *Educational Researcher , 38* (4), 246-249.
[6] Omwenga, E. I. (2006). *citeseerx.ist.psu.edu.* Retrieved 2014, from citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.110.5700...:http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.110.5700&rep=rep1&type=pdf
[7] Nafukho, F. M., & Machuma, H. M. (2013). The World Bank's Africa Virtual University Project: a revisit. *European Journal of Training and Development , 37* (7), 646-661.
[8] Beebe, M. A. (September 2004). Impact of ICT Revolution on the African Academic Landscape. *Conference on Electronic Publishing and Dissemination.* Dakar, Senegal: CODESRIA.
[9] Aviram, A., & Eshet-Alkalai, Y. (2006). Towards a Theory of Digital Literacy: Three Scenarios for the Next Steps. *European Journal of Open, Distance and E-Learning*.
[10] Inoorero University. (2013). *IU History*. Retrieved April 23, 2014, from Inoorero University: http://www.iu.ac.ke/
[11] Baird, D. E., & Fisher, M. (2005-2006). Neomillennial User Experience Design Strategies:Utilizing Social Networking Media To Support "Always On" Learning Styles. *J. Educational Technology Systems , 34* (1), 5-32.
[12] Anderson, P. (2007). *JISC.* Retrieved 2013, from "What is Web 2.0? Ideas, technologies and implications for education JISC Technology and Standards Watch".: http://www.jisc.ac.uk/media/documents/techwatch/tsw0701b.pdf
[13] Sankale, J. (2006). *E-Learning Activities for Kenya.* Retrieved 2013, from Ministry of Education, Kenya: http://www.checkpoint-elearning.com/article/2495.html
[14] Lemke, C., Coughlin, E., Thadani, V., & Martin, C. (2003). *enGauge 21st Century Skills: Literacy in the Digital Age.* Naperville: North Central Regional Educational Laboratory.
[15] Semenov, A. (2005). *Information and Communication Technologies in Schools: A Handbook for Teachers - How ICT Can Create New, Open Learning Environments.* Paris: UNESCO
[16] Karsenti, T., Collin, S., & Harper-Merrett, T. (2012). *Pedagogical Integration of ICT: Successes and Challenges from 100+ African Schools* (3rd ed.). (G. D. Valérie Drouin, Ed.) Ottawa, Canada: creative commons.
[17] Maslowski, R. (2001). *School culture and school performance: An explorative study into theorganizational culture of secondary schools and their effects.* Enschede, The Netherlands: Twente University Press.
[18] Pelgrum, W. J., & Law, N. (2009). *ICT in Education around the world: Trends, problems and prospects.* International Institute for Educational Planning.
[19] Chai, C. S., Hong, H. Y., & Teo, T. (2009). Singaporean and Taiwanese pre-service teachers beliefs and their attitude towards ICT : A Comparative Study. *The Asia-Pacific Education Researcher , 18*, 117-128.
[20] Palak, D., & Walls, R. T. (2009). Teachers' beliefs and technology practices: A mixed-methods approach. *Journal of Research on Technology in Education , 41*, 157-181.
[21] Devos, G., Bouckenooghe, D., Engels, N., Hotton, G., & Aelterman, A. (2007). An assessment of well-being of principals in Flemish primary schools. *Journal of Educational Administration* 33–61.
[22] Kashorda, M., Waema, T., Omosa, M., & Kyalo, V. (2007). *E-Readiness Survey Of Higher Education Institutions In Kenya.* Nairobi: Kenya Education Network (KENET).
[23] Rogers, E. (2003). *Diffusion of innovations* (5th ed.). New York: Free Press.
[24] Sahin, I. (2006). Detailed Review Of Rogers' Diffusion Of Innovations Theoryand Educational Technology-Related Studies Based On Rogers' Theory. *The Turkish Online Journal Of Educational Technology , 5* (2).
[25] Jimoyiannis, A., Tsiotakis, P., & Roussinos, D. (2011). *Pedagogical and instructional design issues towards the integration of Web 2.0 tools in instruction.* Korinthos, Greece: University of Peloponnese.
[26] Kothari, C. R. (2004). *Research Methodology: methods and techniques.* New Delhi: New Age international Ltd..
[27] Kituyi, G., & Tusubira, I. (2013). A framework for the integration of e-learning in higher education institutions in developing countries. *International Journal of Education and Development using Information and Communication Technology , 9* (2), 19-36.
[28] Neyland, E. (2011). Integrating online learning in NSW secondary schools: Three schools' Perspectives on ICT adoption. *Australasian Journal of Educational Technology , 27* (1), 152-173.
[29] Chou, S. W. (2005). Designing good institutional contexts for innovation in a technology mediated learning environment. *Journal of Computer Assisted Learning , 21*, 269-280.

[30] Hussain, I., Gulrez, N., & Tahirkheli, S. A. (2012). Academic Use of Social Media: Practices and Problems of University. *2012 International Conference on Education and Management Innovation.* IACSIT Press.
[31] Thomas, J. (2000). *A review of research on project-based learning. San Rafael, CA: Autodesk.*Retrieved 2013, from Autodesk.: http://www.k12reform.org/foundation/pbl/research