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El modelo de e-learning basado en SNS para proporcionar una solución inteligente para el aprendizaje electrónico

The SNS-based e-learning model to provide smart solution for e-learning

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RESUMEN.
Estamos en la era de los sitios de redes sociales que ofrece una plataforma a miles de millones de individuos para ofrecer y transmitir los unos a los otros. Estos sitios sociales, además, brindan una plataforma mundial a estudiantes y educadores para satisfacer sus necesidades de aprendizaje o instrucción. La incorporación de sitios de redes sociales (SNS) y herramientas en línea con e-learning, obteniendo una gran fama, extraordinariamente instructivo en el espacio. Los alumnos se sienten más cómodos con estos SNS, se sienten complacidos de unirse, participar y colaborar con compañeros o profesores en estos sitios. La integración inteligente de los sitios sociales y las herramientas en línea con la plataforma de e-learning convencional podría revolucionar el modelo actual de e-learning. Varias cuestiones de aprendizaje electrónico, incluida la participación, la asociación, la motivación y el compromiso de los alumnos pueden mitigarse con esta integración. El número de SNS y las herramientas en línea tienen grandes componentes para el aprendizaje, la enseñanza o la capacitación, sin embargo, su uso equilibrado e incorporación con el modelo de aprendizaje electrónico es aún un desafío de exploración. En este artículo, presentamos un modelo que utiliza sitios y herramientas de redes sociales de manera efectiva con la plataforma de aprendizaje electrónico. La idea básica de este modelo es hacer que el e-learning sea simple y más atractivo al usar sitios sociales y herramientas en línea, fáciles de comprender y, en general, gratuitos. Este documento también resalta algunos problemas y desafíos de investigación abiertos que podrían enfrentar el modelo de e-learning basado en SNS. La idea, el conocimiento y los temas de investigación abierta de los que se explicita en este artículo pueden crear otro rumbo de investigación en el espacio de aprendizaje orientado por la innovación.

PALABRAS CLAVE.
Sitios de redes sociales, herramientas de aprendizaje, tecnologías educativas, aprendizaje inteligente, soluciones de aprendizaje electrónico.

ABSTRACT.

We are in the era of social networking sites that gives platform to billions of individuals for offering and conveying to each other's. These social sites additionally give a worldwide platform to students and educators to satisfy their learning or instructing necessities. The incorporation of social networking sites (SNS) and online tools with e-learning, getting high fame, extraordinarily in instructive space. Learners are more comfortable with these SNS, they feel pleasure to join, participate and collaborate with peers or teachers in these sites. The smart integration of social sites and online tools with conventional e-learning platform could revolutionize the current e-learning model. Various e-learning issues including learner's participation, association, motivation and engagement can be mitigated by this integration. Number of SNS and online tools have great components for learning, teaching or training however their balanced use and incorporation with e-learning model is as yet an exploration challenge. In this paper, we present a model that utilizes social networking sites and tools effectively with e-learning platform. The basic idea of this model is to make e-learning simple and more compelling by using normal, easy to understand and generally free social sites and online tools. This paper also highlights some open research issues and challenges that might be faced SNS-based e-learning model. The idea, knowledge and open research issues that talk about in this paper may create another heading of research in the space of innovation bolstered learning.

KEY WORDS.

Social Networking Sites, Learning Tools, Educational Technologies, Smart Learning, E-Learning Solutions.

Introduction.

It is observed that the popularity graph of social networking sites (SNSs) are expanding radically; billions of people are connecting with these platforms. They feel more comfortable to talk, share or communicate with these environment (Treepuech, 2011). Among various SNS Facebook, YouTube and Twitter are the most popular but other social sites including Meetup, Classmates and Schoology ready to participate with e-learning model. These SNSs have tremendous ability to facilitate online learning or e-learning (Knight-mccord et al., 2016). Schoology is a learning management system (LMS) but it has various feature of social sites in this reason it is consider as social learning platform(Knight-mccord et al., 2016). Alongside these social sites there are different online tools that can likewise use in e-learning. Literature suggested (Thacker, 2012; Treepuech, 2011) various scenarios where some well-known online tools can be utilized, the most prominent online tools are Skype, Dropbox and Google docs. This paper additionally gives the use of some less popular online tools including Prezi, Dipity, Scribble and so forth in current e-learning model.

The e-learning is a technology supported learning that utilizes Information and Communication Technology (ICT) to deliver class room educational model onto the Internet (Veeramanickam & Radhika, 2014). Certainly, the e-learning is one of the best and cheap solutions to provide education to millions of people but due to some major issues still e-learning is under large criticism. Among these issues some are student engagement, student participation and motivation issue (Hew, 2015). In literature, we have limited work on

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the domain of social networking-based e-learning model, no significant work has been found that utilizes full advantages of social networking sites and tools with e-learning space. (Olga Pilli, 2014). This paper examines the chance of selection the SNS and online tools in e-learning space and review real issues and difficulties that may emerge with this integration. The paper also tries to answer the question, how social networking sites and tool can be contributed to enhance e-learning mode?

This paper proposed a conceptual model for SNS-based e-learning solutions. The model can improve e-learning outcomes by increasing the learners' motivation, participation and engagement with learning contents in e-learning.

1. E-Learning Fundamentals.

The Internet has awesome effect of training, today's instruction is reshaping a direct result of Internet. The acceptance of Internet in instruction has completely changed the learning and educating worldview. Another idea of pervasive sort learning is winning that upheld by different advances especially information and communication technology (ICT) and Internet innovation (Palanivel & Kuppuswami, 2014). The essential thought behind e-learning is to encourage learning through up-to-date learning resources, without the fix time, space, nationality cast and origin. Just with the Internet link state-of-the-art instruction or learning can be accomplished by anyone. In-fact, the Internet bolstered innovations that convey required information and enhance learning execution is called e-learning. The e-learning gives students or learner great flexibility, opportune and anyplace adapting, particularly for the individuals who have extremely bustling timetable, don't have enough time to sit in a classroom and learn (Islam, Beer, & Slack, 2015). Some regular e-learning components are, picture, text, image, sound and video that have an awesome effect of learning if these components abuse, the e-learning may damage its usability (Chen, Lambert, & Guidry, 2010). Numerous expert begins trusting that e-learning could be one of the speediest rising industry in near future and that is the reason different huge educational establishments are mapping their instructive framework from old-style to e-learning framework.

According to (Sife, Lwoga, & Sanga, 2007) the e-learning condition requesting different new instructive innovations and high prepared technologies, few of them are noted underneath:

- Video Streaming.
- Video Conferencing.
- Data Storage.
- Cross Platform.
- Bandwidth.
- Asynchronous Environment.
- Synchronous Element.

With all advantages e-learning still has some important issues that require a solid answer for improvement in e-learning condition. Some more dicey complications that e-learning may face are listed underneath (Hatakka, 2009):

- Digital-divide issue.
- Copyright stuff.
- Teacher capability.
- Course structure.
- Social connection among students.
- Transparent examination process.
- Student's progress tracing.
- Dropout issue.
- Increase student engagement with LMS/VLEs.

The standard e-learning has different elements that dissimilar this model from conventional classroom learning condition. The following are some potential features that make e-learning differ with standard classroom learning environment.

- Immense number of learners.
- Cost effective solution.
- Technology enhanced learning .
- Ubiquitous learning.
- Use of interface.
- One teacher innumerable students.
- Need electricity for setup.
- Standardization.
- Self-paced learning.
- Revision as per requirement.
- On demand learning possible.
- Self-directed learning.
- Pull approaches possible.

2. Social Networking Sites & Tools for E-Learning.

The social networking sites and tools are the best way to connect people, share resources, educate others and share knowledge (Veeramanickam & Radhika, 2014). According to study (Wharekura-tini & Aotearoa, 2004) the people of age-group 15 to 35 years are active participant of SNS. There are various SNS and tools but the survey result (Wharekura-tini & Aotearoa, 2004) shows that the Facebook social network is one of the most popular social site. In starting of 2015, the Facebook users were counted around 936 million and the number is increasing drastically. Facebook is one of the best social site that have good features of learning, it provides either open or closed group for learning activities. Other SNS and tools including Twitter, Wikis, Skype, YouTube also have good learning feature and their integration with learning platforms can improve e-learning outcomes (Dabbagh & Kitsantas, 2012). The figure 1. shows some active social sits and tools that may utilize with e-learning to improve its usability and learning outcomes.

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3. Fundamental Framework of SNS-Based E-Learning.

The SNS-based conceptual model has presented in this section. The model is highly effective and cost efficient. It utilizes mostly free accesses social sites, media and online tools. The usability of proposed model should be high because its support both learning, i.e. synchronous and asynchronous learning modes.

3.1 Asynchronous SNS-based E-Learning.

In asynchronous learning the teacher and learners are not at the same time, teacher uploads his lectures, or learning materials on e-learning platform. The learners or students' logon through the Internet at any-time, from anywhere, download lectures and start learning (Costley, 2016). In general, the asynchronous mode of learning does not support real time communication and quick response, consequently students may feel isolation or frustration. Most of the time learner uses e-mail or discussion board for their queries (Dabbagh & Kitsantas, 2012). The main positive feature of this learning mode is its flexibility for the learners.

Figure 1. Integration of SNS and Online Tools with E-Learning.
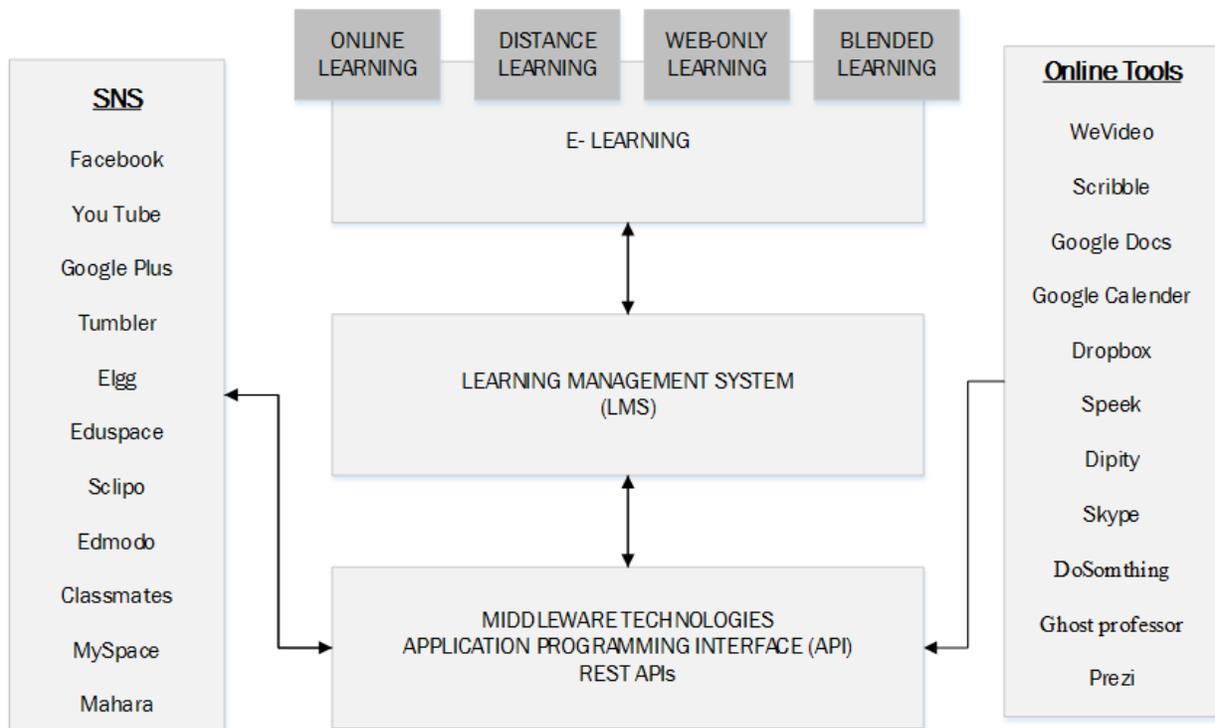
In our model, teacher can upload his long video lectures, presentations or animated media files in any suitable video streaming sites. Various in-hand video streaming sites (YouTube, Vimeo, UStream, TED, Current TV etc.) can be used for this purpose. Among various video streaming sites, the YouTube is highly recommended because of rich media (graphics or

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animated) files and long videos with flawless streaming to upload or download. Many researchers are highly recommended the YouTube for long video streaming (Dubin et al., 2016). For text-based files, notes, digital books, or any other type of files (.doc, .tex, .pdf, .dvi etc.) can be uploaded to any appropriate cloud storage. For this purpose, several cloud storages (SkyDrive, Dropbox, Box, google Drive, RapidShare, Mozy etc.) are available to store massive data on cloud. The Dropbox could be one of the good choices for this purpose (Drago et al., 2012). This online tool can support up-to-many GB-long files or folder (Drago et al., 2012). The teachers can utilize this strong feature of Dropbox to upload long lectures, notes, digital-book or any learning materials. This online tool supports various types of file system, including PDF files that are mostly uploaded by teachers as a learning materials. Further, the teacher will share the links of uploaded-files or folder on SNS, the site pool resources with any suitable learning management system (LMS). The traditional LMSs are limited in term of features provided for learning purpose(Zaharias & Pappas, 2016). The file uploading is limited in LMS, it can't support heavy file for uploading (Conde et al., 2012). Most of the LMS are also limited to supported rich media (heavy graphic, animated) files. In general, LMS chat forums have privacy and quality-in-use(usability) issues, and complex instant messaging module(Abdullateef, Elias, Mohamed, Zaidan, & Zaidan, 2016). Due to these issues, the e-learning platform still facing usability problem consequently depraved learning outcomes. The proposed model try to overcome these challenges of current LMS by integrating specialized SNS, social media and online tools with e-learning.

To select the right SNS, we have to analyze our course content, students and learning resources then go for selection. To design a generic SNS-based e-learning model that fit for the students of different learning style is still an open research issue. The SNS-based e-learning model highly recommend to student /teacher for organize their learning by utilizing some other available SNS, media or tools. For example, learners can use Flickr to establish an archive of personal media that links with course-content. Use social bookmarking tool like Delicious to establish course-contents, similarly Google Calendar, for students personal planning etc.

3.2 Synchronous SNS-based E-Learning.

The synchronous learning mode based on live, real time communication between teacher and learners (Costley, 2016). Video conferencing and real time chat are main factors of this learning mode. The synchronous learning is more social and provisioning real time participation of learners to teacher, teacher to learners or learner to learner (Costley, 2016). Due to strong feelings of participation and real time query support feature increases students' engagements and restrained isolation. Apart of these all positive impact, one major issue with this type of learning mode is time bounding. Sometimes students can't afford such an extreme time bounding in their learning.

In our model, we added the feature of real time communication, with live video conferencing or meeting tools, chat or real-time comments between teacher and learners. For instant messaging or any quick updates to students, teacher can use any suitable messenger services. We have several popular messengers (WhatsApp, Twitter, WeChat, Line, Viber, Meebo etc.) that can be utilized for this purpose. Twitter and Whatsapp are also good social media for this purpose. In case of Twitter, the learners follow their teacher to get timely

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updates about course related information. The Whatsapp social media has different features; teacher has to create a group of his students for instant messaging. Teacher can also send small voice messages to update their students'. For real time video lecture, our framework recommends to use any suitable video conferencing or meeting tool. There are numerous video conferencing tools such as Skype, webex, clickMeeting, eVoice, Red5 etc. that can be used for real-time video lecture. The Skype is popular for live video calls, video conferencing and for many other facilities to handle real time two-way communication. This video conferencing tool could be one of the good choices for synchronous live video lecture, collaborative discussion or for query answer. During synchronous learning the required learning materials can be downloaded directly from already stored materials on cloud-storage or video-streaming sites by using shared-links. The figure 2. depicts the proposed SNS-based E-learning Model.

The e-learning is organized and managed by any learning management system. The proposed framework supports the collaboration of LMS and SNS to produce better learning outcomes. The implementation of this collaboration can be possible by two ways, either add SNS components and tools with traditional LMS or develop new LMS with the features of SNS and online tools. The open source LMS (Moodle, Sakai) can allow to add some new features of LMS or even integrates the components of SNS or online tools(Abdullateef et al., 2016; Dube & Scott, 2014). The commercial LMS (Web Board, WebCT, Blackboard) will not allow any change(Adzharuddin & Ling, 2013).

Figure 2. The SNS-based E-learning Model.
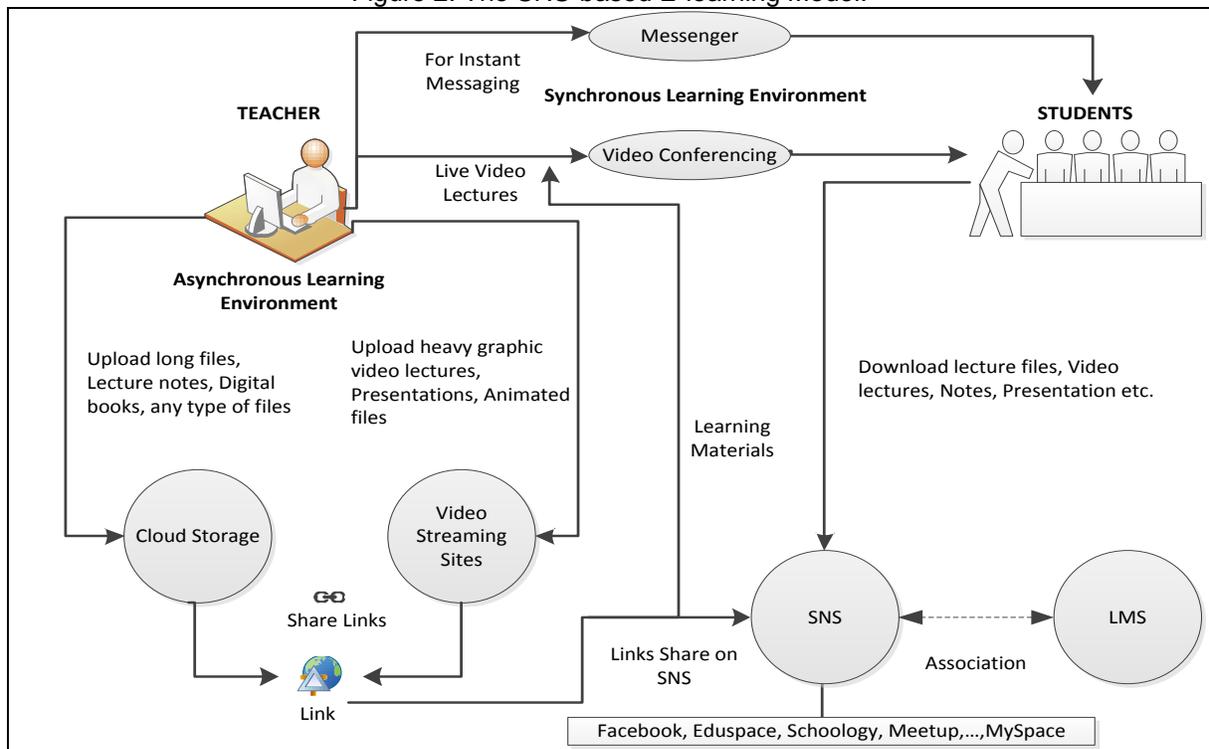
4. Challenges & Opportunities of SNS-Based E-Learning.

Literature suggested (Son, Kim, Na, & Baik, 2016) that in near future social networking sites will intensively collaborate with e-learning. This integration will also show some pros and cons, the next section will discuss some advantages and open research issues of proposed model.

5. Advantages of SNS & E-Learning Integration.

The utilization of SNS and tools in education are increasing drastically (Olga Pilli, 2014), Facebook, YouTube, Digg, Second Life and other SNS are now becoming a source of learning. The inclusion of social media with education brings tremendous benefits(Carlos et al., 2013) ; in view of the current research concentrates the SNS and tools can:

- Develop and upgrade learner accomplishment and community oriented learning skill.
- Student feels more comfortable, learn as a fun.
- Students involvement and engagement increase.
- Decrease dropout ratio.
- SNS highly support Personal Learning Environment.
- Support collaborative learning.
- Increase participation.
- The different components of SNS will surely increment the learning execution.

6. Open Research Issues of SNS-Based E-Learning Model.

Separated of various advantages the SNS-based e-learning system organization will get different issues and difficulties (Islam et al., 2015). These difficulties and issues would be the greatest boundary for SNS and online devices selection in e-learning. Among them, few the most challenging issues are recorded underneath.

- The proposed model is only suitable to small group; further research requires extending it to large scale.
- The involvement of educational environment with the social setting is supposed to be a big violation of privacy and interference in personal life (Thuseethan, Achchuthan, & Kuhanesan, 2014).
- Overexposure of teacher-student communication or connections may be harmful for learning (Mazer et al., 2009).
- Many students and teachers like a thick line between education and social life (Ishengoma & Mtaho, 2014).
- The proposed model requires high bandwidth for their information dissemination and other data communication. Because of old foundation of web the interest for fast data communication some time bargains(Islam et al., 2015). This challenge could be overcome by using the components of broadband technologies and fiber optics set up rather than copper wires.

- The vast majority of the e-learning information requires high security yet, in proposed model, third party will be responsible for information security (Dobre, 2015). The information spillage and vindictive exercises on information could be one of the problems for this sort of learning model. Any malicious activity could, without much of a stretch, be propelled and control the stored materials. To evade this sort of conceivable noxious exercises the basic information ought to be put away by using encryption technologies.

- In proposed model the information including learning materials present on social sites are totally mercy of system suppliers (Dobre, 2015). This circumstance would build the privacy issues in such type of integrated e-learning environment. To overcome this issue, we have to introduce some schemes that should handle the access right of social network providers.

- To accomplish high performance in social sites integrated e-learning is as yet a challenge(Son et al., 2016). The more unpredictable circumstance could happen when we attempt to actualize high security plans and full protection may influence the execution. It is evident the greater security checks, protection and solid confirmation must trade off in execution.

- In social interaction based e-learning, the administration could be one of the mind boggling and challenging job. To deal with learning materials, expense charging, exam direct, result show, endorsements dispatching etc. required broad administration. To deal with this challenge the traditional sorts of LMS ought to modify for social networking integrated e-learning model.

- In private learning system, everyone knows the ownership of stored data but in SNS-based e-learning model the data ownership could be challenging issue (Ossiannilsson, Williams, Camilleri, Brown, & (ICDE), 2015).

7. Conclusions.

The current social networking sites, media and online tools with cooperation of e-learning has been discussed in this paper. This paper also proposed a novel SNS-based e-learning model to enhance general learning outcomes of today's e-learning. The current SNS, free online tools and fast Internet association are significant segments of the model to setup e-learning with cost-effective way. The forthcoming advantages and open challenging issues of proposed model are discussed in this paper that will make another open door in existing e-learning research group. The highlited open research issues and challenges that addressed in this paper must be resolved before deployment of SNS-based e-learning model. The proposed model and related knowledge presented in this paper would be a good literature for the researchers of this domain. As a future work we are intrested to test the proposed SNS-based e-learning model with real e-learning scenario.

Bibliography.

- Abdullateef, B. N., Elias, N. F., Mohamed, H., Zaidan, A. A., & Zaidan, B. B. (2016). An evaluation and selection problems of OSS-LMS packages. *SpringerPlus*, *5*(1), 248. http://doi.org/10.1186/s40064-016-1828-y

- Adzharuddin, N. A., & Ling, L. H. (2013). Learning management system (LMS) among university students: Does It Work? *International Journal of E-Education, E-Business, E-Management and E-Learning*, *3*(3), 248–252. http://doi.org/10.7763/IJEEEE.2013.V3.233

- Carlos, A.-H., Miguel L., B.-L., Eduardo, G.-S., Juan I., A.-P., Guillermo, E.-G., & Adolfo, R.-C. (2013). Enhancing Learning Environments by Integrating External Applications. *Bulletin of the IEEE Technical Committee on Learning Technology*, *15*(1), 21–24.

- Chen, P. D., Lambert, A. D., & Guidry, K. R. (2010). Computers & Education Engaging online learners : The impact of Web-based learning technology on college student engagement, *54*, 1222–1232. http://doi.org/10.1016/j.compedu.2009.11.008

- Conde, M. Á., García-Peñalvo, F. J., Rodríguez-Conde, M. J., Alier, M., Casany, M. J., & Piguillem, J. (2012). An evolving Learning Management System for new educational environments using 2.0 tools. *Interactive Learning Environments*, *22*(2), 188–204. http://doi.org/10.1080/10494820.2012.745433

- Costley, J. (2016). The Effects of Instructor Control on Critical Thinking and Social Presence: Variations within Three Online Asynchronous Learning Environments. *The Journal of Educational Research*, *13*(1), 109–171. http://doi.org/ISSN 1547-500X

- Dabbagh, N., & Kitsantas, A. (2012). Personal Learning Environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning. *Internet and Higher Education*, *15*(1), 3–8. http://doi.org/10.1016/j.iheduc.2011.06.002

- Dobre, I. (2015). Learning Management Systems for Higher Education - An Overview of Available Options for Higher Education Organizations. *Procedia - Social and Behavioral Sciences*, *180*(November 2014), 313–320. http://doi.org/10.1016/j.sbspro.2015.02.122

- Drago, I., Mellia, M., Torino, P., Munafò, M. M., Torino, P., & Sperotto, A. (2012). Inside Dropbox : Understanding Personal Cloud Storage Services. *Proceedings of the 2012 ACM Conference on Internet Measurement Conference - IMC '12*, 481–494. http://doi.org/10.1145/2398776.2398827

- Dube, S., & Scott, E. (2014). An Empirical Study on the Use of the Sakai Learning Management System (LMS): Case of NUST, Zimbabwe. *E-Skills for Knowledge Production and Innovation Conference 2014*, 101–107. http://doi.org/10.13140/RG.2.1.2589.1048

- Dubin, R., Dvir, A., Pele, O., Hadar, O., Richman, I., & Trabelsi, O. (2016). Real Time Video Quality Representation Classification of Encrypted HTTP Adaptive Video Streaming - the Case of Safari, 9. Retrieved from http://arxiv.org/abs/1602.00489

- Hew, K. F. (2015). Towards a Model of Engaging Online Students : Lessons from MOOCs and Four Policy Documents. *International Journal of Information and Education Technology*, *5*(6), 425–431. http://doi.org/10.7763/IJIET.2015.V5.543

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- Ishengoma, F., & Mtaho, A. (2014). Online Social Network as a Tool for Facilitating e-Learning in Tanzania. *International Journal of Open Information Technologies*, *2*(10), 29–35. Retrieved from http://injoit.org/index.php/j1/article/view/146%5Cnhttp://injoit.org/index.php/j1/article/download/146/110

- Islam, N., Beer, M., & Slack, F. (2015). E-Learning Challenges Faced by Academics in Higher Education: A Literature Review. *Journal of Education and Training Studies*, *3*(5), 102–112. http://doi.org/10.11114/jets.v3i5.947

- Knight-mccord, J., Cleary, D., Grant, N., Jumbo, S., Lacey, T., Livingston, T., … Emanuel, R. (2016). What social media sites do college students use most? *Journal of Undergraduate Ethnic Minority Psychology*, (October 2015), 21–26.

- Mazer, J. P., Mazer, J. P., Murphy, R. E., Murphy, R. E., Simonds, C. J., & Simonds, C. J. (2009). The effects of teacher self-disclosure via *Facebook* on teacher credibility. *Learning, Media and Technology*, *34*(2), 175–183. http://doi.org/10.1080/17439880902923655

- Olga Pilli, A. (2014). LMS Vs. SNS: Can Social Networking Sites Act as a Learning Management Systems? *American International Journal of Contemporary Research*, *4*(5), 90–97.

- Ossiannilsson, E., Williams, K., Camilleri, A. F., Brown, M., & (ICDE), I. C. for O. and D. E. (2015). *Quality Models in Online and Open Education around the Globe: State of the Art and Recommendations*. *Online Submission*. Retrieved from http://elib.tcd.ie/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=ED557055&site=eds-live

- Palanivel, K., & Kuppuswami, S. (2014). Architecture Solutions to E-Learning Systems Using Service-Oriented Cloud Computing Reference Architecture. *International Journal of Application in Engineering Management(IJAIEM)*, *3*(3), 547–559.

- Sife, A. S., Lwoga, E. ., & Sanga, C. (2007). New technologies for teaching and learning: Challenges for higher learning institutions in developing countries. *International Journal of Education and Development Using Information and Communication Technology*, *Vol. 3*(2), 57–67.

- Son, J., Kim, J. D., Na, H. S., & Baik, D. K. (2016). A Social Learning Management System supporting feedback for incorrect answers based on social network services. *Educational Technology and Society*, *19*(2), 245–257.

- Thacker, C. (2012). Moving beyond blackboard: Using a social network as a learning management system. *Metropolitan Universities, 23 (2)*, 11–31. Retrieved from http://www.tuinnovates.com/wp-content/uploads/2013/01/Moving-Beyond-Blackboard.pdf

- Thuseethan, S., Achchuthan, S., & Kuhanesan, S. (2014). Usability Evaluation of Learning Management Systems in Sri Lankan Universities. Retrieved from http://arxiv.org/abs/1412.0197

- Treepuech, W. (2011). The application of using Social Networking Sites with available online tools for teaching and learning management. *2011 IEEE International Symposium on IT in Medicine and Education*, *1*, 326–330. http://doi.org/10.1109/ITiME.2011.6130844

- Veeramanickam, M. R. M., & Radhika, N. (2014). A Smart E-Learning System for Social Networking, *4*(3), 8708. http://doi.org/http://dx.doi.org/10.11591/ijece.v4i3.5933
- Wharekura-tini, H., & Aotearoa, K. o. (2004). Learning Management Systems, 1–18.
- Zaharias, P., & Pappas, C. (2016). Quality Management of Learning Management Systems: A User Experience Perspective. *Current Issues in Emerging eLearning*, *3*(1), 60–83. Retrieved from http://scholarworks.umb.edu/ciee/vol3/iss1/5