ICIC Express Letters
Volume **14**, Number **7**, July **2020**

ICIC International ©2020 ISSN 1881-803X
pp. **643–651**

APPLYING SOCIAL MEDIA INTERACTIVITY SYSTEMS TOWARDS SOCIAL LEARNING PLATFORM

Tanty Oktavia[1] and Eka Cahyadi[2]

[1]Information Systems Department, School of Information Systems
[2]Computer Science Department, School of Computer Science
Bina Nusantara University
Jl. K. H. Syahdan No. 9, Kemanggisan, Palmerah, Jakarta 11480, Indonesia
toktavia@binus.edu

Received November 2019; accepted February 2020

Abstract. *The growing e-learning platform associated with the explosion in the Web 2.0 tool drives educators to initiate what is called collaborative learning platform with their students using social media. The open collaborative platform focused on the nature of the Web 2.0 era which is using associated tool for education technology, participation of students, and interactive approach. Higher education institution is challenged to become more creative to create an interactive learning platform. One of the trending solutions is used social learning platform, which combines learning technology with the social media environment. Social learning as learning method combines multiple media that are designed to complement the learning platform. The purpose of this study is to identify how social media could implement as an interactive tool to support blended learning in a higher education institution. The methodology of this study using design science research to identify the appropriate social learning system model which consists of seven stages: design as an artifact, problem relevance, design evaluation, research contribution, research rigor, design as a search process, and communication of research. The result of this study provides a social learning systems application as a tool for higher education institutions to increase learning experience in terms of participation and collaborative learning.*

Keywords: E-learning, Social learning, Collaborative, Design science research

1. **Introduction.** The present times the worldwide accessibility has changed the world to be more interactive. People are increasingly inclined to use their virtual life on existing prevalent social media platform, such as Facebook, Twitter, and YouTube [1]. These websites provide favorable platforms to communicate and collaborate with other. Global Internet users spend 101.4 minutes per day browsing social network [2], and they use social media to communicate with friends, colleagues, family member: a source to access entertainment, a channel to share knowledge, as a media to knowledge update, etc. [3]. This phenomenon has completely revamped how people interact and communicate. Moreover, social media platform has an important role in information and knowledge management to support business process. Hence, these platforms have been used by many institutions. One of them is a higher education institution, which has transformed student learning experience using technology to support a suitable learning environment [4].

A previous study has identified the relationship between social media usage and acculturation from many indicators. Table 1 shows the implementation of social media in the previous studies.

Among the number of terminology Web 2.0, until now the educational institution is still identifying a suitable framework to define learning experiences using the Web 2.0 platform that can be merged into learning process. Currently, many studies from psychology and

DOI: 10.24507/icicel.14.07.643

Table 1. Social media in the previous studies

Social Media	Studies
YouTube	[5-10]
LINE	[11-14]
Facebook	[15-21]
LinkedIn	[22]

information system have identified important variables dealing with the learning platform, and one of them is social learning [23]. Social learning can be used to identify the environment when learners and technology interact using tools and device to collect and interpret information through a process interaction with other [24], because it is commonly understood that it goes beyond individual learning process [25]. However, there is very tight work that identifies what educators' preferences to build a learning platform of the wide range of Web 2.0 technology available in the context of the learning environment. Focusing on the importance for the higher education institution to survive in the competitive world [26], it is valuable to determine whether the tool of Web 2.0 has to integrate with the resources of construction of learning [27].

On these days, the traditional way of teaching and learning is not attractive for students in millennial generations [28]. Social media have been adopted as part of the teaching and learning tools to improve educational achievement and the traditional learning environment is gradually being enhanced with both online and blended learning [29]. Moreover, some studies state that social media gives a positive impact on teaching and learning environments because most students use social media as part of their daily life and they prefer to have more freedom and self-learning approach [28]. Thus, it is necessary to use social media as part of the teaching and learning environment to reduce the complexity of the study. Based on higher education institutions requirements and the shifting of student behavior, this study proposes a platform based on social media tool that reads data from social media, especially for Facebook, LINE, YouTube, LinkedIn [30] which are very familiar to be implemented for learning process and these platforms can extract valuable data that can be used to support learning platform. The output of this study focuses on social learning model and the implementation of social media features into learning platform to enhance interactivity on the class based on application approach, so we will describe the implementation using diagram in the discussion section to show social learning proposed mechanism.

2. **Methodology.** In line with building social learning, particularly institution has to be aware about the development of shared understandings of problem which requires the participation of a wide range of actors [31]. Therefore, this research focused on a cross-sectional research design using design science research based on an extensive literature search database, such as ScienceDirect, Proquest, and Taylor & Francis. A pre-validated construct was developed and used in this study. This research used design science research which combines a focus on the IT artifact with a high priority on relevance in the application design [32]. The design science research guidelines are divided into seven steps.

- Design as an artifact, in this step the research must develop a viable artifact in the form of a method, model, construct, etc.
- Problem relevance. The objective of design science research is to develop a solution based on the business problem.
- Design evaluation. The output of a design artifact must be rigorously assessed via well-executed evaluation methods.

- Research contributions. The design science research must implement clear and verifiable contributions in all areas.
- Research rigor. Design science research relies upon the application of rigorous methods in both the construction and evaluation.
- Design as a search process. The search for an effective artifact requires utilizing available means to reach desired ends.
- Communication of research. Design science must be presented effectively to both technology-oriented and business perspective.

3. **Discussion and Implication.** Modern society is indicated by accelerating development of technology to achieve global recognition [33]. Higher education institution as a dynamic institution has the vision to prepare the student to be ready face the shifting era, so the education institution must be the best place to educate the students. According to this fact, this study is an attempt to see how social media collaborate with learning platform as one learning system called Social Learning Systems. According to theoretical foundation it is indicated that there are different types of experience built and different cognitive factors when students use social media. Moreover, this study adopts virtual activity to enhance the learning experience. The participants of a social learning environment will include students, instructors, and external users as a learning partner.

3.1. **Social learning model.** The procedure of developing a social learning system is carried out based on the needs of the learning system in the higher education institution. So far, this e-learning system is believed to be a learning system that can meet the learning activities connected between students and lecturers, but based on the conditions that occur at this time the communication channel has shifted patterns of interaction from the students who tend to be fluent in using social media as the most popular communication tool at the moment. Therefore, the social learning system is a solution to collaborate the preferences of the students who are currently included in the Y or Z generation, which are the generation who are adaptive and active to use social media on their daily activity. The proposed social learning system is connected to the API (Application Program Interface) of social media based on the channel preferences of the teaching participants, which consists of social media LINE, Facebook, YouTube, and LinkedIn. This social learning model is shown in Figure 1, and it is derived based on electronic learning activities consisting of absorb, do, and connect activities. Then it is mapped with the RASE (Resource

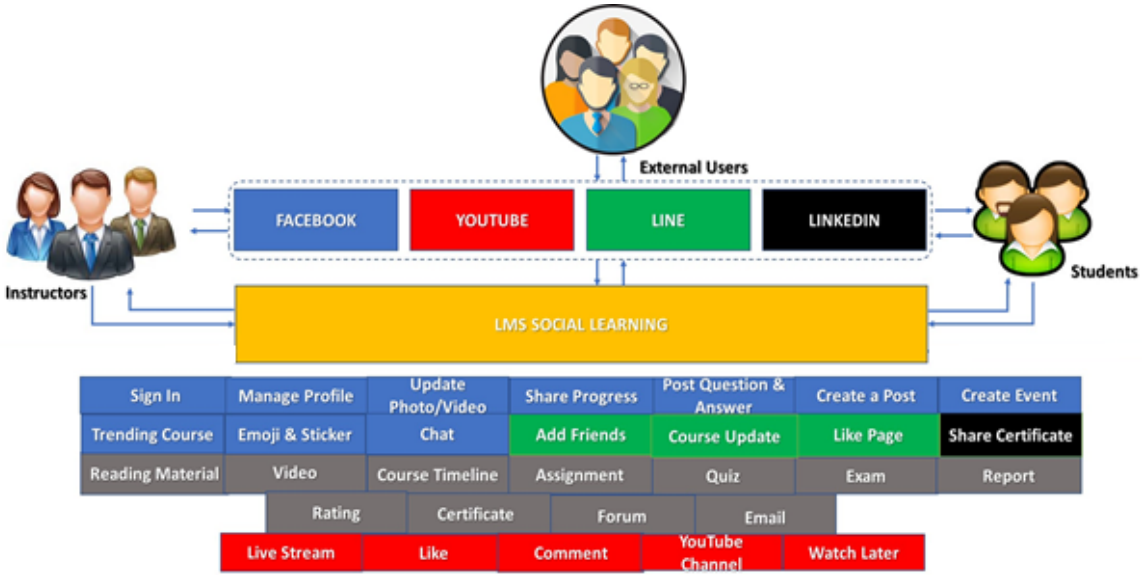

FIGURE 1. Use case social learning

Activity Support Evaluation) pedagogical model to ensure that all processes meet standardized conditions, so that the learning process can run independently by collaborating social media channels. The social media channels will then be derived through features mapped based on functionality that has been measured by the method conjoint, so that channel preferences and features have adjusted to the desires of the teaching participants. The expected result of that is to encourage teaching participants to be more active using social learning, so that it can have a positive impact on the performance and engagement of the teaching participants. The features derived from social media functionality consist of: signing in, managing profiles, photo/video updates, share progress, post questions & answers, creating a post, creating events, trending courses, emojis & stickers, chat, add friends, course updates, like page, share certificate, live stream, like, comment, YouTube channel, watch later, group, watch later, advertisement, trending topics. Features that are basically obtained from the e-learning learning system and that use t-tests and the interval tests are still used, including reading material, videos, course timelines, assignments, quizzes, exams, reports, ratings, certificates, forums, and email features. In Figure 1, it can be seen that the collaboration of the learning process does not only occur between teaching participants and instructors but involves external users who can interact directly with instructors and instructors using selected social media channels. With this channel, external users can provide input related to the learning process undertaken. Actors involved in the learning platform consist of 4 main actors, which are students, instructors, admin, and external user (industry or other higher education institution). The business process flows based on each actor can be seen in Figure 1, which describe the integration process using Facebook, YouTube, LINE, LinkedIn.

Students who have registered can immediately log in according to the role they have. Students can also log in using Facebook by pressing the 'sign in with Facebook' button, then the application will automatically access the teaching participants' data contained on Facebook so that later students can connect using Facebook social media features. Students can also edit their profile if there is any change in personal data. On the edit profile page, data that can be changed are name, date of birth, gender, photo, and self-description.

To enhance the learning experience to be more attractive there are some features that can be combined to integrate with social media features. Some features that can be accessed by students include self-data editing features, registration of courses, view history of the course, view learning videos, view videos from YouTube channel, search for video channels, post questions, view update material, share forum topics, choose trending topics, add friends, create threads in forums, access additional material, do assignments and quizzes, share certificates, chat, and forums. Students who want to take courses can search the course menu and then find the desired course.

If the students are registered and can log into the system, they can access the video containing the material from the course taken. During the course, the student must play all the videos provided to completion and work on the available assignments and quizzes. Student can complete the video at any time after enrolling in a course. After finishing watching the learning video, the instructor can post the learning progress that has been made to Facebook social media. The contents of the post stated that the teaching participants had completed the learning according to the topic in the video. If within 14 days the participant does not access/continue the learning course, the system will automatically send a notification to the e-mail of the teaching participant. If after notification is given, the student still does not continue the course for 30 days from the time the e-mail reminder is sent, the system will reset the course, so the course must be repeated from the beginning again.

After the course has finished, students can do a quiz from the course as a whole as an evaluation of the learning outcomes that have been done. The form of the quiz can be

multiple-choice, essay, or case. If the students do not pass the quiz, then they must take the quiz from the beginning with a different question. However, if the student passes, the system will automatically generate a graduation certificate from the course and the participant can download the certificate, even if the student wants to upload the certificate on their LinkedIn profile, it can be shared directly through this social learning system, so the certificate is directly added to the LinkedIn account of the teaching participant.

During the learning process, students can conduct discussions through the forum feature. In this feature, students can view existing threads, and follow discussions in forum threads created by other students. In addition, students can create new forum threads. Data that must be filled in thread creation is thread title and contents of the thread. The thread is made into a means for discussion with other participants. When a participant conducts a new activity in the forum such as creating a thread or replying to another participant's thread, the teaching participant can share activities in the forum into his Facebook account, so that they can get responses from parties who have competence in the topics being discussed at the forum. In addition, students can interact with other participants, instructors, and the admin. This chat feature allows users to use text, stickers, and emojis to express conversations. All the social learning platform processes can be seen in Figure 2, which involves internal and external participants who collaborate in one learning system that collaborates with social media features.

3.2. **Social learning architecture.** The proposed architecture design for social learning architecture can be seen in Figure 3. The proposed social learning system does not create the function from the beginning, but the social media features will be adopted, using API shared by social media, so there will be an exchange of data and a process between the learning system built with the connected social media channels, but implementing features remains embedded with social learning systems. Technically, for the proposed social learning architecture, the students will be connected to the higher education institution data related to the ongoing learning system. The operational system at the institution will regulate the registration and administration process in the learning process, such as teacher allocation, learning material, assessment, payment, and reports. However, this research will not focus in detail on the daily operational activities of the e-learning system that are commonly run in general, but rather how the learning process in institutions can be integrated with the use of social media features. This research will show that the use of social media features can support the interaction of students with other students, and with instructors. The use of social media features can also be accommodated using a social learning system that is built based on the desired social media preferences channel of teaching participants, i.e., LINE, Facebook, YouTube, and LinkedIn. The social media platforms will blend with learning activities in order to build a social learning system so that all learning activities can be directly linked to social media owned by the teaching participants. In that way, the learning process in social learning that is built does not only take place in one system but has additional space for interaction by using social media platforms that are very close to the daily lives of the teaching participants so far. Moreover, they will not feel bored when they study because the systems accommodate to interact with others easily so the learning process will be fun and attractive. The process flow for the proposed application can be seen in Figure 4.

4. Conclusion.

1) As the use of Internet technology becomes more advanced, higher education institutions and other educational institutions are realized to design learning methods suitable for the needs of their learners [34]. Not only this factor, the other factor that drives the higher education institutions must change is the shifting of generation. Now, most

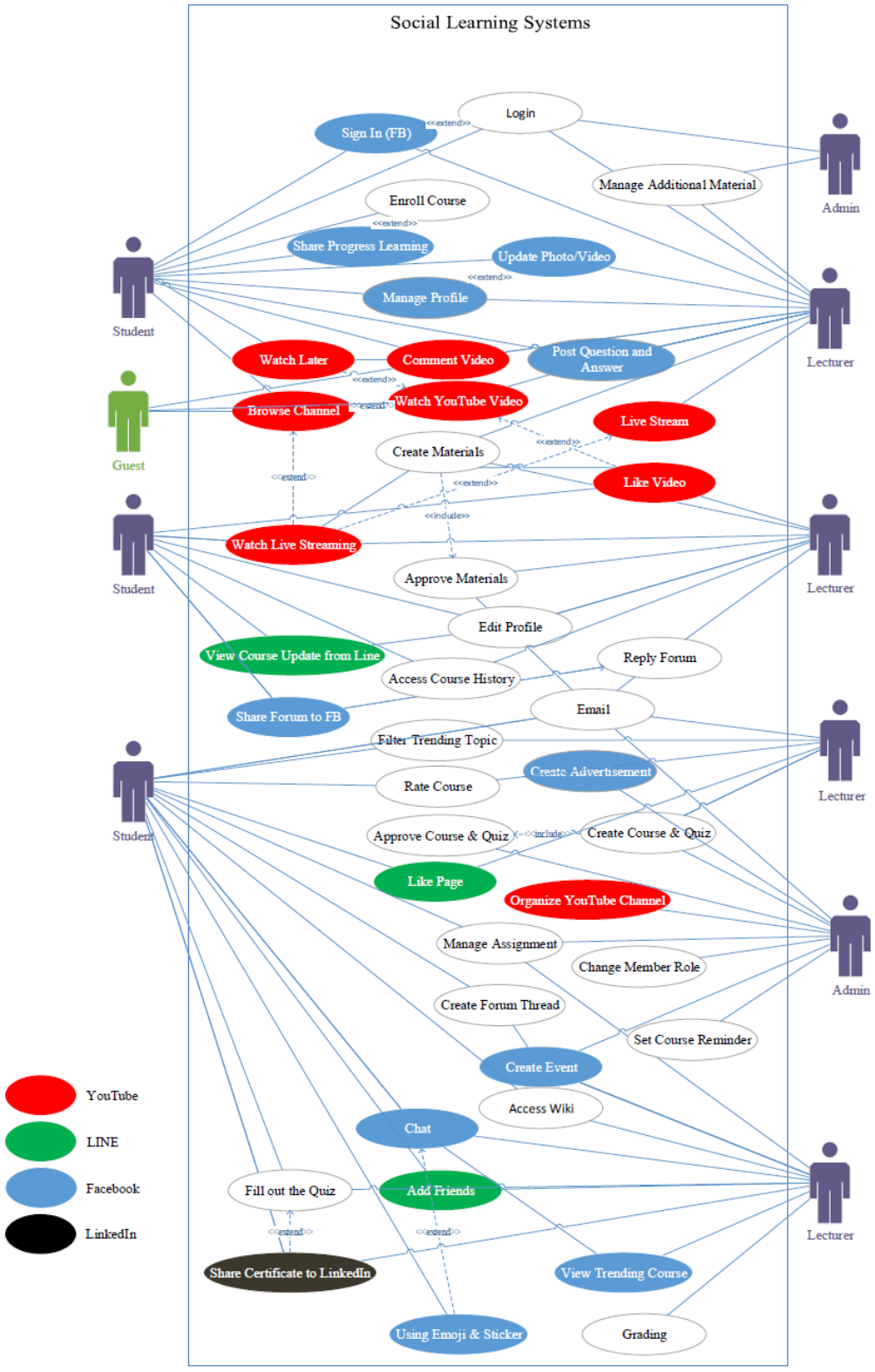

FIGURE 2. (color online) Use case social learning

of the students are millennial generations that are very familiar to use technology to support their daily lives.

2) According to fulfill the higher education institution needs, this research focused on building social learning platform that can accommodate how the student interacts with other which usually uses social media as communication and collaboration channel for their daily lives. For higher education institution social media offers a learning

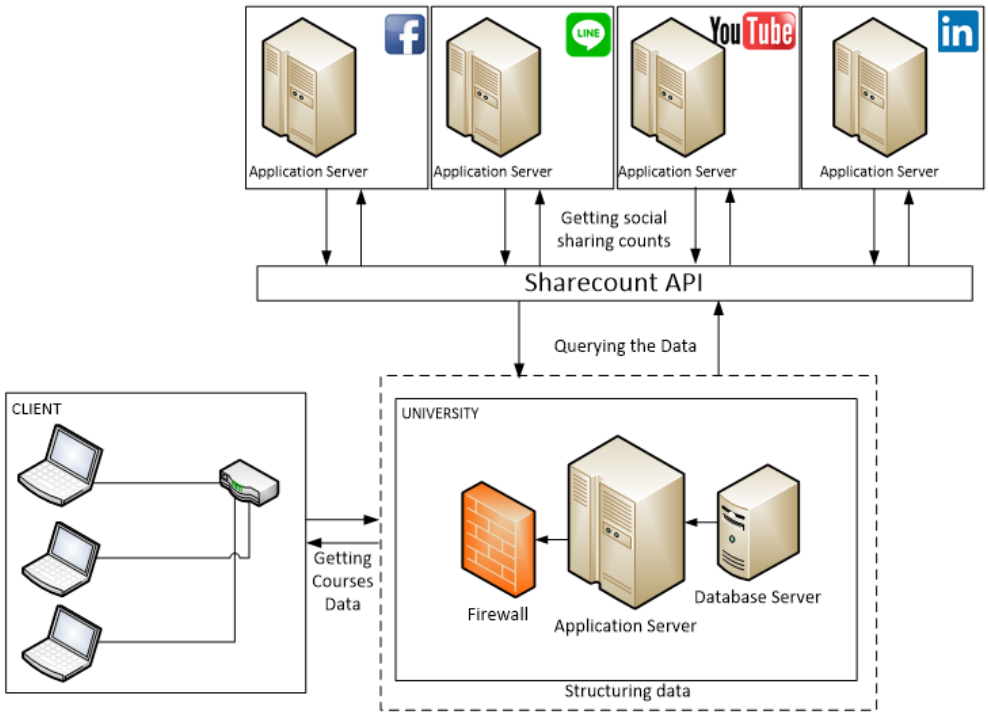

FIGURE 3. Architecture design for social learning systems

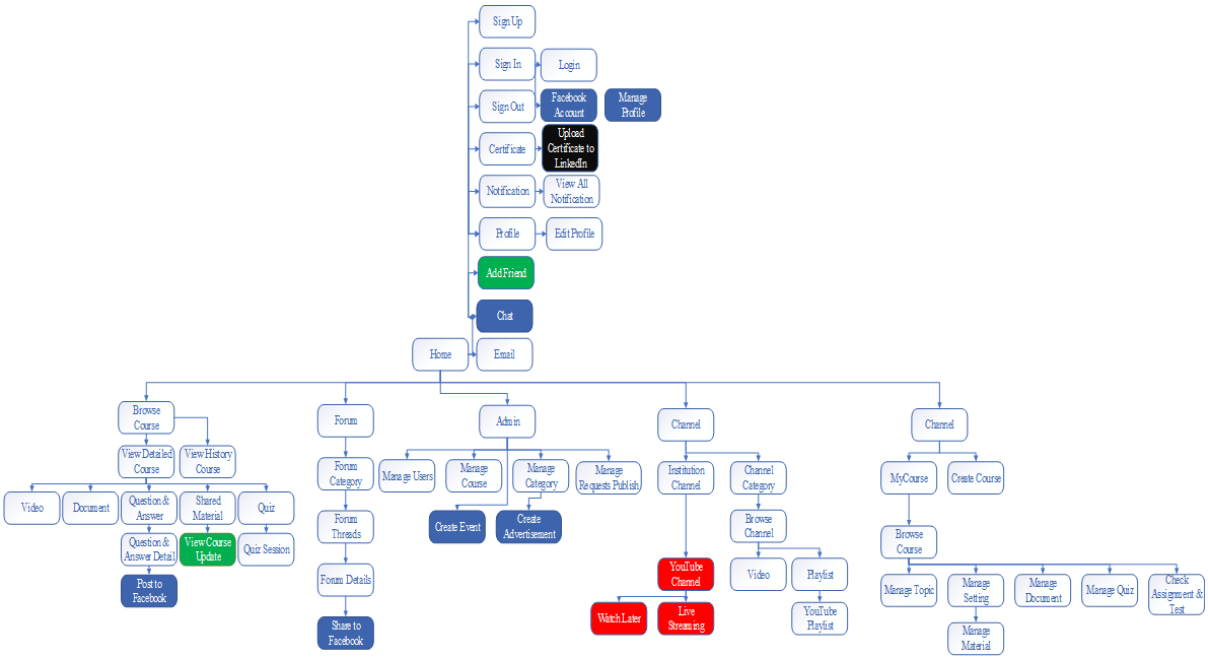

FIGURE 4. Structure diagram

experience of the learning process. As such, the social learning model offers potential implementation for the social learning environment.

3) The evolution of social media functionality creates new characteristics to convert learning experience more interesting. In the proposed social learning systems that combined social media features from LINE, YouTube, Facebook, and LinkedIn, it can adopt social media feature that can support learning functionality to be more attractive which involve student, lecturer, external participants, and admin.

4) For future research, we can update the new features of social media that can be collaborated with the learning process so learning environment will be interesting and accommodate the millennial behavior.

REFERENCES

[1] A. Yan, S. W. Tian, D. Vogel and R. C. Kwok, Can learning be virtually boosted? An investigation of online social networking impacts, *Comput. Educ.*, vol.55, no.4, pp.1494-1503, 2010.

[2] E. Michopoulou and D. Gabriela, Hotel social media metrics: The ROI dilemma, *Int. J. Hosp. Manag.*, no.5, 2018.

[3] Q. Yu, P. Foroudi and S. Gupta, Far apart yet close by: Social media and acculturation among international students in the UK, *Technol. Forecast. Soc. Chang.*, no.7, pp.1-10, 2018.

[4] N. Songkram, E-learning system in virtual learning environment to develop creative thinking for learners in higher education, *Procedia – Soc. Behav. Sci.*, vol.174, pp.674-679, 2015.

[5] M. L. Khan, Social media engagement: What motivates user participation and consumption on YouTube?, *Comput. Human Behav.*, vol.66, pp.236-247, 2017.

[6] K. Güler, Computers & education social media-based learning in the design studio: A comparative study, *Comput. Educ.*, vol.87, no.229, pp.192-203, 2015.

[7] H. Ali-hassan, D. Nevo and M. Wade, Linking dimensions of social media use to job performance: The role of social capital, *J. Strateg. Inf. Syst.*, 2015.

[8] S. Appling et al., Social media for situational awareness: Joint-interagency field experimentation, *Procedia Eng.*, vol.107, pp.319-324, 2015.

[9] A. Benetoli, T. F. Chen and P. Aslani, The use of social media in pharmacy practice and education, *Res. Soc. Adm. Pharm.*, 2014.

[10] J. H. Kietzmann, K. Hermkens and I. P. McCarthy, Social media? Get serious! Understanding the functional building blocks of social media, *Bus. Horiz.*, vol.54, no.1, pp.241-251, 2011.

[11] R. Johns and R. English, Transition of self: Repositioning the celebrity brand through social media – The case of Elizabeth Gilbert, *J. Bus. Res.*, vol.69, no.1, pp.65-72, 2016.

[12] S. Ç. Mengü, Y. Güçdemir, D. Ertürk and S. Canan, Political preferences of Generation Y university student with regards to governance and social media: A study on March 2014 local elections, *Procedia – Soc. Behav. Sci.*, vol.174, pp.791-797, 2015.

[13] M. Ballings and D. Van Den Poel, PT US CR, *Eur. J. Oper. Res.*, 2015.

[14] J. C. Bertot, P. T. Jaeger and J. M. Grimes, Using ICTs to create a culture of transparency: E-government and social media as openness and anti-corruption tools for societies, *Gov. Inf. Q.*, vol.27, no.3, pp.264-271, 2010.

[15] W. W. F. Lau, Effects of social media usage and social media multitasking on the academic performance of university students, *Comput. Human Behav.*, vol.68, pp.286-291, 2017.

[16] S. S. C. Shang, Y. Wu and E. Y. Li, Field effects of social media platforms on information-sharing continuance: Do reach and richness matter?, *Inf. Manag.*, 2016.

[17] L. L. Gu, D. Skierkowski, P. Florin, K. Friend and Y. Yi, Computers in human behavior Facebook, Twitter, & QR codes: An exploratory trial examining the feasibility of social media mechanisms for sample recruitment, *Comput. Human Behav.*, vol.60, pp.86-96, 2016.

[18] R. Rymarczuk, Technology in society same old story: On non-use and resistance to the telephone and social media, *Technol. Soc.*, vol.45, pp.40-47, 2016.

[19] Y. Shen and K. Karimi, Urban function connectivity: Characterisation of functional urban streets with social media check-in data, *JCIT*, vol.55, pp.9-21, 2016.

[20] P. Panagiotopoulos, L. Christine, J. Barnett and Á. Regan, A framework of social media engagement: Case studies with food and consumer organisations in the UK and Ireland, *Int. J. Inf. Manage.*, vol.35, no.4, pp.394-402, 2015.

[21] A. Ghezzi, L. Gastaldi, E. Lettieri, A. Martini and M. Corso, A role for startups in unleashing the disruptive power of social media, *Int. J. Inf. Manage.*, 2016.

[22] H. Jiang, Y. Luo and O. Kulemeka, Leading in the digital age: A study of how social media are transforming the work of communication professionals, *Telematics and Informatics*, vol.33, no.2, pp.493-499, 2016.

[23] P.-C. Sun, R. J. Tsai, G. Finger, Y.-Y. Chen and D. Yeh, What drives a successful e-learning? An empirical investigation of the critical factors influencing learner satisfaction, *Comput. Educ.*, vol.50, no.4, pp.1183-1202, 2008.

[24] M. Bower, J. G. Hedberg and A. Kuswara, A framework for Web 2.0 learning design, *EMI. Educ. Media Int.*, vol.47, pp.37-41, 2010.

[25] B. Siebenhuner, R. Rodela and F. Ecker, Environmental science & policy social learning research in ecological economics: A survey, *Environ. Sci. Policy*, vol.55, pp.116-126, 2016.
[26] G. W. Wei, The use of WIKI to facilitate critical thinking, *International Conference on Teaching, Assessment, and Learning for Engineering (TALE 2012)*, pp.12-14, 2012.
[27] V. H. M. Garcia and W. R. Zambrano A, Elearning model for the higher education based on Web 2.0, *2010 International Conference on Education and Management Technology (ICEMT 2010) Elearning*, pp.51-54, 2010.
[28] W. Y. Seng and M. H. M. Yatim, Computer game as learning and teaching tool for object oriented programming in higher education institution, *Procedia – Soc. Behav. Sci.*, vol.123, pp.215-224, 2014.
[29] O. A. D. Almaghlouth, Investigate the utilisation of Web 2.0 applications: A case study of a marketing teacher and his web-enhanced course building on e-learning concepts at one university in KSA, *The 5th International Conference on e-Learning*, Manama, Bahrain, pp.153-160, 2015.
[30] T. Oktavia, Meyliana, S. H. Supangkat and H. Prabowo, Social media as a new channel learning for higher education (a survey approach), *2016 International Conference on ICT For Smart Society*, pp.20-21, 2016.
[31] C. J. Martin et al., Energy in low carbon cities and social learning: A process for defining priority research questions with UK stakeholders, *Sustain. Cities Soc.*, vol.10, pp.149-160, 2014.
[32] A. Hevner and S. Chatterjee, *Design Research in Information Systems*, USA, 2010.
[33] A. G. Shchitov, O. G. Shchitova, D. A. Shchitova, P. Stasinska and D. T. C. Chieu, Features of the learning modular system moodle use in teaching the Russian language to Russian and foreign students at an institution of higher education, *Procedia – Soc. Behav. Sci.*, vol.215, pp.170-175, 2015.
[34] S. Saude, F. Puteh and A. Rumaisya, Learning through the lounge: Using social presence to assess the learning environment in a MyLinE online forum, *Procedia – Soc. Behav. Sci.*, vol.66, pp.448-459, 2012.