Original Research

Depicting Students' Social Presence on Social Networking Site in Course-Related Interaction

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Yahya M. Al-Dheleai[1], Zaidatun Tasir[2], and Nurul Farhana Jumaat[2]

Abstract

Social networking sites (SNS) are widely used among students, where its integration in higher education is increasing across years. Therefore, this study aimed to analyze students' use of social presence (SP) expressions in blended learning environment using Facebook group as a medium of online discussion. A total of 11 students and one instructor were involved in 7-week multimedia learning course in one of the Malaysian universities. The content of students' online discussion on Facebook group was the source of the data in this study. The discussion content was transcribed, coded, and analyzed, and the frequencies of categories were calculated to determine students' use of SP expressions. The findings of the study revealed that students focus on delivering more interactive response (IR) posts across all learning topics. Interestingly, although SNS are social in nature, this study revealed that students' use of SP expressions on SNS was intended to improve course discussion interactivity rather than for pure socializing purpose. However, more theoretical topics triggered higher number of SP posts compared with technical focused topics. More importantly, the way students used SP expressions during course-related interaction through Facebook may contribute to improved performance in test.

Keywords

social presence, social networking sites in education

Introduction

The current trend in higher education is to integrate information communication technology in a total course delivery or to support after-class learning activities. Nevertheless, the concern about students' sense of isolation and students' social presence (SP) in online classes is a focus point among researchers (Mcinnerney & Roberts, 2004; Regan et al., 2012). However, researchers argue that SP is affected by the characteristics of the communication medium besides the behavior of the interaction participants (Kear, 2010). Hence, social networking sites (SNS), as a phenomenon in online and blended education, may have the characteristics that promote students' SP. Previous study surveyed university students and found that SNS is seen to be an effective tool to increase SP (Lim & Richardson, 2016).

Joyce and Brown (2009) recommend that enhancing SP through SNS put the responsibility on the students to participate by creating a personal space, such as Facebook page, to connect with others with the existence of the key guidance from the instructor to guarantee that the site is used for educational purpose.

Therefore, Yamada and Goda (2012) argue that SNS, such as Facebook and Twitter, seem to establish and promote SP, where the level of students' SP credited to the way SNS are used. However, there is a drought in the research on students' SP on SNS, especially empirical research that investigates students' SP in course-related interaction through SNS. Therefore, to fill the gap in the literature, this research conducted a case study on the way students depict their SP through SNS (Facebook). In this study, students have more control of the learning environment with the presence of the instructor to guide their discussion.

Research Background

Social Nature of SNS

SNS are web-based platforms that support social interactions among users on the sites (Ellison et al., 2011). They are

[1]School of Educational Studies, Universiti Sains Malaysia, Pulau Pinang, Malaysia
[2]School of Education,Universiti Teknologi Malaysia, Skudai, Malaysia

Corresponding Author:
Yahya M. Al-Dheleai, School of Educational Studies, Universiti Sains Malaysia, Minden, Penang 11800, Malaysia.
Email: yamohd3@gmail.com

popular in helping people to initiate and maintain relationships with friends (Sosik & Bazarova, 2014). Through SNS, users can stay in contact, develop new connection, and maintain relationships with friends geographically far from them (Farrugia, 2013). Therefore, the features accommodated in SNS are portrayed in users' purposes of their use which mostly tended to develop, maintain, and strengthen relationships. Therefore, Shabani et al. (2013) reported that people motivation to join SNS (Facebook) is to create new relationships, resume previous relationships, and keep current relationships. Hence, the characteristics of SNS are encouraging to harness its ability to strengthen course participants' relationships, which highly contribute to fostering their SP during course-related interaction.

In recent years, higher education students are highly involved in using SNS for varied activities such as keeping in touch with friends (Joinson, 2008) and exchanging academic information (Selwyn, 2009). Students tend more to use SNS to interact with peers (Lawanson et al., 2016; Veletsianos & Navarrete, 2012). Moreover, SNS help students to strengthen social relationships (Llorens & Capdeferro, 2011) and facilitate forming online communities that allow for collaborative engagement and social interaction (Wodzicki et al., 2012). Furthermore, SNS were seen to reduce students' sense of isolation and lack of support and foster a positive learning experience (Veletsianos & Navarrete, 2012). Therefore, SNS were seen to promote and increase SP (Lim & Richardson, 2016; Yamada & Goda, 2012). However, to our knowledge, the way students portray SP during course-related online interaction that is mediated by SNS is still unclear due to the lack of research in this point. Therefore, the primary aim of this research is to investigate students' use of SP statements during course-related interaction on SNS.

SNS in Education

The integration of SNS in higher education is increasing in recent years, and the popularity of using SNS as educational sites is increasing across days (Pilli, 2014). The use of SNS is growing fast among higher education students, where the number of instructors who tend to combine course delivery with SNS is also increasing (Brady et al., 2010). Through SNS, higher education students communicate with classmates, share information and information resources, and share files and documents (Pilli, 2014). SNS brought some benefits to higher education, as they contributed to improving students' engagement, enhancing learning motivation, offering personalized course materials, and developing students' collaborative skills (Pilli, 2014). SNS support collaboration and communication through facilitating the development of learning communities (Tarantino et al., 2013). However, developing learning community requires students to establish their own identity and perceive the presence of other learning community members' identity (Tarantino et al., 2013), which are the core elements of SP as defined by Gunawardena (1995). SP, however, is crucial in establishing a critical community of learners (Fabro & Garrison, 1998). Therefore, current research focuses on students' SP while using SNS for educational purpose. The purpose is to explore the way students project their SP during course-related interaction on SNS.

SP and SNS

SP was originally defined as "the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships" (Short et al., 1976). SP was later defined with focus on both the participants and the communication medium. This was clear in Lawanson et al.'s (2016) definition of SP which states that, "the degree to which a person is perceived as a 'real person' in mediated communication." SP in online course was defined as the learner's ability to project himself or herself socially and effectively into the community (Rourke et al., 2001).

While Short et al. (1976) emphasize the role of the communication medium in fostering SP, Rourke et al. (2001) stress the participants' ability to project themselves socially into the community. However, DeSchryver et al. (2009) perceive that both the interaction medium and the participants' ability are the factors that affect online SP. A recent study investigated that students perceived SP on Web 2.0, which includes SNS tools, and found that students expressed high perception of SP during learning-related discussion on Web 2.0 tool (Al-Dheleai & Tasir, 2019). Moreover, Al-Dheleai and Tasir (2019) reported a positive relationship between students' SP on SNS and perceived academic performance. This finding supports researchers who believe that SNS can support students' SP when used for course-related interaction. Therefore, the need for exploring the actual SP during course-related use of SNS inspired the researchers to carry out this study.

SP is one element of community of inquiry framework components which include also teaching presence and cognitive presence (Garrison et al., 2000). Garrison et al. (2000) attribute the importance of SP to its function to support cognitive presence which represents the meaning constructed through sustained communication. Rourke et al. (2001) come out with three categories that represent SP in computer-mediated communication (CMC) environment. According to Rourke et al. (2001), SP categories are affective response (AR), interactive response (IR), and cohesive response (CR). AR is represented through emotional expressions, use of humor, and self-disclosure. Furthermore, IR is represented through statements to continue discussion thread, quoting from others' messages, referring to others' messages, asking questions and expressing appreciation, agreement with others, and complimenting. Moreover, CR is the expressions that address participants by name, addressing group using inclusive pronouns (we, us), and finally salutation and expressions that serve pure social function (Rourke et al., 2001).

Table 1. Learning Topics (LT).

LT No.	Learning content	Learning software	Topic type
1.	Introduction to Flash and app development software	Adobe Flash CS5	Theoretical focused
2.	Basic programming on Flash	Adobe Flash CS5	Technical focused
3.	Creating input and output fields in Flash	Adobe Flash CS5	Technical focused

SP and Students' Performance

Researchers acknowledge the effects of online SP on students' learning outcomes. Hostetter and Busch (2013) found that SP is a contributor to students' learning outcome, as students who provide higher SP achieved higher scores in class assessment. However, in terms of relationship of specific SP indicator and students' grade, Joksimović et al. (2015) reported that certain indicators of SP were predictors of final grades. Their study found that, continuing a thread, complimenting, and expressing appreciation significantly predicted final grades, while complimenting and expressing appreciation indicator were negatively associated with students' final grades. Another study found that, SP is a significant predictor of individual and team achievement (Kang et al., 2011).

Earlier studies also reported a positive relationship between SP and students' performance. For example, Picciano (2002) investigated students' perception of SP and its relationship with their perceived learning, scores of written assignment, and scores of examination on eight online courses on graduate level. The study found a strong relationship between students' SP and their perceived learning. Moreover, the relationship between students' perception of SP and their actual performance in the written assignment was significant and positive (Picciano, 2002). However, Picciano's (2002) finding showed that the relationship between students' perception of SP and actual exam scores was not significant. Similarly, Richardson and Swan (2003) examined the correlation between students' SP and their perceived learning in online courses. The participants of the study included students enrolled in 17 different online graduate courses. The findings of the study revealed that students with higher perceived social SP expressed higher perceived learning compared with those with low perceived SP (Richardson & Swan, 2003). Hence, the researchers claim that the intensity of SP from both the peers and the instructor was directly related to students' perceived learning. Similarly, Swan and Shih (2005) found that students with high perception of SP reported higher learning than those with low perceived SP. With high level of SP, students believe that they learn more as they are more involved in online discussion (Swan & Shih, 2005).

In summary, SP found to be an effective factor on students' learning. However, there is still a lack of research that informs about students' SP on SNS especially when it is used for formal courses. Therefore, this study analyzed the improvement on students' performance after the course.

Objectives

This study aimed to achieve the following objectives:

1. Identify the most used type of SP;
2. Identify which type of learning topics (theoretical or technical) triggers more SP posts;
3. Find out the difference in students' performance after the course.

Method

Single case study was used for the purpose of investigating students' actual SP in course-related online discussion. The purposive sampling technique was used to select the sample of this study. Therefore, one instructor and 11 students from teacher education program from one of the Malaysian public universities were the participants of this study. The participants were taking multimedia class, which train students on the process of developing learning courseware using Adobe Flash CS5. The course was planned to cover three learning topics as shown in Table 1. In face-to-face (F2F) sessions, students and the lecturer were meeting for 3 hr once a week. The instructor was helping students in the step-by-step process in developing multimedia learning materials. The instructor also follows up with students' work on the given tasks and provides the necessary comments. To support students' learning after F2F sessions, online discussion was taking place on Facebook group. The instructor posted several learning activities, group tasks, and give some time to respond to students' questions and to facilitate their discussion. In their side, students discussed the given learning activities and task on Facebook group. Moreover, the instructor and students shared related learning materials files to links to support students' learning. After the end of the course, students' online discussion and posts were transcribed, and SP coding schemes were used to extract SP expressions from the total students' online discussion and analyzed based on Rourke et al.'s (2001) SP categories. However, students' performance was measured through conducting pre-test and post-test to measure the change that occurred on students' performance before and after the interaction.

Table 2. Social Presence Categories.

Category	Indicators
Affective response	Expression of emotion, use of humor, and self-disclosure
Interactive response	Continuing a thread of discussion, quoting from others' messages, referring explicitly others' messages, asking questions, complimenting, expressing appreciation, and expressing agreement
Cohesive response	Vocatives, addressing group using inclusive pronouns, and phatic and salutations

Source. Rourke et al. (2001).

Table 3. Examples of Students' Use of SP Expressions.

SP type	Indicator	Example from recent study
Affective response	Expression of emotion	*I'm very glad to have a chance learn it together with friends that are very helpful.*
	Use of humor	*I have no skills in drawing so my line path look weird and my aero plane fly a little bit dangerous hahaha.*
	Self-disclosure	*I am quite busy for involvement with 21st century learning design workshop.*
Interactive response	Continuing a thread of discussion	*Owh . . . lucky for us Malaysians because we rarely experienced wind storm in this country*
	Quoting from others	. . . . .
	Referring explicitly others' messages	*I agree with u prof . . . illustrator and photoshop was the best software in making static design.*
	Asking questions	*How to curve/arch the text in Adobe Flash?*
	Complimenting	"**Person's name**" *more clever in this part*
	Expressing appreciation	*I am happy to learn best practice for Flash such as scene and action script.*
	Expressing agreement	*yeah agree on that, the more efficiently we use flash more high quality output can be reach, in minimal time . . .*
Cohesive response	Vocatives	*Tq* "**Person's name**" *. . . your post helped me a lot . . .* ☐
	Addressing group	*We try to learn together. As long as we try to do and from it we can get experience.*
	Phatic and salutations	*Good day everyone.*

Note. SP = social presence.

Instruments

The researchers used Rourke et al.'s (2001) SP coding scheme instrument to analyze students' SP posts during their interaction through Facebook. Table 2 illustrates the SP categories and the indicators developed by Rourke et al. (2001). The researchers developed the pre-test and post-test questions to measure the difference in students' performance after passing through the course.

Inter-Rater Reliability

Two raters with prior content analysis experience worked separately to analyze students' discussion based on SP coding scheme adopted in this study. Then, content analysis reliability was checked through inter-rater reliability by comparing the two raters' decision on 30 statements of each category. Furthermore, Cohen's kappa was conducted to statistically confirm the level of the agreement between the two raters. However, Cohen's kappa findings showed perfect agreement between the two raters, in which AR reliability was .95, IR reliability was .88, and CR reliability was .96. Then, the frequencies of students' SP statements were calculated and reported in the "Findings" section of this study (refer to Figure 2).

Findings

Total SP Posts in Each Learning Topic

The data shown in Figure 1 indicate that students posted higher number of SP posts in Learning Topic 1 (LT1) while less posts in Learning Topic 2 (LT2).

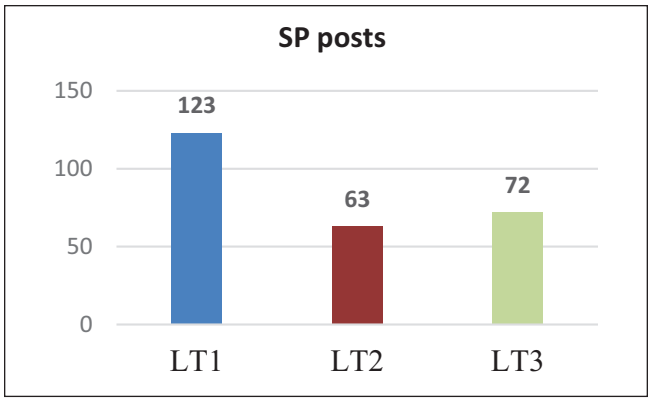

Figure 1. Total SP posts in each learning topic.
Note. SP = social presence; LT = learning topic.

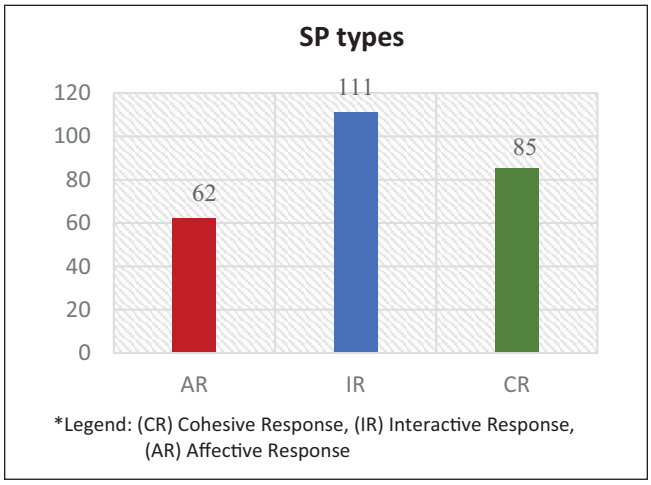

Figure 2. Distribution of students' SP posts.
Note. SP = social presence; AR = affective response; IR = interactive response; CR = cohesive response.

Number of Students' SP Posts for Each Category

Calculating the frequencies of students' SP posts showed that students posted a total of 258 SP posts, where they mostly conveyed 111 IR statements followed by 85 CR statements and only 62 AR statements (Figure 2).

SP Types in Each Learning Topic

The findings illustrated in Figure 3 show that students posted higher number of SP in LT1. Moreover, students conveyed higher number of IR posts across all LTs. In addition, CR posts were higher than AR posts in LT1 and LT3.

Difference in Students' Performance in Test

Figure 4 illustrates the difference in students' marks between pre-test and post-test. The findings showed that the highest difference in students' marks was 87, achieved by Student 8, while the least difference was 42 marks, achieved by Student 2.

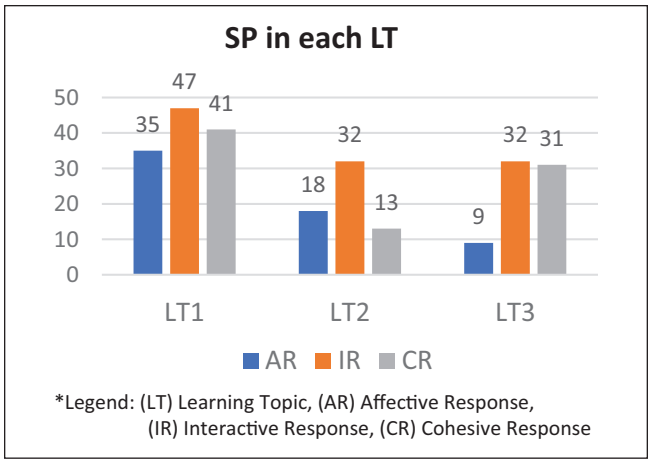

Figure 3. SP categories in each learning topic.
Note. SP = social presence; LT = learning topic; AR = affective response; IR = interactive response; CR = cohesive response.

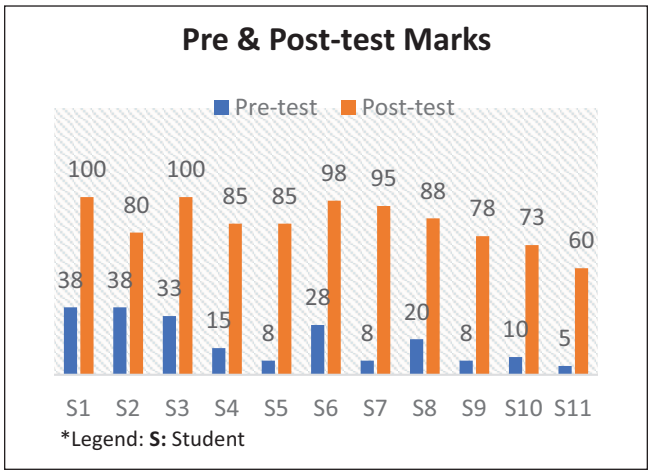

Figure 4. Difference in students' marks.
Note. S = student.

Paired sample *t*-test was run to examine the significance of the difference between students' pre-test and post-test. However, paired sample *t*-test findings confirmed the significant difference between students' pre-test scores ($\mu = 19.18$, $SD = 12.86$) and post-test scores ($\mu = 85.63$, $SD = 12.51$), with $t(10) = -19.07$ and $p = .000$. The findings suggest that students' online discussion on SNS that include SP expressions in blended learning environment facilitated by SNS has significantly contributed to better performance.

Discussion and Conclusion

During students' online discussion, SP expressions were clearly used. Students' use of the three types of SP was in different levels. Nevertheless, the number of SP posts

indicated that students are open to each other's questions, ideas, and even opposite view. In terms of each type of SP, students' focus was more on delivering IR compared with AR and CR. The IR category is more about continuing the discussion and maintaining interactivity among participants. Through IR, students could freely ask questions, continue the thread of the discussion, refer to or quote from others' statements, and post compliments and agreement with others' statements. It is notable that students in this study focused more on conveying social statements that smoothed the discussion of the given topics. However, the findings of this study are similar to previous studies which have found that IR communication is influenced by students' interactivity as they regularly make inquiries and seek clarification, information, or advice from other participants (Ubon & Kimble, 2004).

CRs were the second most frequently used SP type during students' course-related interaction through Facebook. CRs refer to activities and expressions that reflect social commitment among learning participants rather than discussion of ideas and thoughts. Through CR, students address other participants by name using vocative expressions, share feelings, exchange greetings using phatic expressions, and refer to the group using inclusive pronouns. The findings of this study give the impression that although students' focus was much on social statements associated with the discussion topics, they still post cohesive statements to establish positive relationships with other participants that could contribute to the cohesion of the learning community. Addressing CRs appeared to improve students' sense of learning community, which led to greater participation in the interaction about the course content. One possible explanation is that, students intended to use cohesive statements to prompt the interaction about the course content and activities rather than for socializing itself. These findings are in line with previous studies, which argued that the quality of relationships within an online learning community has a direct effect on online interaction (Shin, 2002).

Through AR statements, students can be more open to express emotions, use humor, and present details about their life outside the class. The use of AR statements reflects learning participants' openness to the instructor and peers and can compensate for the absence of facial expressions and vocal interaction in text-based interaction (Rourke et al., 2001). Students in this study posted a considerable number of AR expressions during their course-related interaction. It seems that students were trying to be more open to their instructors and peers through showing socio-emotional expressions. The findings of this study showed that students' AR expressions were mostly shown through using emoticons and sometimes through repetitious punctuation. Students' use of text to express AR was limited to statements that showed emotions resulting from their sense of learning something new. It seems that students preferred to restrict the discussion to the course and learning activities. As seen in the findings of the three SP categories, students used social expressions for the purpose of developing the discussion about the course rather than for purely socializing purposes. This might explain students' use of AR expressions, which were mostly expressed through emoticons rather than through text-based statements. This finding seems to be consistent with other research which has found that, the ways students project themselves through SP, communication style, and even the language they use depend on how they perceive the purpose of online discussion (Swan & Shih, 2005).

The type of learning topic has its effect on the delivered number of SP posts during the course. Students delivered higher number of SP posts in LT1 than LT2 and LT3. LT1 is considered as a more theoretical topic as it introduces students to flash, which triggered more discussion that resulted in more SP posts. On the contrary, LT2 and LT3 are more technical as they require step-by-step process for creating input and output in flash. Therefore, the technical nature of the topics limited students' discussion and consequently limited SP posts. This finding shows that theoretical topics prompted more discussion which triggered more SP posts than technical topics, which is consistent with Jumaat and Tasir's (2016) finding which reported more use of interaction categories in theoretical topic than technical one.

To sum up, students in this study employed SP expressions to improve online course-related discussion interactivity. In other words, students did not use the Facebook group for pure socializing purposes; rather, they focused on their learning purpose. Such opinion is supported by students' focus on conveying more IR posts across all learning topics. IR focuses on continuing the discussion thread, quoting or referring others' messages, asking questions, complimenting, expressing appreciation and agreement, which represent the focus on the course content in students' discussion. On the contrary, students sent only a few statements that reflect purely personal or pure socialization intentions, such as providing details of life outside the classroom, and they hardly posted humor statements. Therefore, the findings of this study suggest that students' SP is a facilitator of course-related online interaction as it was impeded in student's discussion about the course. Remarkably, these findings give the impression that higher education students can adapt to the educational use of SNS tools. Correspondingly, recent findings support the previous research which has found that students' educational use of Facebook is guided by their purpose of use (Mazman & Usluel, 2010). Consequently, SP expressions were employed to establish a social context for learning, which positively contributed to the improvement in their performance in the given test. Undoubtedly, researchers are not proclaiming that students' performance was only improved due to their SP during online discussion on SNS since other factors, such as F2F sessions and online discussion that focused on the course content, might also affect participants' performance in test. Despite that, online discussion on SNS tool supported by the investigated types of SP has

certainly played an important role in improving students' learning reflected by their marks in post-test.

Limitations and Future Work

Some limitations in this study need to be addressed. One of the limitations of this study is the small number of student participants. The participation was limited to those students who registered for the course under focus at the time of conducting this research. Moreover, lack of control group is another limitation in this study which was difficult to implement due to the limited number of students in the course, which prevents separating the participants into experiment group and control group. Therefore, future research is needed with large number of student participants with design that supports experiment and control groups to confirm the effect of SP during course-related interaction through SNS on students' performance. In addition, future research needs to compare the way of using SP expressions in a fully theoretical course with another technical-nature course for wider view and rigorous findings.

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ORCID iD


Yahya M. Al-Dheleai https://orcid.org/0000-0001-9678-402X

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Author Biographies

Yahya M. Al-Dheleai is an educational technology senior lecturer at School of Educational Studies, Universiti Sains Malaysia. His research focus includes online learning, social media in education, Problem and Project-based learning, teaching and learning theories and strategies in online learning environment and startegies to improve students' 21st Century skills and practice.

Zaidatun Tasir is a professor of Educational Technology at the Department of Educational Science, Maths and Creative Multimedia, School of Education, faculty of Social Sciences and Humanities, Universiti Teknologi Malaysia (UTM). She is the dean of faculty of Social Sciences and Humanities, UTM. She is an active research group member of Creative and Innovative Technology in Education (CITE) under Smart Digital Community. Her research interests and expertise include Design and Development of Computer and web-based Instructions, Multiple Intelligence through computer-based instruction, Problem-based learning through technology, Social Networking Tools in Education, and Online Social Learning Model.

Nurul Farhana Jumaat is the head of Creative and Innovative Technology in Education (CITE) Research Group. She is also senior lecturer at the Department of Educational Sciences, Mathematics and Multimedia Creative, faculty of Education Universiti Teknologi Malaysia. She is currently editorial board member of the Innovative Teaching and Learning Journal and a frequent reviewer for ISI indexed journal namely Journal of Educational Computing Research (JECR) and Educational Technology, Research and Development Journal (ETRD). Her research curiosity falls within but not restricted to Big Data Analytics, Social Network Analysis, Online and Distance Learning, Instructional Design, and Mobile Applications Design and Development.