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Abstract

Social Media sites can be used by learners, as a platform for information gathering and interaction during collaborative learning activities. However, there is little research on tertiary learners' experience in using social media for collaborative learning. Positive experiences while using social media applications may contribute to better learning outcomes. Thus, this study aims to investigate ESL learners' experience and perception of using Twitter, online forum, and blog for collaborative learning. The study employs a quantitative data collection method involving seventy-seven ESL learners from an intact class at a public university. An online questionnaire survey was used to gather the learners' experiences and perceptions. It referred to the Technology Acceptance Model (TAM) regarding its perceived usefulness and perceived ease of use. Overall, the results showed learners had a positive experience while using the three social media platforms. Blog was also considered the most useful and easy to use for collaborative learning. More insights and information for the implementation of collaborative learning while using social media can promote active learning that fits the current generation in live with the demand for the Industrial Revolution 4.0.

Keywords: Social Media, Experience, Learners' Perception, Collaborative Learning, Technology Acceptance Model (TAM)

Introduction

The Industrial Revolution 4.0 (IR 4.0) refers to the digitalisation of industries that would create new job opportunities for future graduates. IR 4.0 has given a new impetus to the educational transformation that is Education 4.0 which could affect all the domains of the pedagogical theory of Bloom's model (e.g., Cognitive, Affective, and Psychomotor) in terms of major change in the content, delivery, pedagogy, structure, and management of education. Changes in the human resources produced by the era of Education 4.0 are more likely to be highly creative, data literate, and critical thinkers (Haseeb, 2018). To ensure that human resources remain relevant in the era of IR 4.0, education planning should focus on better self-learning, communication, and collaborative skills (Johnson et al., 2014; Haseeb, 2018). Pedagogy innovations may involve mobile computing, social networking, exploring the use of big data analytics, and personalising the learning experience. Learners can collaborate by

learning anywhere or whenever they want. Hence, the use of social media applications for collaborative learning activities might help in the implementation of IR 4.0 and Education 4.0 which have been mentioned earlier (Haseeb, 2018).

Collaborative learning has been recognised to improve critical thinking, decrease workload, enhance a positive attitude towards learning the subject matter as well as to increase retention, and specifically increase greater employability (Felder & Brent, 1994; Johnson & Johnson, 1986). There were many studies since the year 2012 to 2021 that highlight collaboration and teamwork as the top skills that employers expect from their employees (Robles, 2012; Supena *et al.*, 2021). So far little attention was paid to the use of social media applications for collaborative learning and how the learners perceived it (Dasgupta *et al.*, 2002; Sanchez-Franco, 2010). There are fewer positive findings on the use of social media applications and collaborative learning because learners at times feel discussions are confusing, less productive (Straus, 1997; Straus & McGrath 1994), and more time-consuming than face-to-face collaborative learning environments, especially on the positive and negative perception of online collaborative learning in the classroom (Coughlin & Kajder, 2009). Moreover, there are gaps in the literature regarding ESL undergraduates' positive and negative perceptions of using Twitter, online forums as well as blogs for their collaborative learning activities (Hiltz *et al.*, 2000). Overall, there is some evidence of the importance of measuring how the learners perceived social media platforms for collaborative learning (Zhu *et al.*, 2009; Roszkowski & Soven, 2010) to prepare the learners' career success for the revolution industry 4.0 wave (Schuster *et al.*, 2016; Supena *et al.*, 2021)

Literature Review

Collaborative Learning and Social Media

Over the past century, the characteristics of the current generation have changed according to the Internet and technology advancements. This current generation has produced a digital gap or division between the immigrants (educators) and digital natives (learners). In other words, there is a division between technologically savvy individuals and non-technology savvy (Prensky, 2001). The development of social media has made interaction more open in the Internet age. This current generation mentioned has used social media platforms for diverse domains such as business, academia, entertainment, and politics. The broad use of social media sites is due to the convenience of creating and sharing information. Also, the interaction among users can be done efficiently without the constraints of time and space. However, the efficiency of social media sites depended very much on collaboration among users which is affected by both the experience and interaction of the users with the application itself (Lizzio & Wilson, 2005; Bukvova, 2010).

Collaborative learning can be defined as members of pairs or small groups interacting with each other to reach a common learning goal (Dillenbourg, 1999; Roschelle & Teasley, 1995). This can take various forms, such as asking pairs of learners to explain an expository text to each other, asking four learners to create a joint learning product via a shared electronic workspace, or asking groups of five to reach a consensus on a controversial content-related issue in an online discussion. A study related to collaborative learning suggested that it can strengthen learners' interaction and gather positive learning outcomes. Furthermore, learners seem to perform at higher intellectual levels in constructing knowledge if they learn collaboratively (Vygotsky, 1978; Ting, 2012). Collaborative learning involves group diversity

that forces the learners to face different interpretations, explanations, or answers about their subject matter. At the same time, it induces the learners to rethink their viewpoints. Conversely, Smith *et al* (2011) reported that some learners tend to have a negative attitude towards collaboratively learning online than in face-to-face group work learning settings. Despite the negative impressions of it, some researchers focus on the effectiveness of collaborative learning mainly among undergraduates (Maesin *et al.*, 2009; Yang *et al.*, 2012) but there is still a dearth of an investigation conducted on learners majoring in English Language (Hiltz *et al.*, 2000).

Social Constructivism Learning Theory

Social constructivism learning theory is the sub-theory of knowledge acquisition. In collaborative learning, the learners undergo learning processes that are active and contextualised. It helps them in the knowledge-construction process. During the collaborative learning process, learners deal with the knowledge that is constructed based on personal experiences and hypotheses of a certain environment. Learners continuously test these hypotheses through social negotiation. Each learner would have a different interpretation and construction of the knowledge process. Nevertheless, the learner is not in a clueless condition, but past experiences and cultural factors in a situation are brought (Bruner, 1990). Bruner (1990) specifically argued that learning is an active process in which learners can construct new ideas or concepts via their current and past knowledge.

The central principle of the constructivist approach is that instructors are expected to apply active, self-regulating, and reflective learning strategies in the learning process. In the practice of this study, learners actively regulate and reflect on their thinking for collaborative learning purposes while using social media platforms. In addition to that, motivation is a required element in constructivism as learners learn to motivate themselves in their ways. In short, the constructivist learning environment provides multiple representations of reality, which supports the collaborative construction of knowledge through social negotiation, and noncompetition for recognition among learners (McDonald & Gibson, 1998). For this reason, this study intends to find out how Twitter, online forum, and blog fulfill the features of social constructivism.

Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) is related to the perception of an individual on accepting a certain technology. Hence, Twitter, online forum and blog were evaluated by the learners in this study to find out what they think about such technology. There are external factors that affected the intention and actual use through mediated effects on perceived usefulness and perceived ease of use; organisational, social, individual, and, technological in using the technology (Park, 2009). This study focuses on only two variables of this model, that is, perceived usefulness and perceived ease of use. Both variables are the major contributor to learners' positive attitude towards technology, which eventually leads to the actual use of the technology (Davis, 1993) as exemplified in Figure 1.1.

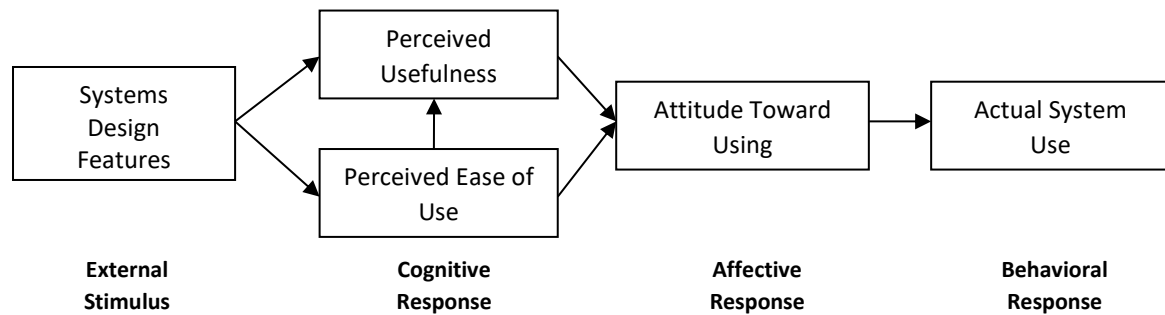


Figure 1.1: Original Technology Acceptance Model (Source: Davis, 1989)

As proposed originally by Davis in 1986, TAM helps to explain and predict user 's behaviour in accepting as well as adopting information technology (Davis, 1989), which is an extension of the theory of reasoned action (TRA) (Ajzen & Fishbein, 1980). The primary aim of this theory is to explain the relationship between attitudes and behaviours among humans especially the learners for this study. Moreover, it predicts the outcome or how individuals will behave based on their pre-existing attitudes and behavioural intentions to engage in a particular behaviour (Gilmore *et al.*, 2002). Hence, TAM can explain why a user accepts or rejects information technology (Davis, 1989).

Purpose of the Study

Perrin (2015) stated that 90% of young American adults aged between 18-29 use social media excessively in 2015, as compared to 12% in the year 2005. It has shown a 78%-point percentage increase in social media users for work, communication, health, and sharing information around the globe. Social media were viewed as part of the social aspect of networking and mingling with new community members. Moreover, past studies were not apparent in providing evidence about the effectiveness of incorporating social media use into the process of collaborative learning in the aspect of gaining knowledge and experience (Bruner, 1985; Lackovic *et al.*, 2017).

There are several views on how learners can benefit from the use of these social media platforms if they were not exposed to the possible uses in collaborative learning (Hamid *et al.*, 2015; Lackovic *et al.*, 2017). Twitter, online forum and blog discussed in this study offer potential use of computer-supported collaborative learning (CSCL) and society should pay more attention and awareness towards these social media applications, particularly in education (Lackovic *et al.*, 2017). Further, there is a lack of research conducted in exploring the use of social media in collaborative learning environments for education, particularly in the local context of Malaysian higher education (Hamid *et al.*, 2015). Thus, it is timely to conduct this research to reduce these research gaps. The aim of this study includes:

1. To explore the ESL undergraduates' experiences in using Twitter, online forum, and blog for collaborative learning.
2. To investigate the ESL undergraduates' perception of the usefulness of using Twitter, online forum, and blog for collaborative learning.
3. To investigate the ESL undergraduates' perception of ease of use in using Twitter, online forum, and blog for collaborative learning.

Methodology

This study used quantitative collection data related to the learners' experience and perception of using Twitter, online forum, and blog for collaborative learning. The research setting of this study was a public university which is in Malaysia. An intact class sample of 77 second-year undergraduate learners (20 males and 57 females) majoring in English participated in this study. The learners' age range was from 20 to 24 years old and considered as Net Generation as they were born between the years 1977 to 1984 (D'Amour, 2005). The learners were enrolled in a compulsory course named Introduction to Psycholinguistics. This course aimed to develop their understanding of key concepts and theories and synthesise data from a range of sources of psycholinguistics.

This study aims to investigate the experience and perception of the three social media for collaborative learning. Thus, there is a need for the creation of the social media platforms for collaborative learning experiences. The students were given before and after training before the execution of the actual survey. Nine learning tasks were assigned to the learners on the three social media. Learners had to use each social media for three weeks. The learning task was simple wh-questions related to the topic they have learned in the lecture session. These questions prompt the learners to discuss as a group. Simple questions were more efficient as it engages the learners dynamically while giving immediate feedback. Hence, learners can be more active while discussing their understanding in completing the task (Black *et al.*, 2004).

A developed set of questionnaires named Survey on Collaborative learning on social media was distributed as the research instrument for this study. The questionnaire was adapted from several validated questionnaires to assess learners' experience and perception level of technology acceptance towards the three social media platforms. The survey was uploaded online and can be accessed by the learners using a *SurveyMonkey* link. The questionnaire consists of four main sections. The questionnaire comprises four parts: part A (Demographic Profile), parts B & C (Collaborative Learning Experiences), and part D (Technology Acceptance). The questionnaire employed a five-point Likert scale for measuring all variables of one (1) to five (5) denotes the level of disagreement. The data collected was analysed descriptively using *SurveyMonkey* and SPSS version 19.0.

Findings

Reliability

The overall Cronbach's Alpha values of the internal consistency reliability of multiple Likert-type scales and all the items in this study are; 0.92 for Twitter, 0.89 for Online Forum, and 0.92 for Blog, respectively. Therefore, these results indicated significant internal consistency reliability of the survey instrument (See Table 1.1).

Table 1.1

Summary Values of Cronbach's Alpha and Average Mean by Each Item and Social Media Platform

Social Media	Items	Average Mean	Cronbach's Alpha	Cronbach's Alpha
Twitter	Perceived Usefulness	3.45	0.94	0.92
	Perceived Ease of Use	3.81	0.88	
Online Forum	Perceived Usefulness	3.69	0.92	0.89
	Perceived Ease of Use	3.82	0.93	
Blog	Perceived Usefulness	3.90	0.89	0.93
	Perceived Ease of Use	4.04	0.93	

Demographic Characteristics

Only 68 of the 77 learners responded to the questionnaire completely, resulting in a response rate of 88.3%. The learners comprised of 17 (25 %) males and 51 (75 %) females. The 68 questionnaires were usable, while the rest were discarded because of incomplete data. Most of the learners were Malay (48.5%), followed by Chinese (27.9%), others (14.7 %), and Indian (8.8%). Almost all of them belonged to the age group of 21-29 (97.1%), while only 1 learner is (2.9%) aged 30-39. Furthermore, all the learners majored in English, and a majority of them reside in urban areas (50, 73.5%), while only 18 (26.5%) are from rural places shown in Table 1.2.

Table 1.2

Demographic Characteristics of the Learners

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	17	25.0
	Female	51	75.0
Ethnic Group	Malay	33	48.5
	Chinese	19	27.9
	Indian	6	8.8
	Others	10	14.7
Age	21-29	67	97.1
Nationality	30-39	1	2.9
	Malaysian	67	98.5
Program	Foreign	1	1.5
	English Language	64	94.1
Resident	English Literature	4	5.9
	Urban	50	73.5
	Rural	18	26.5

Collaborative Learning Experiences of Learners

The study aimed to explore the learners' experience in using the three social media platforms for collaborative learning. Fifty-nine percent (59%) or a majority of the student either had never (10.4%) or seldom (48.5%) been exposed to collaborative learning before. The students were asked about their experiences after using the three social media platforms; A total of 79.4% reported *positive* (66.2%) and *very positive* (13.2%) learning experiences as shown in

Table 1.3. The students understood the core concept and their role in implementing collaborative learning, and when the students were asked whether they were supposed to lead the team or otherwise, seventy-one percent (71 %) said no. This can be interpreted to mean that they understood their roles in collaborative learning, which involves collaborating and not leading.

Table 1.3
Collaborative Learning Experiences

Description	Frequency	Percent
Have you ever experienced collaborative learning before taking this course?		
Never	7	10.4
Seldom	33	48.5
Often	21	30.9
Always	6	8.8
Missing	1	1.5
Total	68	100
Overall, how positive were your collaborative learning experiences?		
Very Negative	1	1.5
Negative	4	5.9
Not Sure	8	11.8
Positive	45	66.2
Very Positive	9	13.2
Missing	1	1.5
Total	68	100
When working in a collaborative learning group, do you usually lead the team?		
No	48	70.8
Yes	19	27.9
Missing	1	1.5
Total	68	100

Learners' Social Media Perception for Collaborative Learning

Two of the objectives formulated regarding the learners' perception were answered based on the analysis. Overall, the learners perceived each social media differently regarding perceived usefulness and ease of use for collaborative learning. From the gathered results, it can be concluded that the blog was shown to have the highest mean score for both perceived usefulness and ease of use.

Regarding learners' perceived usefulness (see Table 1.4), the highest mean showed that the learners felt that using blog improved their task quality ($m = 3.93$). They believe a blog can enhance their task quality as compared to the other two social media. This is because the functions that are available on the blog helped them to access different kinds of blogs for further information. The lowest mean is where the learners felt that using a blog enabled them to complete tasks quickly ($m = 3.85$). It is ranked last because of the long and wide posting space provided by the blog. Thus, they think they must write more and take a longer

period to complete. Based on the researchers' observation, when the learners write more, they feel that their posts would be more appealing.

Table 1.4
Blog Perceived Usefulness

	Missing	Strongly Disagree (1)	Disagree (2)	Maybe (3)	Agree (4)	Strongly Agree (5)	Mean Score
U1) Using Blog improves my task quality	3	0	2	12	44	7	3.93
U2) Using Blog improves the performance of my tasks	3	0	2	14	43	6	3.89
U3) Using Blog enables me to accomplish tasks more quickly	3	0	5	11	43	6	3.85
U4) Using Blog enables me to access a lot of information	3	0	6	9	39	11	3.92
U5) Using Blog enables me to access the newest information	3	1	5	12	35	12	3.90
Average Mean							3.90

As for perceived ease of use (see Table 1.4), the learners felt that the blog is easy to use as the item had the highest mean ($m = 4.17$). The learners were familiar with blogs as they have been exposed to them since they were at a younger age through media. Furthermore, spreading the latest information and online business were mostly done by using blogs. Interestingly, the researcher observed that the learner use blog easily to plagiarise the content in completing a learning task. However, similar to Twitter, the lowest mean for the blog ($m = 3.94$) is where the participants felt that it is easy to use and to become skillful in using a blog. Writing on blogs required them to have excellent writing skills and language proficiency. Writing on blogs is rated lowest because the learners felt it was hard for them to be skillful in using a blog. They perhaps tend to make more language errors along the way as they write.

Table 1.4

Blog Perceived Ease of Use

	Missing	Strongly Disagree	Disagree	Maybe	Agree	Strongly Agree	Mean Score
	(1)	(2)	(3)	(4)	(5)		
E1) Using Blog is easy	0	2	13	35	15		4.04
E2) It is easy to become skillful in using Blog	0	3	12	41	9		3.94
E3) Blog is flexible in interacting and collaborating with peers and instructors	0	3	13	39	10		3.94
E4) Own interaction using Blog would be clear and understandable.	0	1	11	39	14		4.09
E5) find Blog easy to use.	0	3	7	36	19		4.17
Average Mean							4.04

Discussion

The findings of this study found that both perceived usefulness and ease of use affected the attitudes of learners to use the blog and were seen as useful in improving the quality of the task given. The result is parallel to a study by Chee (2010) whereby undergraduates from various faculties, attended the Principle Economics class with a different level of English proficiency, lectures, and an hour of face-to-face tutoring in the ten-week study. Also during the one-hour tutoring, undergraduates were to blog based on the topic given while simultaneously referring to their textbooks. The findings of the study revealed that viewing other blogs was useful for learners' learning process. Furthermore, the blog saves time regarding posting and delivering instructions from the tutor, showing that collaborative learning through blog improved the quality of tasks presented. Also, learners perceived that blog is easy to use compared to Twitter and online forum. The result is consonant with the findings of a study conducted by Bumguardner *et al* (2014) on 70 Students at Texas A&M University aimed at investigating the students' motivations in using blogs for intensive writing courses. It showed that the students felt that learning to operate blogs was easy for them, and ease of use indicates that the results and findings of previous studies are like this study. Surprisingly, even though the blog was accepted as a useful and easy-to-use social media, the learners prefer to use Twitter for academic and social purposes. It was observed that Twitter was a tool to evaluate the learners' understanding because learners must have good summary skills, with a limitation of 140 characters, whereby the learners must do the posting that were genuine and authentic. Even though the space limitation on Twitter may disrupt the message conveyed, learners still found creative ways to communicate (Boyd *et al.*, 2010). Extensive plagiarism was observed by the learners while using online forum and blog in completing the

learning task even though the unlimited space and character offered the learners a significant opportunity to plagiarise. However, this was not the main concern of the study, and further investigation is needed in the future.

Conclusion

Based on the findings, the ESL learners had a positive experience while using all three social media applications. These social media provided the learners with an experience for collaborative learning and a sense of belongingness to a community. The blog was easy for the learners to use due to their familiarity. It was seen to have the highest mean regarding perceived usefulness and ease of use. Meanwhile, the online forum was useful in providing them access to multiple resources of information during their task. Twitter was interesting and immediate feedback given to the learners is the fact that other instructors should consider when choosing social media in a classroom setting. However, the quality of the learning process while social media may be affected if there is no internet connection. Further research can be done since the participants of this study were limited to ESL undergraduates; a similar study can be conducted towards different academic subjects or disciplines, such as business or science should be considered. In conclusion, the three social media platforms offered a lot of positive experiences, were easy to use for collaborative learning, and had high potential for academic and social purposes.

References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behavior. Englewood Cliffs, NJ: Prentice-Hall. Top of Form.
- Black, P., Harrison, C., Lee, C., Marshall, B., & Wiliam, D. (2004). Working inside the black box: Assessment for learning in the classroom. *Phi delta kappan*, 86(1), 8-21.
- Boyd, D., Golder, S., & Lotan, G. (2010). Tweet, Tweet, Retweet: Conversational aspects of retweeting on Twitter. HICSS '10 Proceedings of the 2010 43rd Hawaii International Conference on System Sciences.
- Bruner, J. (1985). Vygotsky: A historical and conceptual perspective. In J. V. Wertsch (Ed), Culture, Communication and cognition: Vygotskian perspectives. Cambridge: Cambridge University Press.
- Bruner, J. (1990). *Acts of Meaning* Cambridge, MA: Harvard University Press.
- Bukvova, H. (2010). Studying research collaboration: A literature review. *Sprouts :Working Papers on Information Systems*, 10(3).
- Bumguardner, K. M., Strong, R., Murphrey, T. P., & Dooley, L. M. (2014). Examining the Blogging Habits of Agricultural Leadership Students: Understanding Motivation, Use, and Self-Efficacy. *Journal of Agricultural Education*, 55(3), 32-42.
- Chee, K. L. (2010). Using Blogs in E-learning for Undergraduate Economics: A Tutor's Perspective. In M. P. Cameron and S. Lim (Eds) *Frontiers in Economics Teaching: Proceedings of the 15th Australasian Teaching Economics Conference 2010*, 127-140. Hamilton, New Zealand: Department of Economics, University of Waikato.
- Coughlin, E., & Kajder, S. A. R. A. (2009). The impact of online collaborative learning on educators and classroom practices. *Los Angeles, CA: Cisco Systems*

- D'Amour, D., Ferrada-Videla, M., San Martin Rodriguez, L., & Beaulieu, M. D. (2005). The conceptual basis for interprofessional collaboration: core concepts and theoretical frameworks. *Journal of interprofessional care*, 19(sup1), 116-131.
- Davis, F. D. (1989). Perceived Usefulness, Perceived Ease Of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13, 983-1003.
- Davis, F. D. (1993). User Acceptance of information technology: System characteristics, user perceptions, and behavioral impacts. *International Journal of Man Machine Studies*, 38, 475-487.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, 35 (8), 982-1003.
- Dillenbourg, P. (1999). What do you mean by collaborative learning? In P. Dillenbourg (Ed.), *Collaborative-learning: Cognitive and computational approaches* (pp. 1–19). Elsevier.
- Felder, R. M., & Brent, R. (1994). Cooperative Learning in Technical Courses: Procedures, Pitfalls, and Payoffs.
- Gillmore, M. R., Archibald, M. E., Morrison, D. M., Wilsdon, A., Wells, E. A., Hoppe, M. J., & Murowchick, E. (2002). Teen sexual behavior: Applicability of the theory of reasoned action. *Journal of Marriage and Family*, 64(4), 885-897.
- Hamid, S., Waycott, J., Kurnia, S., & Chang, S. (2015). Understanding students' perceptions of the benefits of online social networking use for teaching and learning. *The Internet and Higher Education*, 26, 1-9.
- Haseeb, A. A. (2018). Higher Education In The Era Of Ir 4.0. Retrieved May 08, 2018, From <https://www.nst.com.my/education/2018/01/323591/higher-education-era-ir-40>.
- Hiltz, S. R., Coppola, N., Rotter, N., Turoff, M., & Benbunan-Fich, R. (2000). Measuring the importance of collaborative learning for the effectiveness of ALN: A multi-measure, multi-method approach. *Journal of Asynchronous Learning Networks*, 4(2), 103-125.
- Darmuki, I. A., & Hariyadi, A. (2021). The Influence of 4C (Constructive, Critical, Creativity, Collaborative) Learning Model on Students' Learning Outcomes. *International Journal of Instruction*, 14(3), 873-892.
- Johnson, R. T., & Johnson, D. W. (1986). Action research: Cooperative learning in the science classroom. *Science and Children*, 24, 31-32.
- Lackovic, N., Kerry, R., Lowe, R., & Lowe, T. (2017). Being knowledge, power and profession subordinates: Students' perceptions of Twitter for learning. *The Internet and Higher Education*, 33, 41-48.
- Lizzio, A., & Wilson, K. (2005). Self-managed learning groups in higher education: Students' perceptions of process and outcomes. *British Journal of Educational Psychology*, 75(3), 373-390.
- Maesin, A., Mansor, M., Shafie, L. A., & Nayan, S. (2009). A study of collaborative learning among Malaysian undergraduates. *Asian Social Science*, 5(7), 70.
- Mcdonald, J., & Gibson C. C. (1998). International dynamics and group development in computer conferencing. *The American Journal of Distance Education*, 12(1), 6-24.
- Park, S. Y. (2009). An analysis of the technology acceptance model in understanding university students' behavioral intention to use e-learning. *Educational technology & society*, 12(3), 150-162.
- Perrin, A. (2015). Social media usage. *Pew Research Center*
- Preksy, M. (2001). Digital natives, digital immigrants. *On the Horizon*, 9, 5, 1–6.
- Robles, M. M. (2012). Executive perceptions of the top 10 soft skills needed in today's workplace. *Business Communication Quarterly*, 75(4), 453-465.

- Roschelle, J., & Teasley, S. D. (1995). The construction of shared knowledge in collaborative problem-solving. In C. O'Malley (Ed.), *Computer supported collaborative learning*. Springer
- Roszkowski, M. J., & Soven, M. (2010). Did you learn something useful today? An analysis of how perceived utility relates to perceived learning and their predictiveness of satisfaction with training. *Performance Improvement Quarterly*, 23(2), 71-91.
- Schuster, K., Groß, K., Vossen, R., Richert, A., & Jeschke, S. (2016). Preparing for industry 4.0—collaborative virtual learning environments in engineering education. In *Automation, Communication and Cybernetics in Science and Engineering 2015/2016* (pp. 417-427). Springer International Publishing.
- Smith, G. G., Sorensen, C., Gump, A., Heindel, A. J., Caris, M., & Martinez, C. D. (2011). Overcoming student resistance to group work: Online versus face-to-face. *The Internet and Higher Education*, 14(2), 121-128.
- Straus, S. G. (1997). Technology, group process, and group outcomes: Testing the connections in computer-mediated and face-to-face groups. *Human-computer interaction*, 12(3), 227-266.
- Straus, S. G., & McGrath, J. E. (1994). Does the medium matter? The interaction of task type and technology on group performance and member reactions. *Journal of applied psychology*, 79(1), 87.
- Ting-Toomey, S. (2012). *Communicating across cultures*. Guilford Press.
- Vygotsky, L. S. (1978). Interaction between learning and development (M. Lopez-Morillas, Trans.). In Cole, M., John-Steiner, V., Scribner, S. and Souberman, E. (eds). *Mind in society: The development of higher psychological processes*. Cambridge: Harvard University Press, 79-91.
- Yang, K., Woomeer, G. R., & Matthews, J. T. (2012). Collaborative learning among undergraduate students in community health nursing. *Nurse Education in Practice*, 12(2), 72-76.
- Zhu, C., Valcke, M., & Schellens, T. (2009). A cross-cultural study of online collaborative learning. *Multicultural Education & Technology Journal*, 3(1), 33-46.