

The impact of COVID-19 on student motivation, community of inquiry and learning performance

Abstract

Purpose – This paper aims to investigate the impact of COVID-19 on the students studying in higher education institutions pre and during Movement Control Order (MCO). MCO was introduced in March 2020, and the learning process must switch from face-to-face to online learning in schools and universities. This study particularly focuses on university students by analyzing the students' motivation, the community of inquiry and learning performance. In total, three factors are examined in the construct of the community of inquiry, namely social presence, cognitive presence and teaching presence.

Design/methodology/approach – This paper provides quantitative analysis and paired sample *t*-tests on the students' learning motivation, the community of inquiry and learning performance. This paper presents the analysis of the online learning preference of 282 university students and examines whether there is significant difference in preference before and during MCO.

Findings – The findings indicated that the students lost motivation and learning performance using online learning methods during the MCO period. There is a lack of infrastructure to support the learning and social support from the lecturers and peers.

Research limitations/implications – This research helps to explore improvements that are needed to manage such a pandemic to support teaching staff and students.

Practical implications – The COVID-19 is a pandemic that has affected the learning process of the students, and it should not be neglected even when it is over. Policymakers shall consider providing more training and better infrastructures to cater to smooth Internet connection and platform for online learning. Students are not able to focus on learning using online learning methods and, they lack motivation during the pandemic. The teaching faculty also need to be well-trained in delivering online courses and to be more tech-savvy.

Social implications – With the detailed analysis of the students' learning motivation, the community of inquiry and learning performance, it helps to promote a better education environment.

Originality/value – This is the first study to examine the learning motivation and performance model as well as the community of inquiry during the pandemic. It is evident that university students initially have a high level of motivation and community of inquiry before the pandemic but yield a significant drop during the MCO. The paper presented how COVID-19 seriously impacted on the learning experience.

Keywords COVID-19, Learning motivation, Performance, Online learning, Higher education

Paper type Research paper

1. Introduction

COVID-19 is an infectious disease caused by a coronavirus and its first outbreak was in Wuhan, China. The World Health Organization declared it as a pandemic on 11th March 2020 (WHO, 2020). Due to the outbreak of COVID-19 and its surge in the middle of March 2020, many countries have responded by implementing travel restrictions, quarantines, stay-at-home orders, etc. The impact is huge, not only on the global economy but also on education where student learning is disrupted. With the imposing of restricted movement or movement control order by respective authorities, students are unable to attend classes in their normal face-to-face format. In the meantime, teaching faculty must quickly make changes to the delivery mode from traditional teaching methods to e-learning or online learning. Either method has caused a huge impact on the teaching and learning process. Various studies suggested that e-learning can enhance students' engagement and analytical skills (Al-Omari and Salameh, 2012; Saini, 2014). While in the meantime, traditional learning is better where students can communicate verbally with their peers and instructors which in turn improved their interpersonal skills.



Besides, learners can obtain immediate feedback from their instructors through traditional learning which enhances their learning motivation (Stack, 2015).

Therefore, it is vital to understand the attributes that impacted learning performance due to the pandemic. This paper uses the student learning motivation model and community of inquiry framework to analyze the impact of COVID-19 on the university students learning behavior. There is a detailed analysis conducted to understand the change of learning behavior, before and during the Movement Control Order (MCO) period. To illustrate the framework for better understanding, this paper is structured as follows. Section 2 describes the literature reviewed on enrollment, learning motivation, community of inquiry and performance. Section 3 depicts the methodology of gathering the data. Section 4 discusses the quantitative analysis. Finally, Section 5 concludes the finding of the study and social implications on the education sector.

2. Literature review

According to Garrison *et al.* (2000), academics are facing challenges in creating community of inquiry in the virtual learning environment. The learning motivation is believed to be affected whether the class takes place in a physical or virtual setting. Subsequently, the community of inquiry, which consists of social presence, cognitive presence and teaching presence, will be affected by the learning motivation which then has a direct impact on the learning performance. Hence, there is a need to move forward in enhancing teaching and learning using online teaching methods, not only due to the fast-forward development in technology and information system but also its crucial role in a crisis like what we are facing now. Figure 1 exhibits the elements of an educational experience for teachers and students developed by Garrison *et al.* (2000). The model was developed by assuming that learning occurs within the community through the three core elements: social presence, cognitive presence and teaching presence.

2.1 Learning motivation

Learning motivation is defined as behavior that allows students to engage in their learning and motivate to complete every task given by their instructors to pursue their goals in the study (Law *et al.*, 2019; see also Ford, 1992). According to Dörnyei (1998), motivation is no longer viewed as “a function of stimuli and reinforcement” but rather more on the individual’s thoughts and beliefs which then transformed into action. There are two types of learning

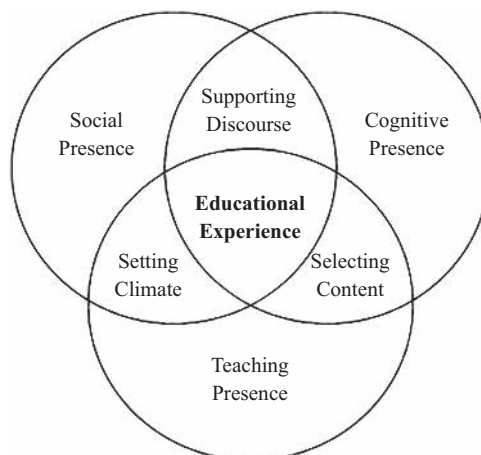


Figure 1.
Elements of an
educational experience
(Garrison *et al.*, 2000)

motivation: internal and external in the framework of motivation. The intrinsic interest of activity, the perceived value of activity, mastery, etc. are examples of internal factors, which are also the dominant type in learning motivation (Dörnyei, 1998; Law *et al.*, 2019). External factors are learning environment, interaction with others, cultural norms and societal expectations and attitudes. According to Papi and Hiver (2020), learning motivational development is complex, and they used Higgins’s model that effectiveness is the core concept of what human desire. To date, there is no research done to examine the effects of learning motivation on performance (Law and Breznik, 2017; Law and Geng, 2018; Law *et al.*, 2010, 2019; Ngan and Law, 2015). Wentzel *et al.* (2010) confirmed that social supports from teachers and peers are important in determining student motivation.

2.2 Community of inquiry

There are three types of presence in the community of inquiry, which are social presence, cognitive presence and teaching presence (Akyol *et al.*, 2011; Kozan and Richardson, 2014). Figure 2 presents more details of the three elements in online and blended learning (Akyol *et al.*, 2009; Vaughan and Garrison, 2019).

According to Garrison (2011), social presence is students’ ability to relate to their peers, communicate and form relationships within their learning class. Social presence measures the collaboration, connection and interaction of students with their peers as well as in their course activities. In the meantime, social presence creates “a sense of belonging, supports freedom of expression and sustains cohesiveness” (Law *et al.*, 2019, p. 2). The second type of presence is the cognitive presence, which involves exploration, reflection, creation through discussion and collaborative works. Examples of measurement are such as “The course allows me to explore more ideas and integrate ideas into solutions”, “The course equips me to have higher-order thinking skills and “The course provides the chance for me to reflect what I learned”. Shea and Bidjerano (2012) suggested that cognitive presence plays a function as self-regulated learning that is crucial not just in a classroom setting but also in online learning. Almasi and Chang (2020) suggested that promptness of feedback, time and confidence has a direct relationship with cognitive presence. Lastly, teaching presence plays the most important role to integrate the role of social presence and cognitive presence in the community of inquiry. Besides, teaching quality is believed to be a key factor that determines students’ learning behavior (Akyol and Garrison, 2008; Shea *et al.*, 2012). Garrison (2011) defined it as the delivery of the course from the dimension of design, facilitation and learning guidelines for the students to achieve the course learning outcomes. Anderson *et al.* (2001) also mentioned that the relationship between students and teaching staff is important in their learning process (see also Eyal, 2012). In a research involved engineering course, it is found that teaching presence is more important than social presence and cognitive presence (Szeto, 2015). Darling-Aduana and Heinrich (2018) conducted research involved bilingual students found that teacher capacity and their teaching strategies using technology should provide culturally relevant experiences in their learning process. Almasi and Chang (2020) concluded that teaching presence influenced

Social Presence	Cognitive Presence	Teaching Presence
<ul style="list-style-type: none"> • Affective expression • Open Communication • Group cohesion 	<ul style="list-style-type: none"> • Triggering event • Exploration • Integration • Resolution 	<ul style="list-style-type: none"> • Design and organization • Facilitating discourse • Direct instruction

Figure 2. Elements of community of inquiry in online and blended learning

the students' cognitive presence in the situation where teachers ask tutorial questions to stimulate students to explore various concepts in their learning process.

2.3 Learning performance

After all, the learning motivation and community of inquiry will have an impact on students' learning performance. Several studies showed that learning motivation increased the students' learning performance (see also Paas *et al.*, 2005 and Partovi and Razavi, 2019) where it is positively impacted on the learners' achievement goals (Schunk and Zimmerman, cited in Geng *et al.*, 2020). Chen and Chen (2009) examined the effects of learning motivation on learning performance using English popular songs where students' English abilities especially on listening skill improved. Tu and Chu (2020) employed a quantitative analysis to investigate the relevance of learning motivation and its impact on learning effectiveness as well as learning experience performance using design students. Performance can be measured in terms of the improvement on critical thinking skills and problem-solving skills after taking a course (Law *et al.*, 2019). Geng *et al.* (2020) conducted a research using a mathematics course which used BookRoll as a platform for digital learning from the perspective of the ARCS (attention, relevance, confidence and satisfaction) model. Their results showed that students' motivation in learning is related to teaching activities/strategies of a teacher and thus on the learning performance. It is evident that students who experienced high cognitive presence tend to have better academic performance (Almasi and Chang, 2020).

3. Methodology

This research project employed a quantitative survey using Google form to collect responses from higher education institutions in Malaysia. This study employed a convenience sampling where it is considered as a nonprobability sampling method. This method was used due to its simplicity to get feedback from students conveniently as long as they are pursuing their study in higher education institutions. The questionnaire was sent out to students who are currently pursuing their degrees (undergraduate/postgraduate) in Malaysian higher education institutions through students' welfare center in universities, Facebook and other social media platforms. The researchers also send the Google form link to lecturers through the researchers' personal contacts, so they can forward the link to their students. The data collection process started on 30th March 2020 which was the 2nd week of MCO, and the survey closed on 15th April 2020. We successfully collected 282 responses during the two weeks of data collection. The students who responded to the research survey are currently studying undergraduate programs such as Business, Hospitality, Tourism and Culinary Arts, Engineering, Communication, Creative Arts, Law, etc.

The questionnaire was designed based on the four constructs, namely motivation, social presence, cognitive presence, teaching presence and performance. There is a total of four sections consist of questions associated with the constructs. The first section consists of the background of students such as program of study, gender, age and reason of enrollment. Then, the second section asked the respondents to provide an opinion regarding their learning motivation, then community of inquiry and performance using traditional learning (face-to-face) methods before MCO. The measurements were mainly adapted from the study of Law *et al.* (2019) to achieve the current research objectives. The third section asked the same questions but moving their agreement on the statements on online learning during MCO. A six-point Likert scale was being used in all three sections (Section 2, 3, and 4) to obtain a more quantifiable result and avoid "neutral" choice from the respondents. According to Brown (2000), even-numbered Likert scales force the respondents to make their stand. By giving a neutral response option using odd-numbered Likert scales, it tends to offer

respondents with indecisive opinion (Croasmun and Ostrom, 2011). The scales are represented as 1 for strongly disagree, 2 for moderately disagree, 3 for slightly disagree, 4 for slightly agree, 5 for moderately agree and 6 for strongly agree. The data were coded, and a quantitative analysis technique was used to compute the results. A paired sample *t*-test was conducted to analyze the change in the learning behavior before and during MCO. The entire data analysis process was completed using both Microsoft Excel and SPSS software.

4. Quantitative analysis

This paper presents the results on the students’ program of study and their learning behavior before and during MCO. A total of 282 respondents provided their responses, and there are no missing data. Table 1 shows the analysis of demographic attributes of the respondents to aid further understanding of their enrollment, learning motivation and behavior.

Table 1 below presents that 155 respondents (55%) are female, and 127 (45%) respondents are male. Besides, there are 152 respondents (54%) who are aged above 20 and 130 respondents (46.1%) who are aged 20 or below.

Table 2 below shows the correlation among construct scores in which there is a strong relationship between learning motivation with the three constructs of the community of inquiry and performance. Among the three community of inquiry, cognitive presence has the strongest relationship with learning performance with a Pearson correlation value of 0.853, followed by teaching presence (0.801) and social presence (0.763). Learning motivation also has a strong relationship with learning performance with a Pearson correlation value of 0.726.

The focus of the study is to investigate the change in learning behavior before and during MCO, and the following results are presented. Paired sample *t*-tests were conducted to examine whether there is a significant change in the learning motivation, the community of inquiry and learning performance.

The differences of learning motivation, community of inquiry (social presence, cognitive presence and teaching presence) and learning performance before and during MCO are presented in Figures 3–7. As seen from the figures, there is a huge change in the level of agreement on the measurements of all these five factors. The students have higher mean

Table 1.
Demographic of respondents

Demographic attributes	Percentage (%)	Demographic attributes	Percentage (%)
<i>Gender</i>		<i>Age</i>	
Female	55	20 or below	46.1
Male	45	Above 20	53.9

Table 2.
Correlation among construct scores

Constructs	Learning motivation (LM)	Social presence (SP)	Cognitive presence (CP)	Teaching presence (TP)	Performance (Perf)
Learning motivation (LM)	1.000				
Social presence (SP)	0.815	1.000			
Cognitive presence (CP)	0.785	0.850	1.000		
Teaching presence (TP)	0.701	0.799	0.856	1.000	
Performance (Perf)	0.726	0.763	0.853	0.801	1.000

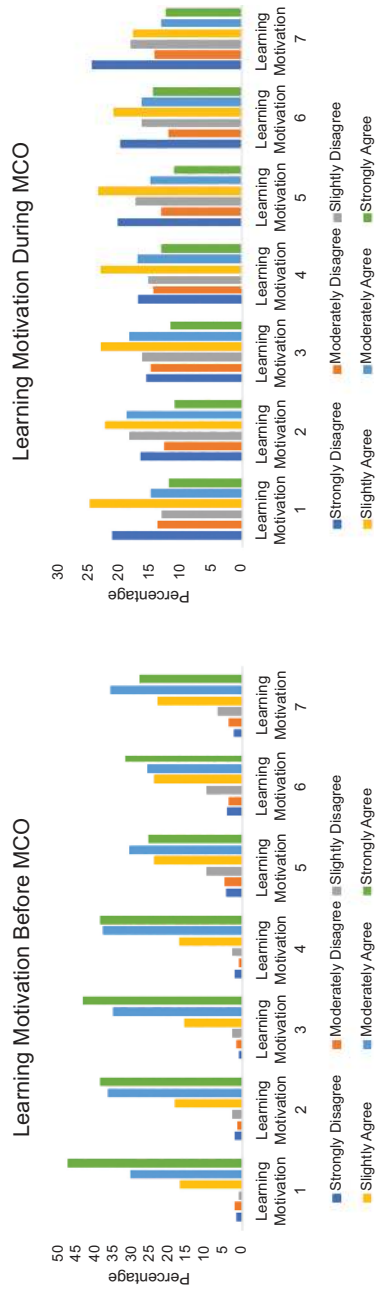


Figure 3.
Change in learning
motivation (before and
during MCO)

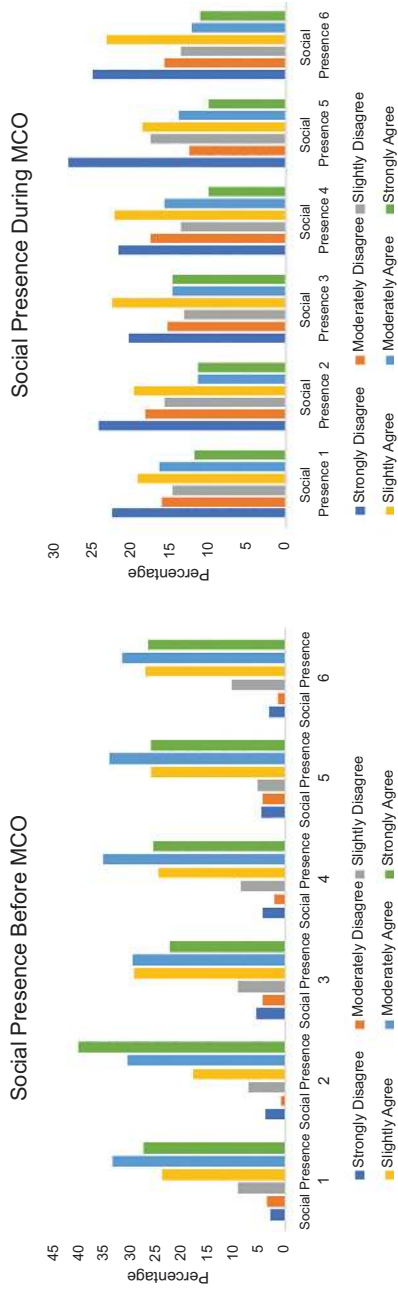


Figure 4.
Change in social
presence (before and
during MCO)

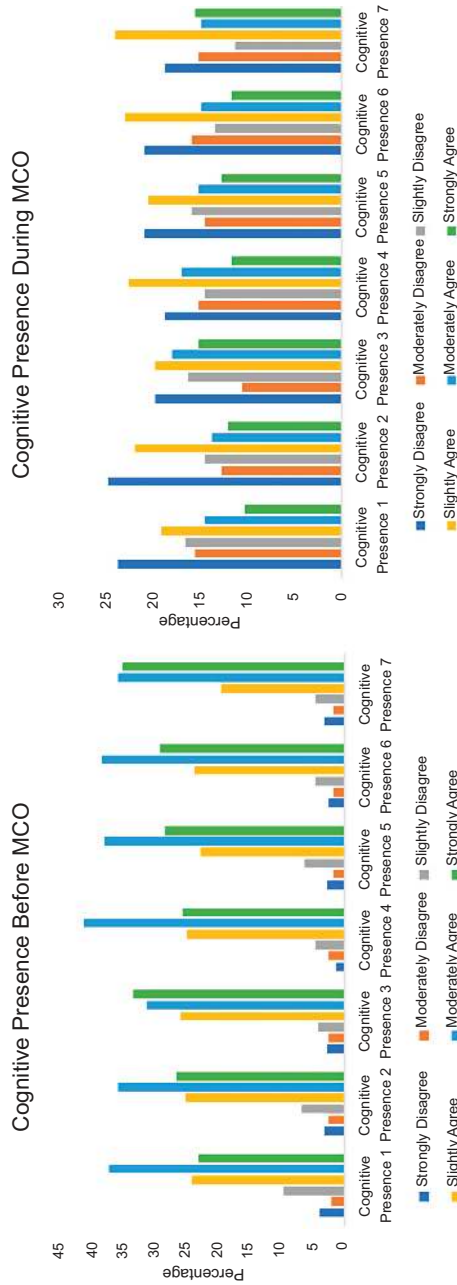


Figure 5. Change in cognitive presence (before and during MCO)

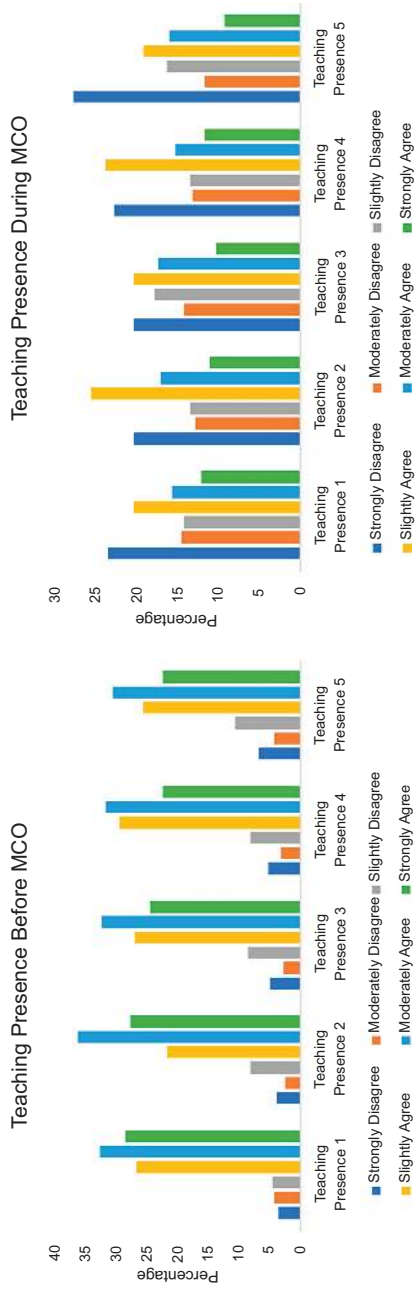


Figure 6.
Change in teaching
presence (before and
during MCO)

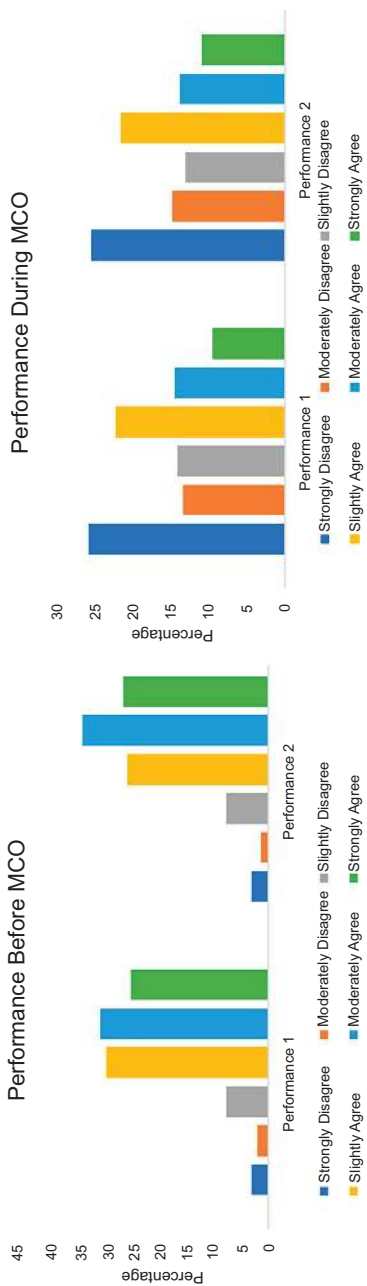


Figure 7.
Change in learning
performance (before
and during MCO)

scores for all five factors before MCO, and the mean scores dropped during MCO. To analyze the significance of differences observed between before and during the MCO period, paired sample *t*-tests were carried out, and results are shown in Table 3. As the results shown, there are significant differences between before and during MCO.

5. Conclusions

In summary, the study has given further insights regarding the impacts of the MCO on the learning behavior due to the outbreak of COVID-19. The pandemic has caught us in shock, and there are adverse impacts on the students’ learning patterns. Even though the teaching faculty managed to switch the traditional teaching methods to online learning, but the aftermath is unknown. Furthermore, most of the teaching staff is not well-equipped with online teaching methods and were forced to adapt to the change due to the crisis. This has suggested that future educators should be equipped with online teaching by improving their digital literacy skills, design online learning content and trained with a wide range of educational philosophies (Korkmaz and Toraman, 2020; see also Amir *et al.*, 2020). Based on the current study, there are much negative feedback and notion on this change of teaching and learning methods. We must take this as an opportunity to enhance the conduct of online education by gathering as much information as possible. According to Kim and Gurvitch (2020), the pandemic brought impacts on how people live, and we have to adopt online communication to keep providing education. Nonetheless, they also pointed out that we face several pedagogical and technological challenges in the online learning environment.

Based on the analysis, the university students were very happy and satisfied with their learning and highly motivated in their study. Most of them agreed that social presence, cognitive presence and teaching presence exist and were helping them to cope well in their study. The same goes to learning performance. Unfortunately, due to MCO, their learning styles must change and many of them find themselves difficult to concentrate, lack of interaction, lack of motivation and need timely feedback from their lecturers through online learning. Subsequently, learning performance has been dropped, and students are stressed with their study. In a recent study conducted by Chung *et al.* (2020) during the COVID-19 pandemic, a majority of the respondents do not want to continue their lesson using online learning methods. Some of the challenges that these students faced include Internet connectivity and understanding of the content of their subjects.

Even though the study showed that there is significant difference in students’ learning motivation, cognitive of inquiry and learning performance, the small sample size of 282 is not sufficient to generalize the learning process of all students studying in Malaysian higher education institutions before and during MCO. Further study can be carried out to analyze the different learning styles among undergraduate and postgraduate students as well as public and private higher education institutions. However, it is challenging to duplicate such research work given different circumstances in the development of COVID-19 within a country and/or across countries.

Constructs	Mean (before MCO)	Mean (during MCO)	<i>t</i> -stat	Sig
Learning motivation	4.8713	3.3916	15.10***	Yes
Social presence	4.6229	3.2003	14.24***	Yes
Cognitive presence	4.7563	3.3440	14.14***	Yes
Teaching presence	4.5319	3.2787	12.94***	Yes
Learning Performance	4.6437	3.1560	13.69***	Yes

Note(s). ****p* < 0.001, ***p* < 0.010, **p* < 0.050

Table 3. Statistical test using paired sample *t*-tests to test for differences

In conclusion, this research allows policymakers and stakeholders to react in providing suitable support in using technology and information system to facilitate the online learning environment as much as possible. Social presence, cognitive presence and teaching presence show the importance of interactivity and collaboration in learning, specifically in this setting is online learning. Through the usage of the online learning management system, it is critical to higher education institutions to provide a conducive online learning environment to enhance students' learning motivation and boost the community of inquiry and subsequently improve their learning performance. Students need guidance to achieve their learning goals. In the meantime, not to forget that teaching faculty need vast support in delivering their courses using technology in conjunction with their initial teaching and research responsibility. The new online teaching philosophy has to be promoted and adopted by teaching faculty as our education paradigm is shifting to the new norm of online education instead of traditional face-to-face teaching. This applies to blended learning and online learning through massive open online courses (MOOCs) or micro-credentials.

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