# Online teaching during COVID-19 pandemic: A phenomenological study of university educators' experiences and challenges

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ABSTRACT

To further understand how online teaching and learning can be improved during the COVID-19 pandemic, a phenomenological study was conducted on 15 educators' experiences of online teaching in Malaysian Universities. The Community of Inquiry framework is used as a guide, as well as a data interpretation tool, to understand the educators' experiences in terms of planning and implementing teaching and learning in using online tools, technologies, and platforms. Findings indicate that in the current situation, with all the intricacies, deficiencies and challenges, the educators' teaching presence is clearly discernible. Nevertheless, there appears to be efforts by the educators to ensure that teaching presence, cognitive presence and social presence are integrated, albeit in an unstructured manner. Based on the data, a flexible, fluid and dynamic model of Community of Inquiry, which is suitable to crisis situations, is suggested and a supporting guideline is provided to understand the framework.

## 1. Introduction

In the relentless wave of new COVID-19 cases, as well as the findings of new strands of the virus, it is most likely that teaching and learning in higher educational institutions (HEI) across the globe may have to be continued in the online environment. Online learning in HEI is no longer an option but a reality that needs to be sustained, developed, and extended. It also needs to adapt/adopt a hybrid approach to learning that enhances "constructivist, learner-centered, cooperative pedagogy" (Adedoyin & Soykan, 2020, p. 2). Hence, online learning has emerged as a "victor ludorum amidst this chaos", which implies that enhancing and enriching the quality of online teaching–learning (OTL) is critical during these times of crisis (Dhawan, 2020, p.7). Achieving this would be impossible without: (i) thorough needs analysis of educators' and learners' preparedness, capabilities and capacities; (ii) proper and thoughtful planning and implementation of online teaching-learning (OTL) and (iii) systematic assessment and evaluation processes of the online teaching-learning. These three elements are of paramount importance if an HEI wishes to deliver effective teaching and learning experiences in the online platforms. Hence, any related decisions taken cannot be and must not be ad-hoc in nature and/or implicates only a few

minor stakeholders. Ideally, these should be based on national-level policy (or at least a state-level) to demonstrate the seriousness of the issues at hand, as well as focus on ensuring meaningful and effective learning during the pandemic. In terms of moving forward and how future directions of education during the COVID-19 pandemic should be conceptualized, El Masri & Sabzalieva (2020, p. 326) echo our view,

> …to rethink how higher education is done and who higher education is for could not only fundamentally alter the HE landscape, but could set the scene for new and more collaborative ways of working between policy actors that extend well beyond COVID-19.

Central to the successful enactment of policies, as well as effective OTL at HEI during this pandemic is the educators (Adedoyin & Soykan, 2020; Murgatroyd, 2020; Rapanta et al., 2020) as they undertake the design of OTL based on the above discussed policies to engage learners in meaningful interaction. Unfortunately, although many educators at HEI may be familiar with teaching and learning in an online environment, conducting the entire semester completely online is extremely challenging and could be an arduous task. Some of these challenges include distance, scale, and personalized teaching and learning (Dhawan, 2020), migration of teaching methods (from face-to-face to online)

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(Adedoyin & Soykan, 2020), lack of technical support (Hodges et al., 2020) and implementing assessment for students' learning and evidencing learning outcomes (Rapanta et al., 2020). Many studies have suggested that challenges during online teaching and learning during COVID should be further explored and continuously researched if we are to sustain meaningful and engaging learning in HEI during this pandemic (see Adedoyin & Soykan, 2020; Dhawan, 2020). Murgatroyd (2020, p.312) predicts and postulates that it is difficult to return to the pre-covid-19 state and what is crucial is a "plan ahead team" to focus on the following years.

Again, educators are integral to the successful and effective surmounting of challenges to deliver engaging, constructive, and productive OTL. This would be driven and dictated by their roles and responsibilities, which have been altered unintentionally, and perhaps far more demanding than ever before specifically in terms of: i) creativity and criticalness of pedagogical approach practiced (Almazova et al., 2020; Bao, 2020); ii) awareness and understanding of students' learning behaviour (Ali & Al-Dmour, 2021; Bao, 2020) and; iii) educators' professional knowledge, professional development and continuous learning (Alsaleh, 2021; Hall, Kreuter, Sörö, Dzara, & Gooding, 2021). These three elements, place learner satisfaction at the heart of learning, and facilitate educators to experience the construction of a more "pedagogically responsive design" (Wan Mahzan et al., 2020, p. 54). For this study, the term 'experiences' is necessarily subjective, and is about the university educators' experiences in relation to their own understanding, thoughts, feelings, and beliefs of their lived experiences of planning, pedagogical decisions, implementing and assessing OTL during COVID-19, including the challenges and difficulties faced. In this context, the educators' experiences would entail "the negotiation of meaning" where the educators are constantly, actively, and meaningfully trying to understand the complexities of OTL, something the educators care about and presents them with challenges (Wenger, 1998, p. 53). Such an understanding of educators' experience is crucial to propose suggestions and recommendations to further improve current practices of online teaching-learning in HEI (Tlili et al., 2020). HEIs could also learn from this experience and execute policies that would further elevate the educators' positive OTL experiences, as well as addressing and surmounting related and emerging challenges.

Based on the above, we examine how educators in this study engage their learners in OTL during the COVID-19 pandemic, and in the due process, what are the challenges that they experience. These two intertwined issues are comprehended using the lenses of the Community of Inquiry framework (CoI) framework and its three main tenets i.e., teaching presence (TP), cognitive presence (CP) and social presence (SP). Therefore, the research questions are: (1) 'How do educators engage their learners in OTL during the COVID-19 pandemic?' and (2) 'What are the challenges experienced by educators during their teaching activities?'.

## 2. Literature review

The current study is guided by the Community of Inquiry framework (CoI), which is utilized as tenets of educators' engagement, experiences and challenges, which are the focus of this study, and are explained thoroughly and well connected to three elements of CoI i.e., cognitive, teaching and social, that may lead to "important theoretical and practical implications" (Garrison & Arbaugh, 2007, p. 168) for online learning in the pandemic era. This model supports critical and creative thinking in an online learning environment. (Garrison, 2016). The framework is process-oriented, comprehensive theoretical model that is informative in research related to online learning as well as practice of online instruction (Arbaugh et al., 2010). It assumes that effective online learning requires the development of a community (Thompson & MacDonald, 2005) supporting meaningful inquiry and deep learning along all three domains.

An exponential number of studies were published from 2010 to 2020

on the CoI framework (see Annamalai, 2017; Anderson, Rourke, Garrison, & Archer, 2001; Arbaugh et al., 2010; Kozan & Caskurlu, 2018; Kaul et al., 2018; Thompson & MacDonald, 2005). These studies are the attestations on how extensively and immensely the studies on CoI framework has grown and expanded with the development of online learning. Unfortunately, the same findings and knowledge of the model cannot be generalized during the use of online learning during the COVID-19 pandemic. The large corpus of research and publication falls on the pre-covid era and little is published on the CoI framework during the COVID-19 pandemic. Therefore, the researchers believe that new perspectives or new solutions are attainable from the integration of the CoI framework since educators were left with not many options and solely had to rely on online instruction to complete the semester.

The present study would further enhance the model and aid practitioners and researchers to discern how overall teaching and learning activities in higher institutions could be better designed and implemented. This issue is an important one, especially when there is a lack of consensus on the effectiveness of face-to face (F2F) versus OTL in the current literature (Kentnor, 2015; Stevens et al., 2021) and compounded by the long-standing criticism of OTL – it cannot replace F2F teaching and learning due to the inadequate communication capabilities that is often attributed to lack of physical presence (Francescato et al., 2006). Recent studies, however, inform us that such notions no longer hold truth, or least reflect the current demands and challenges of teaching and learning globally. For example, Soffer and Nachmias (2018) conclude that "online courses are as effective as, or more effective than, F2F courses", whereby they find students of OTL have better understandings of course structure, "better communication with course staff" and are more engaged in learning (p. 534). On the other hand, F2F students appear to contribute learning content more but their grades are lower than the OTL students. Stevens et al.'s (2021) study provides further evidence that OTL is "at least as effective and often confers a modest advantage compared with F2F modalities across a range of study disciplines" (p. 291) which is hugely amplified by the roles and abilities of the educators to develop and scaffold engaging and interactive tasks and activities. This inclination towards OTL is tacit as digital technologies advancement and their use by educators and students have proliferated immensely in recent years Altindag, Filiz, & Tekin, 2021.

Additional findings on the model would render it more grounded and valuable (Kilis & Yıldırım, 2018) especially the grasp of social, teaching, and cognitive presences, which is still narrow due to limited studies using qualitative inductive approach (Theriault, 2020). It would also enlighten us more on the OTL and F2F debate and based on the strengths of both, potentially synergize new approaches towards teaching and learning. Hence, this study attempts to address, in a meaningful way, our current lack of knowledge and understanding of educators' OTL experiences during a pandemic by adapting a hermeneutic phenomenological investigation.

### 2.1. Teaching presence (TP)

In the CoI framework, TP refers to the design and organization, facilitation of a course and the direct instruction provided for learning and any aspects of the educational experience that make the educators visible to learners (Anderson, Rourke, Garrison, & Archer, 2001). Design and organization refer to structures and curricula, in which educators: (i) utilize mediums such as online to design methods, (ii) set time parameters, (iii) ensure etiquette while interacting in the virtual environment and, (iv) provide comments on the task given (Garrison, 2016). Direct instruction demonstrates educators' actions in diagnosing and addressing misconception and providing knowledge from various sources (Garrison, 2016). Facilitating discourse details the role of the educators in supporting the students to construct personal meaning and to shape their understanding. This is achieved by encouraging and acknowledging learners' contribution, setting an environment for learning and assessing the effectiveness of learning. Past studies have

demonstrated the significant contribution of TP to explain cognitive presence (Annamalai et al., 2016; Archibald, 2011; Shea & Bidjerano, 2009). Consistently, findings have indicated that effective TP with protocol-based online discussion results in improvement of students' performance (Chen et al., 2017; Liu, 2017) while ineffective TP has led to failure of students to achieve higher-order thinking (Shea & Bidjerano, 2009). These studies cement the importance of TP and its integrality in ensuring a successful online learning, as it aims to "establish a CoI through the creation, implementation, facilitation, and monitoring of cognitive and social processes to achieve learning goals" (Majeski, Stover, & Valais, 2018, p.54).

## 2.2. Cognitive presence (CP)

CP explains how learners progress during their learning activities that include. (i) sensing puzzlement, (ii) gathering and comparing new information, (iii) integrating information into a pre-existing knowledge base, (iv) testing for the information's reliability and applicability to new situations and, (v) utilizing imagination and reflection to guide the learners to understand and inform practice (Garrison, Anderson, & Archer, 2001). Students' engagement in the above learning activities with their peers or/and teachers is expected to enable them to construct knowledge and meaning, thus reifying their CP in the online learning environment, ideally.

However, attaining CP could be the most challenging practice in the online learning environment (Akyol & Garrison, 2011) since students need to move from problem, exploration, integration, and application (Garrison & Arbaugh, 2007) to the arrival of resolution phase (Garrison, Anderson, & Archer, 2001; Vaughan & Garrison, 2005). But researchers like Chen et al. (2019) discover that students' level of CP could be enhanced by empowering their peers to initiate questions during OTL and ensuring their direct involvement in OTL. Other researchers have also successfully enhanced and enriched CP in OTL with the use of different teaching models and methods. For example, Sadaf and Olesova (2017) integration of online case discussions with questions based on the practical inquiry model results in students' rich integration of ideas and resolution of problems, while Chan and Cheng's (2017) infusion of independent learning based instructions using the flipped classroom contributes to a significant levels of CP. The above signify that creative and innovative instructional designs that are well orchestrated would lead to significant CP levels among the students, if elements of authentic learning (Chen et al., 2019) and appropriate theoretical underpinnings (Chan & Cheng, 2017; Sadaf & Olesova, 2017) are considered.

It is also challenging because of the impersonal nature of online learning that may hinder students in engaging in cognitive activities (Seckman, 2019). Another problem is that it is very difficult to concretely associate CP and higher order thinking skills (Garrison, Anderson & Archer, 2000), especially among undergraduate learners. Based on these arguments, it is easy to understand why Miller et al. (2020) claim that factors that shape and develop students' CP are least known. Thus, the present study would further enlighten on this aspect of the CoI framework since CP, as alluded by Molnar & Kearney, 2017, could be the most important facet of online learning.

## 2.3. Social presence (SP)

SP emphasizes affective, open communication and cohesiveness (Rourke, Anderson, Garrison, & Archer, 1999), with the aim of enhancing students' engagement by facilitating students' sense of belonging and to foster students "working together as a community of learners" (Miller et al., 2020, p.3). The notion of affective refers to students' engagement in a meaningful dialogue via emotions, humor, and self-disclosure, while the open communication underlines trust and acceptance (of educators and of students by each other). Cohesiveness explains the commitment to the purpose of the CoI and the quality of learning is optimized (Garrison, 2016).

Armellini and De Stefani (2016) view SP as an important element compared to TP and CP. They assert that though the three-core-element remains the same since the model was developed two decades ago, the nature of SP has evolved based on the 21st century teaching and learning processes and thus, strongly recommend that TP and CP should lean towards the concept of learning as a socialization process. Some researchers believe that SP has a significant effect on CP (see Kozan & Richardson, 2014) and can be a catalyst to encourage CP through social interaction (Kilis & Yıldırım, 2018). In the COVID-19 pandemic, we believe this could be the likely scenario since SP augments the "social communication channels that teachers must open to maintain and possibly enhance the lost spontaneous student-student and student-teacher interaction" (Rapanta et al., 2020, p.937). This is crucial since F2F interactions and engagements, currently, are remotely possible and may continue to be scarce opportunities for both educators and learners in the coming days until a remedy for COVID-19 is found.

## 2.4. CoI framed OTL during COVID-19 pandemic

The COVID-19 pandemic has compelled HEIs around the globe to shift to OTL, requiring educators to quickly adapt their teaching to the emerging needs of the HEIs and students' learning and, aligning to course requirements (Scherer, Howard, Tondeur, & Siddiq, 2020). For a successful and meaningful OTL to transpire, educators should be ready, prepared and are able to plan and deliver without major problems (see Dhawan, 2020; Looi et al., 2020; Rapanta et al., 2020). This is the concept of readiness, which basically refers to the "prerequisite personal and technical qualities" (Firat & Bozkurt, 2020, p.113), have an overarching impact on both the educators (to teach) and students (to learn), and their overall experiences of OTL.

Low levels of educators' readiness would result in uncomfortable OTL experiences and vice versa. Scherer, Howard, Tondeur, & Siddiq, 2020 international study of 58 countries during the pandemic finds that HEI educators have an inconsistent readiness profile since HEI educators are "not a homogeneous group with respect to their reported readiness for OTL" (p. 14). Scherer, Howard, Tondeur, & Siddiq, 2020 conclude that different groups of educators need different approaches and EIs need to support the implementation of OTL since the readiness construct is multifaceted and demands individual and contextual perspective. For the HEIs to provide appropriate support, understanding educators' OTL practices and experiences is necessary (Bruggeman et al., 2020). The appropriate support given would enable educators to design suitable learning activities that encompass the amalgamation of TP, CP and SP. (Rapanta et al., 2020). An example of designing suitable activities is proposed by Tan et al. (2020), who use the CoI framework to develop and structure their chemistry lessons with the aim of achieving active learning, team teaching, and collaboration. Their study reports positive student engagement, relevancy of contents and materials, active learning and discussions, feedback for further improvement (from students), as well as their own takeaways from this experience i.e. the need to be creative and willingness to embrace changes in teaching and learning in the 'new normal', while discovering new possibilities and capabilities of teaching and learning (Tan et al., 2020).

The CoI framework has also been used to align and analyze online learning contexts and environments during COVID. For instance, Maher (2020) investigates pre-service teachers' experiences of using video conferencing (VC) for tutorials during COVID-19 and finds that TP, CP and SP are discernable in an online environment where VC is utilized. In medical education, Fatani (2020) examines the use of VC in the delivery of lectures and affirms that teaching effectiveness and quality during the pandemic are determined by TP, CP and SP, and not by technology. Though in the current situation, digital competence and transformation in HEIs is necessary and needed to create pedagogical awareness that is "driven by a teacher's own competence" (Karunaweera & Lee, 2021, p. 110), developing a "curriculum that reflects the perceptible change in the content knowledge and learning experience of students as well as

enable them to think critically" is far more important and impactful in the long run (Mishra et al., 2020, p. 8). These literatures underscore that though technology is very much needed and essential for successful OTL during this pandemic, it is the non-technological factors such as the TP, CP and SP and the provision of meaningful learning experiences by HEI educators that make the significant differences.

Literature captures many educators sharing their experiences, concerns and challenges of OTL from the lenses of the CoI framework, highlighting the multi-dimensional understanding of what teaching and learning means in the times of COVID-19 and how these new 'normals' may shape and colour their pedagogies in the future. For instance, Thomas (2020, p.5) shares her concerns and experiences of students attempting to "negotiate and communicate meaning through reading and writing", as well as access to Internet connection and technologies tools for learning and the perceived engagement for learning. As a result, Thomas (2020) designed and developed a virtual course as a self-paced learning module that revolves around the notion of 'triggering event'. The findings of her study coerce her to conclude that future OTL need to, at least, reflect educators' "commitment to diversity, equity, and inclusion; culturally responsive pedagogy" (Thomas, 2020, p.10). Miller et al. (2020) findings of OTL during COVID-19 lead to the suggestions for educators to be trained and well equipped in a myriad of online instructional practices and placing the importance of teaching presence in promoting SP and CP in an online environment. Other relevant recommendations are made by Erickson and Wattiaux (2021), who find that even educators with very little remote teaching experience are able to create satisfactory levels of TP, CP and SP in online learning environments. They suggest the following in attaining those levels: (i) establishing clear goals, learning outcomes and policies for TP; (ii) integrating multiple ways of learning and providing abundance of resources for CP and (iii) providing active learning, authentic self-expression and interpersonal interactions for SP.

The CoI framework may provide valuable guidelines, insights and understandings into the planning and implementation of OTL during COVID for educators in HEI. Simultaneously, the examination of their experiences, especially in terms of TP, CP and SP and related challenges, may enlighten us further of future effective pedagogies and ensure a more meaningful teaching experiences for the educators and fulfilling learning experiences for the students (MacIntyre, Gregersen, & Mercer, 2020). Hence, data from this study are scrutinized from the lenses of the CoI framework especially in terms of the educators' experiences and to what extent their TP, CP and SP are practiced, developed and shaped in the OTL during the pandemic.

## 3. Methods

The data collection and analysis were guided by interpretive phenomenology, which aims to make an interpretation of participants' experiences (Yüksel & Yıldırım, 2015). This ensured that data obtained from individuals would be first-hand experiences of the phenomena (Roth, 2012), in support of the aim of phenomenology. The method guided the researcher to understand a particular phenomenon ones' lived experience (Englander, 2012). Hermeneutic phenomenology was utilized in understanding the experience of the educators that focused on their experiences of teaching online during COVID, as they lived it and what those experiences meant to them (Langdridge, 2008). This included recognizing the dynamic, complex, and situated experiences they had in the space and examining how they made sense of these experiences. The situational aspects of the interviewees were pertinent to the study since understanding of a phenomenon (i.e., OLT) had to relate to a specific context in which the phenomenon (was experienced) (Englander, 2012). This study employed inductive analysis, moving from the concrete to the abstract, emphasizing nonlinear processes that transpired in a natural setting (Lichtman, 2014). A descriptive analysis would have not been inappropriate since the study did not intend to create a definite description of the model, but to explore new and emerging themes to further enhance the model.

### 3.1. Participants of this study

The rationale for a small group of participants was based on literature about phenomenological research. According to Englander (2012) and Nicholls (2009), qualitative research particularly phenomenological study usually needs a few participants. Thus, the researchers selected the participants based on accessibility (Creswell & Poth, 2017) and purposiveness (Cohen et al., 2013). Purposive sampling was considered using Patton (2002) definition of 'information rich participants' i.e., "those from which one can learn a great deal about issues of central importance to the purpose of the inquiry" (p.230). A call for participation in this study was made through the university email – an email sent to all educators in the three different universities in Malaysia, which were accessible to us. The email contained the criteria of participants (purposive sampling) i.e., (i) full-time educators in the university; (ii) had at least three years of teaching experience in their respective universities and (ii) had delivered their course via online during the COVID-19 pandemic.

In total, 25 educators, with an age range from 30 to 50 years old volunteered. We selected 15 educators as participants for the study based on the above criteria and ensured they represented different fields of study. The 15 educators had an average of 7.5 years of teaching experience in their universities. There were three professors, four associate professors and eight senior lecturers. All the above was purposefully done with the aim of increasing the diversity in sample selection and improving the validity of the findings. The 15 participants were contacted via telephone, and were briefed on the overview of the project and the sample interview questions. They were informed about the nature of the study and were made aware that they were free to exist from the study at any time. They also signed the consent form to ensure confidentiality of their voluntary participation.

### 3.2. Context of the study

The study was conducted at public and private universities in Malaysia, in which the participants were teaching undergraduate courses related to Natural Sciences (P1, P2, P3 and P4), Applied Sciences (P5, P6, P7 and P8), Education (P9, P10 and P11) and Social Sciences (P12, P13, P14 and P15). The fact that the participants were from different research area backgrounds bodes well with the Template Analysis that we had used in capturing the phenomena from a "broader view" and gain "a community perspective" and did not take "a case-by-case approach" (Bush et al., 2019, p. 7). During the pandemic, the three universities involved in this study were instructed to plan and deliver OTL. Academic centres responsible for students' academic learning, development and affairs in these universities assisted and supported the educators by providing training on effective use of Learning Management System (LMS), Cisco Webex, Zoom, Microsoft Teams and other related social media platforms in delivering their courses.

### 3.3. Interview protocol and data analysis

Interviews were conducted via Webex, which is an "enterprise solution for video conferencing, online meetings, screen share and webinars" (www.webex.com). The interviews, which lasted between 30 and 45 min for each participant (uninterrupted), were audio recorded and then transcribed into verbatim. The interviews did not engage participants directly on the CoI framework, but rather on topics related to curriculum design, student engagement, meaningful interactions, assessment, and instructions. The participants were asked for details of a situation in which they have experienced the phenomenon (Englander, 2012) of using the online learning environment during the COVID-19 pandemic. The aim was to give voice to the educators and illuminate certain perspectives and values. They responded with first-hand

narratives (Waters, 2016) that included descriptions about their tools and their experiences of online teaching and learning during the COVID-19 pandemic. Therefore, the study focused on three main guiding questions in answering the research questions (see Table 1). Follow-up questions were also forwarded to the educators when further explanation was needed from them, especially the questions of 'How?' and 'Why?'.

An interpretative phenomenological analysis by six-step (Smith, Flowers, & Larkin, 2009) was used to analyse the data: 1) reading and re-reading; 2) initial noting; 3) developing emergent themes; 4) searching for connections across emergent themes; 5) moving to the next case and 6) looking for patterns across cases (Smith, Flowers, & Larkin, 2009). This allowed us to have fundamental understanding of the data obtained, as well as gaining critical insights into the educators' experiences and challenges of OTL. However, to clearly see the nexus between university educators' experiences and challenges and the existing CoI framework, we defined and pre-determined the themes in advance of the analysis process (Brooks & King, 2012; Bush et al., 2019). These are also known as priori codes and in the case of the current study, they are TP, CP, and SP (Brooks & King, 2012; Bush et al., 2019) since CoI was used as the lenses to understand the university educators' experiences and challenges of OTL during the pandemic. Therefore, the data of the study was discerned and presented accordingly.

To establish reliability, two independent coders were selected to code 40% of the interview data. Inter-rater reliability for the interactions was obtained by using raw percentage as suggested by Miles & Huberman, 1994. Coder 1 achieved an agreement of 86% and Coder 2 achieved 84% with the main author. To ensure the findings are valid, Miles and Huberman state that there must be an agreement of 70% among the raters. The mean of the inter-coder agreement was 85%. Any disagreements between the first author and the independent coder were resolved via discussion to reach a consensus.

### 3.4. Trustworthiness

To address trustworthiness, this study looked on matters related to dependability, credibility, transferability, and confirmability (Denzin & Lincoln, 2005). Member checking, referential adequacy and peer briefing were established to ensure credibility. Member checking was conducted in this study by asking participants to read and comment on the interview transcriptions. If there were any misinterpretation in the data pointed out by participants, the idea or sentences were eliminated (Maxwell, 2005). Dependability explains to what extent research can be repeated in a similar setting (Erlandson et al., 1993). Audit trail was employed to achieve dependability. By explaining all the procedures in the study, the audit trail was fulfilled. Transferability captures the extent to which the findings of the study can be applied in other contexts (Erlandson, 1993). Detailed and thorough descriptions of the sampling and reporting of the findings were provided, which allowed judgement by the reader about transferability. To ensure that the findings of this research could be confirmed, all the processes were recorded, so that the facts and assertions could be tracked to their original sources. Investigator triangulation was achieved when three experienced educators in qualitative research coded the emerging themes and reached 85% agreement among the coders. Hence, the findings are reliable, convincing, and accurately reflecting the real situation.

## 4. Findings

### 4.1. Educators engaging their learners in OTL and the challenges experienced during the COVID-19 pandemic

In answering this research question, we began with the attempt to understand the tools and technologies used in the OTL, and then the educators' practices of engaging the learners from the perspective of the three elements of the CoI framework.

#### 4.1.1. Digital tools and technologies used

Since the implementation of online learning was sudden, the participants had to scramble to get ready as best as they could with whatever tools that they knew how to use. For example, P1 "only used a handphone to do recording" and only later, she was exposed to "various tools like Zoom, Webex and Microsoft team" (P1). Participants such as P2, P3 and P4 embraced these tools because they closely replicated the traditional classroom teaching, and the participants could "see the students and share the screen and show reports" (P4). However, after a few weeks P4 realised that it is "okay not to see the students" because P4 was able to "chat with them and know what their problems are" that were related to the lectures delivered (P4). P3 "discovered Powerpoint Advance 2016 which allowed the use of digital pen" which is similar to writing on the whiteboard. The use of Padlet allowed "students to be more creative and tend to use animations in discussion" and found that they were more attentive during his online teaching whereas in "normal class they tend to play with their smartphones (P6)". P5 delivered his content using a number of tools for discussions. His decision on the type of tools used was based on his care and concerns for those who may not have adequate data for Internet access:

> For group work my students email their Powerpoints and record their explanation and I use the WhatsApp to discuss the group work and ask questions. I prefer to use email and WhatsApp because low data consumption and all students are able to access. If I use Webex it requires high data consumption and students are not able to access the lectures conducted (P5).

The digital tools and technologies were used to "pre-record lectures", "upload in Moodle" and conduct "the discussions the next day" (P9). Pre-recorded lessons were also done by other participants with the aim of clearing their students doubts (P5), discussing the "results of the tasks given to the students" (P10) and ensuring students' understanding by allowing them "to watch the lessons many times" (P8). This actually supports the flipped classroom learning which was encouraged by most HEI but it only gained attention when the participants were "left with no option at all" and had to "learn how to use it" (P4). Quite similarly, P1 explained, "I am from the old school and I never used digital tools and it is totally a 'No' for me but now I am learning. We have no choice and work has to go on." But the pressing issue is, as educators in many other developing and third world countries would certainly identify, "How many of the students can really get access to online learning, given that some of the students living in rural or impoverished areas may have poor

**Table 1**
Interview Questions and Purpose of Each Questions (Research Question).

| Interview Questions | Purpose (Research Question) |
| --- | --- |
| 1. What are the tools used for the online teaching and learning activities during the COVID-19 pandemic | This question is to identify the tools used during their teaching and learning activities (Research Question 1) |
| 2. Were you able to conduct meaningful lessons in the online environment during the COVID-19 pandemic using the above tools? How? A meaningful lesson means:<br><br>(a) active,<br>(b) constructive,<br>(c) cooperative,<br>(d) authentic and,<br>(e) intentional. | This question probed on how the educators conducted their online lessons in relation to Research Question 1 (Research Question 2) |
| 3. What other (positive or negative) experiences did you undergo when you implemented online teaching and learning during COVID-19. | This question was helpful in identifying the participants' positive and negative experiences during their online learning activities during the pandemic. (Research Question 2) |

access to the facility?" (P15).

### 4.1.2. Teaching presence (TP)

The participants' roles in facilitating and conducting OTL were crucial and decisive. They ensured interaction among the students (P1, P7, P8, P10) by creating a conducive online environment for discussion that included pre-recorded lectures (P7) and recorded lectures (P8, P10), synchronous learning (P8, P10, P12) and flipped classrooms (P1). These were carried out with the aim of ensuring the students' participation in online learning was "very active" and "very cooperative" but were based on self-initiative and voluntary (P7), as well as facilitating communication among the students (P8) and enabling "the students and lecturer to proactively interact" (P1). Some of the teaching and learning activities that were planned and implemented to achieve the above aims included: i) providing reading materials (P1, P8); ii) providing meaningful feedback rather than 'right' or 'wrong' answers (P7, P13); (iii) encouraging and applauding students; (iv) creating opportunities and room for student 'talk'/ communication (P8); (v) finding solutions for problems (P1); (vi) engaging students in short, realistic and practical lessons (P1); (vii) weekly group assignments (P1); critical questioning (P15) and; formative assessment (P15).

The above allowed the participants to "conduct online lectures constructively" (P8) and engaged with their "students all the time" through the weekly online lessons and were able to follow their teaching "without any difficulties" (P1). Hence, it was no surprise that teaching was a meaningful engaging process during COVID-19 for some of the participants,

> Students will directly WhatsApp me on matters that confuses them or asking clarification on their understanding either via the group or personal message to myself.In fact, I felt its more engaging than the usual learning before COVID19. I felt very close to students as they can reach me anytime (P15)

As learners utilized the virtual space differently, P10's advice below further accentuated the roles of the participants when it concerned OLT, especially the role as a moderator. P10 encouraged students to be courteous and considerate and practice good online behavior to create a safe environment for learning. Net etiquette allowed the students to represent themselves effectively during their interaction, as the educator was aware of the interaction and encouraged students to be well mannered and polite like one would exhibit in a real life classroom.

> They greeted each other and did have some conversation among them without interference. We even did have some misunderstanding too as one of the students replied to me in capital letters and the words used were deemed appropriate by myself. I address this by asking him to be respectful by not typing in capital letters. He was supported by few of his friends. And the rest was quiet. The case was dropped as I said I will let it pass this time but they should not repeat (P10)

Nevertheless, working online and preparing for OTL in ensuring TP "takes a lot of time… preparing lectures on slides, recording etc." (P3) and the issue of taking attendance online, as complained by P5, ". have to make sure that all 500 students are attending the lectures." P5 pointed out the additional work that comes together with OLT, especially the downloading of "the assignments and making 70 folders to assess their assignments.It is easier when you print and mark" (P5).

Though the participants of this study worked hard on ensuring their TP were discernible to their students, P11 struggled to convey his ideas as the students were "not able to see them" and appeared not to "support the pedagogical enthusiasm for the usefulness and ease of use of online teaching environment" that he had planned. P11 highlighted the "lagging and frozen moment" that he experienced while talking passionately about his subject during OTL that forcibly took away "the edge of my passionate lecture delivery". Hence, it is easy to understand when P15 questioned, "How could online learning effectively emulate the ambience of physical learning?" He explicated,

> It is not easy to teach Chemistry online. For example, lab work, real life demonstration is important. For example, in an experiment if there are colour changes to yellow, students need to see whether it is dark yellow or light yellow. If I am beside them during their experiment, I can show them" (P15).

These experiences were unavoidable, and they made sense to us that the participants in this study would resort to conclusions as the one made by P11 below, which actually accentuated the real scenario of OTL and how it compared to F2F learning,

> These sorts of things although are unexpected and inevitable must be taken into consideration, in fact, must serve as a reminder that traditional classroom-based teaching should be the recourse no matter how the technology has advanced (P11)

### 4.1.3. Cognitive presence (CP)

In engaging students from the CP perspective, P3 posted or/and uploaded his "lectures" and materials "one day before" in the university LMS (learning management system), which he had "never ventured before". His aim was for students to trigger certain ideas and concepts so that his students could have "active online discussions" and "not shy" during Zoom or Webex sessions. Basically, P3 believed it was a form of "flipped classroom" that he utilized to encourage students to trigger events and push them to explore relevant information. This was P3's pedagogical strategy to ensure that his students would be engaged in learning and would participate actively in the online discussions. P4 also emphasized "active communication", especially during "powerpoint presentations," where "students posted questions and shared their views" during "Google classroom platform". P4 planned this with the aim of facilitating "open interactions" in which students were "given spaces to put forward their views and points". Apart from creating and developing interactions, the participants provided "additional learning materials for the students to read, especially for students who are not able to understand certain concepts" (P8). To achieve the same purpose, P3 "shared slides" while P14 initiated discussions and active engagement "with much smaller groups."

However, when the 'active communication' failed, there would be poor or minimal participation from the students, which meant participants faced "difficulties in assessing their (students') understanding on subject matter when the session is done online, especially when it's a dry subject" (P12). For instance, P1's course was related to statistics analysis and required hands-on learning. In the OTL, P1's students "could only see the demonstration" and were not cognitively engaged, and therefore, became "not happy" Masters students, who were in their "50–60 s". Eventually, her students were "not able to complete their project-based assignments" (P1).

In addition, there was very little cognition when students logged in but they would "do something else" that further made it difficult for the participants to "assess the students' understanding during the entire lesson" (P14). P14 further lamented on the nature of OTL they experienced, where students hid behind their computer screen, as they did not respond when their names were called or when they were "disconnected". Aptly, P15 asked the question, "What is the degree of students' participation or how many of them are 'feigning' participation?" P11 concurred and explicated that one could not really ascertain the level of students' cognitive engagement in OTL, especially in terms of meaningful participation,

> …(the) issue that always makes me wonder is the participation of the students. Though they seem to appear 'engaged virtually', it is still challenging to really assess their participation. The atmosphere of communicating freely 'virtually' is incomparable to the physical learning (P11)

As far as resolution is concerned, which is a critical component of

cognitive process, formal assessment is emphasized, whereby students are required to complete online assessment and/or sit for open book tests. For many participants, this was the first time they had to prepare questions and tasks for formative assessment in the online environment or using online platforms. They opined that "the online assignment has more weaknesses than strengths" (P13) because students can copy and "ask Mr Google" and it is "very hard to come up with questions that are not Googleable" (P14). The participants were concerned about students' cheating during online tests, as well "a mechanism to identify whether they are copying. Sometimes they say the laptop is updating and hangs. They come to you with a lot of reasons. Some might be true because it happens to us also" (P8). P3, a pharmacy educator, pointed out that "we may not be able to assess their patients. Physical assessment skills as we could do in face-to face assessment". Furthermore, there could be difficulties in marking long essays using online mode because we have to face the computer for 120 students' answer sheets" (P3). Therefore, participants suggested that HEIs must place more emphasis to "develop a more reliable and trustworthy online assessment platform" to combat "cheating and copying among the students" (P4).

However, P5 and P6 were more positive towards online-based assessments. P5 expressed that "the preparation for online examination is quite easy" and as an "environmentalist", he "would not like to waste papers", while P6 demonstrated a few procedures that could be taken to prevent rampant cheating:

> I gave them an online mock exam so that they can overcome their difficulties during the actual exam. I made them take an oath and send it to me 15 min before their actual exam…. I asked students to switch on the camera to ensure that they are not copying or get help from others.

### 4.1.4. Social presence (SP)

Most participants agree that SP is at the heart of the learning process and integral part of OTL activities. If students are not well connected, they would not have had the incentive to interact and collaborate. For instance, P3 expresses how SP would have helped them to engage and connect to the students since F2F interaction would allow the rectification of "confusion or misunderstanding" as educators are able to assess students' understanding "based on their reaction and response" and address them immediately. Unfortunately, the participants in this study were not able to establish a foundation for building relationships and extending learning. The interviews obviously indicated that social presence was hardly felt during OTL as P12 found silence recurred throughout the lessons and appeared to be a barrier to establish meaningful relationships.

> I don't get to see the reactions of the students during the lecture. Only my video is on usually, not the students and most of the time their mic is muted. Compared to face-to-face lecture, where the lecturer can really see the student's reaction upon telling them a joke or telling them about real working world experiences that are relevant to the topic being discussed. It is engaging only if we ask the students any questions during the lecture. I found that more students like to ask question using the chat-box option maybe because they feel shy during the face-to-face classes (P12)

P13 concurred, and preferred the traditional classroom teaching as he felt OTL was a struggling experience and somehow the learning was incomplete and lacked true understanding. In his words:

> We include jokes and stories and experiences related to pharmacy and working with patients at hospital. Obviously, we cannot see them laughing or even can see the reaction from their patients in relation to the stories. That is the weakness of online learning environments for healthcare workers' settings. The human touch part is going to be hard to be measured in an online setting. We need to

teach the students to be in certain emotions when dealing with patients. All these can only be done using clerkship or hospital rotation

SP was "clearly lacking in a virtual learning set-up. Any attempt to reproduce or emulate the activities typically conducted during physical learning in a virtual learning will most probably suffer from setbacks" (P15). This was because, as P15? reasoned, "the 'aura' or ambience of these two environments are largely discrete" i.e. highlighting the huge difference between F2F and OTL. (P15) analogized this scenario as "a soccer game watched in a stadium and via television, which is quite rhetorical as the former is always more galvanizing than the latter". From the perspective of participants' endeavour to facilitate SP, P14′s experiences of making jokes was apprehended by the fact that technologies do not support a fluid two-way communication and interaction between the participants and the students during OTL.

> Jokes or any informal interactions should be responded with laughter or at least other reactions from the students that will be easily seen during the face to face session. These reactions will motivate us…. However, these aspects are missing in the online because most of the students turn off their video and will be muted to avoid distraction. You cannot keep joking alone when talking to the computer and not react on the other side. Students only give answers in the chat box and usually don't use emoji to show their emotions or they are laughing etc.

## 5. Discussion

The educators in this study use various devices, technologies, and online tools to conduct their OTL during COVID-19. Generally, the findings indicate that TP is quite easily attained by the educators, and they are able to use the myriad of tools and technologies to engage students in OTL that are active, meaningful and interactive. Nevertheless, the educators had to adjust their teaching methods to align to the OTL by planning and utilizing different forms of learning that included synchronous learning (SL), asynchronous learning (AL), flipped learning (FL) and/or microlearning (ML). These were their autonomous and independent decisions (Mishra et al., 2020) based on their problem solving (Tennyson & Breuer, 2010) that aim to make themselves visible to the students (Anderson, Rourke, Garrison, & Archer, 2001) by ensuring "clear learning objectives, carefully structured content… integrated media (and) relevant student activities" (Bates, 2019, p. 167). Ultimately, the educators in this study have designed and implemented "conditions under which learners have a better chance to learn" (Parchoma et al., 2019, p. 13).

On the contrary, the reification and realization of CP and SP in OTL are not as straightforward as TP, as experienced by the educators. It is quite difficult for the educators to ascertain and gauge the CP and SP in OTL as they face numerous challenges and obstacles, particularly from the students' perspectives and participation. In addition, although past researchers have argued that TP is integral in establishing and maintaining social CP and SP, as well as magnifying students' cognitive development (see Garrison, Cleveland-Innes & Fung, 2010; Saadatmand et al., 2017), findings from the current study suggests that establishing an effective and meaningful TP may not necessarily lead to accomplishing CP and SP, especially from the educators' perspectives. In the context of OTL during COVID-19, since F2F is nonexistent, attaining CP and SP could be elusive due to the nature of a full OTL environment, in which students could feign participation and hide behind the computer screen. It could also be due to the fact that many of the educators have little experience in an unfamiliar OTL space and environment, since most of their previous teaching and learning experiences were based on F2F interaction and engagement. The pandemic actually played the role of a catalyst that highlights the educators' inabilities to resolve challenges of OTL with the little knowledge and experiences of OTL that they have. This study is a wake-up call for HEI to equip their educators with

relevant pedagogical and technological knowledge and skills, as well as appropriate technologies and tools so that the educators would be able to undertake "educational change toward more flexible models and practices" (Rapanta et al., 2020, p 942). Such change would (i) break the monotony of one-way interaction; (ii) hinder weariness of continuous OTL; (iii) facilitate ways of learning that are active, interactive, self-regulated and collaborative and (iv) enable and augment creative teaching (e.g. gamifying lessons).

The educators in this study, based on the findings, have, very clearly, practised or attempted to practise the process oriented guided inquiry learning (POGIL) in their delivery of OTL. Some of the elements of POGIL that are found in this study include (i) inquiry-based learning, problem based learning and active learning (Rumain & Geliebter, 2020); (ii) provision of motivation, encouragement and meaningful feedback (Kussmaul, 2016) and (iii) cognition, critical thinking and communication (Moore et al., 2015). Also evident, but not as much as POGIL, are outcome-oriented learning (OOL) and social oriented learning (SOL) approaches that the educators embraced in the delivery of OTL during the COVID-19 pandemic. The OOL mainly revolves around ensuring students trigger and produce ideas and concepts, which are further explored in the form of cognitive engagement (with the educators and peers) and eventually, leading to understanding and learning. Such understanding and learning focus "on the results of the educational process" that "students are able to demonstrate" (Schmitz et al., 2012, p. 141). SOL, on the other hand, is very much derived from the social learning environment, whereby it functions as a "connecting interactive learning space" to facilitate and enhance communication between students and educators and to "motivate students for active learning through collaborative problem solving tasks" that are achieved via the integration of "social networks functionalities in the learning formats, but under control of appropriate pedagogical methods" (Raspopovic et al., 2017, p. 156). This means that the pedagogical methods applied by the educators in this study are crucial and determine if TP, CP and SP are experienced, 'felt' and are able to be reflected upon by the students, which are not the objectives of this study. Nevertheless, data do indicate

that the educators did embark on various strategies and activities to achieve TP, CP and SP, albeit with varied success, especially the CP and SP. These three approaches, in tandem, have shaped and determined the way the educators develop and implement their OTL i.e. SL, AL, FL and/or ML. It is through these types of learning (or pedagogical methods, according to Raspopovic et al., 2017) that the educators are able to reify the TP, CP and SP in engaging their students (see Fig. 1).

In this study, the resolution phase in CP is considered valuable as the educators have to conduct the assessment in the virtual environment as traditional assessment was not permitted by the universities during the pandemic. Early researchers have often criticized the CoI framework since the resolution phase of it is seldom achieved (Garrison, Anderson, & Archer, 2000; Vaughan & Garrison, 2005). In fact, Archer (2010) pointed out that researchers have been looking for the phases (integration and resolution phases) at the wrong place and would probably reserve the integration and resolution phases to be included in their assessments. The present study has provided an example on how resolution phase in CP is achievable during online teaching during the COVID-19 pandemic. The model can be considered practical when a complete and comprehensive OTL takes place.

## 6. Conclusion

Since there is blurring of boundaries between TP, CP and SP due to many reasons discussed above, the element of resolution of CP in the COI framework should be flexible in terms of placement and implementation. We believe evaluation and assessment should be present in all the three of the COI i.e. resolutions should not only be present in CP but could also be integrated and reified into TP and SP, depending and basing it more on the learning outcomes to be achieved rather than fitting or adhering to the existing (or guiding) models or theories. We can conclude that the educators have attempted to create opportunities and the space for students to communicate and find solutions for problems, where the learners apply new knowledge (Arbough et al., 2010) to different situations of OTL, whether it is TP, CP or SP. Hence,
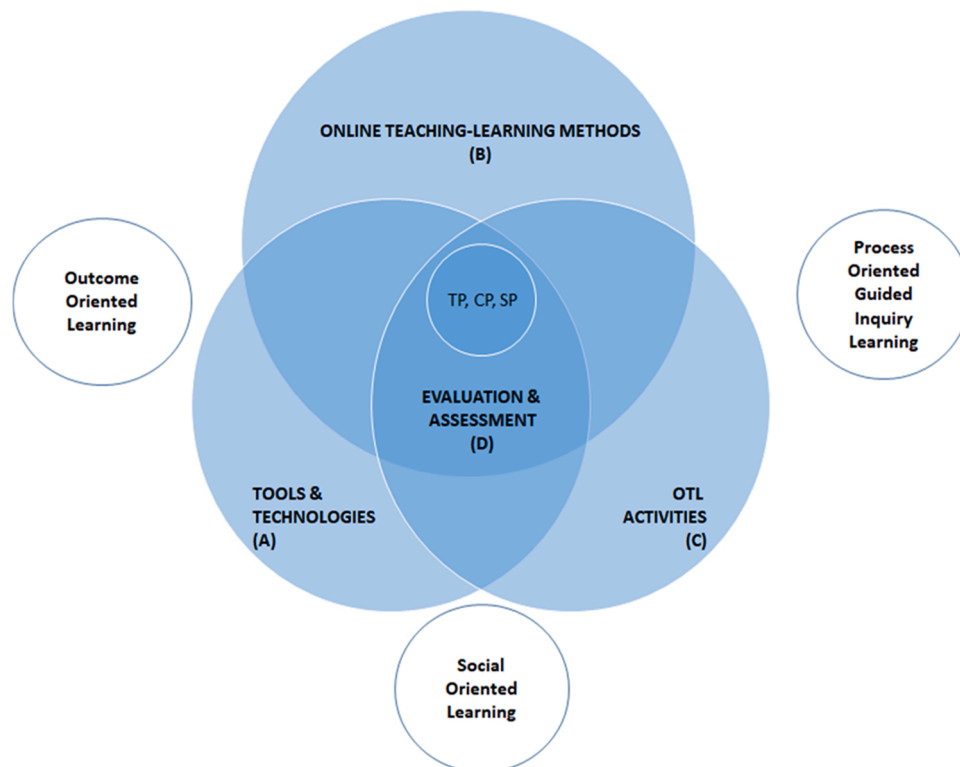


**Fig. 1.** Situating CoI in an OTL Context.

we suggest a revised model of COI for OTL contexts, particularly during times of crisis (such as the current pandemic other catastrophic events) (Fig. 1).

Fig. 1 could be used as a guideline by educators for planning OTL using the COI framework in a more flexible, fluid and dynamic manner, where TP, CP and SP are not considered as three overlapping entities but as a single entity. In this said entity, the three elements – TP, CP and SP – could be connected to each other, or/and contribute to each other, or/and inter-sect with each other. In defining and identifying the appropriate features of OTL using the CoI framework, four critical questions should be asked - (A) What tools, technologies and platforms to be used for effective OTL?; (B) What related and meaningful OTL methods, in tandem of the available tools, technologies and platforms, should be selected and implemented?; (C) How should the answers to the previous two questions (i.e. A and B) be dealt with and lead to the delivery of OTL i.e. activities? and; (D) In tandem to A, B and C, what would be the best assessment and evaluation to be implemented and how? These four questions should be framed by the three orientations of learning - POGIL, OOL and SOL. Educators could be selective in utilizing the various elements that are contained in POGIL, OOL and SOL, depending on the pre-determined learning outcomes of their courses, as well as aims of academic programmes. Specific elements of the four questions can be found in the table format in Appendix A, i.e., a table that can be used as a guideline by educators to plan OTL in a COI situated framework.

The educators' experiences inform us that planning and successfully carrying out a lesson that includes TP, CP and SP is not an easy task. However, if the COI framework is considered as a fluid, dynamic and flexible framework that is all-encompassing, then it is possible to achieve a comprehensive and meaningful OTL in the current situation and time, where teaching and learning is laden with challenges, inconsistencies, and deficiencies. In this respect, however, the evaluation and assessment facets ought to be the focal point, where they could be planned and integrated for various purposes in various forms listed in Appendix A. This approach of assessment as a focal, "as other activities take place around them" (Maddox, 2015, p.440), would facilitate learners to "control their own learning and decide how to make sense of assessment information through self-regulation, their curiosity, self-production and their abilities to understand multiple layers of their own activities" (Dann, 2014, p.164).

From another perspective, this study also affirms that, perhaps, the educators need more training in this regard and thus, more professional development programmes related to OTL and CoI framework should be planned for educators in HE. But, with educators, who are not so well-versed with OTL and the CoI framework, and lack the required training, the revised and suggested framework in this study is, probably, the way forward. Future research should test and investigate the revised and suggested framework to determine and establish its validity and effectiveness, especially in different contexts, settings and levels of education, especially in the context of a full OTL. Perhaps CoI should be further investigated, and perhaps revised and reconceptualized in our attempts to understand its usability in the current difficult times of teaching and learning.

One policy initiative that could be contemplated by HEI, as a result of this study, is the continuing professional development (CPD), where educators in this study had to learn and relearn during the pandemic. Though such practice and its ensuing experiences may lead to ones' learning and growth as an educator, HEI should not always be reacting and resorting to 'spontaneous' form of CPD activities. Rather, HEI should be thinking and conceptualizing CPDs for the future, and how educators could be trained to learn, relearn, unlearn, and reflect to continuously improve and enrich their pedagogical knowledge in diverse, unpredictable, and challenging contexts and situations.

We recognize a limitation of the study, which other researchers may want to address in future studies – the educators who participated in this study were from three different universities in Malaysia, which may not reflect the scenario of overall OTL in the Malaysian universities. Participants from different universities but representing the overall population of university educators may provide a much sharper, richer and wholesome depiction of OTL during COVID-19 pandemic in the nation.

## Compliance with ethical standards

None.

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### Conflict of interest

The authors declare that they have no conflict of interest.

## Appendix A. Guidelines for educators' considerations for OTL situated in a COI framework

| (A) | (B) | (C) | (D) |
|---|---|---|---|
| Tools, Technologies & Platforms: The tools, technologies and platforms that both my students and I are able to access, have these features or/and allow or/and facilitate the following: | OTL Methods: Based on (A), I can select and implement these methods (either as a single method or a combination of 2 or more methods): | OTL Activities: Based on (A) and (B), I am able to plan and implement one or more (in different combinations of) activities: | Assessment and Evaluation: Based on (A), (B) and (C), I am able to plan and implement these assessment and evaluation aims/ techniques / practices: |
| • *Variety*<br>• *Accessibility*<br>• *Flexibility*<br>• *Facilitative*<br>• *Connectivity*<br>• *Engagement*<br>• *Communication*<br>• *Interaction*<br>• *Evaluation and assessment*<br>• *Sharing materials*<br>• *Facilitate small group discussions*<br>• *Visibility of participation* | • *Synchronous*<br>• *Asynchronous*<br>• *Flipped*<br>• *Microlearning* | • *Sharing, Reading and Engaging with learning materials*<br>• *Small group discussions*<br>• *Interactive*<br>• *(peer-peer; peer-educator)*<br>• *Active*<br>• *Self-initiated*<br>• *Problem based learning*<br>• *Meaningful feedback*<br>• *Encouraging and motivating*<br>• *Creating opportunities for communication and interaction*<br>• *(peer-peer; peer-educator)*<br>• *Critical questioning*<br>• *Understanding, Triggering, Clarifying, Exploring, Reflecting* | • *Understanding content*<br>• *Application of knowledge*<br>• *Application of skills*<br>• *Cognitive engagement*<br>• *Variety of assessment*<br>• *Formative and summative* |

*(continued )*

|  |
|---|
| • *Moderating and facilitating* |
| • *Varied and engaging* |

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