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## Student engagement in online and blended learning in a higher education institution in the Middle East: Challenges and solutions

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### Abstract

**Keywords**

student engagement; online learning; community of inquiry; social presence; Arabic as a foreign language; Arabic heritage learners

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This paper aims to identify challenges to students' engagement in online learning at the Qatar branch campus of America's Georgetown University, and to propose solutions. Specifically, it: 1) identifies challenges and solutions from students' perspectives; 2) provides recommendations for developing instructional policies to maximise student engagement in synchronous learning contexts; and 3) aims to contribute to the literature on the engagement of Arabic as a Foreign Language (AFL) learners and Arabic Heritage Learners (AHLs) in online learning in higher education (HE) in the Middle East. It did so by collecting qualitative data, using an open-ended questionnaire from 13 Arabic as a Foreign Language and Arab Heritage learners. We investigate these learners' perceptions and experiences of student engagement in online learning within the social presence dimension of the Community of Inquiry (CoI) framework. In addition to presenting a set of challenges that our students experienced in their online learning, especially under the unprecedented health, social and mental constraints created by Covid-19, we highlight their solutions to these challenges. We conclude by offering a set of recommendations that we hope AFL and Arabic Heritage (AH) programmes and institutions will find useful.

## 1. Introduction

In the past twelve months (2020-2021) there has been a massive shift to online distance learning due to the coronavirus pandemic (Covid-19). This has led to a dramatic change in global education, whereby – according to statistics from the World Economic Forum (2021) – 1.2 billion school and university students in 186 countries have been affected as governments have closed educational institutions.

In recent years, online and distance learning have emerged as a convenient medium of learning for busy or overseas students and an exceptionally productive opportunity to sharpen research and independent thinking skills. Many universities offering online learning programmes provide websites that their potential students, who are both self-motivated and independent, can use for their learning. However, online and distance learning programmes sometimes fall short when it comes to outlining the scope of courses or the expectations placed on online students in concrete terms (Kandiko & Mawer, 2013; Parkinson & Forrester, 2004). Moreover, despite the potential value of the online learning context for both learners and instructors, there may be a general preference for conventional face-to-face learning rather than online education (Mann & Henneberry, 2014; Stodel et al., 2006). This may be because most university students are experiencing online learning for the first time and feel unprepared to use the large number of applications available, potentially resulting in poor course retention and progression. In addition, due to lack of online teaching experience/training, some teachers have simply brought their traditional teaching methods to the online mode during Covid-19, which may negatively affect students' online learning and lessen their online class engagement.

Georgetown University in Qatar (GU-Q) is a branch campus of Georgetown University in Washington, DC in the United States that offers a Bachelor of Science in Foreign Service. It is located in Education City in Doha, Qatar, which belongs to Qatar Foundation for Education, Research and Community Development (QF). The Arabic programme at GU-Q offers two elective course tracks for Arabic learners: one for non-native speakers who seek to learn Modern Standard Arabic (MSA), and the other for AHLs, whose mother tongue is one of the dialects of Arabic but whose MSA productive skills, i.e., speaking and writing, need further development. From March 10th, 2020, GU-Q – like other educational institutions in the country – had to transfer instruction from face-to-face into an online and/or blended learning mode because of the outbreak of Covid-19. Following school

closure, some instructors continued to apply the face-to-face syllabus designed for Spring 2020 and did not modify their mode of delivery during the early phases of Covid-19 breakout. During the Spring 2020 term (the remaining period of March and April 2020), faculty members who maintained instructional continuity through the use of online platforms shared concerns about the level of student engagement in their courses. Since Fall 2020, and until writing this paper (Spring 2021), GU-Q has given instructors and students a choice between online and blended learning modes, subject to there being full adherence to the Covid-19 precautionary measures set out by Qatar's government. This situation has arisen due to the sudden outbreak of the corona pandemic, instructors not having attended faculty training for online/blended teaching, and the university not providing instructions on coaching students in matters related to cyber ethics/etiquette and using online learning platforms. Instructors assumed that their students were competent in using online platforms and would quickly master any digital learning tool.

The aims of this study are:

1. to gain a deeper understanding of the key challenges faced by online AFL learners and AHLs, within the social presence dimension of the CoI framework, that impact their online engagement in Arabic courses at GU-Q;
2. to gather insights into the range of solutions they propose based on their first-hand experiences and perceptions; and
3. to recommend, in light of these perceived challenges and solutions, some measures that may benefit AFL and AH instructors in similar educational institutions and contexts, and indeed HE educators more broadly.

## 2. Theoretical framework

This study employs the Community of Inquiry (CoI) framework proposed by Garrison, Anderson and Archer (2000), which is the most widely used framework in teaching and learning in online environments (Akyol et al., 2009). The CoI framework provides a structure and meaning-making process for examining the learning environment within online and blended learning settings through the interaction of three main elements: cognitive presence, social presence (which is the focus of our current study) and teaching presence (Garrison et al., 2010).

According to Garrison et al. (2001), 'cognitive presence' is "the extent to which learners can construct and confirm meaning through sustained reflection and discourse" (p. 11).

In online learning, this can occur when the instructor creates a learning environment where students engage in a high level of thinking through collaborative communication (Shea & Bidjerano, 2009).

The second element, ‘social presence’, is defined as “the ability of participants in the CoI to project their characteristics into the community, thereby presenting themselves to the other participants as ‘real people’” (Garrison & Archer, 2000, p. 97). Here the primary goal is to enhance cognitive learning by sustaining critical thinking in the CoI and making interactions more enjoyable within a virtual community by participants’ expression of themselves (Rourke et al., 1999). Waters and Gasson (2006) - in their paper entitled ‘Social Engagement in Online Community of Inquiry’ which was inspired by Garrison et al. (2001) - defined social engagement as an “active commitment to the social facilitation and direction of the community learning process.” (p. 5). Such a commitment should be demonstrated by both teachers and students.

The third element, ‘teaching presence’, is defined as “the design, facilitation and direction of cognitive and social processes for the purpose of realising personally meaningful and educationally worthwhile learning outcomes” (Vaghjee & Panchoo, 2016); it facilitates both social and cognitive presence. In the CoI, “learning occurs within the community through the interaction of these three core elements” (Garrison & Archer, 2000, p. 88).

Social presence is also described as the “degree to which participants feel effectively connected to one another” (Kozan & Richardson, 2014, p. 69). Garrison et al. (2000) say social presence has three sub-categories. The first is ‘affective expression’, which refers to emotional expression consisting of “humour expression and self-disclosure of personal information” (p. 99). The second is ‘open communication’, which refers to free peer interaction with other classmates through conversation and question-asking (Fornara & Lomicka, 2019). This occurs when students feel they co-exist in a risk-free learning environment where they can trust each other to reveal themselves (Boston et al., 2009) and can have “reciprocal and respectful exchanges” (Garrison et al., 2000, p. 100). The third sub-category of social presence is ‘group cohesion’, which manifests itself in building and sustaining a sense of group commitment (p. 101), where students comfortably collaborate and acknowledge each other’s opinions respectfully. This helps them to build trust and to disagree with each other freely (Smith, 2018).

Although Garrison et al. (2000) define teaching, cognitive and social presence as the core elements for successful engagement in an online learning context, they suggest that social presence may prove to be the key element, affecting teaching and cognitive presence. They argue that social presence is key to higher-order thinking in online learning and teaching. Other studies have stressed the value of social presence for broader learning objectives (Garrison & Akyol, 2013). Potentially, it positively impacts students’ active learning (Molinillo et al., 2018) and satisfaction in online courses (Grieve et al., 2016), and promotes student engagement (Dixson, 2010).

### 3. Literature review

This section reviews a range of sources that examine factors, challenges and solutions that university students are likely to experience as they engage actively in online learning.

#### 3.1 Online and hybrid learning

Online education in the university context is divided into different categories by different authors, with the proportion of course content online determining the type of online learning. According to Allen and Seaman (2016), an online course is one where content, interaction and assessment are done mainly online and at least 80% of the content is conducted online; traditional face-to-face education has no more than 29% of course content delivered online; and classes with up to 80% of course content delivered online may be termed ‘blended’ or ‘hybrid’. Dixson (2010), however, suggests that hybrid courses are those that integrate face-to-face sessions with 50-70% of online activities and assessment.

#### 3.2 Social presence: Challenges and solutions

Robinson and Hullinger (2008) found that working actively with peers is a major factor in determining collaborative online learning success. Likewise, O’Shea et al. (2015) found, in their qualitative study of the challenges Australian students faced when studying online, that some students perceived social presence as a significant factor promoting online learning. In addition, Shea et al. (2012) claimed that when students learn collaboratively in an online learning environment they build stronger relationships as peers.

A common challenge among online students is a feeling of social isolation and loneliness (Allen, 2014; Haynes et al., 2012), resulting from a lack of peer communication, which may lead to students dropping out of the course (Vaghjee

& Panchoo, 2016) and negatively affect learning (Borup et al., 2012). Bolliger and Halupa (2012) suggested that social interaction can help students cope with the feeling of being left behind. Student-to-student interaction is considered key to promoting engagement and retaining students in online courses (Banna et al., 2015).

Famularsih (2020), who investigated students' experiences in using online learning applications for English as a foreign language under Covid-19, concluded that poor internet connection, insufficient interaction, and anxiety using the target language (TL), i.e., the language being learnt, were major challenges for the participants. Likewise, Shahzad et al. (2020) emphasised that slow internet connection was one of the challenges facing ESL postgraduate students in Pakistan. Bailey and Lee (2020), who studied the online learning experience under Covid-19, identified challenges such as using new technology in learning; anxiety and sharing content in TL; and the importance of finding the appropriate Learning Management System (LMS) or platform to fulfil students' needs (Gillett-Swan, 2017).

### 3.2.1 Affective expression

Many researchers (for example, Brown et al., 2015; Bawa, 2016; Allen, 2014; Haynes et al., 2012) have investigated the challenge of building dynamic collaboration and a sense of belonging and relatedness in online education. Bolliger and Martin (2018) show that engaging students in meaningful collaborative online activities promotes their feelings of belonging in the class community. Such a sense of belonging productively facilitates the learning process (Cai, 2017).

Online learning and coping with a new mode of study can present several challenges for college students related to using technology skills, and the anxiety associated with using online learning platforms can undermine learners' performance and confidence (Bawa, 2016; Bonk et al., 2015; Dews-Farrar, 2018). The change to an online delivery medium reduces information transmission and the chance for students to practise what they learn, while the instructor's role shifts from teaching to facilitating the learning process (Kebritchi et al., 2017). Where this happens, the online learning environment becomes an undesirable medium for knowledge transmission, especially if there is no sense of belonging or peer engagement (Wallace, 2003), and needs to be complemented by students doing peer facilitation, as Lan et al. (2007) suggested.

Although the shift from a face-to-face learning environment to learning online may be beneficial for some learners,

who have elsewhere perceived it as "a versatile medium for the delivery of educational programmes 'anytime, anywhere'" (Garrison et al., 2000, p.87), it can create challenges for learners in different countries when an online course spans several time zones (Anderson, 2004). This may lead to students falling asleep during class or shifting their schedule of weekends and holidays (Battro et al., 2008), making it harder for learners to be fully engaged in their online studies. Moreover, learning through the online medium involves some health risks, such as eye strain from reading e-books or working on digital devices (Jeong, 2012), and general fatigue (Culpepper, 2015).

Krishan et al. (2020) highlight the importance of cues such as facial expressions and eye contact for building bonds among online English learners under Covid-19. The potential absence of these social cues in online classes can (Pi et al., 2017) negatively impact students' social engagement, which Waters and Gasson (2006, p. 5) define as an "active commitment to the social facilitation and direction of the community learning process". Meanwhile, human interaction is improved when students turn on their video conferencing cameras to see each other in the online learning context (Conrad, 2015).

### 3.2.2 Open communication

Intimidation appears to be one of the challenges of online learning, especially when students are new to such a learning environment (Nippard, 2005) and there is a lack of trust between peers and therefore less engagement among them during discussions and debates. Intimidation also manifests itself when students perceive their peers as having a greater understanding of the topic discussed or dominating the online class debate (Cleveland-Innes et al., 2007).

To date, there are relatively few studies investigating the impact of the shift to online learning in higher education during the Covid-19 pandemic in relation to students' social presence as part of the CoI framework. The only study to employ the CoI framework and specifically explore social presence (Holmes et al., 2020) was conducted in relation to master's-level counsellor educator learning, and compared students' perceptions of social presence in online and on-campus courses. The findings suggested that adult learners perceived social presence in a face-to-face course as better developed than in online settings.

### 3.2.3 Group cohesion

Group cohesion and mutual trust are significant factors in promoting engagement in the online classroom (Wang,

2007). Large group size and different time zones can negatively affect the learning process and create group incoherence in synchronous classes (Mucundanyi, 2019), while small class size has a positive impact on “sociability, social space, and group cohesion” (Akcaoglu & Lee, 2016, p. 13).

Shaker (2018) conducted a mixed-method study, which was not conceptualised within the CoI framework, on factors affecting the engagement of non-native learners of Arabic in a self-paced MOOC (massive open online course). He found that the “mode of delivery of instruction” is one of the key factors affecting student engagement in online courses (p. 2). Aguilera-Hermida (2020) and Schulze and Scholz (2018) claim that language college students prefer face-to-face over the online mode of delivery because they find it challenging to adapt to the online learning mode. Face-to-face may also lessen students’ anxiety and promote ‘peer learning’ (Brulland, 2013).

Other studies have focused on suggesting strategies for successful online discussions and improving student engagement. To facilitate student discussion online, Woods and Bliss (2016) suggested forming smaller working groups to help manage discussion threads, integrate reflective assignments that enhance peer interaction, and provide timely constructive feedback. Rourke and Anderson (2002) also found that students who lead the group discussion online benefit from monitoring their peers.

### 3.3 Online learning and students of Arabic

In this study, we aim to address the challenges AFL learners and AHLs have faced regarding their learning engagement in their first online Arabic course, and their suggested coping strategies, through the lens of social presence as part of the CoI framework. Although there has been extensive research into the issues the current paper explores, we have found very little research investigating the role of social presence in engaging AFL learners and AHLs in online courses. This study fills a gap in the literature by identifying challenges and coping strategies based on the experiences of these students of Arabic, which is one of the least investigated languages in online studies (Shaker, 2018).

Our paper is distinctive in being based on qualitative data collected from students who have experienced first-hand the issues around social engagement under the unique health and mental constraints imposed by Covid-19. It identifies these students’ perceptions and experiences using the CoI framework (Garrison et al., 2000), adding sophistication to our understanding of this framework and contributing to the

literature on technology-enhanced learning in the Middle East within the CoI framework – a link not often made concerning online teaching, and one that stands to benefit the wider online education community.

## 4. Research questions

- RQ1: What are the challenges that AFL learners and AHLs at GU-Q – as a higher education institution in the Middle East – face regarding their engagement in the online learning context within the social presence dimension of the CoI Framework?
- RQ2: What solutions and recommendations do these learners propose for overcoming these challenges?

## 5. Methodological framework

This paper is a small-scale study employing the case study approach (Stake, 1995; Merriam, 1998). It identifies the participants’ perceptions and experiences regarding the challenges they have faced in engaging in online AFL and AH courses and their proposed solutions for overcoming these challenges. It has done so by collecting qualitative data from GU-Q AFL learners and AHLs, using an open-ended, structured online questionnaire that asked students to identify one example of a challenge and a solution to it under the three aspects of social presence: affective expression, open communication and group cohesion. The questionnaire (see Appendix 1) consisted of seven questions modified from the CoI survey (CoI, n.d.). The three questions under ‘affective expression’ addressed: their sense of belonging in the course; forming distinct impressions of coursemates; and online or web-based communication as a medium for social interaction. The two questions under ‘open communication’ tackled: students’ comfort with talking/conversing through the online medium, and their comfort participating/interacting in course discussions. The two questions under ‘group cohesion’ focused on: students’ comfort with disagreeing with other course participants while maintaining a sense of trust in them, and their feeling comfortable that other classmates acknowledged their points of view.

The exploratory nature of the research questions and our need to collect qualitative data to answer them required that we use a ‘purposive’ sampling approach (Robson & McCartan, 2016, p. 281). In general, 103 AFL learners and 141 AHLs were enrolled in the academic year 2020-21. After consulting with the instructors, they discouraged us from sending the questionnaire to all these students as they were bombarded with completing surveys on other topics and rather recommended, we send it to 64 students in

particular courses. Having secured the GU-Q research office Institutional Review Board (IRB)'s approval, we emailed the questionnaire including the consent form, in English, on Google Form, to these students, who were attending five AFL and AH courses. The authors received and thematically analysed responses from 13 AFL learners. Ten of them were at the elementary or intermediate language proficiency level, according to the American Council on the Teaching of Foreign Languages (ACTFL, 2021); the other three were AHLs at the advanced level. The AFL learners were studying synchronously six-hour credit course per week, while the AHLs were taking a three-hour credit course that used both synchronous and asynchronous modes. We used thematic analysis (Braun & Clarke, 2012) to analyse the qualitative data emerging from the participants' responses. Following the steps recommended by Braun and Clarke, we first familiarised ourselves with the data by reading it more than once; we identified the 'latent codes' (p. 61) manually rather than identifying them using software such as Nvivo. This enabled us to read between the lines and dig deeper into the data. Finally, we identified themes in response to the research questions regarding the challenges our students faced with engaging in online Arabic courses and their suggested solutions.

## 6. Key findings

The following themes emerged from our thematic analysis of the participants' responses on the three aspects of social presence in the CoI Framework: affective expression, open communication and group cohesion.

### 6.1 Affective expression

#### 6.1.1 Sense of belonging in the course

**Student recommendations:** Our students suggested creating a blended, welcoming learning environment; having small size classes; conducting more engaging, comfortable class activities; switching between synchronous and asynchronous learning modes; and doing task-based activities to overcome the intimidating digital set-up; large class size; intense, disengaging content; and differences in time zones, which they perceived as obstructing them from developing a sense of belonging.

The first challenge students described was the nature of the learning environment and its being online. Due to their being used to face-to-face instruction, some of them found online learning sometimes '*very intimidating*' (Student

11), especially at the beginning of the course. They recommended that instructors make the learning environment comfortable by giving students time to adapt to this new environment. They also suggested that instructors deliver '*hybrid classes*' and be '*welcoming*', and that students '*get together outside classes...[for] fun*', (Student 2), though presumably not face to face. They also saw large class sizes and disengaging content as challenges to building their sense of belonging in the online course. One (Student 5) said '*[In small classes] we all knew each other.*' They described having difficulty when the instructor taught too much new content in the online class, especially when engaging, interactive activities were not used. They suggested having small class sizes, and that instructors conduct '*more discussions and debates*' (Student 7) in addition to fun activities and games. To cope with large classes, they suggested that instructors enable students to get to know and '*become comfortable with one another*' (Student 11) through working in pairs and small groups and doing language activities that enabled them to socialise and develop friendships. The time zone difference was a challenge for some students who had to attend class '*at odd hours*' (Student 9), and it was difficult for them to adapt. As Shea and Bidjerano (2009) proposed, our students recommended asynchronous, task-based and collaborative activities to overcome this challenge.

#### 6.1.2 Forming distinct impressions of coursemates

**Student recommendations:** Our students proposed turning their device cameras on; conducting warm-up speaking activities; using pair work; and forming chat groups to address the lack of peer interaction, which got in the way of their forming distinct impressions of online coursemates.

This challenge sprang from a couple of factors. First, some students did not turn their cameras on, which meant their peers could not see their facial expressions while they were communicating with each other, thus constraining their engagement with each other as humans (Garrison & Archer, 2000). That created a big challenge, especially for first-year students who were in their first semester ever. For example, Student 3 said: '*It was difficult to form a distinct impression of coursemates whom I had not previously met in person.*' Students suggested there needed to be a policy that all students should turn their cameras on throughout class time. Another factor was that instructors did not allow enough time for students to break the ice and get to know each other well. Students therefore suggested that instructors conduct warm-up activities and pair work to help students get to know each other. In addition, a '*class group chat*' was suggested (by Student 2) to help them communicate outside

the class. Furthermore, some suggested having '*[face-to-face] classes*' (Student 10), which was completely impossible with Qatar's closure of schools due to Covid-19. Nevertheless, these findings reflect what others, such as Mann and Henneberry (2014) and Stodel et al. (2006), have reported about students preferring face-to-face learning over the online learning mode.

#### 6.1.3 Online or web-based communication as a medium for social interaction

**Student recommendations:** Our students advocated creating asynchronous classes and setting up panel discussion boards and hybrid classes to address internet connection unreliability and issues related to screen fatigue, which obstructed social interaction through online, web-based communication.

Participants, especially those not staying at the Education City/QF dorm, where internet coverage is provided, and who could have been in their home countries under a Covid-19 lockdown and travel ban, complained of having '*Wi-Fi issues*' (Student 7), which caused some of them 'to be less engaged or absent' (Student 9) for some classes. To address that, they suggested having '*asynchronous classes*' and '*board discussions*' (Student 7) in which they could take part at their convenience. Most of our participants did not perceive online learning very favourably. One (Student 3) said '*the online mode of instruction proved to be a serious barrier to social interaction*' and suggested having face-to-face classes whenever possible. Students suggested various reasons for the problem. First, they claimed that this mode of learning '*did not provide time for informal communication*'... for example, '*coffee with professor/class events*' (Student 4). As Culpepper (2015) suggested, they also highlighted physical issues due to attending numerous online classes, such as screen '*fatigue, headache, back pain, loss of sense of time, and [feeling] lazy and tired*' (Student 8). Some suggested that instructors could invite their students to stand up and stretch during the class. Others complained about poor sound quality on Zoom and suggested using other digital platforms such as Discord. They also suggested having animated backgrounds to break the boredom and monotony of online classes.

### 6.2 Open communication

#### 6.2.1 Feeling comfortable talking/conversing through the online medium

**Student recommendations:** Our participating

students recommended that Arabic instructors conduct more dialogues and closed and open pairs, and train students in raising digital hands and writing their questions and comments in the 'chat box' and discussing their comments orally, to enable shy students to talk in online classes.

It was claimed that '*it is difficult to converse online as opposed to being in-person*' (Student 3), for which participants again gave many reasons. First, they found it difficult to talk to peers and instructors they had never met in person; some suggested raising digital hands to get an opportunity to talk. They also recommended instructors conduct as many dialogues and open and closed pairs as possible, and engage students in dialogue practice, providing them equal opportunities for taking turns and expressing themselves. In addition, they suggested that shy students could write their questions in the 'chat box', and the instructor could then encourage them to say them out loud, enabling them to discuss their questions with peers and get peer feedback before the instructor's feedback. This is supported by Robinson and Hullinger's (2008) claim about the significance of students' working in pairs for developing collaborative community in online courses. Our participants also claimed that students, especially shy ones, would keep their microphones muted during open discussions, and recommended that instructors encourage them all to speak freely, tolerate mistakes, and engage them with their peers, which would increase their engagement in the online class (Bolliger & Halupa, 2012). Some participants explained that '*being online ... is something [we are] not used to*' (Student 12). They suggested more time, practice and technology training to master features such as digital hand raising, putting questions in the chat box, and controlling their microphones.

#### 6.2.2 Feeling comfortable participating/interacting in course discussions

**Student recommendations:** Our participants proposed that instructors should be supportive and motivating, and ensure that students got to know each other well and were trained in using digital tools such as e-textbooks to help them overcome the anxiety of making mistakes and working with peers for the first time, which could limit their participation in online classes.

Participants claimed that working in pairs or groups in breakout rooms before they had had a chance to get to know each other well was an obstacle to participation. They recommended that their Arabic instructors build a supportive, comfortable, anxiety-free online learning environment, conduct whole-class discussions, and ensure

students feel comfortable working in pairs and groups before they are put in break-out rooms. Another challenge for some students was not using paper-based textbooks and needing to follow dialogues in the e-textbook; they suggested that instructors train them in using these digital resources. They also claimed that sometimes '*the professor can be scary*' and not accept mistakes, and might call on students to answer questions. They suggested that instructors should '*calm down*' and '*be helpful*' (Student 2). According to Student 11, calling on specific students made them '*...lose comfort and confidence*'. Our participants explained that this kind of class environment held them back from asking '*stupid questions*' (Student 8) or made them afraid of being ridiculed by their instructors. They pointed out that Arabic (as a Heritage/ Foreign Language learning course) is not core content, and students found it difficult to participate without making mistakes, especially when they did not have the Arabic language competency to practise; they suggested that the instructor should allow all questions and encourage students to '*speak up even if they are wrong*' (Student 3) and to '*clear their doubts*' (Student 8). However, unlike most of the other participants, Student 6 (who might be shy in a face-to-face context) believed '*being online made it easier to ask questions*'. Participants also recommended that instructors give students the choice whether to participate freely, and not put them on the spot by calling on them.

### 6.3 Group cohesion

#### 6.3.1 Feeling comfortable disagreeing with other course participants while maintaining a sense of trust in them

**Student recommendations:** Participating students recommended activating peer correction and feedback; providing equal space and time for each student in peer discussions; and setting clear discussion rules to overcome the lack of peer-to-peer correction and feedback, which can make it difficult to disagree with other classmates while maintaining a sense of trust in them.

The major challenge they described here was a lack of peer correction and peer feedback practice, especially when students do not know each other very well and the instructor's feedback and correction leave no room for peer feedback. Emphasising the value of peer correction, Student 11 commented that '*providing [peer] feedback and correction ... allows [students] to get better and improve*'. A related challenge was the unequal amounts of time allowed for each student in peer discussions. Students suggested that the instructor should moderate these discussions to ensure that

'*both sides speak equally*' (Student 7). They also emphasised that Arabic instructors should set clear peer discussion rules and clear participation rubrics to ensure that ideas were discussed, not personalities, and that mutual respect and trust were maintained. For example (Student 11) proposed that '*the instructor... [should build] an environment where everyone respects each other's opinion*'. While most of the students thought the online discussion environment made it harder for them to communicate, express and defend their opinions and disagree with coursemates, Student 6 – who might have been a shy person – thought otherwise, saying: '*Being online made it easier to politely disagree*'.

#### 6.3.2 Feeling comfortable that your point of view is acknowledged by classmates

**Student recommendations:** Our participants suggested more peer-to-peer informal chat in Target Language, and that instructors should train students in how to check they understand their classmates' opinions correctly.

A major challenge described here was the students' lack of linguistic competency to check the meaning of their peers' points of view. This was clearer among AFL learners than their Arabic Heritage counterparts, probably because the latter would have the linguistic ability to correctly understand and acknowledge their classmates' viewpoints due to their wealth of language in both its forms – MSA and dialect – which they have built up through their added exposure and usage, especially of the dialect. In contrast, their non-native counterparts lacked such ability and confidence. Students also described the non-native AFL learners' fear of talking and making mistakes, especially in front of their native Arabic Heritage counterparts. The same challenge was highlighted in the literature by Cleveland-Innes et al. (2007). Our participants suggested that instructors could help students to practise phrases such as '*Is .... what you meant?*' (Student 7), as part of their Arabic classroom language in order to be able to acknowledge their classmates' viewpoints. Another challenge our participants mentioned was that AFL or Arabic Heritage was not a core content course; therefore, they – especially the AFL learners – lacked the linguistic competency to express agreement/ disagreement in it. Instead, they preferred '*any disagreements to be settled by asking the professor*' (Student 4) because they perceived him/her as more linguistically able to do so than themselves. As explained above, both AFL learners and AHLs at GU-Q were studying elective course tracks of Arabic. Unlike core courses, such as politics, government or history studied in English, students on Arabic course tracks did not have the linguistic competency that would enable them to

engage fully in discussions or debates in Arabic.

## 7. Summary and implications

Among the most valuable insights we gained from conducting this small-scale study was that our AFL learners and AHLs had experienced multiple challenges relating to their engagement in online learning, which had added to their lack of mental health and wellbeing under Covid-19. This study aimed to offer them a space to propose solutions to these challenges and contribute to the international body of literature on this topic. We have distilled some of their most productive suggestions above.

Although we designed our small-scale study along the lines of the CoI framework and its social presence element to investigate our AFL learners' and AHLs' social engagement in GU-Q Arabic online courses during a specific period of time, the key findings of this study illustrate experiences that will resonate with those of other students in other higher education institutions in the Middle East.

The most surprising aspect of our findings was that not all of our students were as competent in using online digital learning tools as we had mistakenly assumed they would be, and that they had not been provided with sufficient opportunity to engage online socially. Furthermore, these MSA learners had no better place to learn and practise their MSA version of Arabic than in their Arabic online course, due to the diaglossic situation in the Arab world, where MSA is used only in formal situations and literature, while multiple dialects are used in daily life situations. These two reasons contributed to decreasing their social engagement in both online and offline contexts.

As discussed above, our study identifies key challenges to the social engagement of AFL learners and AHLs and proposes a set of solutions. These challenges and solutions add sophistication to our understanding of the components of the social presence element of the CoI framework.

### 7.1 Affective expression

Under 'affective expression' our participants proposed, in keeping with the literature, that creating a welcoming environment, working in small, cooperative groups applying task-based and engaging activities, using both synchronous and asynchronous learning modes, and considering time zone differences would all enable them and their peers to develop a sense of belonging in the online course. To form distinct impressions of colleagues, our participants suggested

turning their cameras on during the class and that instructors conduct more warm-up speaking activities, put them in pairs, and help students form chat groups. Krishan et al. (2020) and Conrad (2015) highlighted the positive impact of these social prompts on student engagement in online courses. To make online and web-based communication a favourable medium for social interaction, our students also suggested running discussions, asynchronous classes and regular physical activities that would enable them to overcome screen fatigue.

### 7.2 Open communication

To enable themselves and their peers to feel comfortable talking/conversing during their Arabic online classes, our students recommended that Arabic instructors put them in pairs and enable them to practice dialogues, and train students, especially shy ones, to raise digital hands when they needed to ask questions. Woods & Bliss (2016) also highlighted the importance of instructors training their students in using new digital technologies in their classes. To maximise their own and their peers' interaction in online Arabic courses, our participants recommended their instructors encourage practising the TL and allowing mistakes. They also urged their instructors to build a supportive, motivating learning environment. Our study adds to the existing literature by sharing the challenges and solutions that our AFL learners and AHLs perceive as regards building open communication in online learning courses.

### 7.3 Group cohesion

In order to create and maintain group cohesion where students can comfortably disagree with each other while maintaining their sense of mutual trust, our participants proposed that their Arabic instructors promote peer correction and feedback and ensure students' equality as regards peer discussion. Nippard (2005) highlighted the instructor's role in building an anxiety-free online learning environment for promoting student engagement. Our students also recommended that they and their peers create informal chat rooms to practise the TL, and that their instructors train them in how to use classroom language to acknowledge each other's viewpoints.

## 8. Recommendations

In light of the above, we make the following recommendations for AFL, AH instructors and stakeholders in higher education institutions:

- Educational institutions should take screen fatigue

into account and provide sufficient training and break times to enable students and instructors to maintain their mental wellbeing during online courses throughout the semester.

- Arabic instructors are advised to combine synchronous and asynchronous learning modes to provide a variety of learning platforms for all students wherever they are and whenever they want. This would fix many challenges, such as internet connection availability, screen fatigue, and the difference in time zones.
- In order to maximise students' peer feedback and correction, we recommend instructors develop and share a feedback rubric with their AFL learners and AHLs as part of their course outline. We also recommend that instructors teach 'classroom language', especially for AFL learners, and language functions such as 'agreeing and disagreeing' for Heritage students.
- We recommend that Arabic instructors get trained, and train their students, in using digital tools/applications such as Flippgrid, collaborative tools in Google Workspace for Education, Quizlet and Adobe Spark Video, as well as e-textbooks.
- Additionally, we propose that Arabic instructors encourage their AFL learners and AHLs to create informal social media groups (for example, on WhatsApp and Facebook) to practise freely among themselves what they are learning in their online Arabic classes.
- Finally, we wish we could have presented these findings along with the challenges our students faced and the solutions they proposed as regards their social engagement in the online Arabic courses within the other two dimensions of the CoI framework (cognitive and teaching presences). We hope to do so in a forthcoming publication.

Although the above findings are not meant to be generalizable, we believe that our fellow instructors of AFL and AH as well as their Higher Educational Institutions may find them useful.

## References

- Actfl.org. 2021. *Home | ACTFL*. [online] Available at: <<https://www.actfl.org/>> [Accessed 24 January 2021].
- Aguilera-Hermida, A. P. (2020). College students' use and acceptance of emergency online learning due to Covid-19. *International Journal of Educational Research Open*, 1, 100011.
- Akcaoglu, M., & Lee, E. (2016). Increasing social presence in online learning through small group discussions. *The international review of research in open and distributed learning*, 17(3).
- Akyol, Z., Arbaugh, J. B., Cleveland-Innes, M., Garrison, D. R., Ice, P., Richardson, J. C., & Swan, K. (2009). A response to the review of the community of inquiry framework. *International Journal of E-Learning & Distance Education/Revue internationale du e-learning et la formation à distance*, 23(2), 123-136.
- Allen, I. E., & Seaman, J. (2016). *Online report card: Tracking online education in the United States*. Babson Survey Research Group. Babson College, 231 Forest Street, Babson Park, MA 02457.
- Allen, I. R. (2014). *Virtual communities of practice: A netnographic study of peer-to-peer networking support among doctoral students* (Doctoral dissertation, Capella University).
- Anderson, T. (2004). Teaching in an online learning context. *Theory and practice of online learning*, 273.
- Armellini, A., & De Stefani, M. (2016). Social presence in the 21st century: An adjustment to the Community of Inquiry framework. *British Journal of Educational Technology*, 47(6), 1202-1216.
- Bailey, D. R., & Lee, A. R. (2020). Learning from experience in the midst of covid-19: benefits, challenges, and strategies in online teaching. *Computer-Assisted Language Learning Electronic Journal*, 21(2), 178-198.
- Banna, J., Lin, M. F. G., Stewart, M., & Fialkowski, M. K. (2015). Interaction matters: Strategies to promote engaged learning in an online introductory nutrition course. *Journal of online learning and teaching/MERLOT*, 11(2), 249.
- Battro, A. M., Fischer, K. W., & Léna, P. J. (2008). The educated brain: Essays in neuroeducation. In *Mind, Brain, and Education*, Nov, 2003, Rome, Italy; This volume has been edited from the papers presented at the aforementioned conference.. Cambridge University Press.
- Bawa, P. (2016). Retention in online courses: Exploring issues and solutions—A literature review. *Sage Open*, 6(1), 2158244015621777.

Bolliger, D. U., & Halupa, C. (2012). Student perceptions of satisfaction and anxiety in an online doctoral program. *Distance Education*, 33(1), 81-98.

Bolliger, D. U., & Martin, F. (2018). Instructor and student perceptions of online student engagement strategies. *Distance Education*, 39(4), 568-583.

Bonk, C. J., Lee, M. M., Kou, X., Xu, S., & Sheu, F. R. (2015). Understanding the self-directed online learning preferences, goals, achievements, and challenges of MIT OpenCourseWare subscribers. *Journal of Educational Technology & Society*, 18(2), 349-368.

Borup, J., West, R. E., & Graham, C. R. (2012). Improving online social presence through asynchronous video. *The Internet and Higher Education*, 15(3), 195-203.

Boston, W., Diaz, S., Gibson, A., Ice, P., Richardson, J., & Swan, K. (2009). An exploration of the relationship between indicators of the Community of Inquiry framework and retention in online programs. *Journal of Asynchronous Learning Networks*, 14(1), 3e19.

Braun, V., & Clarke, V. (2012). Thematic analysis. In H. Cooper (Ed.), *APA Handbook of Research Methods in Psychology: Vol. 2. Research designs* (pp. 57-91) Washington, DC: American Psychological Association.

Brown, M., Hughes, H., Keppell, M., Hard, N., & Smith, L. (2015). Stories from students in their first semester of distance learning. *International Review of Research in Open and Distributed Learning*, 16(4), 1-17.

Bruland, N. F. (2013). Examining the relationship between interaction and linguistic outcomes: Is the online learning environment a viable alternative to traditional classroom instruction for beginning language learners? (Doctoral dissertation, The Florida State University).

Cai, Q. (2017). Enhance Student Engagement through Leadership Strategies. *Transformative Dialogues: Teaching and Learning Journal*, 9(3).

Cleveland-Innes, M., Garrison, R., & Kinsel, E. (2007). Role adjustment for learners in an online community of inquiry: Identifying the challenges of incoming online learners. *International Journal of Web-Based Learning and Teaching Technologies (IJWLTT)*, 2(1), 1-16.

CoI. (n.d.). Retrieved January 19, 2021, from <https://coi.athabascau.ca/coi-model/coi-survey/>

Conrad, O. (2015). *Community of Inquiry and Video in Higher Education Engaging Students Online* (Doctoral dissertation, California State University, Fullerton).

Culpepper, M. C. (2015). *Teaching Culture in Foreign Language Classrooms of International Baccalaureate Schools* (Doctoral dissertation, Walden University).

Dews-Farrar, V. (2018). *Students' Reflections and Experiences in Online Learning: A Qualitative Descriptive Inquiry of Persistence* (Doctoral dissertation, Grand Canyon University).

Dixson, M. D. (2010). Creating Effective Student Engagement in Online Courses: What Do Students Find Engaging?. *Journal of the Scholarship of Teaching and Learning*, 10(2), 1-13.

Famularsih, S. (2020). Students' experiences in using online learning applications due to COVID-19 in English classroom. *Studies in Learning and Teaching*, 1(2), 112-121.

Fornara, F., & Lomicka, L. (2019). Using visual social media in language learning to investigate the role of social presence. *Calico Journal*, 36(3), 184-203.

Garrison, D. R., & Akyol, Z. (2013). The community of inquiry theoretical framework. *Handbook of distance education*, 3, 104-120.

Garrison, D. R., & Archer, W. (2000). *A Transactional Perspective on Teaching and Learning: A Framework for Adult and Higher Education. Advances in Learning and Instruction Series*. Elsevier Science, Inc., PO Box 945, New York, NY 10159-0945.

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical Inquiry in a Text-Based Environment: Computer Conferencing in Higher Education. *The Internet and Higher Education*, 2(2-3), 87-105.

Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *American Journal of distance education*, 15(1), 7-23.

Garrison, D. R., Cleveland-Innes, M., & Fung, T. S. (2010). Exploring causal relationships among teaching, cognitive and social presence: Student perceptions of the com-

- munity of inquiry framework. *The internet and higher education*, 13(1-2), 31-36.
- Gillett-Swan, J. (2017). The challenges of online learning: Supporting and engaging the isolated learner. *Journal of Learning Design*, 10(1), 20-30.
- Grieve, R., Padgett, C. R., & Moffitt, R. L. (2016). Assignments 2.0: The role of social presence and computer attitudes in student preferences for online versus offline marking. *The Internet and Higher Education*, 28, 8-16.
- Haynes, C., Bulosan, M., City, J., Grant-Harris, M., Hudson, J., & Koro-Ljungberg, M. (2012). My world is not my doctoral program... or is it?: Female students' perceptions of well-being. *International Journal of Doctoral Studies*, 7(1), 1-17.
- Holmes, C. M., Reid, C., Hawley, C., & Wagner, C. (2020). Social Presence in Online Counselor Education. *The Journal of Counselor Preparation and Supervision*, 13(4), 11.
- Jeong, H. (2012). A comparison of the influence of electronic books and paper books on reading comprehension, eye fatigue, and perception. *The Electronic Library*.
- Kandiko, C., & Mawer, M. (2013). Student Perceptions and Expectations of Higher Education. *Quality Assurance Agency*.
- Kebritchi, M., Lipschuetz, A., & Santiague, L. (2017). Issues and challenges for teaching successful online courses in higher education: A literature review. *Journal of Educational Technology Systems*, 46(1), 4-29.
- Kozan, K., & Richardson, J. C. (2014). Interrelationships between and among social, teaching, and cognitive presence. *The Internet and higher education*, 21, 68-73.
- Krishan, I. A., Ching, H. S., Ramalingam, S., Maruthai, E., Kandasamy, P., De Mello, G., ... & Ling, W. W. (2020). Challenges of Learning English in 21st Century: Online vs. Traditional During Covid-19. *Malaysian Journal of Social Sciences and Humanities (MJSSH)*, 5(9), 1-15.
- Lan, Y. J., Sung, Y. T., & Chang, K. E. (2007). A mobile-device-supported peer-assisted learning system for collaborative early EFL reading. *Language Learning & Technology*, 11(3), 130-151.
- Mann, J. T., & Henneberry, S. R. (2014). Online versus face-to-face: Students' preferences for college course attributes. *Journal of Agricultural and Applied Economics*, 46(1379-2016-113921), 1-19.
- Mays, T. L., & Smith, B. T. (2009). Navigating the doctoral journey. *Journal of Hospital Librarianship*, 9(4), 345-361.
- Merriam, S. B. (1998). *Qualitative Research and Case Study Applications in Education. Revised and Expanded from "Case Study Research in Education."*. Jossey-Bass Publishers, 350 Sansome St, San Francisco, CA 94104.
- Molinillo, S., Aguilar-Illescas, R., Anaya-Sánchez, R., & Vallespín-Arán, M. (2018). Exploring the impacts of interactions, social presence and emotional engagement on active collaborative learning in a social web-based environment. *Computers & Education*, 123, 41-52.
- Mucundanyi, G. (2019). *College Student Engagement in Online Learning* (Doctoral dissertation, New Mexico State University).
- Nippard, E. C. (2005). *Social presence in the web-based synchronous secondary classroom* (Doctoral dissertation, Memorial University of Newfoundland).
- O'Shea, S., Stone, C., & Delahunty, J. (2015). "I 'feel' like I am at university even though I am online." Exploring how students narrate their engagement with higher education institutions in an online learning environment. *Distance Education*, 36(1), 41-58.
- Parkinson, G., & Forrester, G. (2004). Mind the gap': Students' expectations and perceptions of induction to distance learning in higher education. In *British Educational Research Association annual conference, University of Manchester*. <http://www.leeds.ac.uk/educol/documents/00003842.doc>. [accessed 26 December 2007].
- Pi, Z., Hong, J., & Yang, J. (2017). Does instructor's image size in video lectures affect learning outcomes?. *Journal of Computer Assisted Learning*, 33(4), 347-354.
- Robinson, C. C., & Hullinger, H. (2008). New benchmarks in higher education: Student engagement in online learning. *Journal of Education for Business*, 84(2), 101-109.
- Robson, C. & McCartan, K. (2016). *Real world research*. London: John Wiley & Sons Ltd.
- Rourke, L., & Anderson, T. (2002). Exploring social communication in computer conferencing. *Journal of Interactive*

- Learning Research*, 13(3), 259-275.
- Rourke, L., Anderson, T., Garrison, D. R., & Archer, W. (1999). Assessing social presence in asynchronous text-based computer conferencing. *The Journal of Distance Education/Revue de l'education Distance*, 14(2), 50-71.
- Schulze, M., & Scholz, K. (2018). Learning trajectories and the role of online courses in a language program. *Computer assisted language learning*, 31(3), 185-205.
- Shahzad, S. K., Hussain, J., Sadaf, N., Sarwat, S., Ghani, U., & Saleem, R. (2020). Impact of Virtual Teaching on ESL Learners' Attitudes under COVID-19 Circumstances at Post Graduate Level in Pakistan. *English Language Teaching*, 13(9), 1-9
- Shaker, T. (2018). Promoting engagement in self-paced online language courses-A case study in the context of a MOOC for Learning Arabic [Master's thesis, University of Oulu]. <http://jultika.oulu.fi/files/nbnfioulu-201811103018.pdf>
- Shea, P., Hayes, S., Smith, S. U., Vickers, J., Bidjerano, T., Pickett, A., ... & Jian, S. (2012). Learning presence: Additional research on a new conceptual element within the Community of Inquiry (CoI) framework. *The Internet and Higher Education*, 15(2), 89-95.
- Shea, P., & Bidjerano, T. (2009). Cognitive presence and online learner engagement: A cluster analysis of the community of inquiry framework. *Journal of Computing in Higher Education*, 21(3), 199.
- Smith, J. A. (2018). Faculty Perspectives and Practices of Social Presence in Online Post-Secondary Learning Environments. *ProQuest LLC*.
- Stodel, E. J., Thompson, T. L., & MacDonald, C. J. (2006). Learners' perspectives on what is missing from online learning: Interpretations through the community of inquiry framework. *The International Review of Research in Open and Distributed Learning*, 7(3).
- Vaghjee, H., & Panchoo, S. (2016). Applying the Community of Inquiry Framework to explore sense of community on Moodle. In *2016 IEEE International Conference on Emerging Technologies and Innovative Business Practices for the Transformation of Societies (EmergiTech)* (pp. 378-383). IEEE.
- Wallace, R. M. (2003). Online learning in higher education: A review of research on interactions among teachers and students. *Education, Communication & Information*, 3(2), 241-280.
- Wang, X. (2007). What factors promote sustained online discussions and collaborative learning in a Web-based course?. *International Journal of Web-Based Learning and Teaching Technologies (IJWLTT)*, 2(1), 17-38.
- Waters, J., & Gasson, S. (2006). Social engagement in an online community of inquiry. In *ICIS 2006 Proceedings* (p. 47). Milwaukee, WI.
- Woods, K., & Bliss, K. (2016). Facilitating Successful Online Discussions. *Journal of Effectiv Waters, J., & Gasson, S. (2006). Social engagement in an online community of inquiry. In ICIS 2006 Proceedings (p. 47). Milwaukee, WI. Waters, J., & Gasson, S. (2006). Social engagement in an online community of inquiry. In ICIS 2006 Proceedings (p. 47). Milwaukee, WI. e Teaching*, 16(2), 76-92.
- World Economic Forum. (2021). *The COVID-19 Pandemic Has Changed Education Forever. This Is How*. [online] Available at: <<https://www.weforum.org/agenda/2020/04/coronavirus-education-global-covid19-online-digital-learning/>> [Accessed 20 January 2021].

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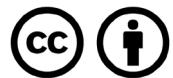
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