## Cognitive Presence in a Blended Learning Environment at Jordanian Universities

**Jibrel Harb**
The World Islamic Sciences and Education University
Amman, Jordan

**Pramela Krish**
National University of Malaysia
Faculty of Social Sciences and Humanities
Bangi, Malaysia

**Abstract**
Cognitive presence is the ability of the learners to project their mental and perceptual presence. This paper aims to investigate cognitive presence when using a Blended Learning environment. The article also aims at exploring university students' attitudes towards using a BL environment in language learning, since BL perception, as a computer learning environment, has become a requirement to enhance language learning. The sample for the study consists of 100 students studying the English Language Skills course at Al-Balqa Applied University (BAU) in Jordan, who responded to a questionnaire on cognitive presence issues. The findings of the study reveal that Blended Learning (BL) can create a vibrant cognitive presence, which enables to support active language learning. The results share some positive attitudes towards a cognitive presence in a BL environment. The study recommends that more research on the part of the online instructors to create and enhance cognitive presence is necessary to benefit learning English language skills.

*Keywords*: Blended learning, cognitive presence, Jordanian universities, negative attitudes, positive attitudes

## Introduction

Technology has revolutionized the processes of teaching and learning at universities. Technology has paved the path to expand knowledge and create a sense of 'being there'; it has created a different way of thinking, feeling, and behaving from an instructional perspective. Instructors need to ensure planning and designing a course to make sure of the effective learning outcomes. Technology cannot replace instructors; it can only enhance the quality of teaching and learning. Although some may say it is a lonely journey feeling isolated and anxious in the online world, it is not valid if the courses are structured to create discussion, to work collaboratively, and to receive and give feedback to make the learning enjoyable.

Most universities nowadays are using blended learning courses to benefit from both modes, Face-to-Face and online learning environments. Pramela et al. (2012) explain that interaction is so essential in a virtual learning environment, and it calls for a more in-depth inquiry that would contribute to online learning. Akyol et al. (2011) and Redmond (2011) state that there is a need for more research on the effectiveness of cognitive presence on blending learning to improve critical thinking and depth of knowledge. Initial study comparing the effectiveness of online learning and face-to-face education indicated that there is no significant difference in the learning outcomes of students (Twigg, 2001). All learners, irrespective of the learning environment -face-to-face, online, or blended- have the opportunity to achieve the same cognitive outcomes.

Blended learning enables educators to create learning opportunities where both face-to-face and online paradigms are part of the learning process. This research aims to investigate the impact of cognitive presence in blended learning experiences, to achieve quality learning outcomes that promote critical thinking; while students are connecting, constructing, and applying knowledge.

The ultimate goal of learning via both modes of blended learning, whether face-to-face or online, is that students must be encouraged to become self-directed, manage and monitor their knowledge appropriate to the task and ability (Garrison & Anderson, 2003). Harasim et al, (1995) explain that participation in an online environment is based on making input, responding to peers, and sharing ideas. This can be seen by the number of contributions made by students in their weblog or learner management systems (LMS), which tracks all contributions in the learning forum. Students need to participate without hesitation, and this allows for successful learning and teaching to be witnessed. To add to that, it is essential to know what Lehman and Conceicao (2010) say. According to them, the instructors' presence is vital as his voice serves as a model for the critical discourse, constructive critique, and formative feedback.

## Cognitive Presence

The concept of presence is complex and not easy to understand. Presence is a result of the dynamic interplay of thought, emotion, and behavior in the online world (Garrison & Arbaugh, (2007). Therefore, Lehman (2010) believes that presence has to be viewed from a different perspective, social, psychological, and emotional. These components are necessary for the cognitive presence to maintain constant.

Cognitive presence was defined by Garrison et al. (2000, 2001) as constructing meaning

through sustained and permanent communication. Based on this definition, Matheson, Wilkinson, and Gilhooly, (2012) argue that this could be achieved through "greater use of group work that values the personal contribution and promotes secure learning environments to foster exchange."(p.259) Two critical issues must be taken into consideration concerning active learning. These are internal cognitive processes and the external contextual elements that precipitate and shape thinking. According to Garrison (2003), cognitive presence is concerned with "the process of both reflection and discourse in the initiation, construction, and confirmation of meaningful learning outcomes" (p. 4). If there is no reflection, students will not be able to "fully appreciate what they have learned and how far they have come in learning, and how to apply and use new knowledge they gained" (Akyol, et al., 2012. p. 159).

According to Gutiérrez-Santiuste et al., (2015), cognitive processes aim at promoting the "analysis, construction, and confirmation of meaning and understanding within a community of students through reflection and discourse" (p.350). Understanding cognitive presence is a priority provided that a deep and meaningful learning outcome aspires to an educational experience resulted from integrating the public and private worlds of students. Meaning and understanding are both basic concepts in the creation of cognitive presence for learning outcomes.

Cognitive presence indicates the extent to which students are capable of constructing meaning through a continuous reflection in a critical research community (Garrison & Anderson, 2003; Garrison, Anderson, & Archer, 2001) through sustained communication (Gunawardena, Lowe, & Anderson, 1997). Cognitive presence thus indicates the extent to which the learning objectives are achieved. The cognitive abilities involved in high–level instruction—making inferences, observing connections, verifying, and organizing—generate better results when they are integrated cooperatively (Resnick, 1987), and promoted and maintained by social presence (Fabro & Garrison, 1998; Gunawardena, 1995).

Researchers are intent on determining if higher-order learning can be achieved in an online or blended learning environment. Most of the research on cognitive presence has been collected using the perceptions of participants, such as student satisfaction and perceived learning in higher education students (Richardson & Swan, 2003; Shea et al., 2006). Akyol and Garrison (2011) call for an emphasis on measuring actual learning outcomes to connect collaborative and engaging approaches of blended and online learning to a depth of learning. They state that linking processes and outcomes is critical in order to understand how to support cognitive presence in blended and online learning environments (Akyol & Garrison, 2011).

Garrison et al. (2001) introduced cognitive presence as the extent to which meaning can be constructed and validated by online learners through the process of reflection, discourse, analysis, and synthesis. According to Garrison et al. (2001), cognitive presence is based on the literature of critical thinking, which is a necessary condition of learning, and therefore is a process and outcome frequently presented in higher education (Garrison et al. 2000). When learners possess critical thinking and inquiry, they can understand and confirm meaning and their knowledge construction (Akyol & Garrison, 2011; Shea & Bidjerano, 2009). Because cognitive presence is a vital element in critical thinking (Garrison et al., 2000), it is considered an essential element to success in higher education (Garrison et al., 2000). Besides, critical thinking is also the

desired outcome of the educational pursuit of high school students (Jeremiah, 2012).

**Methodology**
The study utilized the quantitative method of data collection using a self-report questionnaire. Data were collected from students studying the university requirement English language skills 101 online at BAU in Jordan. Those 100 students came from different disciplines of study; most of them were students specializing in Medicine, who enrolled in one section, and the other section comprising 50 students who were from different majors: Management, Engineering, and Information Technology (IT). The questionnaire was distributed to the students after their Face-to-Face meetings in the laboratories of the Information Technology College at the end of the semester of the academic year 2016-2017. The completed questionnaire was analyzed by using SPSS version 16.0.

**Data Analysis**
Table (1) presents the items responded by the students using a Likert scale of 1-4, scale, being: 1-Strongly disagree, 2- Disagree, 3- Agree, and 4- Strongly agree. The number of items in the questionnaire was 10. The responses received on scales (1) and (2) were categorized as negative responses. However, the answers received on scales (3) and (4) were classified as positive responses.

**Discussion of Findings**
The collected data on cognitive presence towards the use of the BL environment in language learning is shown in Table 1. The critical constructs in the ten items, namely *problem solver, think critically, easily understand, different viewpoints, participate in discussions, self-reliant, construct explanations, express opinions, to study using BL,* represent cognitive elements; hence it qualifies to be used to measure cognitive presence in the BL environment. The findings indicate that (40.8 %) of the participating student positively agree and (7.5 %) of the students strongly agree that they "became a better problem solver." This result indicates that students were able to solve problems when using BL environment, which allowed most of them (52.8 %) to think critically, and which helped more students, (61.4 %) of the participants, understand conversation using this approach, BL, that made them better problem solvers. This finding is associated with what Gutiérrez-Santiuste et al. (2015) suggested that meaning and understanding are both basic concepts in the creation of cognitive presence for learning outcomes.

Table 1. *Student responses to cognitive presence questionnaire*

| | Items | Negatively Responded (%) | | Positively Responded (%) | |
|---|---|---|---|---|---|
| 1 | I became a better problem solver. | 16.5 | 35.2 | 40.8 | 7.5 |
| 2 | This approach allowed me to think critically. | 2.6 | 25.4 | 52.8 | 19.2 |
| 3 | I could easily understand conversation using BL environment. | 3.1 | 19.2 | 61.4 | 17.3 |

| 4 | I felt motivated to explore content-related questions | 1.5 | 20.5 | 59.6 | 18.4 |
| 5 | BL helped me see different viewpoints and broaden mine. | 2.5 | 20.6 | 60.4 | 16.5 |
| 6 | I could easily participate in discussions using BL environment. | 1.4 | 16.2 | 61.8 | 20.6 |
| 7 | I felt more self-reliant as a result of the content learned in the course | 3.1 | 20.5 | 58.5 | 17.9 |
| 8 | Learning activities helped me construct explanations/solutions. | 1.3 | 13.5 | 70.7 | 14.5 |
| 9 | I felt that BL helped me express my opinions clearly | 1.4 | 7.3 | 72.7 | 18.6 |
| 10 | I prefer to study using BL environment. | 1.0 | 8.5 | 75.3 | 15.2 |

To the item on, *I felt motivated to explore content-related questions*, the majority of the students responded positively (61.4 %) agree and (17.3 %) strongly agree. This result indicates that students were able to explore content-related questions as most of (60.8 %) *could easily participate in discussions* motivated by using the BL environment. The table also showed that (60.4 %) of the students agree that *BL helped them see different viewpoints and broadened their minds*, which indicates that the students were able to work on varying perspectives. They were (82.4 %) who were able to *participate in discussions easily* and *express their opinions clearly* when the BL environment was applied. This result is also supported by Resnick, (1987), who indicated that cognitive presence includes making inferences, observing connections, and verifying better results, which help learners to explore better (Lehman & Conceicao, 2010).

Further, the Table shows that (70.7 %) of the students positively agree that learning activities employed by the BL approach helped them *construct explanations and solutions* to the problems they encountered through the learning process (Lehman, 2010). And finally, the statement *I prefer to study using BL environment* received highly positive responses, a total of 90.5 % of the students, which indicates that the majority of the participating students would rather use the BL environment than use the traditional approach in learning the oral skills of the language. The findings showed high responses, which might be attributed to that fact that most students were from Faculty of Medicine, Faculty of Engineering, and IT College. Those students obtained high scores in their school exams and public exams, which may have been a prerequisite for admission in these faculties that require very high scores, as is known. This result also suggests that if the students were from other different majors, the results of the study might have been changed.

The findings of the present study have shown that cognitive presence is significant in applying the BL environment, which can improve not only the students' competence, but also their performance in language learning. Students were able to acknowledge the benefits of the BL environment in respect to the oral skills. The majority of the students responded positively to employing the BL approach into language learning, the oral skills in particular. They appreciated

particularly authentic features of the use of BL activities, and the opportunities for interaction and collaboration with other students in the class. They perceived facilitating learning environment and experienced an innovation to the traditional face-to-face classroom teaching. Therefore, more emphasis should be given to cognitive presence for the success of online contributions. This study is also prepared with the foresight that students would provide positive responses to the cognitive presence in a BL environment, which has undoubtedly become significant in the learning process. Further, such a learning environment has positively brought about new challenges when being utilized effectively.

## Conclusion

This study is limited by the sample size used, which is two sections of English 101 at BAU in Jordan. Hence the generalization of the results may not apply to other institutions or faculties. It is hoped that future research will be using random sampling, so that the predictive value of cognitive presence can be generalized. Besides, more studies on the effectiveness of BL are needed on students from other faculties and colleges like Faculty of Education, Faculty of Arts, Faculty of Law, and others. The study also recommends that further studies be in need focusing on the instructors' attitudes towards using BL environment in language learning at universities. However, we should not lose sight that the instructors' role in the BL would play an important role they would need to initiate the discussion.

To continually support the cognitive presence, psychology and social presence are equally important. Besides, the learning resources must be professionally designed to offer the kind of cognitive constructs to lead to healthy online learning. All these can be a reality to enhance the English language when there is a real communication supported by meaning feedback to build a sense of community in the online presence.

## About the Authors:

**Dr. Jibrel Harb** is an Assistant professor of Linguistics at English Language Department, Faculty of Arts and Sciences at The World Islamic Sciences & Education University (WISE) in Jordan. He is also the Director of Language Centre. His research interests include Semantics, Sociolinguistics, Discourse Analysis, Translation, Morphology, Syntax, Language Learning and Acquisition.

**Dr. Pramela Krish** is an Associate professor of Applied Linguistics at the Centre of Language Studies and Linguistics, Faculty of Social Sciences and Humanities at, Malaysia. Her research interests include distance language learning, technology enhanced language learning and teacher professional development.

## References

Akyol, Z., & Garrison, D. R. (2011). Understanding cognitive presence in an online and blended community of inquiry: Assessing outcomes and processes for deep approaches to learning. *British Journal of Educational Technology, 42*, 233-250. doi: 10.1111/j.1467-8535.2009.01029.x

Akyol, Z., Garrison, D. R. & Vaughan, N. (2012). The development of a metacognition questionnaire for online and blended communities of inquiry. *Paper presented at the Annual Meeting of the American Educational Research Association*. Vancouver.

Akyol, Z., Garrison, D. R. & Vaughan, N. (2012). The development of a metacognition questionnaire for online and blended communities of inquiry. *Paper presented at the Annual Meeting of the American Educational Research Association*. Vancouver.

Fabro, K. G., & Garrison, D.R. (1998). Computer conferencing and higher–order learning. *Indian Journal of Open Learning, 7*(1), 41–53.Garrison, D.R., & Anderson, T. (2003). *E–learning in 21st century: A framework for research and practice*. London: Routledge Falmer.

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text–based environment: Computer conferencing in higher education. *Internet and Higher Education, 11*(2), 1–14. doi:10.1016/S1096-7516(00)00016-6

[6]Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *The American Journal of Distance Education, 15*(1), 7–23.

Gunawardena, C.N (1995). Social presence theory and implications for interaction collaborative learning in computer conferences. *International Journal of Education Telecommunications 1*(2/3), 147-166

Gunawardena, C. N., Lowe, C. E., & Anderson, T. (1997). Analysis of a global online debate and the development of an interaction analysis model for examining social construction of knowledge in computer conferencing. *Journal of Educational Computing Research, 17*(4), 397–431.

Gutiérrez-Santiuste, E., Rodríguez-Sabiote, C., & Gallego-Arrufat, M-J. (2015). Cognitive presence through social and teaching presence in communities of inquiry: A correlational–predictive study. *Australasian Journal of Educational Technology, 31(*3), 349-362.

Harasim, L., Hiltz, S. R., Teles, L., and Turoff, M. (1995). *Learning networks: A field guide to teaching and learning online*. Massachusetts: The Massachusetts Institute of Technology Press.

Jeremiah, K. (2012). *Understanding approaches to teaching critical thinking in high school classrooms*. (Unpublished doctoral dissertation). Minneapolis, MN: Walden University.

Lehman, R. M., & Conceição, S. C. O. (2010). *Creating a Sense of Presence in Online Teaching: How to 'Be There' for Distance Learners*. San Francisco: Jossey-Bass.

Matheson, R., Wilkinson, S. C., & Gilhooly, E. (2012). Promoting critical thinking and collaborative working through assessment: Combining patchwork text and online discussion boards. *Innovations in Education and Teaching International, 49*(3), 257–267. doi:10.1080/14703297.2012.703023

Pramela, K., Maros, M., & Stapa, S.H. (2012). Sociocultural and Social Presence in an online Learning Environment. Gema Online. *Journal of Language Studies*, (*12*(1) (201-213).

Redmond, P. (2011). *Exploring teaching and cognitive presence in blended learning: promoting pre-service teachers' critical thinking*. [Thesis (PhD/Research)]

Resnick, L. B. (1987). *Education and learning to think*. Washington, WA: National Academy Press.

Richardson, J., & Swan, K. (2003). Examining social presence in online courses in relation to students' perceived learning and satisfaction. *Journal of Asynchronous Learning Networks*, *7*(1), 68-88.

Shea, P., Li, C. S., & Pickett, A. (2006). A study of teaching presence and student sense of learning community in fully online and web-enhanced college courses. *Internet and Higher Education*, *9*(1), 175-190. doi: 10.1016/j.iheduc.2006.06.005

Shea, P., & Bidjerano, T. (2009). Community of inquiry as a theoretical framework to foster "epistemic engagement" and "cognitive presence" in online education. *Computers & Education, 52*(3), 543–553. doi:10.1016/j.compedu.2008.10.007

Twigg, C. (2004). *Improving learning and reducing costs: lessons learned from round II of the Pew Grant program in course redesign*. The Learning MarketSpace.