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Investigating the Communities of Inquiry in Blended Learning Environments

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ABSTRACT: *The purpose of this paper is to investigate how the Community of Inquiry supports deep approaches to learning and especially within blended learning contexts. The research was conducted through quantitative methods. For the inquiry a questionnaire was delivered to participants in electronic form. All the participants were students from three universities in Belgium (Flanders and Capital Region) – only the departments that used blended learning within their teaching strategies. The survey was conducted from November 2014 until June 2015. The results of the inquiry agree with international studies that within blended environment, Cognitive Presence is highly related with deep learning (Akyol & Garrison, 2011; Akyol, Garrison, & Ozden, 2009; Garrison & Cleveland- Innes, 2005). Though, further research should be conducted, focusing on linking quantitative comparatives of the development of education and learning approaches.*

KEYWORDS: Blended learning, community of inquiry, deep learning approaches

INTRODUCTION

The world we are living in constantly changes. There are new findings that generate and establish in fast rhythms and that happens because of globalization. The globalization makes people able to think in a rational and wider way, to seek for bigger opportunities and what they could benefit out of them in ways that they would be provided with speed, efficacy, effect and, of course, comfort. Through globalization people can create new ideas, values, identities, practices, and movements. When people desire to adjust to this new reality of an orientation towards technology, they need to get along with an environment that, if not all, most of the consequences are based and affected by technology (Sethy, 2008). Therefore, there is the conclusion that within all these changes education is affected too. Education is not only affected by technology but even so the technology has become an important part of education. There is no reason to ask ourselves whether to use technology or not. This question is no longer compatible. The real question and the real point of any conversation on technology is how it should be used so that all would get the best out of it (Sharpe, Benfield, Roberts, & Francis, 2006).

The evolution of technology and the effort to combine it with pedagogical approaches – mainly the efforts were around constructivist approaches like Dewey's (1938) – ended up creating new forms of education such as online and blended learning (Akyol, Garrison & Ozden, 2009; Bleed, 2001; Garrison & Kanuka, 2004; Pregot, 2013; Prilluck, 2004; Staker & Horn, 2012; Vaughan, 2010) and the presentation of Communities of Inquiry framework (Garrison, Anderson, & Archer, 2000). Due to recent COVID – 19 pandemic and the lockdown, there was a global change of education which led to its full transformation. All academic levels shifted their way of delivery of education in both synchronous and asynchronous learning experience via technological means (Batista-Toledo & Gavilan, 2022). In order to achieve a more complete learning environment, deep learning approaches were mentioned as important too, to perfect an integrated pedagogical package that leads to better ways of teaching as well as learning – obtaining full and clear knowledge. The real necessity, in order to have real results on deep learning within online and blended learning environments, is to focus on the actual learning outcomes and how to collect and evaluate them correctly (Akyol & Garrison, 2011). The community of Inquiry provides a lot into online and blended environments. Mainly what it provides is a good structure and clear instructions because those interactive environments can be really complicated (Garrison & Anderson, 2003). The results of studies, which depend on students' perception of the quality of online and blended environments, have been taken under serious consideration in order to be linked to student satisfaction and obtained knowledge (Akyol & Garrison, 2011; Richardson & Swan, 2003; Shea, Li & Pickett, 2006).

Blended Learning

The increased need of technology usage in education has formulated new means of teaching such as online and blended learning (BL). Covid-19 has compelled educators to change their landscape for teaching and learning in higher education. This new landscape combines physical and virtual environments known as blended or hybrid learning models (Usmani, 2021, p. 338). Blended learning can be both simple and complex as well (Garrison & Kanuka, 2004). Online learning is a method of learning delivered by using asynchronous communication technologies; blended learning is the integration of face-to-face and online learning (Akyol, Garrison, & Ozden, 2009, p. 65).

Ron Bleed (2001) argues, though, that this is not a sufficient definition for blended learning. He suggests that blended learning should be viewed as an opportunity to reform the way of courses development, schedule, and delivery in higher education through combining physical and virtual instruction (Vaughan, 2010). According to Staker and Horn (2012), from a student's perspective blended learning (BL) is a formal education program in which a student learns at least in part through online delivery of content and instruction with some element of student control over time, place, path, and/or pace and at least in part at a supervised brick-and-mortar location away from home" (p.3). Even if the school itself is not offering online or blended courses, students may still experience BL if they are engaged in a formal online learning program on their own while also attending a brick-and-mortar school. They are participating in the combination of both experiences, regardless of whether they initiated the convergence, or their school did (Staker & Horn, 2012, p. 3).

The effectiveness of blended learning is based on its ability to facilitate a community of inquiry. What the community provides is the stabilization, the cohesive influence that balances the open communication and the limitless access for information on the internet. Also, communities transfer free and open dialogue, critical debate, negotiation, and agreement which are the indication of higher education. Blended learning has the ability to facilitate these conditions and it also adds a significant reflective element with numerous modes of communication to apt precise learning needs (Garrison & Kanuka, 2004).

Blended learning as an instructional model, that comprises teaching presence, social presence, and cognitive presence, is an admirable way to deliver instruction. The type of instruction used in blended learning offers course content which has designed to stimulate enthusiasm and instill interest (Pregot, 2013, p. 321). In comparison to a traditional class, blended learning has persistently higher insight in participants' responses which allows more creative and interactive work in class (King, 2002). What are also quite common in blended learning are the differentiation of instruction and the development of a setting plan to meet students' plan (Pregot, 2013). A blended course can help students to develop in an upper degree their critical thinking skills, their team building and their social interaction (Prilluck, 2004). Furthermore, students can feel through blended courses the teacher presence increased (Pregot, 2013). According to Graff (2008) students who were disposed to intuitive cognitive styles indicated poor sense of classroom community and also, they doubted about blended educational practice. That suggests that students that are disposed to intuitive thinking work in more individual context. On the contrary students that used blended model, revealed more confidence holding the content and were more satisfied with the use of visual pictures that online-instructor offered (Pregot, 2013).

Community of Inquiry (CoI)

The initiation of this framework can be seen in the work of John Dewey (1938), and it is dependable in constructivist approaches to learning in higher education. This framework has reproduced with the online learning (Garrison, Cleveland-Innes, Koole, & Kappelman, 2006). The structure of the community of inquiry framework has been also confirmed through factor analyses conducted by Garrison, Cleveland-Innes, and Fung (2004), Arbaugh (2007), and Arbaugh and Hwang (2006). A more detailed analysis of the educational and transactional issues requires a theoretical framework that can provide order and simplicity to the complexities of online learning (Garrison, 2007). One of the first frameworks that identified both social and cognitive dimensions of online learning was provided by Henri. According to Henri (1992) his model appears capable of promoting and supporting a collaborative process and developed to highlight five dimensions of the learning process; participation, interaction, social, cognitive, and metacognitive (Henri, 1992). Henri's work is the one that inspired (Figure 1), the community of inquiry framework (Garrison, 2007). This framework is consisted of three elements; social, teaching, and cognitive presence, and also has categories and indicators to define each presence and to guide the coding transcripts (Figure 2) (Garrison, Anderson, & Archer, 1999).

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Figure 1
Community of Inquiry Framework (Garrison, 2007, p. 62)

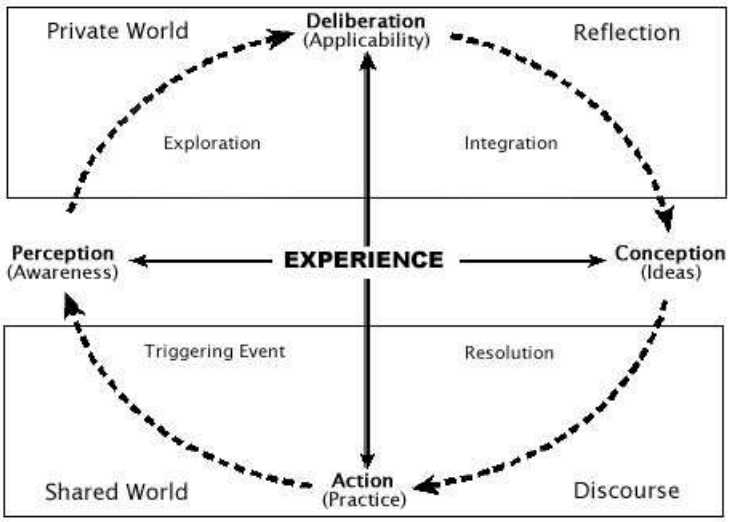

Figure 2
Practical Inquiry Model (Garrison, 2007, p. 63)

The model outlines conceptual elements essential to successful knowledge construction in collaborative online environments. The frameworks theorize online knowledge building as a result of collaborative work among active participants in learning communities characterized by instructional orchestration appropriate to the online environments (teaching presence) and a supportive collegial online setting (social presence) (Shea & Bidjerano, 2010). The

framework is also a viable theory for both understanding the dynamics and potentials of learning in online and blended learning contexts as well as developing effective learning communities. Nevertheless, there might be some external factors that can affect the development of each presence, which actually can affect the learning experience (Akyol, Garrison, & Ozden, 2009). Also, one of the characteristics of the community of inquiry (Lipman, 1991) is that members question one another, demand reasons for beliefs, and point out consequences of each other's ideas – thus creating a self-judging community when adequate levels of social, cognitive and teacher presence are evident.

Social Presence

The interest of the online learning initially was mostly social presence. Social presence is described as the ability to project oneself and establish personal and purposeful relationships (Garrison, 2007, p. 63). The primary concerns occur at the intersection of social and cognitive presence. The three main aspects of social presence are: effective communication, open communication, and group cohesion (Garrison, 2007). Social presence is about the participants having the ability to; associate with the community; to communicate decisively in an environment of trust; and to develop interpersonal relationships by presenting their personal nature (Akyol, Garrison, & Ozden, 2009).

Social Presence: Online and Blended Courses

Transcripts analysis of online discussions shown more social presence indicators in the messages that online course students posted, compared to the blended course students (Akyol, Garrison, & Ozden, 2009). According to the survey of Akyol, Garrison & Ozden (2009), students have high perceptions of their presence in both online and blended courses. However, the students in the blended course have a little higher perception of all the students compared to those in the online course. Also, in the blended course, most of the students determined their satisfaction with the level of social presence. Students in both courses expressed that social presence formed an environment comfortable enough for them to share ideas, to express their views, and to collaborate. Furthermore, according to the students, in small groups social presence was of higher quality. Especially the blended course's students indicated that small class size reduced the amount of time that was needed to develop social presence. According to the instructor, though, there was no remark of any big difference in terms of social presence. However, it is remarked that there were different forms of social presence in each course (Akyol, Garrison, & Ozden, 2009).

Cognitive Presence

Cognitive presence is defined as the exploration, construction, resolution and confirmation of understanding through collaboration and reflection in community of inquiry (Garrison, 2007, p. 65). In terms of cognitive presence, the main issue that worth to be explored more is related to the progressive development of inquiry in an online learning environment. Cognitive presence's definition is in terms of a sequence of practical inquiry where participants pass purposely from understanding the problem/issue to exploration, integration, and application. Integration and resolution are more demanding than exploration and as a result more time is necessary for reflection (Garrison, 2007). Cognitive presence is described by Garrison,

Anderson and Archer (2001) as the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry.
Cognitive presence is operationally defined through the practical inquiry model, which consists of four phases:

- Triggering event,

Triggering event is the initiation of the inquiry process through a problem or dilemma (Garrison & Anderson, 2003). Also, as Garrison et al. (2000) described, a triggering event is a state of dissonance of feeling of unease resulting from an experience (p.21).

- Exploration

The second category of the cognitive presence is exploration, which is the process of understanding the nature of a problem then searching for relevant information and possible explanations (Garrison & Anderson, 2003). Exploration is regarded as searching for clarification and attempting to orient one's attention (Garrison, Anderson, & Archer, 2000, p. 21).

- Integration,

The third category of practical inquiry is integration, which involves a focused and structured construction of meaning (Garrison & Anderson, 2003). It also involves reflecting on the way how new discovered information and knowledge can be integrated into a coherent idea or concept (Garrison, Anderson, & Archer, 2000).

- Resolution, (Garrison & Anderson, 2003).

The resolution of the dilemma or problem is the fourth category. It is the resolution of a problem by constructing a meaningful framework or by discovering specific solutions (Garrison & Anderson, 2003). Garrison and Anderson (2003) suggest that the results from the resolution phase often "raise further questions and issues, triggering new cycles of inquiry, and, thereby, encouraging continuous learning (p.60).

Teaching Presence

Teaching presence, according to Anderson, Rourke, Garrison, and Archer (2001) is the design, facilitation and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes (p.5).
Using the word 'teaching' instead of 'teacher' it is emphasized the possibility to distribute the roles and the responsibilities of a teacher between the participants (Akyol, Garrison, & Ozden, 2009). Teaching presence has three distinct categories: design, facilitation, and direct instruction, and is an important determinate of student satisfaction, perceived learning, and sense of community. Also, teaching presence supports social and cognitive presence as well as has practical implications for a community of inquiry (Garrison, 2007).

Teaching Presence: Online and Blended Courses

As stated in Akyol et al.'s (2009) survey, none of the messages in both online and blended courses were coded as teacher presence's category of design and organization. On the contrary, online course discussions compared to the blended course included more facilitating discourse and direct instruction indicators. Yet, these variances were not statistically important (Akyol, Garrison, & Ozden, 2009).

Community of Inquiry (CoI) in Blended Learning

The focus of inquiry in blended learning program was on the connection between one's teaching practice and student learning. Community of inquiry (CoI) framework was used to guide the inquiry process in the blended learning program. When this model is applied to faculty development context, the focus of cognitive presence becomes an inquiry into teaching practice. The ability of the community to support and sustain this inquiry forms the social presence. The opportunities for blended (face-to-face and online learning) support encapsulate the teaching presence (Vaughan, 2010).

Deep Learning Approaches

Reading strategies, according to Marton and Säljö (1976) are separated in deep and surface learning approaches. When students are preparing themselves for tasks that acquire high demand of studying, they take two different tactics. Those using deep learning approaches read for deep and overall understanding and meaning. However, those who use surface approaches to learn focus on isolated, disconnected facts and sterile memorization.

Deep learning approaches are referring to how students confront specific learning tasks. Surface and deep approaches are recognized to be different levels of processing (Marton & Säljö, 1976). Deep learning is contrasting with the surface learning. Deep learning is about the analysis of new ideas which are connected with principles and concepts already obtained by the student. Therefore, through this teaching level, students are led to understanding and long-term reservation of concepts. Surface learning, on the other way, is sterile memorization and perceiving information as isolated facts. There is, though, a third learning approach, the strategic learning which is a well-organized form of surface approach but in this approach, student focuses on obtaining good marks (Entwistle & Ramsden, 1983). The learning process as well as the learner is highly influenced by the learning context (Kelly, 2000).

Student learning conceptions and approaches to learning are influenced by personal experiences within the cultural context, and individual intentions versus the contextual demands." (Zhu, Valcke, & Schellens, 2008, p. 121.). Different actions are performed and those actions within contexts are the ones that highly influence student learning (Van Rossum, Deijkers, & Hamer, 1985). Knowledge as a domain is a very important if not the most important factor in the learning context (Entwistle & Ramsden, 1983).

METHODOLOGY

For the research have been used mixed methods – qualitative and quantitative research. Both data assembled from qualitative and quantitative research collected at the same time and are equally weighted. The advantage of this procedure is that the strengths of one method offset the weakness of the other. During the research the research questions were answered. This happened through investigating the literature already existing as well as completing a survey.
The survey took place in Belgium within three universities in Flanders and in Brussels region. The target group was higher education students from the various departments of Belgium's Universities. The research focused on what extend the three elements of Community of Inquiry

– social, cognitive, and teaching presence – have an impact on deep learning approaches in higher education students. The focus on those three universities occurred because of the fact that some of their departments were using blended learning as a teaching approach. The instruments used for this research were; a questionnaire on Approaches and Study Skills for Students already existing by Marton, Säljö, and Hattie (1996); and a questionnaire of Shea and Bidjerano (2010) on Communities of Inquiry and Blended Learning (the questionnaire can be found in the Appendix).

In university A the participants were all from the Faculty of Psychology and Education and specifically all master students. The participants that completed the survey were twenty (20). This faculty has been using blended learning some years now and – especially in master's program – almost all courses are blended. There were two more faculties in university A working in blended learning environment, though there were no participants in the survey. In university B were six (6) courses within blended learning environment. It was a pilot on blended learning for MS Office among sixty (60) participants that worked in the university. From those who participated only four (4) completed the survey. And finally, in university C there were twenty-one (21) blended courses in both masters and bachelor programs for working students. The participants that completed the survey were five (5) in this university. In total, both fully answered and incomplete, those who participated were forty-nine (49). Overall, the complete answers were twenty-nine (29) and incomplete twenty (20) (all data can be found in Table 1). Though the sample is quite small, it must be mentioned that the results converge towards same results as in international research. The distributed questionnaire was a combination of two existing ones. The questionnaire was generated in 'LimeSurvey', a free and open-source on-line survey application (LimeSurvey, 2015). It was distributed to all the faculties of all universities (A, B and C) electronically via e-mail, official webpage of each department and social networks. Also, the questionnaire was tested before application in one small group within university A. All procedure took place from November 2014 until June 2015. The instruments used for this research were; a questionnaire on Approaches and Study Skills for Students already existing by Marton, Säljö, and Hattie (1996); and a questionnaire of Shea and Bidjerano (2010) on Communities of Inquiry and Blended Learning (the questionnaire can be found in the Appendix). The survey on Communities of Inquiry included Teaching Presence (13 items), Social Presence (9 items) and Cognitive Presence (12 items). The survey on Approaches to Learning included 18 items. The items were measured on a 5-point Likert-type scale, where 1 was _strongly disagree' and 5 was _strongly agree'.
This study seeks to find to what extend Community of Inquiry in blended learning environments had impact on student deep approaches to learning by using a mixed methods design to assess the following research questions:

- To what extent Social Presence in Community of Inquiry in blended learning environments had an impact on student deep approaches to learning?
- To what extent Cognitive Presence in Community of Inquiry in blended learning environments had an impact on student deep approaches to learning?
- To what extent Teaching Presence in Community of Inquiry in blended learning environments had an impact on student deep approaches to learning?

RESULTS

Description of the sample and descriptive results

The results given below are from a survey conducted in Belgium from November 2014 until May 2015. Three universities of the state took part in this survey, one in capital region and two in Flanders. The population of the sample was 29 students (both bachelor and master students) that have experience with blended learning (see Table 1), of ages between 19 and 49. The total of participants were 49 students. Though, from them only twenty-nine (29) completed the survey. The other twenty (20) did not answer all questions and their answers were not included in the results. There were many limitations that might have degraded the quality of the research. The participants were really few, although many university students took part in the survey. The total population that had access to the survey was over 200 students, though most of them did not participate. Also, the participation was not obligatory which made it easier for someone to avoid being involved. Even though the questions might seem to be a lot, there was a timeframe given that the survey would be completed. The completion of the survey could have been achieved in less than five minutes since all questions were closed choice (one choice per question between 1 and 5 – 1 strongly disagree to 5 strongly agree). There might be different results with more participants, or, at least, might be considered more valid.

Quantitative Results

Table 1

Participants in Survey

Participated in survey	Gender: Male	Gender: Female	Total
Number	1	28	29

Following are the Reliability Analysis Results of Community of Inquiry and Deep Approaches to Learning (Table 2). Also, Table 3 concerns the item total statistics, Table 4 shows the Descriptive analysis of all Community of Inquiry (CoI) scales (Social Presence, Cognitive Presence, Teaching Presence) and Deep Learning Approaches, and finally Tables 5 and 6 present the correlation analysis among Community of Inquiry scales as well as Community of Inquiry scales and Deep Learning Approaches.

Ordinal responses were scored using the scale 1 (1 = Strongly Disagree) to 5 (5 = Strongly Agree). The analysis showed results that correspond with published research. Correlation among the CoI scales showed that Teaching Presence is more highly correlated with the Cognitive Presence (r=0.696) (Table 5). With the difference of rate, also in literature, among the CoI scales, Teaching Presence was the one highly correlated with Cognitive presence (Arbaugh, et al., 2008). When Deep Learning Approaches is added to the ratio, the analysis showed that Deep Learning Approaches highly correlated to Cognitive Presence (r=0.766) (Table 6).

Table 2

Reliability Statistics; all scales (sub-scales) of CoI and Deep Learning Approaches

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of items
.950	.953	11

For the statistic results to be reliable, over .70 (>.70) is acceptable. According to Table 2 the results are over .70 which means that it is a good scale, and a composite of the scale can be formed.

Table 3

Item Total Statistics in Reliability Analysis Results

Item Total Statistics

	Scale if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Crombach's Alpha
CoI – Teaching Presence; Design and Organization	35.94	52.559	.860	.903	.942
CoI – Teaching Presence; Facilitation	36.52	54.684	.783	.847	.946
CoI – Teaching Presence; Direct Instruction	36.42	54.550	.597	.738	.952
CoI – Social Presence; Affective expression	36.29	53.534	.729	.731	.947
CoI – Social Presence; Open Communication	36.12	51.783	.702	.896	.949
CoI – Social Presence; Group Cohesion	36.53	52.435	.792	.867	.945
CoI – Cognitive Presence; Triggering Event	36.27	55.224	.690	.910	.948
CoI – Cognitive Presence; Exploration	36.07	50.776	.853	.935	.942
CoI – Cognitive Presence; Integration	35.98	51.751	.861	.877	.942
CoI – Cognitive Presence; Resolution	36.16	52.217	.884	.921	.941
Deep Learning Approaches	36.53	54.330	.881	.951	.943

Below are given the Descriptive Statistics Results for the Community of Inquiry (CoI) and Deep Approaches to Learning.

Table 4

Descriptive Analysis of all scales of CoI (Teaching Presence, Social Presence, Cognitive Presence) and Deep Learning Approaches

Means and Standard Deviation of all CoI scales and Deep Learning Approaches					
		CoI – Teaching Presence	CoI – Social Presence	CoI – Cognitive Presence	Deep Learning Approaches
N	Valid	21	21	20	18
	Missing	8	8	9	11
Mean		3.49	3.43	3.68	3.35
Std. Deviation		.799	.951	.784	.699

Following is the Correlation Table (Spearman Correlation) among all Community of Inquiry sub scales, Teaching Presence, Social Presence and Cognitive Presence.

Table 5

Correlation Analysis among CoI scales;
Teaching Presence, Social Presence, Cognitive Presence

Spearman Correlation Analysis among CoI scales				
		CoI – Teaching Presence	CoI – Social Presence	CoI – Cognitive Presence
CoI – Teaching Presence	Correlation Coefficient	1.000	.381	.696
	Sig. (2-tailed)	.	.089	.001
	N	21	21	20
CoI – Social Presence	Correlation Coefficient	.381	1.000	.659
	Sig. (2-tailed)	.089	.	.002
	N	21	21	20
CoI – Cognitive Presence	Correlation Coefficient	.696	.659	1.000
	Sig. (2-tailed)	.001	.002	.
	N	20	20	20

According to the analysis the strongest correlation among the sub-scales of CoI is between Teaching and Cognitive Presence with r=.696, very close to p=.01.

If we correlate the CoI sub-scales (Teaching Presence, Social Presence and Cognitive Presence) with Deep Learning Approaches, the results are the following (Table 6).

Table 6

Correlation Analysis between CoI scales; Teaching Presence, Social Presence, Cognitive Presence, and Deep Learning Approaches

Spearman Correlation Analysis between CoI scales and Deep Learning Approaches					
		CoI – Teaching Presence	CoI – Social Presence	CoI – Cognitive Presence	Deep Learning Approaches
CoI –Teaching Presence	Correlation Coefficient	1.000	.381	.696	.400
	Sig. (2-tailed)	.	.089	.001	.100
	N	21	21	20	18
CoI – Social Presence	Correlation Coefficient	.381	1.000	.659	.451
	Sig. (2-tailed)	.089	.	.002	.060
	N	21	21	20	18
CoI – Cognitive Presence	Correlation Coefficient	.696	.659	1.000	.766
	Sig. (2-tailed)	.001	.002	.	.000
	N	20	20	20	18
Deep Learning Approaches	Correlation Coefficient	.400	.451	.766	1.000
	Sig. (2-tailed)	.100	.060	.000	.
	N	18	18	18	18

According to the analysis the strongest correlation is between Cognitive Presence and Deep Learning Approaches (r=.766).

Results to research questions

Statistically the research questions can be answered through the results that can be found in Table 5. More specifically, the answer to the first research question (—To what extent Social Presence in Community of Inquiry in blended learning environments has an impact on student Deep Approaches to Learning) is; the two variables have a positive relationship between them, r=.45, p=.01. The second research question was: —To what extent Cognitive Presence in Community of Inquiry in blended learning environments has an impact in student Deep Approaches to Learning. The analysis (see Table 5) has shown that the two variables have a positive relationship between them, r=.77. Of all the sub-categories of Community of Inquiry the Cognitive Presence has the strongest impact on Deep Approaches to Learning. The last research question was: —To what extent Teaching Presence in Community of Inquiry in Blended Learning environments has an impact in student Deep Approaches to Learning. The analysis from the survey (see Table 5) showed that the two variables have a positive relationship, r=.40. All categories of Community of Inquiry have a positive impact in student Deep Approaches to Learning, but the strongest relationship and higher impact is the one between the Cognitive Presence and Deep Learning Approaches.

Qualitative results

The results of the analysis confirmed a strong correlation between Cognitive Presence and Deep Learning Approaches. International literature also confirms such a strong correlation. The

qualitative findings can help to understand the correlation between the deep learning approaches and the Communities of Inquiry in blended learning environments. Even though the results of the survey confirm the correlation, there were many limitations and most importantly the number of participants which can make the results considered less valid.

DISCUSSION

The analysis of the data supports the validity of Social Presence, Teaching Presence and Cognitive Presence as measured by the Community of Inquiry. (Arbaugh, et al., 2008).The results of the analysis confirmed a strong correlation between Cognitive Presence and Deep Learning Approaches. International literature also confirms such a strong correlation. In the research conducted by Akyol and Garrison (2011), students commented on how much value they put on cognitive presence for structuring their knowledge. Abraugh et al. (2010) also support the correlation in their research. They also mention that students seem to feel challenged to engage in such courses because they can get involved at the same time in learning the course content and become more skilled in using technology (Lambert & Fisher, 2013). Same results can be viewed in Kucuk and Sahin (2013) research. While Teaching Presence and Social Presence also have a positive correlation with Deep Learning Approaches, Cognitive Presence shows the strongest one. Of course, the results support that correlation within blended learning environments. This is also an indication proved by international literature (Akyol & Garrison, 2011; Annand, 2011; Shea & Bidjerano, 2009).

Students that are involved in blended learning environments can develop more favorable perceptions and beliefs about their cognitive presence and learning in the context of blended virtual classroom. (Shea & Bidjerano, 2010, p. 1727). Research also shows comments from the instructors' point of view. Instructors could provide positive feedback connecting learning outcomes with Cognitive Presence (Akyol & Garrison, 2011; Akyol, Garrison, & Ozden, 2009). The results of correlation among the Community of Inquiry sub-categories showed that the strongest correlation was between Cognitive and Teaching Presence.

This is something that is also proved in international literature within blended learning environments (Akyol & Garrison, 2011; Annand, 2011; Rourke & Kanuka, 2009; Shea & Bidjerano, 2010). As Vaughan and Garrison (2006) states, online social presence is less spontaneous and more deliberate, that is not to say that social presence was not present, but that it was less frequent (p.10). Furthermore, according to Akyol et al. (2009), findings show that students that participated in blended learning courses had higher perceptions of teaching presence. Also, the cognitive presence was found high and perceived to be strong (Akyol, Garrison, & Ozden, 2009, p.13).

Analysis results seem to agree with international literature. Nonetheless the participants were not enough for the survey to be considered quite valuable. The limits, of course, were expected and are always expected when surveys take place and most of the time are out of the researchers' control. A quite important limitation is that each participant has to get involved for some time and not all suitable possible participants are always willing to provide that time

(Simon & Goes, 2013). However, even in such a small scale, the results were representative enough to confirm some valid results.

CONCLUSION

The concerns of Community of Inquiry framework have important theoretical and practical significance.

Understanding the role of social presence is essential in creating a community of inquiry and in designing, facilitating, and directing higher order learning (Garrison & Arbaugh, 2007, p. 168).

In order to have productive inquiry it is essential to establish such an environment in order to promote open communication and building group cohesion. Also concerning productive members of community, the community of inquiry needs to have clear expectation of the description of critical conversation. Participants need to acknowledge the academic objectives, the phase of inquiry, and the level of discourse (Garrison & Arbaugh, 2007).

Research has shown that student usually suggest that it is of high importance all presences of Community of Inquiry to be present and balanced. Though, cognitive presence seems to be the strongest and the one highly influencing deep learning, balancing those two (cognitive presence and deep learning approaches) within blended learning environments need the support of the two other presences (Akyol & Garrison, 2011). Although resent research supports the community of inquiry as a tight and coherent theory of online learning, the work needs to be supported by additional study, and this is something that a lot of writers and researchers agree on.

The purpose of this paper was to investigate the extent of which Community of Inquiry has an impact on student deep approaches to learning. The paper is a synthesis of international literature review and a survey that took part in Belgium. The findings of the survey were the expected ones, in relation to other findings in international research with only small divergence. Most importantly, as lot of researchers' report, within blended environment, Cognitive Presence is highly related with deep learning (Akyol & Garrison, 2011; Akyol, Garrison, & Ozden, 2009; Garrison & Cleveland- Innes, 2005). The limitations of the survey were also expected. The participants were very few, although there were a lot more students from those three Universities that could get involved. There might be a different result in case there were more participants, or, at least, the survey and the results might be considered more valid.

REFERENCES

Akyol, Z., Garrison, D., & Ozden, M. (2009, January 4). Development of a community of inquiry in online and blended learning contexts. *Procedia Social and Behavioral Sciences, 1*, pp. 1834-1838.

Akyol, Z., Garrison, R. D., & Ozden, Y. M. (2009, December). Online and Blended Communities of Inquiry: Exploring the Developmental and Perceptional Differences. *International Review of Research in Open and Distance Learning, 10*, pp. 65-83.

Anderson, T., Rourke, L., Garrison, D., & Archer, W. (2001, September). Assessing teaching presence in a computer conferencing context. *Journal of Asynchronous Learning Networks, 5*(2), pp. 1-17.

Arbaugh, J. (2007, April). An Empirical Verification of the Community of Inquiry Framework. *Journal of asynchronous learnign networks, 11*(1), pp. 73-85.

Arbaugh, J., & Hwang, A. (2006). Does "teaching presence" exist in online MBA courses? *The Internet and Higher Education, 9*(1), pp. 9-21.

Arbaugh, J., Cleveland-Innes, M., Diaz, S. R., Garrison, R. D., Ice, P., Richardson, J. .., & Swan, K. P. (2008). Developing a community of inquiry instrument: Testing a measure of the Community of Inquiry framework using a multi-institutional sample. *Internet and Higher Education*(11), pp. 133-136.

Batista-Toledo, S., & Gavilan, D. (2022, October 26). Implementation of Blended Learning during COVID-19. *Encyclopedia, 2*(4), pp. 1763-1772.

Bleed, R. (2001). A Hybrid Campus for the New Millennium. *Educause Review, 36*(1), pp. 16-24.

Dewey, J. (1938). *Experience and education.* New York: Collier Books.

Entwistle, N., & Ramsden, P. (1983). *Understanding Student Learning.* London: Croom Helm.

Garrison, D. (2007, April). Online Community of Inquiry Review: Social, Cognitive, and Teaching Presence Issues. *The Sloan Consortium, 11*(1), pp. 61-72.

Garrison, D., & Anderson, T. (2003). *E-Learning in the 21st Century: A Framework for Research and Practice.* London: Routledge.

Garrison, D., & Arbaugh, J. (2007, April 5). Researching the community of inquiry framework: Review, issues, and future directions. *Internet and Higher Education, 10*(3), pp. 157-172.

Garrison, D., & Kanuka, H. (2004, December 19). Blended learning: Uncovering its transformative potential in higher education. *Internet and Higher Education*, pp. 95-105.

Garrison, D., Anderson , T., & Archer, W. (2000). Critical Inquiry in a Text-Based Environment: Computer conferencing in higher education. *Internet and Higher Education, 11*(2), pp. 1-34.

Garrison, D., Anderson, T., & Archer, W. (1999). Critical Inquiry in a Text-Based Environment: Computer Conferencing in Higher Education. *The Internet and Higher Education, 2*(2-3), pp. 87-105.

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

Garrison, D., Cleveland-Innes, M., & Fung, T. (2004, April). Student Role Adjustment in Online Communities of Inquiry: Model and Instrument Validation. *Journal of asynchronous learning networks, 8*(2), pp. 61-74.

Garrison, D., Cleveland-Innes, M., Koole, M., & Kappelman, J. (2006). Revisiting methodological issues in transcript analysis: Negotiated coding and reliability. *The Internet and Higher Education, 9*(1), pp. 1-8.

Graff, M. (2008, Oktober). Individual differences in sence of classroom community in a blended learning format. *Journal of Educational Media, 28*(2-3), pp. 203-210.

Henri, F. (1992). *Computer Conferencing and Content Analysis* (Vol. 90). NATO ASI Series.

Kelly, L. (2000). Understanding Conceptions of Learning. *Proceedings from UTS Change in Educational Research Group.*

King, K. P. (2002). Identifying success in online teacher education and professional development. *Internet and Higher Education, 5*(3), pp. 231-246.

Lipman, M. (1991). *Thinking in Education.* Cambridge: Cambridge University.

Marton, F., & Säljö, R. (1976, February). ON QUALITATIVE DIFFERENCES IN LEARNING: I—OUTCOME AND PROCESS. *British Journal of Educational Psychology, 46*(1), pp. 4-11.

Marton, F., Säljö, R., & Hattie, J. (1996). Scoring Key for the Approaches and Study Skills Inventory for Students (ASSIST).

Marton, F., Säljö, R., & Hattie, J. (1996). Scoring Key for the Approaches and Study Skills Inventory for Students (ASSIST).

Pregot, M. V. (2013, May). The Case for Blended Instruction: Is It a Proven Better Way to Teach? *US-China Education Review, 3*(5), pp. 320-324.

Prilluck, R. (2004, August). Web-Assisted Courses for Business Education: An Examination of Two Sections of Principles of Marketing. *Journal of Marketing Education, 26*(3), pp. 161-173.

Sethy, S. (2008, July). DISTANCE EDUCATION IN THE AGE OF GLOBALIZATION: An overwhelming Desire towards Blended Learning. *Turkish Online Journal of Distance Education, 9*(3), pp. 29-44.

Sharpe, R., Benfield, G., Roberts, G., & Francis, R. (2006). *The undergraduate experience of blended e-learning: a review of UK literature and practice.* Heslington: Higher Education Academy (HEA).

Shea, P. J., Pickett, A. M., & Pelz, W. E. (2003, July). A Follow-Up Investigation of "Teaching Presence" in the SUNY Learning Network. *Journal of Asynchronous Learning Netwoeks, 7*(2), pp. 61-80.

Shea, P., & Bidjerano, T. (2010). Learning presence: Towards a theory of self-efficacy, self-regulation, and the development of a communities of inquiry in online and blended learning environments. *Computer and Education, 55*, pp. 1721-1731.

Shea, P., & Bidjerano, T. (2010). Learning presence: Towards a theory of self-efficasy, self-regulation, and the development of communities of inquiry in online and blended learning environments. *Computers & Education, 55*, pp. 1721-1731.

Shea, P., & Bidjerano, T. (2010). Learning presence: Towards a theory of self-efficasy, self-regulation, and the development of communities of inquiry in online and blended learning environments. *Computers & Education, 55*, pp. 1721-1731.

Simon, M. K., & Goes, J. (2013). Scope, Limitations, and Delimitations. In *Dissertation and scholarly research: Recipes for success.*

Staker, H., & Horn, M. B. (2012). *Classifying K-12 blended learning.* San Mateo: Clayton Cristensen Institute.

Usmani, S. (2021). COVID-19 Pandemic and Blended Learning: A Quantitative Assessment of Revised Community of Inquiry (RCoI) Framework. *Journal of Education and Educational Development, 8*(2), pp. 338-358.

Van Rossum, E., Deijkers, R., & Hamer, R. (1985, December). Students' learning conceptions and their interpretation of significant educational concepts. *Higher Education, 14*(6), pp. 617-641.

Vaughan, N. D. (2010). A blended community of inquiry approach: Linking student engagement and course design. *Internet and Higher Education, 13*, pp. 60-65.

Vaughan, N., & Garrison, D. (2006, December). How Blended Learning Can Support a Faculty Development Community of Inquiry. *Journal of Asynchronous Learning Networks, 10*(4), pp. 139-152.

Zhu, C., Valcke, M., & Schellens, T. (2008, July 5). A cross-cutlural study of Chinese and Flemish university students: Do they differ in learning conceptions and approaches to learning? *ScienceDirect*, pp. 120-127.