Inovasi Kurikulum

Student's learning experiences in an online learning environment using Garrison's CoI framework

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ABSTRACT

This study was conducted to examine the implementation of online learning in distance education utilizing the *Community of Inquiry* (CoI) framework, as introduced by Garrison. The CoI framework consists of three core elements essential in implementing online learning: social presence, cognitive presence, and teaching presence. These components are crucial for the success of online learning modalities. This is due to the nature of online learning, where instructors and learners are not present at the exact location or time, necessitating a 'binding element' in the educational process to ensure effective management of learning activities. Consequently, this research involved distributing questionnaires to 317 participants enrolled in online courses at Universitas Terbuka Indonesia. The results obtained from this study were classified as high, indicating that all three CoI elements achieved high ratings. Specifically, the aspect of cognitive presence was dominated by resolution capabilities. In social presence, the open communication capacity scored higher than the affective and cohesive components. Meanwhile, facilitating discourse was rated higher in the teaching presence domain than instructional design, organization, and direct instruction. Based on these findings, it can be concluded that learning across these three aspects is considerably high in the students' online learning experiences.

ABSTRAK

Penelitian ini dilakukan untuk mengetahui bagaimana pembelajaran daring pada pembelajaran jarak jauh melalui pendekatan Community of Inquiry (CoI) framework yang diperkenalkan oleh Garrison. CoI memiliki tiga unsur yang menjadi perhatian dalam implementasi pembelajaran daring, yaitu social presence, cognitive presence, dan teaching presence. Ketiga unsur ini menjadi komponen penting dalam keberhasilan pembelajaran yang bersifat daring. Mengapa demikian? Karena pembelajaran daring adalah pembelajaran dimana antara pengajar dan peserta tidak berada pada tempat dan waktu yang bersamaan. Sehingga jika tidak ada "pengikat" dalam proses pembelajaran tersebut akan sulit untuk mengontrol pelaksanaan pembelajaran. Oleh karena itu, pada penelitian ini dilakukan penyebaran kuesioner kepada 317 peserta yang mengikuti perkuliahan pembelajaran daring di Universitas Terbuka Indonesia. Hasil yang diperoleh dari penelitian ini dalam kategori tinggi. Hal ini menunjukkan bahwa dari ketiga unsur CoI berada pada kategori tinggi, sspek cognitive presence didominasi oleh kemampuan resolution. Pada aspek social presence kemampuan open communication tinggi dibandingkan affective dan cohesive. Sedangkan pada aspek teaching presence facilitating discourse memiliki nilai lebih tinggi dibandingkan instructional design and organization dan direct instruction. Berdasarkan data tersebut dapat disimpulkan bahwa kehadiran pembelajaran dari ketiga aspek tersebut cukup tinggi dalam pembelajaran daring yang dialami oleh siswa.

Kata Kunci: Community of Inquiry; evaluasi pengalaman belajar mahasiswa; pembelajaran daring

INTRODUCTION

The advancement of technology has significantly influenced all aspects of life, including the field of education. In education, various aspects—such as the learning process—have undergone significant changes due to rapid technological progress. The learning process, which traditionally took place face-to-face in classrooms, has increasingly shifted to virtual or online formats (Flynn-Wilson & Reynolds, 2021; Yusny et al., 2021). Although society is still affected by the COVID-19 pandemic, online learning continues to occur frequently because teachers have become accustomed to and are adaptive toward online learning processes (Mooney et al., 2023).

Online learning remains ongoing in higher education institutions even though the impact of COVID-19 has declined. However, several challenges in online learning continue to pose obstacles to its implementation. These challenges include communication barriers, technological issues, ambiguity in basic concepts, boring learning methods, and weak curricula (Morrison-Smith & Ruiz, 2020). These conditions can potentially reduce students' motivation and academic achievement, necessitating proper management actions in the online learning process. In addition, online learning at the primary education level requires parental guidance to access learning platforms, understand learning materials, and complete assignments (Reimers et al., 2020). Sometimes, parents complain about the numerous educational system changes when helping their children understand the lessons (Arini & Wiguna, 2021).

The online learning process certainly has positive and negative impacts, especially on students. Research has shown that online learning can improve students' academic achievement, with findings indicating that student learning outcomes during online learning were higher than during face-to-face instruction (Nugraha et al., 2020). However, previous studies have also found that online learning can lead to lower levels of student understanding (Alfiaturrohmaniah et al., 2022). This is supported by other research indicating that online learning reduces student motivation, decreases student discipline in completing assignments, and can negatively affect learners (Hita et al., 2021; Fadilla & Nurfadhilah, 2022). Additional research has concluded that students' cognitive ability to apply learning material remains low despite using online learning designs (Nuraeni et al., 2020).

Through online learning, it is expected that meaningful learning experiences will emerge for both students and instructors. Within the Community of Inquiry (CoI) framework, online learning environments are anticipated to foster high levels of student learning engagement. Learning must be designed to be more engaging, interactive, and enjoyable to prevent learning loss. The Community of Inquiry (CoI) model can serve as a foundation for exploring how social presence among students and lecturers, cognitive presence, and teaching presence manifest in implementing online learning within the ICE Institute MOOCs environment. MOOCs have grown rapidly, as demonstrated by the increasing number of universities offering free access to courses that students can take from other institutions and the general public (Suharso et al., 2021).

The government's "Merdeka Belajar" or "Kampus Merdeka" policy has also motivated the public, including students, to enroll in various courses offered by institutions such as the ICE Institute, which provides a wide range of courses freely accessible to anyone, both domestically and internationally. Domestically, the Kampus Merdeka policy—developed by the Ministry of Education and Culture—aims to encourage the public and students to gain multidisciplinary knowledge to prepare for the workforce. This policy provides students the freedom to choose which courses to take, and it is expected to enhance the competencies of university graduates (Simatupang & Yuhertiana, 2021).

Internationally, the number of students taking courses through the ICE Institute currently stands at approximately 3,700, with 220 students having completed several courses from EdX (https://www.ut.ac.id/berita/2021/10/ice-institute-untuk-indonesia-satu). Although the institution is

relatively new, many students and lecturers have already participated in learning activities through ICE. However, there is still a lack of data showing how the learning process and learning experiences unfold for students and lecturers participating in ICE courses. Therefore, this study aims to investigate the perspectives of students and lecturers regarding their learning and teaching experiences while taking courses at ICE. The Community of Inquiry (CoI) framework will be employed to explore these perspectives to analyze how students and lecturers perceive their learning and teaching experiences within online learning.

LITERATURE REVIEW

Community of Inquiry

The Community of Inquiry (CoI) is an inquiry-based learning design that involves forming learning groups or communities. CoI is a collaborative inquiry that engages students in self-directed learning groups with instructor support (Kusuma et al., 2020). In this instructional design, students are guided to form a dynamic community in which they are responsible for constructing meaning and confirming understanding through active participation, contributions, and collaboration in the inquiry process. The CoI learning design focuses on students' online learning experiences, particularly their satisfaction with text-based, asynchronous, and online learning (Purwandari et al., 2022). The Community of Inquiry is conceptualized through teaching, social, and cognitive presence, aiming to achieve meaningful education through inquiry-based learning.

A Community of Inquiry is a learning group that engages in critical discussion and cooperative reflection to develop meaning and affirm understanding through mutual interaction. This learning model requires a higher degree of cognitive presence from students than social and teaching presence, thus contributing to positive learning outcomes (Yıldırım & Seferoglu, 2021). However, these three elements are interrelated and play equally important roles in enhancing the quality of learning, even though cognitive presence tends to be more dominant in the inquiry learning process. Social and teaching presence are supporting components that facilitate the learning process, while cognitive presence reflects students' ability to develop knowledge through communication (Purwandari et al., 2022). **Figure 1** shows these three elements are interconnected and collectively form a deep learning experience.
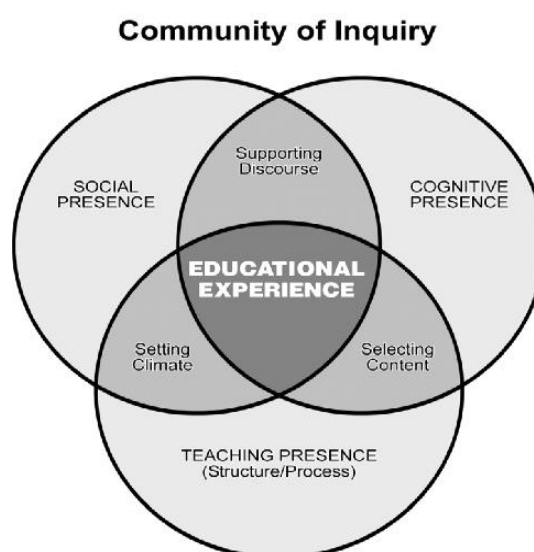
Figure 1. Concept of *Community of Inquiry*
Source: Garrison & Arbaugh (2007)

Furthermore, the three concepts of participation in the development of the Community of Inquiry (CoI) (**Figure 1**) are cognitive presence, social presence, and teaching presence. Cognitive presence refers to students' ability to construct and confirm meaning through inquiry-based learning (Garrison & Arbaugh, 2007). Social presence refers to students' ability to project their personal characteristics to communicate and build relationships within the community. Meanwhile, teaching presence involves designing, organizing, facilitating, and directing the social and cognitive processes to achieve optimal learning outcomes (Kusuma, 2020). **Table 1** presents the categories and indicators of the three elements of the Community of Inquiry (CoI), as follows:

Table 1. Elements, Categories, and Indicators of the Community of Inquiry (CoI)

Element	Category	Indicator
Cognitive Presence	*Triggering Event*	*Sense of Puzzlement*
	Exploration	*Information Exchange*
	Integration	*Connecting Ideas*
	Resolution	*Apply New Ideas*
Social Presence	*Effective Expression*	*Emoticons*
	Open Communication	*Risk-free Expression*
	Group Cohesion	*Encourage collaboration*
Teaching Presence	*Design & Organization Setting*	*Curriculum & Methods*
	Facilitating	*Discourse Sharing Personal Meaning*
	Direct	*Instruction Focusing Discussion*

Source: *Garrison & Arbaugh (2007)*

In addition, the use of the Community of Inquiry (CoI) can support students in building relationships with others to collaborate, communicate, and participate socially, thereby providing an enjoyable online learning experience (Ng, 2022). Online learning that uses the Community of Inquiry (CoI) instructional design can enhance students' skills and knowledge with the support of instructors, resulting in positive learning outcomes (Yıldırım & Seferoğlu, 2021). The presence of the Community of Inquiry (CoI) is important for shaping students' online learning experiences, as open communication can reduce the gap between students and instructors, improve academic abilities, and encourage active participation in learning activities (Banayo & Barleta, 2022; Grothaus, 2022; Purwandari et al., 2022).

Online Learning

Online learning refers to educational activities that utilize the internet as a means of interaction and a platform to facilitate instructional services (Fadilah, 2021). It is a form of learning supported and facilitated by the use of technology (Anugrahana, 2020). Furthermore, online learning allows educational activities to be conducted remotely via communication devices and internet connectivity (Fadilah, 2021). This form of learning enables students to study flexibly, anytime and anywhere, using the internet (Anggianita et al., 2020).

In Indonesia, online learning grew significantly in 2020 during the COVID-19 pandemic, which restricted face-to-face interactions between students and lecturers. As a result, teaching and learning activities shifted to digital platforms that allowed learning without physically attending the campus. Online learning enables real-time interaction between students and lecturers through various internet-connected platforms

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(Anggianita et al., 2020). Many digital platforms are available for online learning, such as Google Classroom, Google Meet, Zoom, and YouTube (Dewi, 2020). Social media, learning management systems (LMS), and educational websites can also be used as tools for online learning (Anim, 2020).

Online learning is an educational innovation integrating technological tools and the internet to deliver instructional content. Online learning resources can combine various learning materials such as documents, videos, images, and audio, which help students visualize, read, listen to, and understand the content. These learning resources play a critical role in determining the success of online learning; thus, they must be presented in an engaging way and tailored to students' characteristics to ensure that learning objectives are achieved (Anggianita et al., 2020).

In essence, online learning is a web-based learning that provides training and learning materials through the use of electronic devices integrated with the internet. Online learning encompasses principles that support the impact of online learning as follows (Sari et al., 2024):

1. Multimedia consisting of electronic devices and internet networks.
2. Information storage provides various information types according to students' needs, accessible anytime.
3. A collaborative platform that supports student collaboration in communication during the learning process.
4. An internet network that supports the learning process, allowing students to participate in learning effectively.
5. Enabling students to access learning materials from other platforms, not just from the online learning platform itself.
6. Good operational management that ensures online learning improves students' learning outcomes.

Online learning has many benefits that both students and instructors can experience, as follows (Fadilah, 2021):

1. It can build communication and discussions between students and instructors and between students themselves.
2. It facilitates communication between students, instructors, and parents.
3. It can be used as a medium for conducting exams and quizzes.
4. It allows for the easy delivery of visual or video materials to students.
5. It makes it easier for students to access learning materials.
6. It makes it easier for instructors to create exam or quiz questions anytime and anywhere.

In addition to its various benefits, online learning has its drawbacks, which are barriers to its implementation. The drawbacks of online learning include the following (Hasyim & Hayati, 2023):

1. Lack of interaction between students and instructors during the learning process.
2. Online learning platforms (Google Classroom, LMS) are not maximized; they are only used to assign tasks or exams when instructors are absent.
3. Unstable internet connections are a major barrier to online learning.
4. Misuse of study time, often occurring when students open other apps during online learning.
5. Lack of discussions in online learning via Zoom or class groups (WhatsApp).
6. Some students do not have the technology required to support the online learning platforms.

ICE Institute

ICE Institute is the Indonesian Cyber Education, an online education center developed by the Ministry of Education and Culture. ICE has provided various online courses from universities and online learning providers across Indonesia. The purpose of the ICE Institute is to facilitate the provision of quality education and simultaneously ensure the quality of online learning services and distance education. Students can use ICE to engage in independent learning activities and help develop participants' careers (https://icei.ac.id/tracks/about/). Currently, one can take various courses at the university level by selecting and registering as a participant at the ICE Institute. ICE Institute, as a marketplace for online courses in Indonesia, currently offers 1,381 courses from EdX and 165 courses from the ICE Institute consortium. The ICE Institute consortium consists of 14 higher education institutions in Indonesia and educational institutions.

METHODS

This research was conducted by distributing a questionnaire via Google Forms to students who have participated in online learning. The instrument developed consists of 22 questions based on the Community of Inquiry (CoI) concept. Community of Inquiry (CoI) includes social presence, cognitive presence, and teaching presence (Garrison & Arbaugh, 2007). The distributed questionnaire uses a Likert scale of 1-4. Before distribution, the instrument was first tested for validity and reliability.

The validity test used the Bivariate Correlation Pearson analysis technique. Based on the validity test results, the r-table value with 309 degrees of freedom was 0.11. As shown in the analysis results in Table xx, the correlation values for each item with its total construct or r-calculated are greater than the r-table value, so it can be concluded that each item is valid based on the Bivariate Correlation Pearson, or that each item supports its construct well.

Meanwhile, the reliability test on this instrument refers to the Composite Reliability theory with the formula:

$$\rho c = \frac{(\sum \lambda_i)^2}{(\sum \lambda_i)^2 + \sum_i var(\varepsilon_i)}$$

Where $var(\epsilon_i)$ It is the error variance of the item. It is known that the square of the total factor weights is shown in **Table 2**.

Table 2. Square of Total Factor Weights for Each Construct

Construct	Square of Total Factor Weights
Cogntive	218,95
Social	103,69
Teaching	224,4

Source: Author's Documentation, 2023

RESULTS AND DISCUSSION

Based on the data obtained from the data collection, a total of 311 students filled out the questionnaire, with the following distribution (**Table 3**):

Table 3. Respondent Data

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Aspect	Variable	Number (N)	Percentage (%)
Gender	Male	58	18,65
	Female	253	81,35
Field of Study	Science and Tech	23	7,2
	Social and Humanities	90	28,48
	Education	142	44,94
	Research Methods	39	12,34
	Others	22	6,9

Source: Research Results, 2023

The demographic data of participants in this study shows a significant majority of females, with 81.35% female participants compared to 18.65% male participants. Academically, the distribution shows a strong tendency in the field of Education (44.94%), followed by Social and Humanities (28.48%), Research Methods (12.34%), Science and Technology (7.2%), and others (6.9%). This profile highlights the dominant involvement of women in educational technology and those working in disciplines focused on education. As experts in the field of educational technology, this insight emphasizes the need to adjust the integration of technology and curriculum development to meet the interests and needs of this primary demographic group, thereby optimizing the effectiveness and inclusivity of education.

Measurement of Cognitive, Social, and Teaching Aspects from the Student's Perspective

The measurement of the Cognitive, Social, and Teaching aspects refers to the scores generated by students based on the choices: strongly agree = 4, agree = 3, disagree = 2, and strongly disagree = 1. For each indicator of each construct, the total score is calculated, then the average is computed and categorized based on **Table 4**.

Table 4. Categories Based on Average Score

Average(p)	Category
1 - 1,5	Very Low
1,51 - 2,5	Low
2,51 - 3,5	High
3,51 - 4	Very High

Source: Research Results, 2023

From these categories, the percentage of students in each category for the cognitive construct is presented in **Table 5**.

Table 5. Percentage of Students in Each Category for the Cognitive Construct

Indicator	Very High	High	Low	Very Low
Triggering Event	23,79 %	74,6 %	1,61 %	-
Exploration	27,97%	71,06%	0,96%	-
Integration	25,08 %	73,31 %	1,61 %	-

Indicator	Very High	High	Low	Very Low
Resolution	20,58 %	78,78 %	0,64 %	-

Source: Research Results, 2023

The Community of Inquiry (CoI) model depicts four progressive stages of collaborative learning: triggering event, exploration, integration, and resolution, as evidenced by graphical representations showing student engagement at each phase. Specifically, the Triggering Event (23.79%) serves as the starting point, sparking inquiry by introducing a problem or question. Next, the Exploration phase (27.97%) shows a slightly higher percentage of students actively researching and discussing the topic, indicating progress from the initial trigger. Similarly, the Integration phase (25.08%) underscores students' efforts to synthesize information and formulate solutions, with an equivalent percentage of students involved. However, the Resolution stage (20.58%) shows the lowest level of student involvement, suggesting challenges in applying acquired knowledge and drawing conclusions. While some students show progress, others appear lagging, indicating heterogeneous progress. Strategies such as reviewing the Triggering Event for clarity and engagement, providing scaffolding during Exploration and Integration, and fostering collaboration among students are recommended to enhance engagement and ensure successful completion of the Community of Inquiry (CoI) project.

Table 6. Percentage of Students in Each Category for the Social Construct

Social Presence	Very High	High	Low	Very Low
Affective	19,61 %	76,52 %	3,86 %	-
Open Communication	18 %	80,38 %	1,61 %	-
Cohesive	18,97 %	78,13 %	2,89 %	-

Source: Research Results, 2023

Based on **Table 6**, the Social Presence Element in online education has three categories: Affective, Open Communication, and Cohesive. Each of these categories falls within the "High" category. The Affective category (76.52%) indicates that most students can express many emotions during online learning. Additionally, the Open Communication category (80.38%) shows that students feel there is good communication between teachers and students, or between students, and they feel safe and encouraged to express themselves openly. However, there is still some hesitation in certain contexts or subjects. Finally, a strong group dynamic is observed in the Cohesive category (78.13%), fostering collaboration. This connection indicates that most students experience a positive social presence, which is essential for an effective online learning experience.

The percentage of students in each category for the Teaching Presence construct is shown in **Table 7**.

Table 7. Teaching Presence

Teaching Presence	Very High	High	Low	Very Low
Instructional Design and Organization	23,15 %	74,6 %	2,25 %	-
Facilitating Discourse	18,32 %	79,42 %	2,25 %	-
Direct Instruction	19,61 %	77,49 %	2,89 %	-

Source: Research Results, 2023

Based on **Table 7**, the Teaching Presence Element in online education has three categories: Instructional Design and Organization, Facilitating Discourse, and Direct Instruction. Each of these categories falls into the "High" category. The Instructional Design and Organization category shows that the online learning provided was conducted clearly according to the teaching method used. The Facilitating Discourse category also shows that online learning facilitates students to actively engage in discussions and effectively share insights. Finally, the Direct Instruction category indicates that the online teaching method used effectively focuses on discussions and helps students understand key concepts from the material presented.

Discussion

Online learning is ongoing, and various programs have been developed to support this learning process. Previous research found that online learning can help improve abilities related to the creative process and increase motivation to learn (Muzaini et al., 2021). Online learning is divided into two types: asynchronous and synchronous (Rehman & Fatima, 2021). The ICEI online learning system is asynchronous, designed for self-paced learning, as the Learning Management System (LMS) allows students to access materials and assignments asynchronously according to their individual learning time. However, various supports are needed to ensure the smoothness of the learning process.

E-learning in online education requires digital tools and resources to support asynchronous learning. Through e-learning, students can learn anytime and anywhere without being restricted by space and time (Careaga-Butter et al., 2020). Various activities can be carried out, such as online discussions, assignment submissions, downloading materials, uploading materials, watching educational videos, sending messages, etc. However, developing e-learning-based learning models must be carefully designed to achieve the intended objectives. Previous research found that students' acceptance of asynchronous learning is influenced by educator characteristics, organizational and technical support, technological innovations, and students' trust in the online learning provided by the institution (Persada et al., 2022).

Efforts to assess the effectiveness of online learning can be done by applying the Community of Inquiry (CoI) theory. This theory consists of three important elements: teaching presence, cognitive presence, and social presence (Garrison & Arbaugh, 2007). The inquiry-based learning model can measure the relationship between students' understanding (cognitive presence), teaching presence, and their social relationships with students (social presence) and lecturers in the learning process. The Community of Inquiry (CoI) framework is general because it is conceptually based on teaching and learning theories in higher education. Philosophically, the Community of Inquiry (CoI) framework is consistent with John Dewey's work on the importance of always being curious or asking questions (inquiry).

According to the Community of Inquiry (CoI) theory, learning will be successful if it has these three key elements. Learning experiences in higher education are different from learning experiences in secondary schools (Garrison & Arbaugh, 2007). In higher education, students must be the main subjects who can regulate their own learning process. Meanwhile, the lecturer's role in higher education is to always provide motivation, encourage students to collaborate, and actively participate in the learning process provided by the lecturer.

CONCLUSION

Based on the research findings, it can be concluded that cognitive, social, and teaching presences are evident in online learning. The acquisition of cognitive learning experiences can be seen through the triggering event activities, such as initiating tasks to enhance students' learning activities. Following this, exploration, integration, and resolution activities are carried out. Social presence is demonstrated through

mutual respect, open communication, and unity in the learning process. In terms of teaching presence, it can be seen when the learning is systematically designed and organized, when facilities for learning are provided, and when direct instruction occurs, even in an online setting.

AUTHOR'S NOTE

The author declares that there is no conflict of interest regarding the publication of this article. The author affirms that the data and content of the article are free from plagiarism

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