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Students' Critical Thinking Skills Improvement through Community of Lecturer, Teacher, and Colleger (CLTC)

I Nyoman Try Upayogi[1,2*], Riandi[1], Sumar Hendayana[1], Ida Kaniawati[1]
[1] Science Education Study Program, Indonesia University of Education, Bandung, Indonesia.
[2] Science Education Study Program, Citra Bakti Institute of Teacher Training and Education, Ngada, Indonesia.

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*Corresponding Author Email:
upayogitry@gmail.com

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Abstract: The students' critical thinking skills in Ngada Regency are still relatively low, with an average test score of 44,9. Critical thinking is a fundamental skill that students must possess to face future challenges in the era of global competition. Initial classroom observations indicate that teachers need more facilitation in developing students' critical thinking. Several issues identified include: (a) the provision of information sources is still limited to textbooks, (b) teachers have not facilitated students in asking critical questions (teachers ask more questions, and students answer), (c) teachers lack in providing opportunities for students to conclude in Worksheets or summarize learning outcomes, and (d) student Worksheets mainly involve filling in or explaining terms, lacking opportunities for students to strategize problem-solving. These issues can be addressed through focused and continuous mentoring, necessitating a school learning community. This study investigates the influence of the Community of Lecturers, Teachers, and Collegers (CLTC) on teachers' professional development in enhancing students' critical thinking skills. The study employs a mixed methods case study (MMCS) design to investigate the influence of CLTC on teachers' professional development in improving the critical thinking skills of 8th-grade students in science subjects. Data were collected through interviews, observations, and critical thinking skills tests. Qualitative data were analyzed using a thematic analysis approach, while quantitative data were analyzed using paired t-tests. The results showed increased teachers' professionalism in enhancing students' critical thinking skills during CLTC activities. Statistical tests also showed significant differences in students' critical thinking skills before and after teachers participated in CLTC, with a Sig. (2-tailed) value of 0,015. Based on qualitative findings, classroom observations and sharing during learning evaluations were the most effective activities. These findings have implications for universities and schools to create mutually beneficial partnerships to enhance teachers' professionalism and students' experience. The practical impact of this research includes recommending that teachers conduct peer teaching observations and sharing sessions within schools routinely. Collegers must also be involved in the learning community at school early to form professional teacher candidates earlier.

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INTRODUCTION

Education serves as the cornerstone in shaping future generations, preparing them to confront the ever-evolving complexity of the world (Almalky & Alwahbi, 2023; Kahila et al., 2023; Yang et al., 2023). In the era of globalization and technological advancement, critical thinking skills have emerged as essential competencies that empower individuals to unravel complex information, develop robust arguments, and make decisions grounded in deep deliberation (Altun & Yildirim, 2023; Vidal et al., 2023; Yüceer, 2023). The education system must produce graduates capable of thinking critically and creatively, utilizing knowledge to confront authentic challenges, and contributing to societal progress (Álvarez-Huerta et al., 2022). In this context, learning communities in schools play a crucial role in fostering these skills, as they provide a collaborative environment where students, teachers, and other stakeholders can engage in meaningful interactions that enhance critical thinking and problem-solving abilities.

Amidst the dynamic evolution of education, educational institutions, especially colleges and schools, have become vital in shaping a generation equipped with critical thinking abilities (Altun & Yildirim, 2023; Sarmiento-Márquez et al., 2023). Universities and schools are responsible for creating environments that stimulate intellectual creativity and the development of critical thinking skills. However, critical thinking skills cannot be developed in isolation (Cui & Teo, 2023; Hemming, 2000). Developing critical thinking requires integration among various stakeholders involved in the educational process. There must be a collaboration between colleges and schools in developing critical thinking skills (Cripps et al., 2018).

Within this framework, a learning community has emerged as a promising approach to enhancing students' critical thinking skills (Miedijensky et al., 2021). Learning communities adopt the idea of collaborative learning, which can occur among teachers within a school or a specific region. In Indonesia, various types of teacher-learning communities exist, such as Teacher Working Groups and Subject Teacher Assemblies at the regional level and Teacher Activity Centers at the national level. The Indonesian Ministry of Education has also launched online national learning communities through the "Merdeka Mengajar" platform to enhance collaboration among teachers for the professional development of teaching. Additionally, the collaboration between teachers and lecturers in Indonesia was initially developed in 2006 by Sumar Hendayana and his team through lesson study activities based on Subject Teacher Assemblies and school-based lesson studies (Hendayana et al., 2016).

Existing learning communities focus on enhancing students' critical thinking skills through discussion groups, collaborative projects, and debate activities (Ay and Dağhan 2023; Jiang, et al., 2023; Insani, et al., 2020). However, pre-service teachers need more active involvement, often called collegers, particularly in Eastern Indonesia. This oversight highlights a crucial research gap, emphasizing the need for a more in-depth examination of how collegers can actively contribute to developing students' critical thinking skills through collaborative learning environments (Upayogi, et all., 2023). While learning communities are making strides in sharpening students' critical thinking through innovative methods, the potential contributions of collegers still need to be utilized. By involving collegers actively, valuable insights can be gained into the most effective pedagogical strategies and community dynamics for promoting critical thinking. This approach addresses a vital aspect of teacher education and professional development in this under-researched region, enriching students' learning experience and enhancing collegers' professional competence, preparing them to contribute effectively in diverse and dynamic educational environments.

The significance of critical thinking skills is not only rooted in the ability to navigate rapid changes across various fields but also in their application in everyday life (Kuhn, 2019). In an environment with easily accessible information, the capacity to identify, analyze, and evaluate information has become more crucial than ever before (Akpur, 2020; Y. Zhang et al., 2023). Nevertheless, Wang and Jia (2023) argue that developing critical thinking skills is not straightforward. Critical thinking entails competencies such as (1) analyzing information, claims, or evidence, (2) concluding inductive or deductive reasoning, and (3) employing reasoning strategies to form logical judgments and draw conclusions (O'Reilly et al., 2022). Hence, education must play an active role in facilitating the development of critical thinking skills through holistic and ongoing approaches (Kuhn, 2019).

The involvement of colleger in learning communities plays a crucial role in shaping and enhancing the quality of education (Barnes, 2020; Topçu & Çiftçi, 2023; Wray, 2007). Learning communities provide a platform enabling colleger to share knowledge, experiences, and best practices to prepare them for becoming future educators. Therefore, this research utilized a learning community formed by lecturers, teachers, and collegers named the Community of Lecturers, Teachers, and Collegers (CLTC). Through mutually enriching interactions, this educational community fosters an environment where students can learn profoundly, gain interdisciplinary experiences, and develop strong critical thinking abilities (Gwebu et al., 2021).

Within the CLTC, each member is crucial in enhancing students' critical thinking skills. As knowledge holders and academic experience bearers, lecturers are vital in guiding students towards more profound and more analytical thinking. Their experience in research development and problem-solving, both inside and outside the classroom, can be an invaluable source of inspiration for fostering students'

critical thinking skills. On the other hand, teachers have direct interactions with students and possess an in-depth understanding of their needs and potential (Muhonen et al., 2023). Teachers can implement strategies that stimulate active student engagement, encourage critical questioning, and develop analytical thinking patterns. During their educational journey, collegers are the most directly involved. Participation in the learning community enables colleger to network with peers and experienced educators. CLTC can aid them in seeking support, sharing advice, and gaining valuable guidance when facing real-world challenges. Furthermore, collegers can leverage the experiences and insights from this learning community to develop innovative approaches in their teaching practices.

Recognizing that developing critical thinking skills cannot occur in isolation is essential (Rodríguez-Sabiote et al., 2022; Silva Pacheco & Iturra Herrera, 2021; Tiruneh et al., 2018). Enhancing students' critical thinking skills cannot only rely on teachers within schools. Improving student skills also falls under the responsibility of higher education institutions as one of the producers of future educators (Lin et al., 2023). Collegers must be prepared to design innovative learning experiences to enhance students' critical thinking skills. Dynamic interactions among lecturers, teachers, and collegers are crucial in generating innovations that stimulate students' thinking skills. Therefore, the collaboration among these three parties within an educational community holds significant potential to drive sustained growth in critical thinking. Through discussions, collaborative problem-solving, and reflection, collegers can broaden their perspectives and learn from diverse viewpoints.

This research explores the role of the Community of Lecturers, Teachers, and Collegers (CLTC) in developing students' critical thinking skills in schools. By analyzing the dynamics of interactions among these three parties, effective strategies can be identified as efforts to enhance students' critical thinking skills. Other educational institutions can also adopt these practical strategies to strengthen the development of students' critical thinking skills. More specifically, this research also addresses the following question: How do lecturers, teachers, and collegers perceive the impact of CLTC on the development of learning that can enhance students' critical thinking skills?

METHOD

This study aims to investigate the role of the Community of Educators, Teachers, and Collegers in enhancing students' critical thinking skills. The research employs a mixed methods case study (MMCS) approach to achieve this objective (Walton et al., 2020). This method was chosen because it allows for a comprehensive understanding of interactions among educators, teachers, and collegers and their impact on developing students' critical thinking skills.

Research Design

MMCS provides a valuable framework to synthesize the diverse findings from this research in a way that captures micro-level perspectives (individual participants), macro-level findings (the entire partnership), and slight relationships between these findings. Applying mixed methods integration strategies to case study findings yields more profound and cohesive meta-inferences. To provide a clearer understanding of the research process conducted, the following flowchart in Figure 1 illustrates the steps involved in exploring the role of the Community of Lecturers, Teachers, and Collegers (CLTC) in developing students' critical thinking skills.

Participant

The participants in this research consist of lecturers, teachers, collegers, and students, selected using a purposive sampling technique. The involvement of educators and teachers is based on the commitment of colleges and schools to collaborate through the CLTC. Selected collegers include those enrolled in the micro-teaching and instructional media development classes. Chosen school students are from a class taught by a teacher willing to act as a model teacher in the CLTC activity, and the students have obtained parental consent to participate in CLTC activities. The research involves two lecturers: one teaching the micro-teaching class and the other teaching the instructional media development class. The lecturer respondents are coded as RL1 and RL2. Nine teachers with diverse educational backgrounds and teaching experiences participated, coded as RT1 to RT9. Five students from the micro-teaching class and ten from the instructional media development class participated, coded RC1 to RC15. Twenty-one eighth-

grade students, coded as RS1 to RS21, are involved in a science lesson at Citra Bakti Junior High School in Ngada Regency.

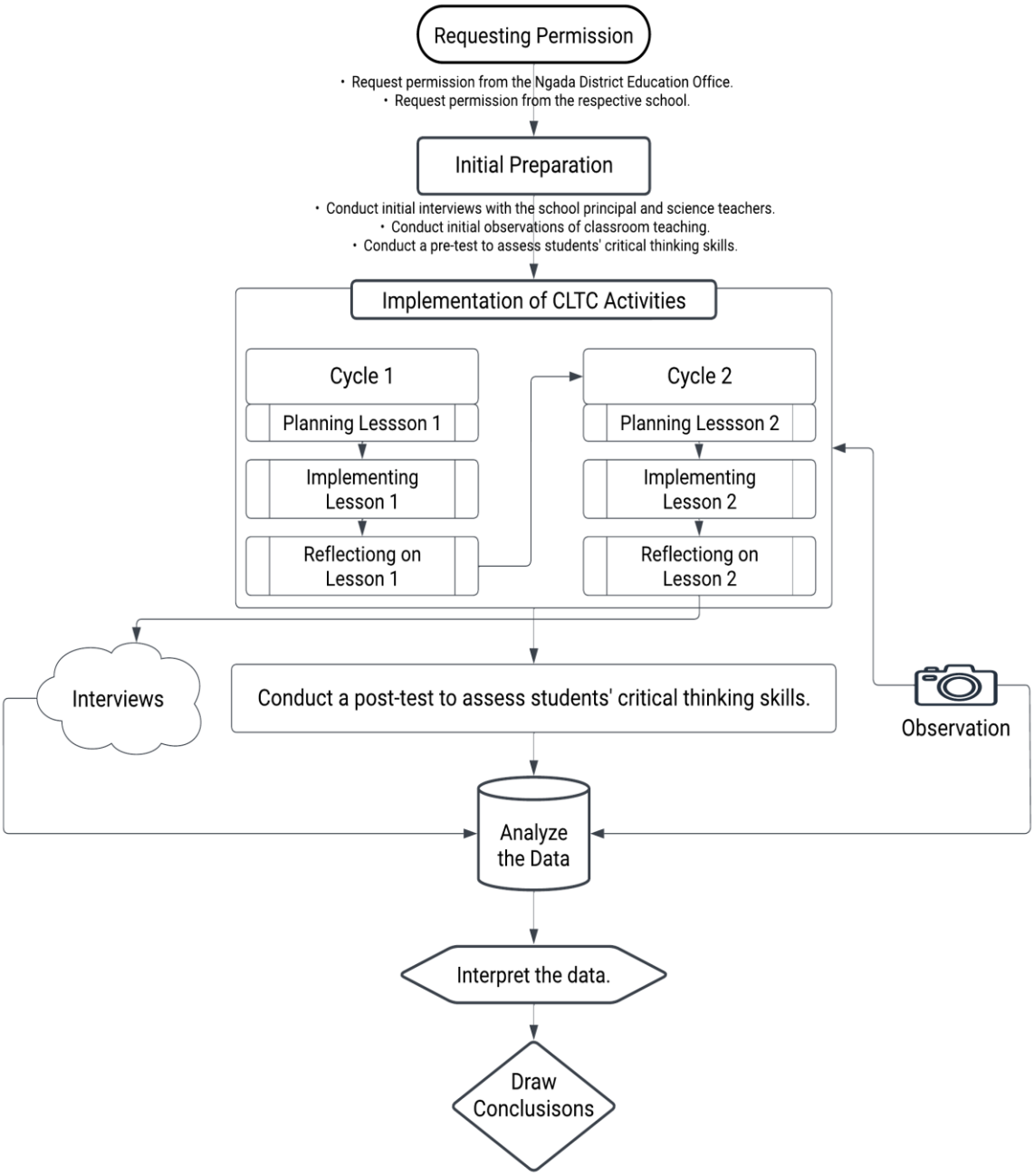

Figure 1. Research Flowchart

Data Collection

Data is collected through in-depth interviews, participatory observation, and a critical thinking skills test. In-depth interviews are conducted with lecturers, teachers, and collegers to understand their perspectives on the role of the community in developing students' critical thinking skills. Below are some key questions we posed during the interviews:

1. Background and Experience of Respondents:
    - Could you tell us about your educational background and professional experience?
    - How are you involved in the CLTC learning community?
2. Understanding of Critical Thinking Skills:

- What is your understanding of critical thinking skills?
- How important are critical thinking skills for students in the current era?

3. Role and Contribution in CLTC:
   - What is your role in the CLTC community?
   - What specific contributions do you make to this community?
   - How do interactions between lecturers, teachers, and collegers occur in this community?
4. Strategies and Best Practices:
   - Can you explain the strategies or methods used in the CLTC community to develop students' critical thinking skills?
   - Are there any best practices that you find particularly effective in enhancing students' critical thinking skills?
5. Impact on Students:
   - In your opinion, what is the impact of the CLTC community on students' critical thinking skills?
   - Have you noticed significant changes in students' critical thinking abilities after participating in CLTC activities?
6. Collaboration and Integration:
   - How does collaboration between lecturers, teachers, and collegers occur in the CLTC community?
   - To what extent is there integration between the theory taught in higher education and practice in schools?
7. Challenges and Solutions:
   - What are the biggest challenges in developing critical thinking skills through CLTC?
   - How do you overcome these challenges?
8. Expectations and Recommendations:
   - What are your expectations for the future of the CLTC community?
   - Do you have any recommendations to improve the effectiveness of CLTC in developing students' critical thinking skills?

Observations occur during three stages of CLTC activities. The first observation involves lecturers, teachers, and collegers during lesson planning. It examines how CLTC members interact in designing lessons that enhance students' critical thinking skills. Below are some observation points during the lesson plan:

1. Interaction Among CLTC Members
   - How do lecturers, teachers, and collegers communicate during lesson planning?
   - Are there specific roles assigned to each member? Describe these roles.
   - How do they collaborate to integrate critical thinking skills into the lesson plan?
2. Incorporation of Critical Thinking Skills
   - How are critical thinking skills identified and integrated into the lesson plan?
   - What specific activities or strategies are planned to enhance critical thinking?
   - Have there been discussions on assessing critical thinking skills during the lesson?
3. Effectiveness of Collaboration
   - How effective is the collaboration between lecturers, teachers, and collegers in lesson planning?
   - What are the strengths of their collaborative approach?
   - Are there any challenges faced during the collaboration? How are they addressed?
4. Innovation and Creativity in Lesson Design
   - Are innovative and creative methods being used to design the lesson?
   - How do the members of CLTC bring in new ideas to make the lesson more engaging?
   - What resources or tools are utilized in the planning process?

The second observation is during the implementation of the jointly designed lesson plans. It observes students' responses to the implemented lesson plans and involves all CLTC members to monitor student activities reflecting critical thinking development. Below are some observation points during the

lesson:

1. Can all students focus their questions?
2. Can students analyze arguments?
3. Can students observe and consider observation results?
4. Can students consider the credibility of sources?
5. Can students deduce and evaluate the results of the deduction?
6. Can students induct and evaluate the results of the induction?
7. Can students identify terms and consider definitions using appropriate criteria?
8. Can students identify assumptions?
9. Can students integrate their information with others (logical strategies and conclusions)?
10. Can students decide on an action?
11. What would you do differently if you were the teacher in this class?
12. Which students were unable to participate in today's lesson? Why were these students unable to learn well? What do you think caused it, and what are alternative solutions?

The third observation occurs during the evaluation of the implemented lesson plans (reflection). It observes how CLTC participants interact to identify strengths and weaknesses in the implemented plans and provides suggestions for improving subsequent lesson plans based on observed student responses during implementation. This observation provides insights into how community interactions influence students' critical thinking skills. Below are some observation points during the reflection:

1. Evaluation Process
   - How do CLTC members evaluate the implemented lesson plans?
   - What methods or criteria are used for evaluation?
   - Are there specific roles assigned to each member during the evaluation process? Describe these roles.
2. Feedback and Reflection
   - How do CLTC members provide feedback on the lesson implementation?
   - What aspects of the lesson are highlighted for improvement?
   - Are students' responses and engagement considered in the evaluation? How?
3. Assessment of Critical Thinking Skills
   - How is the development of students' critical thinking skills assessed?
   - What specific evidence or examples are used to demonstrate students' critical thinking?
   - Have there been any discussions on the effectiveness of activities or strategies to enhance critical thinking?
4. Collaboration and Communication
   - How do CLTC members collaborate and communicate during the evaluation?
   - Are there any disagreements or differing perspectives? How are they resolved?
   - What are the strengths and weaknesses of their collaborative approach during the evaluation?
5. Recommendations for Improvement
   - What recommendations are made for improving the lesson plan?
   - How are these recommendations expected to enhance students' critical thinking skills?
   - Are there any plans for follow-up actions or future lesson adjustments?

A test is administered to students to measure their critical thinking skills. The test is conducted both before and after CLTC activities. The test consists of 30 multiple-choice questions and assesses critical thinking skills across five aspects adapted from Robbert. H. Ennis: elementary clarification, basic support, inference, advanced clarification, and strategies and tactics.

Data Analysis

The qualitative data collected will be analyzed using a thematic analysis approach. Transcripts of interviews and observation notes will be examined to identify the main themes related to the role of the community in enhancing students' critical thinking skills. These themes will be used to construct a holistic understanding of the interactions among educators, teachers, and students and their impact on students' critical thinking skills. Quantitative data from the critical thinking skills test will be analyzed using a paired

t-test. The paired t-test is chosen to assess the effectiveness of CLTC, indicated by differences in means before and after the CLTC. The paired t-test will be conducted using IBM SPSS Statistics 25 software.

The validity of the findings is ensured through data triangulation, which combines data from various sources, such as interviews and observations. The process of triangulation allows for confirming findings from different perspectives. Triangulation involves cross-verifying data from multiple sources to ensure the accuracy and validity of the findings. In this study, the triangulation process included:

1. Convergence of Data:
    a. Comparing and contrasting quantitative test results with qualitative observations and interview data.
    b. For instance, if the paired t-tests indicate a significant improvement in students' critical thinking skills, this finding is cross-validated with observational data showing enhanced student engagement and qualitative insights from teachers reporting effective instructional strategies.
2. Consistency of Themes:
    a. Identifying consistent themes and patterns across different data sources.
    b. For example, themes emerging from teacher interviews regarding the use of specific teaching methods are corroborated with observational data and supported by improvements in students' test scores.
3. Corroboration of Evidence:
    a. Ensuring that evidence from one data source is supported by findings from other sources.
    b. For instance, a teacher's claim about the success of a particular teaching strategy is validated by observational data showing active student participation and improved test scores reflecting better critical thinking skills.

The convergence and corroboration of quantitative and qualitative data provide a comprehensive understanding of the impact of teaching practices on students' critical thinking skills. This multi-faceted approach strengthens the credibility of the study's findings and supports robust conclusions.

Ethical Considerations

This research will be conducted under applicable research ethics guidelines. Ethical approval will be obtained from the educational institutions involved and the participants taking part in the research. For students involved, parental consent has been obtained by signing a permission letter to participate in CLTC activities. Participant identities will be kept confidential, and the collected data will only be used for research.

RESULT AND DISCUSSION

Result

Through the conducted MMCS, this research gained in-depth insights into the role of the community in enhancing students' critical thinking skills. Several themes can be extracted based on the analysis of qualitative and quantitative data. Each theme is elaborated in detail as follows.

CLTC fosters the development of teacher professionalism in delivering lessons that enhance students' critical thinking skills.

As suggested by all interviewed parties, an initial theme identified is that CLTC fosters the development of teacher professionalism in delivering lessons that enhance students' critical thinking skills. All parties concur that all CLTC procedures, observation of lesson plan implementation, and conducted lesson evaluations can help cultivate teacher professionalism in delivering lessons that effectively promote critical thinking skills. As an example, in this regard, RT5 explains:

"The meetings within CLTC not only assist teachers in designing more effective lessons to promote critical thinking among students, but they also impact teachers' abilities to communicate with students, stimulate students to focus on questioning and engage students in analyzing arguments related to the given issues,"

explains RT5.

The statement from RT5 is further supported by the data illustrating the changes in students' critical thinking abilities, as shown in Figure 1.

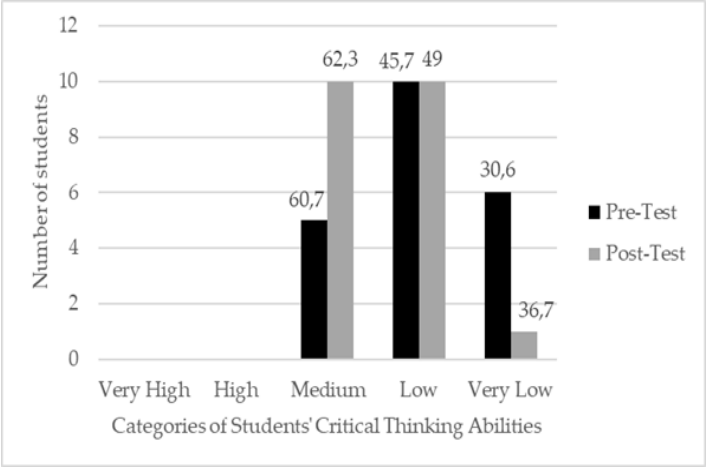

Figure 2. The Level of Students' Critical Thinking Skills

Figure 2 illustrates the changes in students' critical thinking abilities before and after CLTC. Before CLTC, six students were categorized as "very low," and after CLTC, only one remained in the "very low" category. The number of students in the "low" category showed no change before and after CLTC, but there was an increase in the average score of critical thinking abilities from 45.7 to 49. Meanwhile, students categorized as "moderate" increased from 5 students before CLTC to 10 students after CLTC. The aspects of students' critical thinking abilities also improved during CLTC, as indicated in Figure 2.

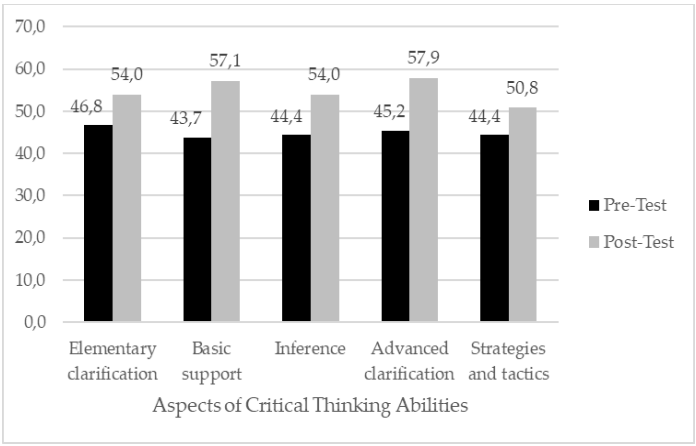

Figure 3. The Average Score of Students' Critical Thinking Skills Aspects

Based on Figure 3, all aspects of students' critical thinking showed improvement after CLTC. The increase in the teacher's ability to stimulate students to focus on questions and analyze arguments aligns with the rise in students' elementary clarification scores. The aspect of critical thinking that saw the most improvement was basic support. The increase in the teacher's ability to stimulate aligns with observation results where teachers energetically accompanied students during the learning activities. Teachers were not confined to just one group of students; they directed students in discerning accurate sources of information. For instance, during a discussion about the digestion process in the mouth, differing opinions arose between a group asserting that only mechanical digestion occurs and another group stating that mechanical and chemical digestion occurs. The teacher encouraged students to touch the parts of the mouth's organs. When student RS14 touched saliva, they recalled an enzyme mentioned in the teacher-provided module. RS14 then reviewed the module and validated their argument. The teacher guided the students to refer to the module and together validated the response of RS14.

The school where CLTC took place is a new institution, and most of its teachers are relatively new to teaching, having taught at this school for less than five years. The supporting facilities for learning and the student's standard of living are relatively low, making it difficult to access various sources of information. Students' parents cannot help but provide their children with computers or smartphones, which means that the information sources available to students primarily rely on modules and books provided by teachers. Within limited resources, to provide equitable education to students and ensure a good learning experience, teachers need to learn from each other's strengths and address their weaknesses. As expressed by RT2, facing challenges like these requires exchanging experiences with other teachers to enrich the content of subjects and overcome weaknesses by learning from each other's best practices. In alignment with RT2's opinion, according to RT1, "learning from each other's best practices" is the primary goal of CLTC. RT1 states that they learned a new teaching tactic from RT5's observation during a lesson where students felt drowsy close to dismissal time. RT5 created a paper ball, then asked a question about the human digestive system and threw it to a less focused student, asking them to answer.

Therefore, RT1 suggests that teachers adopt an open-minded attitude and combine their experiences during CLTC. RT8 supports RT1's suggestion, noting that CLTC enables teachers to observe students' responses in more detail to RT5's teaching implementation and deepen understanding through reflection discussions. Responding to RT8's statement, RT5 says,

"*I feel greatly assisted in designing lessons and gaining a deeper understanding of the subjects I teach. I was helped in observing student responses that I didn't notice during lesson implementation in the classroom, which leads to improvements in subsequent lessons*."

For RT3, a limitation of the lesson implementation involves the distribution of teaching modules, where there is only one module per group, making it difficult for students to view its contents simultaneously. RT8 adds that students also need help to provide further explanations and draw conclusions. When students RS8, RS17, and RS20 were asked to explain how food enters the mouth until it is excreted from the anus, they faced difficulties. RT8 then suggests giving extra attention to these students in the following lessons.

The second observation of the lesson demonstrated a more active learning atmosphere. RT5 approached groups containing RS8, RS17, and RS20 more frequently. RT2 states that during the second lesson, all students appeared more engaged from the beginning to the end. Students were also more confident in asking questions and expressing their opinions. Supporting RT2's statement, RT6 observed that RS8 and RS17 focused on reading the provided module. When RT5 asked for lesson conclusions, they confidently offered their answers.

According to RT1, the CLTC conducted at the school has helped teachers develop students' critical thinking abilities. Although student progress is not uniform, there have been observable changes in the active engagement of students in their elementary clarification and basic support skills. RT7 adds that inference and advanced clarification skills improved during the second lesson. This statement is supported by the t-test results shown in Table 1.

Table 1. Paired Samples t-Test Results

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre-Test – PostTest	-9.905	17.126	3.737	-17.700	-2.109	-2.65	20	.015

The paired samples test results show a Sig. (2-tailed) value 0.015. Since Sig. (2-tailed) 0.015 < probability 0.05, there is a significant difference in the average critical thinking skills before and after the

CLTC activity. Statistically, this can be interpreted as an influence of CLTC on improving students' critical thinking skills. The paired samples correlation results indicate a significance value (sig.) of 0.148. Because the Sig. Value 0.148 > probability 0.05, there is no relationship between the pre-test and post-test variables. Therefore, students' post-test answers are not influenced by their pre-test answers. The paired t-test results also indicate that the CLTC program effectively enhances students' critical thinking skills.

RD1 says that improving students' critical thinking skills may appear because, during CLTC, teachers are willing to discuss the learning outcomes desired by students openly. Teachers are also willing to support ideas related to improvements that could be made regarding implementing RT5's teaching. RD1's statement is supported by RD2, who emphasizes that one of the benefits of CLTC is providing teachers with the opportunity to share knowledge and understanding related to evolving teaching methods, strategies, and content.

CLTC, Enriching Teachers' and Collegers' Understanding of Students.

The second benefit of CLTC is that it enriches teachers' and collegers' understanding of students. The CLTC activities enable teachers to develop a more profound knowledge of their students. According to RT5, gaining a deeper understanding of students and maintaining a close relationship with them is crucial. RT5 said:

"Student RS10 once mentioned that she found the subject very challenging, but she still tried his best to participate actively in class because she felt that I never embarrassed him when she couldn't answer. Outside the classroom, she also feels comfortable chatting with me, and I always greet her whenever we meet anywhere (RT5)."

RT5 also added that through CLTC, she could get to know each student on a more personal level. Students like RS13 and RS7, previously thought to be less attentive during class, were leaders in their group work. RT2's statement supports this:

"At the beginning of the class, RS13 and RS7 seemed to pay little attention to the teacher's explanations, but when they started working in their groups, they were the most active in completing the assigned worksheets."

RT1 then mentioned that although the number of students was manageable, it was still challenging to observe and attend to every action of each student during teaching. CLTC provides an opportunity for teachers to gain a deeper understanding of their students through the observations of other teachers during lessons. RT1 also encouraged other teachers to pay more attention to students who require support and particular approaches in their respective subjects.

For the collegers, CLTC offers them a direct experience of students' issues and how to design practical learning experiences for them. RC1 stated that by directly observing the process of designing, implementing, and evaluating lessons in CLTC, she felt confident creating lesson plans and effectively conducting teaching simulations in her microteaching course. RC2 also mentioned that she previously needed clarification about designing practical lessons, but after participating in CLTC, she could now imagine what teaching strategies would work well for her microteaching course.

According to RC7, CLTC inspired designing instructional media for the instructional media development class. RC7 stated:

"I initially wanted to create a PowerPoint-based instructional media, but after seeing the limitations of students' learning styles firsthand, I decided to design a teaching aid as instructional media. I realized that students need physical activities to become more engaged in learning."

Furthermore, RC10 expressed:

"I haven't decided on the instructional media I will create yet, but based on my experience during CLTC, I noticed that students need media that emphasizes visualization. I saw that students are more interested in large and clear visuals compared to reading or listening to explanations from the teacher."

In response to the statements from RC7 and RC10, RD2 expressed enthusiasm about CLTC, which provided valuable experiences for the collegers from the best practices demonstrated by the teachers during CLTC. RD2 also mentioned his hope for the current collegers' instructional media development to be more varied and have clear objectives guided by the direct experiences collegers witnessed regarding the challenges students face during the learning process.

Discussion

This research explores the implications of a learning community in the form of CLTC for increasing teacher professionalism in developing learning that can improve students' critical thinking skills. CLTC influences teacher professional development in line with the theoretical framework presented by Chen, (2022); Huijboom et al., (2023); Wang and An, (2023). The findings in the research reveal that CLTC increases the professionalism of teachers designing learning and teachers teaching in the classroom through openness and collaboration between CLTC participants. Interviews with teachers revealed that CLTC improved their pedagogical content and increased teacher motivation in improving their teaching and understanding of individual students. Class observation and sharing during learning evaluation are the most effective activities based on qualitative findings. In line with the conclusions drawn by Evert and Stein, (2022); Sinnema et al., (2021); J. Zhang et al., (2022), it can be concluded that teacher knowledge about teaching strategies, teacher understanding of the subject, and teacher knowledge about individual students can be increased through learning communities. Teacher motivation to improve abilities and build better relationships with colleagues can also be increased with CLTC support.

Based on the findings from observation data, interviews, and critical thinking skills tests, several teacher behaviors promote the improvement of students' critical thinking skills. These teacher behaviors are as follows:

1. Critical Question Stimulation: The teacher actively stimulates students to ask questions by providing examples of critical questions and allocating particular time for Q&A sessions at the end of each lesson. For instance, the teacher might start with questions such as "Why doesn't the digestion process occur directly in the stomach?" or "How can you prove that chemical digestion begins in the mouth?"
2. Argument and Evidence Analysis: The teacher encourages students to analyze and compare arguments from various information sources. For example, in a lesson about digestion, the teacher asks students to compare textbook explanations with their direct observations and group discussions. The teacher also provides different scenarios and asks students to determine which is more logical based on the available evidence.
3. Structured Discussion and Debate: The teacher organizes debate and group discussion sessions where students are expected to defend their opinions with solid reasoning and unmistakable evidence. For example, the teacher can divide students into several groups to debate whether saliva functions as a lubricant or has an enzymatic role in digestion.
4. Reflection and Self-Evaluation: The teacher holds reflection sessions at the end of each lesson where students are asked to write down what they learned, what still confuses them, and how they can improve their understanding. The teacher then collectively reviews the students' responses to identify areas that need further clarification.
5. Student Collaboration: The teacher facilitates student collaboration through group work where each member has a specific role. For example, in a group studying the digestive system, one student might be responsible for collecting data, another for analyzing it, and another for presenting their findings. The teacher ensures that every student actively participates and exchanges ideas.
6. Creating a Supportive Learning Environment: The teacher creates a supportive learning environment by providing positive feedback, valuing all opinions, and encouraging students not to fear making mistakes. The teacher is also open to discussing the teaching methods used and welcomes student feedback on what can be improved.

Based on the actions taken by the teacher, these methods promote the improvement of students' critical thinking skills. The improvement of students' critical thinking skills is evidenced by the critical thinking test scores before and after the Critical Thinking Learning Cycle (CLTC), with a Sig. (2-tailed) value of 0.015, which is less than 0.05, indicating a significant difference. The paired t-test results also

indicate that the CLTC program effectively enhances students' critical thinking skills. Figure 2 shows an increase in students' average critical thinking ability scores from 45.7 to 49. The number of students in the "very low" category decreased from six to one after the CLTC. Figure 3 shows an improvement in all aspects of critical thinking skills. According to the test, the most significant improvement was observed in providing basic support.

As teachers' professionalism develops in designing learning and implementing learning through CLTC, students' critical thinking abilities in their classes also increase in line with Yue, (2019) conclusion, which states that continuous development of teacher professionalism is one of the keys to developing students'' critical thinking skills, which is one of the 21st-century skills that students need. Davies and Willing (2023), also stated that teacher professional development focusing on discussions about how students learn to think critically can help improve students' critical thinking skills. The results of the student's critical thinking ability test also showed differences in students' critical thinking abilities before and after the teachers took part in learning community activities in the form of CLTC.

According to this study, sharing between CLTC members and observing teaching activities is very important to increase teacher professionalism in developing students' critical thinking skills. Teachers gained much new knowledge from good practices carried out by RT5 and RT5 and received constructive input to increase innovation in teaching. This finding was confirmed by Ehlert and Souvignier (2023), Elkomy and Elkhaial (2022), Ell and Major (2019), Janssen et al., (2019), Kager et al., (2022), Ninković et al., (2022), Nordgren et al., (2021), concluded that sharing, collaboration, and observation of teaching practice supports professional development through an in-depth understanding of appropriate teaching methods, an in-depth understanding of the scientific field, and get to know students on a personal basis better. The findings of this study also show that even though students are less interested in their subjects, students still want to try to participate in learning activities well because they feel close to the teacher who teaches them.

The findings also reveal that teachers can better understand student problems in classroom observation, and colleger participating in CLTC also gain valuable experience. Students can see directly the problems of students in the learning process. When evaluating learning, the student's problems are explained from various teachers' perspectives so that students can go deeper into the problems that occur to students at school.

This research demonstrates that the implementation of the Community of Lecturers, Teachers, and Colleger (CLTC) significantly impacts teacher professional development, enhances students' critical thinking skills, and provides essential benefits for college students. Through CLTC, teachers can enhance their professionalism in designing and implementing instruction that emphasizes developing critical thinking skills. Active participation in this community allows teachers to share best practices, receive constructive feedback, and enrich their understanding of effective teaching strategies.

Moreover, CLTC offers valuable opportunities for college students to gain hands-on experience in designing and implementing collaborative learning and understand the challenges students face in the learning process. College students involved in CLTC can directly observe classroom dynamics, understand the needs and issues faced by students, and develop the ability to design innovative and effective learning media and teaching strategies. This experience helps college students become more prepared and competent future teachers, capable of effectively addressing challenges in the education field.

The findings of this study reinforce the importance of collaboration between higher education institutions and schools in shaping a more professional and skilled generation of educators. Future research could further explore the long-term impact of CLTC on the development of students' critical thinking skills in various educational contexts and identify factors that influence the successful implementation of this program on a broader scale. A holistic and collaborative approach like CLTC can create a better and more sustainable educational ecosystem.

CONCLUSION

This research demonstrates that implementing the Community of Lecturers, Teachers, and College Students (CLTC) significantly impacts teacher professional development, enhances students' critical

thinking skills, and provides essential benefits for college students. Through CLTC, teachers can improve their professionalism in designing and implementing instruction that emphasizes developing critical thinking skills. Active participation in this community allows teachers to share best practices, receive constructive feedback, and enrich their understanding of effective teaching strategies.

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The research also highlights the potential significant impact of CLTC on teacher professional development programs. Using CLTC, educational institutions can develop more effective strategies to enhance teachers' teaching skills and student learning outcomes. Although the limited implementation cycle resulted in only modest progress, the statistically significant improvement in students' critical thinking skills is promising. These findings suggest that CLTC has excellent potential to further enhance students' critical thinking skills with broader and more sustained implementation.

The results of this study reinforce the importance of collaboration between higher education institutions and schools in shaping a more professional and skilled generation of educators. Future research could further explore the long-term impact of CLTC on the development of students' critical thinking skills in various educational contexts and identify factors that influence the successful implementation of this program on a broader scale. Through a holistic and collaborative approach like CLTC, it is hoped that a better and more sustainable educational ecosystem can be created.

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