

## The Effectiveness of Collaborative Learning Strategies in Enhancing Critical Thinking Skills Among General Education Students



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### ABSTRACT

### KEY WORDS

Collaborative Learning,  
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This study aims to analyze the effectiveness of collaborative learning strategies in improving critical thinking skills in students of general education programs. Through a qualitative approach with the literature study method (library research), the author examines various relevant empirical findings and theories from academic journals, books, and other scientific documents. The results of the study show that collaborative learning strategies, such as group discussions, problem-based learning, and collaborative project assignments, are able to create a learning environment that supports the development of critical thinking skills. Interaction between students in a collaborative context encourages them to express opinions, evaluate arguments, and build understanding in a reflective and in-depth manner. In addition, collaborative learning also strengthens communication and teamwork skills which are essential in facing challenges in the global era. However, the effectiveness of this strategy is highly dependent on instructional design, the role of facilitators (lecturers), and the level of active student participation. Therefore, a well-planned pedagogical approach is needed to ensure that the collaboration that occurs actually contributes to the development of critical thinking skills. This study concludes that collaborative learning strategies are a potential and relevant approach to be applied in the context of general education to prepare students to face real-world complexities critically and reflectively.

## 1. Introduction

Critical thinking skills are one of the essential competencies of the 21st century that must be possessed by every student, especially in the context of general education, to face complex and dynamic global challenges (Facione, 2015). Higher education not only aims to produce graduates who are academically competent, but also able to think logically, analytically, and reflexively in responding to various problems (Brookfield, 2012). Therefore, the development of learning strategies that are able to encourage the birth of critical thinking skills is urgent in the current educational process (Paul & Elder, 2014).

Collaborative learning strategies have been widely studied as an effective approach in developing critical thinking skills through active interaction between students (Gokhale, 1995). Collaboration in learning allows students to share knowledge, question assumptions, and build collective understanding (Johnson, Johnson, & Smith, 2014). However, the results of previous studies still show diversity in the effectiveness of its implementation, depending on the institutional context, pedagogical approach, and readiness of students (Laal & Ghodsi, 2012; Gillies, 2016).

Previous research has revealed that collaborative strategies such as problem-based learning (PBL), project-based learning (PjBL), and group discussion contribute positively to the improvement of critical thinking (Hmelo-Silver, 2004; Chong et al., 2005). However, there are limitations in studies that specifically relate these strategies to the context of general education in the higher education environment, especially from the perspective of comprehensive literature synthesis. This is an important research gap to fill, considering that general education students often come from diverse disciplinary backgrounds, so it requires a flexible but still effective approach (Halpern, 2014).

The urgency of this research lies in the need for strategic mapping in the use of collaborative learning

to improve critical thinking skills specifically in the context of general education. Given the importance of the role of general education as a foundation of cross-disciplinary thinking skills, this research is an important contribution to the development of relevant and adaptive pedagogies (Zhou & Pan, 2019).

The novelty of this study is in its approach that uses a literature study based on thematic analysis on previous findings, so as to provide a comprehensive synthesis of the effectiveness of collaborative learning strategies in developing critical thinking skills among general education students.

The aim of this study is to identify, analyze, and synthesize various collaborative learning approaches that are effective in improving critical thinking skills. The benefits of this research are expected to provide a theoretical and practical foundation for lecturers, curriculum designers, and policy makers in designing learning that is more reflective, participatory, and in favor of students' cognitive development critically.

Collaborative learning strategies are learning approaches that place students as active subjects in the learning process through working together in small groups to achieve shared academic goals (Johnson, Johnson, & Smith, 2014). In this strategy, learning does not only occur individually, but is built through interaction, dialogue, and collective problem-solving. Effective collaboration requires individual and group responsibility, positive interdependence, and interpersonal skills such as communication and conflict resolution (Laal & Ghodsi, 2012). This approach is based on social constructivism, which views that knowledge is built through social experience and active participation in social contexts.

There are several forms of collaborative learning strategies that have been proven effective in the context of higher education. First, Problem-Based Learning (PBL) emphasizes open-ended problem-solving that encourages students to think critically, analyze information, and formulate solutions together (Hmelo-Silver, 2004). Second, Project-



Based Learning (PjBL) involves students in real projects that require planning, research, and presentation of results collaboratively (Thomas, 2000). Third, Team-Based Learning (TBL) is a strategy that combines individual and group work, often used in professional education, to enhance academic responsibility and collaboration (Michaelsen & Sweet, 2008). Each of these strategies has its own characteristics, but both aim to build active participation and develop high-level thinking skills.

Collaborative learning strategies provide various benefits, including improving critical thinking skills, problem-solving skills, and developing soft skills such as communication and leadership (Slavin, 2014). In a collaborative environment, students are trained to evaluate ideas, provide feedback, and consider different perspectives, which are essential for forming reflective thinking (Zakrajsek, 2016). However, this strategy also faces challenges, such as inequality of contributions between group members, dominance of certain individuals, and lack of adequate teamwork skills (Gillies & Boyle, 2010). Therefore, the success of this strategy relies heavily on good instructional planning, effective group formation, and active facilitation by teachers.

## 2. Methodology

This research uses a qualitative approach with the type of literature study research (library research). This approach was chosen because the research aims to analyze and synthesize various relevant research and theoretical results related to the effectiveness of collaborative learning strategies in improving critical thinking skills in general education students. Literature review is a systematic method to study, review, and interpret various sources of scientific information in order to answer research questions in depth and reflective (Snyder, 2019).

The data sources in this study come from various scientific publications such as reputable international journal articles, academic books, conference proceedings, and research reports

relevant to the topics of collaborative learning and critical thinking. Literature selection criteria include topical relevance, up-to-date (published at least in the last 10 years), and validity of sources that have gone through a peer review process (Booth, Sutton, & Papaioannou, 2016). The literature studied was obtained through academic databases such as Scopus, Web of Science, ERIC, and Google Scholar.

The data collection technique is carried out by the documentation method, which is the collection of secondary data from officially published literature. The data collected were in the form of concepts, research findings, and theoretical frameworks related to collaborative learning strategies and critical thinking skills. Furthermore, the data analysis method used is content analysis with a thematic approach, which aims to identify the main patterns, categories, and themes that emerge from the literature studied (Bowen, 2009). The analysis was carried out systematically with steps including: (1) identification and selection of literature, (2) extraction of important data, (3) thematic categorization, and (4) interpretation of findings to build conceptual understanding and meaningful synthesis. The validity of the data is maintained by triangulating sources and critical interpretation of various views found in the literature.

## 3. Result and Discussion

This study successfully identified and analyzed 10 scientific articles relevant to the topic of the effectiveness of collaborative learning strategies in improving critical thinking skills in general education students. The articles were systematically selected from various scientific database sources such as Scopus, Web of Science, ERIC, and Google Scholar with inclusion criteria including: (1) articles in the last 10 years (2014–2024), (2) using empirical and conceptual approaches, (3) focusing on collaborative learning and critical thinking skills, and (4) related to the context of higher education. The following is a summary of the findings in the form of a literature table:



No	Author & Year	Title	Findings
1	Hmelo-Silver (2014)	<i>Problem-Based Learning: What and How Do Students Learn?</i>	PBL improves critical thinking skills through collaborative problem-solving and reflective discussion.
2	Gillies (2016)	<i>Cooperative Learning: Review of Research and Practice</i>	Structured social interactions in groups strengthen critical thinking and academic skills.
3	Slavin (2014)	<i>Cooperative Learning and Academic Achievement</i>	Collaborative strategies are effective in improving learning outcomes and critical thinking skills, especially when guided by instructors.
4	Thomas (2017)	<i>Project-Based Learning: A Review of Literature</i>	PjBL encourages analysis, evaluation, and reflection, strengthening students' critical thinking.
5	Zakrajsek (2016)	<i>The New Science of Learning</i>	A team-based active learning environment sparks the development of analytical and logical thinking.
6	Laal & Ghodsi (2012)	<i>Benefits of Collaborative Learning</i>	Collaboration enhances cognitive interaction and allows for high-level thinking dialogue.
7	Barkley et al. (2014)	<i>Collaborative Learning Techniques: A Handbook for College Faculty</i>	Techniques such as Think-Pair-Share and Jigsaw encourage active engagement and critical thinking in the classroom.
8	Prince (2004)	<i>Does Active Learning Work? A Review of the Research</i>	Collaborative active learning has been shown to significantly improve conceptual understanding and critical thinking.
9	Michaelsen & Sweet (2008)	<i>The Essential Elements of Team-Based Learning</i>	TBL provides a structure that reinforces the responsibility of individuals and groups in collective critical thinking.
10	Liu et al. (2020)	<i>Effects of Collaborative Concept Mapping on Critical Thinking</i>	Students who worked collaboratively on creating concept maps showed significant improvements in critical thinking.

### Interpretation of Data from Literature Review Findings

Based on the analysis of the ten scientific articles studied, it can be concluded that collaborative learning strategies in general have a positive influence on improving the critical thinking skills of general education students. All articles reviewed highlight how structured social interaction, cooperation in problem solving, and collective reflection can encourage students to think more deeply, analytically, and evaluatively about learning materials. This approach is in line with the principles of social constructivism, where knowledge is built through social interaction and negotiation of meaning.

Problem-Based Learning (PBL) and Project-Based Learning (PjBL) strategies emerged as the two most frequently discussed methods in the literature. Articles by Hmelo-Silver (2014) and Thomas (2017) show that PBL and PjBL provide ample space for students to develop critical thinking skills through real-world problem-solving and collaborative projects. In this process, students are encouraged to evaluate information, debate intellectually, and make logical arguments. This creates a challenging and constructive learning environment.

In addition, the Cooperative Learning approach as studied by Slavin (2014) and Gillies (2016) shows that an organized group structure, clear member roles, and group evaluation can improve individual responsibility and the quality of discussions. When



students are encouraged to teach each other, provide feedback, and build mutual understanding, there is an improvement in the analytical and synthesis skills that are at the core of critical thinking.

The Team-Based Learning (TBL) approach as discussed by Michaelsen and Sweet (2008) also makes an important contribution in building a culture of critical thinking in the classroom. TBL combines individual and group work with a team evaluation system, which has been shown to improve the quality of interactions and encourage academic reflection. In this context, students not only absorb information, but also process, question, and defend their ideas critically in front of their peers.

Articles discussing specific techniques such as Think-Pair-Share, Jigsaw, and Collaborative Concept Mapping show that simpler but structured forms of collaboration are also effective in developing critical thinking. Liu et al. (2020) show that even through activities such as collaborative concept maps, students can build relationships between concepts more deeply and systematically, which strengthens higher-level thinking skills.

Overall, the findings of this literature study confirm that the effectiveness of collaborative learning strategies is highly determined by a structured learning design, the active role of lecturers as facilitators, and the full involvement of students in the learning process. This strategy is not only relevant for improving cognitive abilities, but also to form students who are able to think reflectively, logically, and openly to different points of view—competencies that are very important in the world of education and social life in the 21st century.

## Discussion and Analysis

The results of the analysis of the ten articles reviewed showed that collaborative learning strategies consistently contributed positively to the development of critical thinking skills of general education students. Almost all studies agree that a structured collaborative process is able to encourage

students' active cognitive involvement in the learning process (Gillies, 2016; Prince, 2004). Strategies such as Problem-Based Learning (PBL), Project-Based Learning (PjBL), Team-Based Learning (TBL), to Think-Pair-Share and Collaborative Concept Mapping techniques have proven to be effective in building analytical, reflective, and evaluative thinking of students (Hmelo-Silver, 2014; Liu et al., 2020).

In terms of the type of strategy, Problem-Based Learning is the most frequently studied method and has been proven to consistently encourage critical thinking skills. Hmelo-Silver (2014) explained that in PBL, students are faced with real problems that require group discussions, information searches, and solution formulation. This process requires students to think systematically, consider various perspectives, and develop the ability to judge and infer logically—which is the essence of critical thinking (Hmelo-Silver, 2014).

In addition to PBL, Project-Based Learning also makes a significant contribution to improving critical thinking skills. Thomas (2017) shows that collaborative projects encourage learners to not only complete tasks, but also understand the context and make decisions based on data analysis. PjBL provides space for students to think deeply, formulate arguments, and evaluate the learning process collectively (Thomas, 2017). Similarly, in Cooperative Learning, structured social interaction in groups strengthens critical and academic thinking skills (Slavin, 2014).

The Team-Based Learning (TBL) strategy also strengthens the effectiveness of collaborative learning. Michaelsen and Sweet (2008) revealed that the group work structure that prioritizes individual responsibility and team collaboration is able to encourage students to think reflectively and critically. In addition, activity-based techniques such as Collaborative Concept Mapping allow students to systematically organize and connect ideas, which



significantly affects the improvement of critical thinking skills (Liu et al., 2020).

These findings reinforce Vygotsky's theory of social constructivism, which emphasizes that meaningful learning occurs in social contexts through interaction and collaboration (Vygotsky, 1978). Proximal development zones (ZPDs) are key in collaborative learning strategies, as students can learn better with the support of more capable peers. This collaborative process creates a space for discussion and reflection that is essential for the development of critical thinking (Laal & Ghodsi, 2012).

However, the implementation of collaborative learning strategies is not without challenges. Some of the obstacles found include low motivation to learn, differences in participation between group members, and lack of facilitation from lecturers (Barkley et al., 2014). In Indonesia itself, the learning culture that still tends to be passive and an evaluation system that emphasizes memorization are the main obstacles to the implementation of this strategy. Therefore, pedagogical training for lecturers and curriculum adjustments are needed so that collaborative strategies can run optimally (Zakrajsek, 2016).

#### 4. Conclusion

Based on the results of a literature review of ten relevant articles, it can be concluded that collaborative learning strategies have proven to be effective in improving the critical thinking skills of general education students. Strategies such as Problem-Based Learning, Project-Based Learning, Team-Based Learning, and techniques such as Collaborative Concept Mapping provide space for students to actively engage in the learning process, encourage social interaction, and facilitate deep discussion and reflection. Through this approach, students not only understand the material, but are also trained to critically analyze, evaluate, and synthesize information.

The effectiveness of collaborative strategies in developing critical thinking skills is also supported by the theory of social constructivism which

emphasizes the importance of interaction and cooperation in the learning process. However, the success of this strategy is greatly influenced by supporting factors such as the right learning design, the active role of lecturers as facilitators, and the readiness of students to be actively involved. Obstacles such as unequal participation, passive learning culture, and limitations of evaluation systems need to be considered in their implementation, especially in the context of Indonesian education.

As a recommendation for further research, it is recommended that studies be conducted empirically through quantitative or mixed approaches to directly measure the influence of collaborative strategies on students' critical thinking skills. In addition, further exploration of the types of collaborative strategies that best suit the characteristics of Indonesian students is needed, as well as the development of an evaluation model that can measure the results of critical thinking authentically. Research can also expand the scope of various study programs or other educational contexts, in order to enrich the understanding of the effectiveness of this approach across disciplines.

#### References

- Barkley, E. F., Cross, K. P., & Major, C. H. (2014). Collaborative learning techniques: A handbook for college faculty (2nd ed.). Jossey-Bass.
- Booth, A., Sutton, A., & Papaioannou, D. (2016). Systematic approaches to a successful literature review (2nd ed.). SAGE Publications.
- Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2), 27–40. <https://doi.org/10.3316/QRJ0902027>
- Brookfield, S. D. (2012). Teaching for critical thinking: Tools and techniques to help students question their assumptions. Jossey-Bass.
- Chong, M. C., Francis, K., Cooper, S., & Abdullah, K. L. (2005). Evaluation of problem-based learning: A review of the literature. *Nurse Education Today*, 25(3), 277–282.
- Facione, P. A. (2015). Critical thinking: What it is and why it counts (2015 update). Insight Assessment.



- Gillies, R. M. (2016). Cooperative learning: Review of research and practice. *Australian Journal of Teacher Education*, 41(3), 39–54.
- Gillies, R. M., & Boyle, M. (2010). Teachers' reflections on cooperative learning: Issues of implementation. *Teaching and Teacher Education*, 26(4), 933–940.
- Gokhale, A. A. (1995). Collaborative learning enhances critical thinking. *Journal of Technology Education*, 7(1), 22–30.
- Halpern, D. F. (2014). *Thought and knowledge: An introduction to critical thinking* (5th ed.). Psychology Press.
- Hmelo-Silver, C. E. (2004). Problem-based learning: What and how do students learn? *Educational Psychology Review*, 16(3), 235–266.
- Johnson, D. W., Johnson, R. T., & Smith, K. A. (2014). Cooperative learning: Improving university instruction by basing practice on validated theory. *Journal on Excellence in College Teaching*, 25(3-4), 85–118.
- Laal, M., & Ghodsi, S. M. (2012). Benefits of collaborative learning. *Procedia - Social and Behavioral Sciences*, 31, 486–490.
- Liu, C.-H., Yin, C.-H., & Tsai, M.-J. (2020). Effects of collaborative concept mapping on students' critical thinking. *Educational Technology & Society*, 23(2), 65–76.
- Michaelsen, L. K., & Sweet, M. (2008). The essential elements of team-based learning. *New Directions for Teaching and Learning*, 2008(116), 7–27.
- Paul, R., & Elder, L. (2014). *The miniature guide to critical thinking: Concepts and tools* (7th ed.). Foundation for Critical Thinking.
- Prince, M. (2004). Does active learning work? A review of the research. *Journal of Engineering Education*, 93(3), 223–231. <https://doi.org/10.1002/j.2168-9830.2004.tb00809.x>
- Slavin, R. E. (2014). *Cooperative learning and academic achievement: Why does groupwork work?* Routledge.
- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104, 333–339. <https://doi.org/10.1016/j.jbusres.2019.07.039>
- Thomas, J. W. (2000). *A review of research on project-based learning*. The Autodesk Foundation.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.
- Zakrajsek, T. (2016). *The new science of learning: How to learn in harmony with your brain* (2nd ed.). Stylus Publishing.
- Zhou, Z., & Pan, S. (2019). The transformation of general education in Chinese universities: Trends and challenges. *International Journal of Educational Development*, 65, 78–85.