

# Collaborative Teaching Practices and Technology Mindset on Students' Critical Thinking Abilities

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## ABSTRACT

This study examines the connection between students' critical thinking skills, collaborative teaching methods, and technology mindset in the context of Malaybalay City during the 2024–2025 school year. Given the increasing awareness of the need for critical thinking in education, particularly among Filipino students, this study attempts to determine the collaborative methods teachers now employ, their perspectives on technology, and their effects on students' analytical abilities. Data were gathered using a quantitative study approach by administering a structured survey to instructors in different public schools. Effective collaborative teaching strategies and a positive technology mindset significantly correlate with students' improved critical thinking abilities. Descriptive and inferential statistics were utilized to examine the data. The results highlight the need for educational reforms that use technology and collaborative techniques to provide a stimulating learning environment. The issues of a quickly changing educational landscape are addressed by offering suggestions for professional development in collaborative teaching and technology integration to help teachers foster students' critical thinking skills.

**Keywords:** Collaborative teaching practices, technological mindset, critical thinking skills

## INTRODUCTION

Recent studies have shown that collaborative teaching practices and a technology-driven mindset significantly impact learners' critical thinking skills. This information is crucial for educators. Worldwide, the importance of critical thinking in education is increasingly recognized due to the growing societal demand for problem-solving skills (Facione & Gittens, 2016). According to the recent results of the Programme for International Student Assessment (PISA), Filipino students have low creative and critical thinking skills, scoring an average of only 14 points in creative thinking. This score is below the standard the Organization for Economic Co-operation and Development (OECD) sets, which aims to evaluate educational systems worldwide (Chi, 2024). With this, the demand to implement educational reforms has been emphasized with the use of collaborative teaching and learning with the help of the new trends in technology to cultivate critical thinking (The Philippine Star, 2024). Furthermore, Brazel (2024) said integrating technology, specifically in collaborative environments with varied learning resources, can meaningfully improve the students' analytical abilities. Moreover, to improve the critical thinking skills of learners with different socioeconomic circumstances, the problem of the digital gap in education should also be addressed.

Enhancing students' critical thinking skills requires integrating collaborative teaching approaches with a technology mentality. Knowledge of the frequency, varieties, and effects of teachers' collaboration on student outcomes might help educators develop more successful lesson plans. It is crucial to evaluate teachers' attitudes toward technology to promote a positive learning environment, their integration of digital tools into the curriculum, and professional development needs. Studies reveal that educators possessing a good attitude toward technology have a higher probability of involving students, enhancing their drive, and producing better academic results (Langreo, 2023). Furthermore, evaluating students' critical thinking skills and examining the connections between these skills, technological mindsets, and collaborative teaching methods can uncover vital

relationships that affect student success in the classroom. Teachers can adapt their teaching strategies to fit the different requirements of their students in the classroom by identifying the characteristics that predict students' critical thinking abilities.

Filipino students must develop their critical thinking abilities, particularly in light of the quickly changing nature of the educational system. Technology combined with collaborative teaching methods creates dynamic learning environments that engage students and provide them with the skills they need to succeed in the twenty-first century. According to research, students participating in collaborative learning can acquire effective communication, negotiation, and problem-solving skills and a more profound comprehension and retention of the material (Aitken, 2023). Access and resource disparities can be addressed in the Philippines by employing technology, where socioeconomic inequities exacerbate educational issues. Technology-enabled collaborative learning technologies, for example, have been demonstrated to increase student motivation and engagement, making learning more relevant and participatory (Milo, 2023). Additionally, by embracing digital platforms for collaboration, educators set an example for their pupils in critical skills, equipping them for future workplace needs where technological proficiency and teamwork will be necessary (Poth, 2020). Therefore, encouraging a collaborative culture aided by technology is essential for raising academic standards and strengthening students' critical thinking skills in the Philippines.

Technology integration in the classroom has been demonstrated to improve significantly collaborative teaching methods, which in turn helps students develop their critical thinking abilities. Turkey's study by Yilmaz et al. (2021) found that introducing technology gradually enhances the critical and creative thinking of aspiring teachers and their 21st-century competencies. According to research, digital tools such as smartphones and websites enhance student engagement and facilitate collaborative learning environments, which is essential for fostering critical thinking (Timotheou et al., 2022). Akram (2022) said teachers' opinions on technology integration are also important; favorable views regarding its use in the classroom can result in more engaging and productive learning environments. It has also been demonstrated that incorporating collaborative projects with digital tools improves students' learning results and prepares them for new challenges (Torchia, 2023). These results highlight how crucial it is for educators to include technology and teamwork in the classroom to help kids develop their critical thinking abilities.

The main goal of this study is to determine how students' critical thinking skills, technology mentality, and collaborative teaching methods relate to each other in the Division of Malaybalay City academic year 2024–2025. This study intends to determine the current state of students' critical thinking abilities, the frequency and kinds of collaborative practices teachers use, and their views toward technology integration in the classroom. The study examines how technology and collaborative spaces improve learning outcomes, and increasing student engagement can be achieved by examining these variables. This research aims to offer knowledge that will assist teachers in implementing efficient methods for encouraging students' critical thinking abilities in a quickly changing educational environment.

## Research Problems

Fostering students' critical thinking skills in the modern educational environment depends critically on a partnership between collaborative teaching approaches and the technological mentality. Scholarly investigations demonstrate that cooperative instruction raises student interest and develops critical thinking abilities for analytical reasoning and problem-solving (Baecher, 2023). This study specifically aimed to answer the following questions to improve the learners' critical thinking skills in different learning areas. This study explored how these pedagogical practices can be effectively integrated.

1. What is the level of collaborative teaching practices that teachers employ in terms of:
  - a. frequency of collaboration;
  - b. types of collaborative practices; and
  - c. impact on student outcomes?

2. What is the level of technology mindset that teachers possess in the following aspects:
  - a. attitude towards technology;
  - b. integration into the curriculum; and
  - c. professional development needs?
3. What is the level of critical thinking skills that students portray?
4. Is there a relationship between students' critical thinking abilities and:
  - a. collaborative teaching practices; and
  - b. technology mindset?
5. Is there any variable, singly or in combination, that best predicts the students' critical thinking abilities?

## **METHODOLOGY**

### **Research Design**

#### **The Quantitative Research Design**

This study used a quantitative research design to thoroughly scrutinize the relationship between collaborative teaching practices, technology mindset, and students' critical thinking abilities. The quantitative approach permitted the gathering and analysis of numerical data, permitting the examination of patterns and relationships among the variables of interest. This design effectively addresses the research questions by enabling the measurement of specific variables related to teaching practices and their effects on student outcomes.

#### **Research Setting**

The research was conducted in the Department of Education, Division of Malaybalay City, specifically in Malaybalay City National Science High School and Bukidnon National High School. The researcher intentionally selected these schools due to their diverse educational environments and abundant resources for collaborative teaching and technology integration. Carrying out this study within this context unveiled profound insights into the unique educational practices of students locally.

#### **Participants of the Study**

In this study, the respondents were 140 teachers from the Department of Education (DepEd) Division of Malaybalay City, Bukidnon.

#### **Sampling Procedure**

A stratified sampling method was utilized to gather a diverse representation of teachers across different subjects and grade levels. This sampling technique provided the necessary data and portrayed a clear interpretation of collaborative teaching practices and technology mindsets among division teachers.

#### **Data Gathering Procedure**

A survey questionnaire was employed to gather information in order to assess students' critical thinking skills, teachers' collaborative teaching methods, and their technology mentality. Based on two related online research, the questionnaire included closed-ended questions with a 5-point Likert scale to measure answers efficiently. The surveys were given out on paper. Before distributing the survey instruments, a pilot test was carried out to guarantee the survey items' reliability and clarity. Sections measuring attitudes, integration practices, and

professional development needs were added to the survey to improve the assessment of teachers' technology mindsets. A more thorough knowledge of the student's critical thinking capabilities was made possible by including performance challenges and self-assessment items in the questionnaire. This methodical methodology guarantees a thorough evaluation of teachers' and students' competencies.

### Data Analysis

Statistical methods were used to collect and analyze data appropriate for quantitative research. Next, a summary of critical variables was gathered using descriptive statistics. Then, inferential statistics, including correlation analysis and multiple regression, were used to assess the relationships between collaborative teaching practices, technology mindsets, and students' critical thinking abilities. Lastly, a data analysis was conducted using the statistical software SPSS to ensure an accurate and efficient interpretation of the results.

## RESULTS AND DISCUSSION

### Level of Teacher’s Collaborative Teaching Practices

#### Summary of Mean Scores of Teachers’ Collaborative Teaching Practices

Table 1. Summary of Mean Scores of Teachers’ Collaborative Teaching Practices

Parameter	Mean	SD	Qualifying Statement
Impact of Student Outcomes	4.41	0.49	High
Types of Collaborative Practices	4.27	0.47	High
Frequency of Collaboration	4.10	0.53	High
Overall Mean	4.26	0.49	High

#### Legend

Range	Descriptive Meaning	Qualitative Description
4.51-5.00	Strongly Agree	Very High
3.51-4.50	Agree	High
2.51-3.50	Neutral	Moderately High
1.51-2.50	Disagree	Low
1.00-1.50	Strongly Disagree	Very Low

The data shown in the table above emphasizes the mean scores of teachers' collaborative teaching practices, suggesting a generally high level of engagement across all parameters. The sub-variable "Impact of Student Outcomes" is a parameter with the highest mean score of 4.41, which suggests that teachers strongly believe their collaborative efforts greatly enhance student learning. Next, the "Types of Collaborative Practices," with a mean score of 4.27, and the "Frequency of Collaboration," with a mean score of 4.10, also suggest a strong agreement among teachers regarding the benefits of working together. With an overall mean of 4.26, it is clearly stated that collaborative teaching practices are highly valued by teachers, which may positively influence the students' critical thinking abilities. These results signify the relevance of the collaborative environment that teachers create, which will highly impact and improve educational outcomes.

When teachers collaborate to design their teaching strategies, they can make better decisions and build a shared understanding of the nature of the intended learning goals and how they might be accomplished in their situations (Lofthouse & Thomas, 2015). However, according to a study conducted by Svendsen (2016), professional development should be successfully implemented for teachers, or the learning community will be impacted. A positive learning community is crucial because it fosters collaborative teacher learning and keeps instructors in a positive feedback loop. The learning community influences the professional growth of individual instructors and individual learning. Moreover, the collaborating experiences of teachers are affected by leadership, interpersonal dynamics, external responsibility pressures, and time and space constraints. Hence, building strong bonds of respect and trust with coworkers is also essential for teachers managing group initiatives to enhance instruction (Weddle et al., 2020).

When teachers place a significant priority on collaborative teaching methods, this will positively help students develop their critical thinking skills, which is very evident in a study by Mirza and Iqbal (2014); based on their findings, collaborative teaching (CT) significantly improves students' performance in mathematics, especially in conceptual comprehension and procedural knowledge. Furthermore, reading and math achievement increases more when teachers and schools collaborate more effectively. Additionally, instructors who work in schools with higher levels of collaboration improve more quickly (Ronfeldt et al., 2015).

Duran and Miquel (2019) stated that peer collaboration gives the teacher a new and transformational role that makes it easier to perform tasks like ongoing evaluation or instant individualized attention, which is more challenging in settings that employ a standard teaching strategy. In addition, collaboration in teaching is crucial for inclusive education, for it allows teachers to address the various and unique needs of the learners. Collaboration also serves as a teaching tool; co-teachers can turn collaboration into a professional development opportunity by encouraging one another's observation, introspection, and preparation of creative approaches. However, teacher training is necessary to guarantee that students receive better attention and that teachers learn from one another; this needs to be approached experimentally.

Adewale (2024) in his study stated that when it comes to the frequency of teachers' collaborative teaching practices, the utilization of collaborative teaching techniques by teachers was shown to differ significantly by gender and age. Female and younger respondents employed the teaching strategies more frequently than male and older respondents. Therefore, it is advised that teachers, particularly those older and male, receive training and motivation to incorporate collaborative teaching practices into their lessons. Pancsofar and Petroff (2016) also said that teachers often use co-teaching rather than co-planning and co-instructing, in which one person plans and delivers the lesson while the other offers tailored support. Based on what was mentioned above, the results of the studies signified the vital role that teachers' demographic traits have a significant role in adopting collaborative teaching practices. This means that older male teachers need special training and assistance to increase their use of these successful teaching techniques.

Chew et al. (2020), in their study, "Enhancing Critical Thinking Skills of Elementary School Students through Collaborative Learning," found that students in collaborative learning groups fared better when the identical critical thinking enhancement practice was used in individual and group learning settings. Students were exposed to many viewpoints on the problem from their peers, which allowed them to reevaluate their responses through peer conversations. In addition, Yusal et al. (2021) also concluded that students' critical thinking abilities improved to a high category when collaborative problem-solving using decision-making issues was implemented, and the majority of these changes are likewise classified as high. Therefore, employing decision-making problems to solve difficulties collaboratively is a good way to develop critical thinking abilities.

Effective learning and school improvement depend on teachers using collaborative teaching methods. Research shows that collaborative teaching methods and teacher collaboration within professional learning communities have a favorable effect on students' academic performance and teachers' professional development (Khasawneh et al., 2023). Hence, the strategies and methods mentioned foster a better perception of content and teaching methods, create supportive relationships, and lessen feelings of isolation. Accordingly, even with its challenges, effective teacher collaboration can significantly enhance instructional strategies and improve student learning outcomes.



## Teachers' Technology Mindset

### Summary of the Level of Teachers' Technology Mindset

Table 8. Summary of Mean Scores of Teachers' Technology Mindset

Parameter	Mean	SD	Qualifying Statement
Attitude Towards Technology	4.49	0.53	High
Professional Development Needs	4.25	0.49	High
Integration Into the Curriculum	4.16	0.47	High
Overall Mean	4.30	0.49	High

#### Legend

Range	Descriptive Meaning	Qualitative Description
4.51-5.00	Strongly Agree	Very High
3.51-4.50	Agree	High
2.51-3.50	Neutral	Moderately High
1.51-2.50	Disagree	Low
1.00-1.50	Strongly Disagree	Very Low

The average teachers' technological mentality scores across several criteria are compiled in the table, showing a generally favorable attitude toward using technology in the classroom. Teachers who receive an overall mean score of 4.30, which is classified as "High," have a strong attitude toward technology (4.49) and recognize the value of curricular integration (4.16), professional development needs (4.25), and other factors. With these results, teachers are welcoming to new technology, and they fully understand how important professional development is for it to help them successfully integrate technology into their lesson plans. The steady rise in high ratings indicates a shared dedication to improving technological proficiency, crucial for creating a contemporary learning environment.

Teachers' personal and professional use of digital tools is influenced by digital mindsets, including presumptions about technology's affordances (Tour, 2015). With this, teachers should utilize the tools available since teachers can change their classes to inspire their students to pursue knowledge. Because of this, teaching dynamic, engaging, and visually appealing classes with technology is possible, knowing that it can facilitate the teaching-learning process. Moreover, students and teachers benefit greatly from using technology when appropriately chosen. However, it greatly emphasized not only the role of the teacher as a mediator in the teaching and learning process but also the necessity of the teacher's autonomy and expertise in developing their teaching methodology (Santos, 2024). Therefore, teachers must have the necessary skills and capability to work along in incorporating technology into their lesson plans.

According to research, most teachers have favorable opinions about using technology in the classroom. Technology is viewed well by Filipino teachers, and integration techniques are strongly correlated with perceived ease of use (Nueva, 2019). In India, a study by Mahajan (2016) revealed that with no discernible variations by gender or experience, only 25% of teachers expressed positive opinions about using technology in the classroom. Positive teacher attitudes toward ICT are positively correlated with increased levels of technology integration in Spanish schools, resulting in a positive feedback loop that improves learning

(González-Sanmamed et al., 2017). These results highlight the value of encouraging teachers to have positive attitudes about technology to facilitate successful classroom integration. However, a more extensive study is required to reach firm conclusions.

According to research, teachers need professional development to successfully incorporate technology into the classroom. Teachers who are immigrants or digital natives both need training, but newcomers need more basic skills training (Li et al., 2020). According to Beberman (2020), teacher self-efficacy for integrating technology can be increased through professional development, with outcomes influenced by experience and perspective. However, present training methodologies may not expand teachers' pedagogical subject knowledge repertoires or entirely suit their demands (Gumbo, 2020). The demands of digital native and immigrant teachers should be considered in future technology professional development, along with the importance of meaningful links between technology and instruction and the inclusion of one-on-one coaching from on-site experts.

Adnan et al. (2020) stated that teachers face constant hurdles when integrating technology into the curriculum, which calls for a change in perspective and pedagogical strategy. Teachers' beliefs and adaptability are among the most critical indicators of a successful technology integration curriculum implementation. Najdabbasi and Pedaste (2014) also added that when it comes to incorporating technology into the curriculum, teachers' pedagogical views and expertise are crucial.

Effective technology integration occurs when teachers understand the curriculum and learning processes. Linking students' needs with teachers' knowledge of technology's role in learning achieves high student engagement through inquiry. This leads teachers to recognize technology's benefits and discover practical ways to incorporate it into their lessons (Morehead & LaBeau, 2020).

In Aljehani's (2024) study "Enhancing Student Learning Outcomes: The Interplay of Technology Integration, Pedagogical Approaches, Learner Engagement, and Leadership Support," he found out that technology-enabled learner-centered pedagogies produce more engaging and meaningful learning experiences, which improve comprehension and memory. Effective leadership support further enhances the technological ability to improve student learning outcomes, which promotes technological projects and cultivates an innovative culture. Effective technology integration has the potential to greatly improve educational results when backed by learner-centered strategies and leadership support. These insights can help educational institutions create evidence-based practices to improve student learning outcomes.

Moreover, Sunny and Cherobin (2023) mentioned in their case study that Robotic teacher assistants helped with classroom management and customized instruction, which increased student engagement and attentiveness. Points and incentives, among other gamification components, encouraged students to feel competitive and excited, raising their level of effort and engagement. Immersion learning experiences offered by virtual reality simulations led to a better comprehension of difficult ideas and enhanced memory recall. For those institutions with little to no budget for technology integration, Abou-Khalil et al. (2021) said that student involvement in emergency online learning in low-resource settings and student-content engagement techniques like screen sharing and recordings are thought to be the most successful. Fontela and White (2017) emphasized that educators should not presume that the resources they plan to utilize will be accessible if they aim to harness the benefits of technology-infused teaching. When technology plans do not come to fruition, teachers can adapt by being a bit flexible. It is crucial to remember that technology serves as a tool. Its value lies not in the additional features it may offer, but in how learners engage with it to develop their own ideas.

It is also relevant to take note of teachers' perspectives on integrating technology into the classroom successfully. Professional development programs can also significantly enhance teachers' self-efficacy regarding technology use based on research. Educators in schools with a higher degree of technology integration tend to hold more positive views about information and communication technology (ICT), which supports the learning process. That is why it is important to recognize the factors in professional development and teacher education programs, for they foster effective technology integration in the classroom, as they can serve as catalysts for innovation in educational settings.

## Students Critical Thinking Skills

### Mean Scores of Students Critical Thinking Skills

Table 9. Mean Scores of Students Critical Thinking Skills

Parameter	Mean	SD	Qualifying Statement
My students demonstrate open-mindedness when considering different viewpoints during discussions.	3.93	0.76	High
My students ask insightful questions that reflect their understanding of complex topics.	3.88	0.73	High
My students can provide constructive feedback on their peers' work during group activities.	3.87	0.72	High
My students can apply learned concepts to real-world problems effectively and creatively.	3.83	0.79	High
My students show persistence when faced with challenging tasks or problems.	3.82	0.78	High
Overall, my students exhibit strong critical thinking skills across various subjects.	3.80	0.83	High
My students can articulate their reasoning processes clearly during discussions or presentations.	3.72	0.82	High
My students can evaluate arguments and evidence presented in various formats (e.g., text, video).	3.70	0.77	High
My students can synthesize information from multiple sources when completing assignments.	3.69	0.78	High
My students can analyze information critically before making decisions or conclusions about it	3.65	0.80	High
Overall Mean	3.79	0.61	High

#### Legend

Range	Descriptive Meaning	Qualitative Description
4.51-5.00	Strongly Agree	Very High
3.51-4.50	Agree	High
2.51-3.50	Neutral	Moderately High
1.51-2.50	Disagree	Low
1.00-1.50	Strongly Disagree	Very Low

The table portrays the mean scores of students' critical thinking skills, displaying an overall positive assessment across different parameters, all marked as "High." With a mean score of 3.93, students show notable strengths in open-mindedness, and with a mean score of 3.88, the students show the ability to ask insightful questions (3.88), with an overall mean score of 3.79, suggesting their high level of engagement in discussions and understanding of complex topics. Their capacity for critical thinking is further demonstrated



by other domains, such as offering helpful criticism (3.87) and using acquired ideas to solve practical issues (3.83). The overall scores indicate that students successfully develop critical thinking skills needed for academic performance and real-world applications, even if the lowest scores are synthesizing (3.69) and critically analyzing information (3.65).

Tripon (2019) said that students with critical thinking abilities will succeed in the classroom and the workplace. These abilities include problem-solving, evaluation, inference-making, and argument analysis. Studies have found that many students struggle with critical thinking; one study found that 64% of high school students lacked critical thinking abilities (Susilawati et al., 2020). However, studies indicate that focused interventions can help enhance these abilities. Creating a solicitous learning environment can enhance Students' critical thinking skills, providing examples of cognitive processes and advice (Persky et al. (2018). It is interesting to note that in specific academic disciplines, especially those that include unconventional problem-solving techniques, there is a positive association between creative thinking and critical thinking abilities (Ulger, 2016). Critical thinking skills can be developed by concerted efforts at the curriculum and individual course levels, despite obstacles including students' perspectives, inadequate metacognitive abilities, and cognitive biases.

According to Mulalić (2022), students' critical thinking skills significantly affect their academic performance and personal development, which allows them to assess arguments, examine data, and resolve challenging issues. These abilities are vital for aspiring educators since they boost their capacity to raise the standard of instruction and learning (Sudrajat et al., 2020). Sagar and Ranbir (2024) said that teachers are essential in developing critical thinking abilities through various pedagogical strategies, including inquiry-based learning, Socratic questioning, and problem-solving exercises. In an article by Qizi (2024), she examined how important pedagogy is in helping students develop their critical thinking abilities. She explored various instructional methods, approaches, and various teaching-learning strategies that teachers can use to help improve students develop critical thinking skills. She found that teachers can better prepare students for the problems of the modern world by comprehending the significance of pedagogy in this setting. She concluded that thinking critically is essential for success in the twenty-first century because it enables people to assess, evaluate, and synthesize information to solve complex problems and make well-informed judgments.

## Relationship of Collaborative Teaching Practices and Technology Mindset on Students' Critical Thinking Abilities

### Correlation of Collaborative Teaching Practices and Technology Mindset

Table 19. Correlation of Collaborative Teaching Practices and Technology Mindset on Students' Critical Thinking Abilities

Independent Variables	Pearson Coefficient (r-value)	Probability (P-Value)
<b>Collaborative Teaching Practices</b>	0.559	.000**
<b>Frequency of Collaboration</b>	0.472	.000**
<b>Types of Collaborative Practices</b>	0.495	.000**
<b>Impact on Student Outcomes</b>	0.501	.000**
<b>Technology Mindset</b>	0.566	.000**
<b>Attitude Towards Technology</b>	0.462	.000**
<b>Integration into Curriculum</b>	0.519	.000**
<b>Professional Development Needs</b>	0.506	.000**

\*\* Correlation is significant at the 0.01 level (2-tailed).

The table shows the solid positive connections across all parameters between students' critical thinking skills and various independent variables linked to collaborative teaching approaches and technology mindset. The most significant association between collaborative teaching methods ( $r = 0.559$ ) and technology mindset ( $r = 0.566$ ) suggests that students' critical thinking abilities significantly improve as teachers increase their collaborative efforts and technology mindset. Further highlighting the value of teacher cooperation in promoting critical thinking are characteristics like the frequency of collaboration ( $r = 0.472$ ) and the sorts of collaborative practices ( $r = 0.495$ ). These teaching methods and attitudes toward technology are essential for improving students' cognitive abilities and overall learning results, as indicated by the statistical significance of each correlation at the 0.01 level.

A recent study showed that instructional methods and technology integration are essential for improving students' cognitive abilities and learning results. Despite using various technologies, many teachers need more sophisticated pedagogical abilities for successful online instruction. The study also highlighted the value of teacher preparation programs in fostering technology-enhanced pedagogical skills and the necessity for educational institutions to provide suitable safety protocols for online learning environments (Nyngas, 2024). Furthermore, Ismael and Al-Badi (2014) said that both students and teachers agreed that educational technology significantly improves the overall learning experience for students and the teachers' teaching style. Moreover, Hamengkubuwono et al. (2022) added that teacher collaboration significantly and favorably impacted students' critical thinking abilities more than its opposite in their experiment. Students who received instruction from teachers who collaborated with them retained critical thinking abilities. Respectively, it was believed by students that teacher collaboration helps improve their awareness, metacognitive abilities, and collaborative skills. Hence, integrating technology with instructional methods is very important to improve students' cognitive abilities and learning outcomes. Educational institutions should prioritize teacher preparation programs and establish robust safety protocols to enhance instruction and collaborative teaching practices.

Furthermore, Yooyativong (2018) concluded in his study that many teachers lack the digital literacy and collaborative teaching methods experience needed to successfully adopt them in their classrooms. Teachers frequently find it difficult to choose and apply the right digital resources for their lessons. That is why a study by Muñoz et al. (2021) concluded that enhancing teachers' digital competencies and collaborative behaviors requires professional development. Students' development of digital competence is closely linked to cross-curricular projects that use digital technology, and teacher involvement in professional networks is linked to the execution of such projects. In addition, another study by Jaipal-Jamani et al. (2015) said a Technological, Pedagogical, and Content Knowledge (TPACK)- Based learning model, faculty members' instructional needs, and self-reflection on evolving teaching methods are all essential components of successful professional development programs. Hence, teachers and students can benefit greatly from using digital technology for teacher cooperation in the digital age, particularly regarding professional learning activities and cross-curricular project implementation.

### Variables that Best Predict the Students' Critical Thinking Skills

#### Regression Analysis of Variables that Best Predict the Development of Students' Critical Thinking Skills

Table 20. Regression Analysis of Variables that Best Predict the Development of Students' Critical Thinking Skills

Predictor Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.141	0.459		0.308	.759
Collaborative Teaching Practices					

<b>Maintaining a Toolbox of Behavioral Strategies</b>	0.108	0.032	0.172	3.372	.001
<b>Emotional Intelligence</b>					
<b>Social- Awareness</b>	0.265	0.052	0.306	5.055	.000
<b>Self- Awareness</b>	0.159	0.048	0.191	3.342	.001
<b>Managing Emotions</b>	0.188	0.049	0.227	3.857	.000

R= 0.688, R<sup>2</sup>= 0.474, F= 55.110, p-value=.000

The table's regression analysis identifies important predictor variables significantly impacting how well students develop their critical thinking abilities. With an R<sup>2</sup> value of 0.474, the model shows an excellent overall fit, meaning that the included predictors account for around 47.4% of the variance in critical thinking abilities. With the highest standardized coefficients, with (Beta = 0.306) for social awareness and (Beta = 0.227) for emotion management, collaborative teaching methods and other components of emotional intelligence stand out as noteworthy contributors. This suggests that these practices promote student engagement and cognitive development. Furthermore, having a toolkit of behavioral strategies (Beta = 0.172) and being self-aware (Beta = 0.191) have a good impact. The significance of collaborative techniques and emotional intelligence in developing students' critical thinking skills is highlighted by the statistical significance of all predictors.

## CONCLUSIONS

This study's findings highlight the importance of teachers' collaborative teaching techniques and positive technology mindset to improve the learners' critical thinking skills. Moreover, the high mean scores indicate that teachers appreciate the impact of effective teamwork, which significantly enhances student learning outcomes. This scenario propagates that school administrators and teachers should provide a learning environment where students can develop their critical thinking, problem-solving, and open-mindedness abilities. Moreover, the robust connection between students' cognitive development and teachers' collaborative practices highlights the strategies' vital importance in building effective learning environments. Educational institutions can provide students with the critical thinking abilities necessary for their academic success and facing real-world situations through the promotion of collaborative approaches.

## RECOMMENDATIONS

Educational institutions are encouraged to prioritize professional development programs that stress collaborative teaching techniques and emotional intelligence training to maximize the advantages of these approaches. Addressing gaps in technology integration and collaborative practices requires establishing a supportive learning environment and offering specific training to male and senior teachers. Funding professional development that blends cooperative learning techniques with technological instruction will also increase the effectiveness of education. Resources and support are also recommended to be available continuously to guarantee continued growth in these areas. Additionally, longitudinal research to monitor how teachers' abilities evolve and affect student outcomes can yield insightful information. Educational institutions can enhance the classroom environment, encourage critical thinking in students, and better prepare them for success in the classroom and the real world by prioritizing these factors.

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