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Students' Critical Thinking Skills in a Parallel Class Set-Up

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Abstract: This study examined the effect of a parallel class set-up on the critical thinking skills of college freshmen at PHINMA Cagayan de Oro College. The study employed a quantitative one-group pretest-posttest research design involving 130 students enrolled in four parallel class sections. Data were collected using a critical thinking rubric applied to students' essay responses administered before and after exposure to the parallel class set-up. The paired sample t-test was utilized to determine whether a significant difference existed between the pretest and posttest scores of the respondents. Findings revealed that students' critical thinking skills significantly improved after exposure to the parallel class set-up, indicating that the instructional structure and learning environment contributed positively to the development of higher-order thinking skills. The increase in posttest scores suggests that the teaching strategies and collaborative learning experiences embedded in the parallel class arrangement enhanced students' ability to analyze, evaluate, and reason critically. The study concludes that the parallel class set-up can be an effective instructional approach in fostering critical thinking skills among college students when supported by structured learning experiences and responsive teaching practices.

Keywords: *Parallel Class Set-Up, Critical Thinking Skills.*

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I. INTRODUCTION

Critical thinking is considered one of the most important skills in higher education because it enables students to analyze information, solve problems, and make sound decisions. In today's educational landscape, colleges and universities are expected to develop learners who can think critically and apply knowledge effectively in real-life situations. The development of critical thinking has become increasingly important as educational institutions adapt to flexible and student-centered learning environments. According to the Commission on Higher Education, higher education institutions are encouraged to promote outcomes-based education that develops higher-order thinking skills among students (CHED, 2017).

Research shows that active and collaborative learning environments contribute positively to the development of critical thinking skills. Students tend to develop a deeper understanding when they participate in discussions, problem-solving activities, and cooperative learning experiences (Abrami et al., 2018). Similarly, educational approaches that encourage interaction, reflection, and engagement help learners improve reasoning and analytical skills (Brookhart, 2017). These instructional practices are commonly observed in parallel class set-ups where students are grouped into sections following similar learning objectives and teaching strategies.

A parallel class set-up is commonly implemented in higher education institutions to manage large student populations while maintaining consistency in instruction. This arrangement may provide opportunities for collaboration, peer interaction, and structured learning experiences that can support cognitive development. Despite the growing use of parallel classes, few studies have examined their influence on students' critical thinking skills, particularly in the Philippine context. Most existing studies focus on academic performance and classroom management rather than on the development of higher-order thinking.

The lack of local studies regarding critical thinking in a parallel class set-up creates a research gap that this study intends to address. Furthermore, the increasing emphasis on innovative instructional strategies and quality learning outcomes makes this topic timely and relevant. Thus, this study aimed to determine the critical thinking skills of students exposed to a parallel class set-up and identify whether a significant difference exists between their pretest and posttest scores.

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➢ *Research Questions:*

The present study examined the effects of parallel classes on students' critical thinking skills and motivation in college freshmen students at PHINMA Cagayan de Oro College.

Specifically, the study sought to answer the following questions:

- *What is the Level of Students' Critical Thinking Skills in Parallel Classes Set up in Terms of:*

✓ Issues;
✓ Contexts;
✓ Perspectives;
✓ Assumption;
✓ Evidence; and
✓ Implications

- *Is there a Significant Difference in Critical Thinking Skills before and after the Intervention in a Parallel Class Set up?*

II. METHODOLOGY

This study employed a quantitative one-group pretest-posttest research design to determine the effect of a parallel class set-up on students' critical thinking skills. The design allowed the researcher to measure the students' critical thinking skills before and after exposure to the instructional arrangement using the same group of participants. The study was conducted at PHINMA Cagayan de Oro College, a private higher education institution implementing a parallel class set-up in selected general education courses. The study involved four intact sections of college freshmen enrolled in Science, Technology, and Society during the first semester of the academic year 2024–2025. A total of 128 students participated in the study.

The study utilized a simple random sampling technique through the selection of intact class sections with similar academic schedules and learning conditions. All students enrolled in the selected sections participated in the pretest and posttest assessments. Data were gathered using a researcher-made five-item essay test designed to measure students' critical thinking skills in Science, Technology, and Society. The instrument was subjected to content validation by experts to ensure its appropriateness and relevance to the objectives of the study. Students' responses were evaluated using the Critical Thinking Rubric developed by the Center for Teaching and Learning (CTL) and adapted from Northeastern Illinois University. The rubric assessed the following criteria: issues, context, perspective, assumption, evidence, and implication. The instrument also underwent inter-rater reliability with college instructors to ensure consistency in scoring.

Before the intervention, a pretest was administered to determine the students' initial level of critical thinking skills. After exposure to the parallel class set-up, a posttest was conducted using the same assessment procedure. The collected data were analyzed using a weighted mean to determine the level of critical thinking skills and a paired sample t-test to identify whether a significant difference existed between the pretest and posttest scores.

III. RESULTS AND DISCUSSION

Table 1. Students' Critical Thinking Skills in Parallel Class

Critical Thinking Skills	**Pre-test**		**Post-test**	
	Mean	QI	Mean	QI
Issues	1.31	LP	2.9	P
Contexts	1.26	LP	2.64	P
Perspectives	1.09	LP	2.24	P
Assumption	1.05	LP	2.13	P
Evidence	1.08	LP	1.93	SP
Implications	1.03	LP	1.73	SP
OVERALL	1.14	LP	2.29	P

Before the intervention, all dimensions of critical thinking skills fell within the "Limited Proficiency" (LP). The mean scores ranged from 1.03 to 1.31, with an overall mean of 1.14, which falls within the Limited Proficiency level. Among the indicators, issues obtained the highest mean (1.31), while implications recorded the lowest mean (1.03). These results suggest that before the instructional intervention, students had limited ability to analyze issues, understand contexts, evaluate perspectives, identify assumptions, examine evidence, and derive logical implications from information. This finding implies that the students initially possessed only basic or minimal critical thinking skills.

In contrast, the post-test results demonstrate a noticeable improvement across all indicators of critical thinking. The indicators of issues (M = 2.90), contexts (M = 2.64), perspectives (M = 2.24), and assumptions (M = 2.13) were interpreted as "Proficient" (P). Meanwhile, evidence (M = 1.93) and implications (M = 1.73) reached the level of "Some Proficiency" (SP). The overall mean increased to 2.29, corresponding to the "Proficient" level. This shift from Limited Proficiency in the pre-test to Proficiency in the post-test indicates that students were able to improve their ability to analyze problems, interpret contexts, and evaluate ideas more effectively after the instructional process.

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The improvement observed in the students' critical thinking skills may be attributed to the consistent instructional strategies, curriculum implementation, and assessment methods that highlight the benefits of structured collaborative environments applied in the parallel class set-up. Viado and Department's (2023) study on collaborative individual learning among Philippine secondary students showed that blending group-based tasks with individual reflection significantly improved post-test critical thinking scores, with participants attaining "Good" to "Very Good" levels in argumentation, evidence evaluation, and metacognition. This mirrors our findings suggesting that strategic alternation between collaboration and independent thinking boosts overall reasoning. Since all sections were exposed to the same learning materials, teaching approaches, and evaluation procedures, students were provided with structured opportunities to engage in analytical and reflective learning tasks. Such learning experiences are essential in developing higher-order thinking skills.

Furthermore, the findings highlight that although significant improvements were observed in most indicators, the dimensions related to evidence and implications remained at the Some Proficiency level, suggesting that students may still need further support in evaluating supporting information and drawing logical conclusions. (Annunziata et al. 2023) highlighted that critical thinking is related to both dispositions and skills, and that although there is no consensus on its definition, it is established that it is a higher-order cognitive process that can be trained. However, the results show that more studies have been conducted considering critical thinking as a skill than as a disposition, that the immersion approach has been widely used, and that some instructional strategies have shown greater effectiveness than others when the disciplines are evaluated independently. Additionally, according to Cui et al. (2021), the need for educational frameworks that support the development of critical thinking skills is for performance-based assessments and tailored instructional strategies. This approach aims to equip students with the necessary tools to critically engage with the vast amounts of information they encounter. These aspects of critical thinking often require deeper cognitive processing and continuous practice.

When a parallel class set-up is implemented with uniform instruction and consistent academic standards, it can contribute positively to the development of students' critical thinking skills. The improvement in mean scores from the pre-test to the post-test demonstrates the potential effectiveness of structured instructional practices in fostering higher-level thinking among students. Blyznyuk, T., & Kachak, T. (2024). Interactive learning often involves problem-solving activities, which help students to apply critical thinking skills to analyze information, evaluate results, and solve educational problems. Through hands-on experiences and real-world scenarios, students develop the ability to think critically and make informed decisions. Such active engagement encourages students to process information more deeply, leading to better understanding and retention of concepts.

Table 2. Difference of Students' Critical Thinking Skills in Parallel Classes before and after Intervention

Critical Thinking Skills	N	Mean	SD	t-value	Sig. (2-tailed)
Pretest	130	21.31	11.22	-29.36	.000
Posttest	130	55.89	9.21		

The computed t-value of -29.36 with a p-value of .000 indicates that the difference between the pre-test and post-test scores is statistically significant at the 0.05 level. This means that the observed improvement in students' critical thinking skills is not due to chance, but can be attributed to the effect of the instructional intervention.

The large increase in mean scores suggests that the students experienced a substantial development in their ability to analyze, evaluate, and reason, which are key components of critical thinking. Additionally, the decrease in standard deviation from 11.22 (pre-test) to 9.21 (post-test) indicates that students' scores became slightly more consistent after the intervention, suggesting a more uniform level of performance.

The significant improvement in students' critical thinking skills may be attributed to the structured instructional strategies, consistent curriculum, and aligned assessment methods implemented in the parallel class set-up. This pattern of improvement supports the findings of Paul and Elder (2019), who argue that critical thinking skills can be significantly developed through consistent, reflective practice embedded in active learning. Moreover, a learner who is capable of critical thinking will be able to use the information they have learned and the abilities they have developed in a way that optimizes their benefits (Hafni, 2018). Additionally, according to Arisoy, B., & Aybek, B. (2021), integrating critical thinking instruction into specific subjects can effectively develop students into stronger thinkers. Moreover, PBL significantly improved both critical thinking and environmental attitudes. Students trained under PBL were better equipped to think critically in solving real-world problems collaboratively, while the problem-solving nature of PBL also encouraged greater environmental awareness and concern (Amin, S. 2020). Additionally, according to the recent study, collaborative learning significantly improved students' critical thinking skills and supported long-term retention. Students also reported that CL positively influenced their emotional awareness, learning motivation, cognitive development, and open-mindedness (Warsah, I. 2021).

This indicates that the parallel class set-up had a significant positive effect on students' critical thinking skills, as evidenced by the substantial and statistically significant increase in scores from pre-test to post-test. This

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supports the effectiveness of the instructional approach in fostering higher-level thinking among students.

IV. CONCLUSIONS

The following conclusions were drawn from the study:

- The students exposed to the parallel class set-up demonstrated proficiency in critical thinking skills in terms of issues, contexts, perspectives, assumptions, evidence, and implications. This indicates that the instructional environment and learning experiences provided in the parallel class arrangement contributed positively to the development of students' higher-order thinking skills.
- A significant difference between the students' pretest and posttest critical thinking skills after exposure to the parallel class set-up. The improvement in scores suggests that the intervention enhanced students' ability to analyze issues, evaluate evidence, understand contexts, and draw logical implications, thereby supporting the effectiveness of the parallel class set-up in fostering critical thinking skills.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations are hereby given:

- Teachers handling parallel classes may continue implementing collaborative and student-centered instructional strategies that encourage analysis, reasoning, and reflective thinking to further strengthen students' critical thinking skills across the identified dimensions.
- Future researchers may conduct similar studies using a larger sample size, different academic disciplines, or other educational institutions to further validate and expand the findings of the study. They may also explore other variables related to critical thinking skills, such as teaching strategies, classroom interaction, or learning modalities within a parallel class set-up.

➢ *Compliance with Ethical Standards*

The researcher observed ethical conduct throughout the study. An IERC clearance was secured from Central Mindanao University regarding the ethical considerations of the study. Then, the researcher also secured permission from the teachers and students. Collected information remained anonymous and was stored securely. Any potential conflicts of interest between the researchers and participants were addressed and disclosed.

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