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Case-Based Blended Learning in Catholic Education: Enhancing Critical Thinking toward SDG 4 and SDG 10 in Eastern Indonesia

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ABSTRACT

Objective: *To examine the effectiveness of the Case Based Blended Learning (CB2L) model in improving the critical thinking skills of grade X students in Catholic Religious Education at a senior high school in Jayapura, Papua. This article reports the summative quasi-experimental phase of a broader research and development (R&D) project.* ***Method:*** *The study employed a quasi-experimental design using a non-equivalent control group pretest-posttest design involving 60 grade X students. The experimental class was taught using the CB2L model, while the control class received conventional instruction.* ***Results:*** *The experimental group achieved a higher posttest score (M = 82.97, SD = 5.31) than the control group (M = 69.67, SD = 7.25). The difference was statistically significant, t = 8.107, p < .001, with a mean difference of 13.30 points. The experimental group also demonstrated a moderate normalized gain (N-gain = 0.421), with mean scores increasing from 58.42 to 81.37.* ***Novelty:*** *The novelty of this study lies in the implementation of an integrated Case-Based Blended Learning model in Catholic Religious Education, combining authentic case-based learning with blended learning to foster critical thinking within a faith-based educational context. Unlike previous studies that primarily examined learning outcomes, this research demonstrates how contextual, technology-supported, and value-based learning can simultaneously promote inclusive and equitable quality education (SDG 4) while addressing educational disparities in geographically remote and culturally diverse regions such as Papua, thereby contributing to the achievement of reduced inequalities in education (SDG 10).*

INTRODUCTION

Critical thinking has become one of the most important learning outcomes in contemporary education. Students need this competence to interpret information, evaluate arguments, make responsible judgments, and respond to complex social and moral issues. In senior high school, critical thinking becomes more urgent because students face questions of identity, dignity, gender equality, faith, digital culture, and ethical responsibility. These questions do not only ask students to remember concepts. They require students to examine evidence, clarify values, compare alternatives, and justify decisions.

Catholic Religious Education has a strong potential to develop critical thinking because its content often deals with moral reasoning, human dignity, conscience, social responsibility, and the relationship between faith and action. The subject can help students connect doctrine with real life. It can also train students to examine concrete cases through Catholic values and reasoned judgment. However, classroom practice often does not reach this potential. Many religious education classes still rely on explanation, memorization, and teacher-centered discussion. Such instruction may transmit content, but it gives students limited opportunity to analyze cases, test claims, and defend conclusions.

The challenge becomes more specific in Papua. Students in Jayapura live in a multicultural context that contains diverse ethnic, religious, social, and digital experiences. This context requires a learning model that can connect religious education with real situations. It also requires flexible learning because infrastructure, access, and learning habits vary across

students. A model that combines case analysis and blended learning can respond to this situation. Case-based activities can bring moral and social problems into the classroom. Blended learning can extend learning time and give students access to materials before and after face-to-face sessions.

Case Based Learning (CBL) uses realistic cases as the center of learning. A case can present a problem, conflict, dilemma, or event that requires students to analyze facts, identify values, consider alternatives, and propose reasonable solutions. CBL has a strong fit with critical thinking because it moves learning from recalling definitions to examining contextual problems. In the case method, students do not only ask what a concept means. They ask how a concept works in a real situation and why a certain decision can be justified. Previous studies have shown that case-based approaches can increase student engagement, conceptual understanding, and analytical discussion (Herreid, 1997; Rybarczyk et al., 2007; Thistlethwaite et al., 2012; Williams, 2005).

Blended learning combines face-to-face learning with online learning. It allows teachers to distribute materials, cases, guiding questions, and resources before class. Students can read, search, and prepare before they meet their teacher and peers. Face-to-face sessions can then focus on deeper discussion, argumentation, feedback, and reflection. This design supports active learning because it reduces one-way explanation and expands opportunities for student participation. Blended learning also fits the learning profile of contemporary students who already interact with digital resources in everyday life (Garrison & Vaughan, 2008; Kintu et al., 2017; Stein & Graham, 2020).

The Case Based Blended Learning model, abbreviated as CB2L, integrates these two approaches. CB2L uses cases as the learning anchor and uses online activities to prepare students for classroom analysis. In the model developed in this study, students encounter cases related to Catholic Religious Education through online materials. They conduct self learning, analyze the case in groups, search relevant information, present their reasoning, and evaluate the learning process with teacher guidance. The model rests on constructivist learning theory because it positions students as active meaning makers. It also aligns with cognitive learning theory because students build understanding through interpretation, analysis, evaluation, inference, explanation, and self-regulation.

Although CBL and blended learning have been widely discussed, their integration in Catholic Religious Education remains underexplored. Many case-based studies focus on medicine, science, business, or professional education. Research in religious education, especially Catholic Religious Education at the senior high school level in Papua, remains limited. This gap matters because Catholic Religious Education contains values and dilemmas that fit case-based analysis. It also matters because Papuan schools need models that respect local realities, student diversity, and learning flexibility.

The need to strengthen critical thinking through innovative and inclusive learning also aligns with the Sustainable Development Goals (SDGs), particularly SDG 4 (Quality Education) and SDG 10 (Reduced Inequalities). SDG 4 emphasizes equitable access to quality education that equips learners with higher-order thinking skills, problem-solving abilities, and lifelong learning competencies. Meanwhile, SDG 10 calls for reducing inequalities by ensuring that students in geographically remote and socio-culturally diverse regions have access to meaningful and effective learning opportunities. In the context of Papua, where educational disparities, infrastructure limitations, and diverse learning needs remain significant challenges, integrating technology-supported and contextual learning approaches

such as Case-Based Blended Learning (CB²L) offers a promising strategy for promoting educational equity while enhancing students' critical thinking skills.

This study addresses this gap by testing the effectiveness of CB2L in enhancing critical thinking among grade X students in Catholic Religious Education. The study focuses on the summative quasi-experimental phase of a broader research and development project. The main research question is: Does the CB2L model significantly enhance students' critical thinking compared with conventional instruction? The study hypothesizes that students who learn through CB2L will show higher critical thinking achievement than students who learn through conventional instruction.

LITERATURE REVIEW

Case-Based Blended Learning (CB2L) model

Case-Based Learning (CBL) is a learning model that uses authentic cases as the center of learning to connect theory with practice and develop critical thinking, problem-solving, and decision-making skills (Thistlethwaite et al., 2012). CBL is student-centered, encouraging discussion, collaboration, and reflection through the analysis of real-life cases. CBL is characterized by the use of authentic cases to practice critical thinking, collaboration, and decision-making, with the teacher acting as a facilitator (Thistlethwaite et al., 2012). CBL syntax includes establishing cases and learning objectives, group case analysis, and presentation and evaluation of discussion results. CBL aims to improve material mastery, critical thinking, communication, collaboration, and problem-solving (Syarafina et al., 2017). The advantages of CBL include improving analytical skills, learning motivation, independence, and connecting theory with practice (Pérez-Sánchez et al., 2020). However, CBL is less effective for delivering very broad material and is not suitable for all types of learning materials. Furthermore, CBL is beneficial in developing analytical skills, reflection, decision-making, and active student engagement.

The Blended Learning model is a learning model that integrates face-to-face and online learning to create a more flexible, effective, and learner-centered learning process. Its main characteristics include a combination of offline and online learning, the use of technology, active interaction, and student control over the time, place, and pace of learning. Blended learning consists of information retrieval, information processing, and knowledge synthesis. Its implementation can utilize the Rotation, Flex, A La Carte, and Enriched Virtual models (Staker, 2015).

The Case-Based Blended Learning (CB2L) model integrates case-based learning with blended learning to train students' analytical and problem-solving skills (Bruce Joyce & Weil, 2023). The CB2L syntax includes case assignments, independent learning, group discussions, analysis, presentations, and evaluation, with the educator acting as facilitator (Maer & Hendrayani, 2022). The support system includes case-based learning materials, worksheets (LKPD), assessments, technology, and an LMS to support interactive and independent learning (Hassoulas et al., 2025). This model has been shown to improve critical thinking, problem-solving, collaboration, and student learning outcomes.

Critical thinking skills in Catholic Religious education through case-based learning

Critical thinking skills are higher-order thinking skills that involve conscious, reflective, rational, and systematic processes to analyze information, evaluate evidence and arguments, and make sound decisions based on logical reasoning. Rather than accepting information at face value, learners are expected to examine its validity, relevance, and credibility before

drawing conclusions. In educational contexts, critical thinking is commonly reflected through the abilities of interpretation, analysis, evaluation, inference, explanation, and self-regulation, while also emphasizing clarity, accuracy, relevance, and depth of reasoning (Debra McGregor, 2007).

In Catholic Religious Education, critical thinking is understood as purposeful and reflective judgment that enables students to interpret moral situations, analyze values, evaluate different claims, infer possible consequences, explain their viewpoints, and regulate their reasoning (Facione, 2011). Therefore, critical thinking does not diminish religious learning; instead, it strengthens students' understanding of faith by encouraging them to apply Christian values responsibly to real-life situations.

Critical thinking can be effectively fostered when Catholic Religious Education encourages students to ask meaningful questions, examine reasons behind moral decisions, and connect religious values with their lived experiences. Such an approach prevents religious education from becoming merely the transmission of information and instead transforms the classroom into a space where faith, reason, and everyday life are integrated through dialogue (Go, 2018). This is particularly relevant for Grade X topics such as the unique self, equality between men and women, and human dignity as the image of God, which require students to reflect critically on identity, social justice, and human values.

One instructional approach that supports the development of critical thinking is Case-Based Learning (CBL). CBL presents students with contextual and authentic cases that require them to identify problems, analyze relevant information, evaluate alternative solutions, and justify their decisions using logical evidence. These learning activities encourage students to move beyond memorization toward reasoned judgment while strengthening collaborative discussion and reflective thinking. Through this process, students learn to assess arguments based on relevance, clarity, accuracy, evidence, and consistency, resulting in more accountable conclusions (Rybarczyk et al., 2007).

Furthermore, Case-Based Learning connects theoretical knowledge with practical situations, making learning more meaningful and applicable to everyday life. Research has shown that CBL enhances conceptual understanding and learning outcomes (Thistlethwaite et al., 2012), increases student engagement and knowledge acquisition through case discussions (Sartania et al., 2022), and remains effective in promoting active participation even in online learning environments when cases are carefully designed (Donkin et al., 2023). Consequently, CBL provides a strong pedagogical foundation for developing critical thinking skills in Catholic Religious Education by helping students apply faith-based values to authentic moral and social issues.

Effectiveness of the CB2L model

The effectiveness of the CB2L Model is measured by improvements in critical thinking and problem-solving skills through pretest-posttest results, N-gain analysis, and statistical tests that indicate significant improvements in learning outcomes (Jan van den Akker, 1999).

RESEARCH METHOD

Research design

This study employed a quasi-experimental research design using a non-equivalent control group with pretest and posttest measures. This approach was considered appropriate because the study was conducted in a school setting where existing classes could not be randomly assigned. The experimental group was taught using the Case-Based Blended

Learning (CB2L) model, while the control group received conventional classroom instruction. The design enabled the researcher to compare students' critical thinking performance after the intervention and to evaluate improvements from the pretest to the posttest.

The present study represents the effectiveness-testing stage of a broader research and development project based on the Dick and Carey instructional design model. In the larger project, the CB2L model and its supporting instructional materials were designed, validated, and refined. This article specifically reports the summative evaluation conducted to determine whether the CB2L model effectively improves students' critical thinking skills.

Participants and setting

The research was carried out at SMA YPPK Teruna Bakti Waena, Jayapura, Papua, during the 2025/2026 academic year. Participants consisted of tenth-grade students enrolled in Catholic Religious Education courses. The final sample included two intact classes comprising 60 students, with 30 students assigned to the experimental class (XE8) and 30 students to the control class (XE1). Class selection was determined based on school considerations and recommendations from the subject teacher rather than through random allocation.

The intervention addressed three learning topics in the Grade X Catholic Religious Education curriculum: understanding oneself as a unique individual, recognizing equality between men and women, and appreciating human dignity as the image of God. Instruction was delivered over three meetings, each lasting 90 minutes (2 × 45 minutes). These topics were selected because they present authentic moral and social issues that can be explored through contextual case analysis to promote critical thinking.

Intervention

Students in the experimental group participated in learning activities using the CB2L model. Prior to classroom meetings, the teacher uploaded learning materials, case scenarios, and guiding questions to an online learning platform. Students independently reviewed these materials and prepared preliminary responses before attending class. During face-to-face sessions, students collaborated in small groups to examine the assigned cases, gather supporting information, present their arguments, and reflect on their learning process. Throughout these activities, the teacher functioned as a facilitator by providing scaffolding, correcting misconceptions, encouraging evidence-based reasoning, and helping students relate the cases to Catholic values.

Meanwhile, the control group received conventional teacher-centered instruction. The teacher delivered explanations, conducted question-and-answer sessions, and assigned classroom tasks. Although both groups studied the same curriculum topics, the control group did not experience the structured stages of the CB2L model, including online preparation, collaborative case analysis, information discovery, group presentations, and systematic reflection.

Instrument

Critical thinking skills were assessed using a case-based essay test specifically developed for this study. The instrument evaluated six dimensions of critical thinking: interpretation, analysis, evaluation, inference, explanation, and self-regulation. Students were required to analyze case scenarios related to Catholic Religious Education and demonstrate their ability

to interpret issues, analyze relevant facts and values, evaluate alternative viewpoints, draw logical conclusions, justify their decisions, and reflect on the quality of their reasoning.

The validity of the CB2L model and its accompanying instructional materials had previously been established through expert evaluation as part of the larger research and development process. Both the learning model and its instructional resources achieved ratings ranging from valid to highly valid. In addition, earlier formative trials demonstrated a high level of implementation fidelity, providing sufficient evidence to proceed with the summative quasi-experimental evaluation.

Data analysis

The collected data were analyzed using descriptive statistics, an independent-samples t-test, normalized gain (N-gain), and effect size analysis. Descriptive statistics were used to summarize students' mean scores and standard deviations for both groups. The independent-samples t-test was conducted to determine whether there was a statistically significant difference in posttest critical thinking scores between the experimental and control groups at a significance level of 0.05. Prior to conducting the t-test, Levene's test was applied to examine the assumption of homogeneity of variances.

Students' learning improvement was further assessed using the normalized gain (N-gain), which measures the extent of score improvement from pretest to posttest. The interpretation of N-gain followed Hake's (1998) classification of low, medium, and high improvement levels.

To complement the significance testing, the study also calculated effect size based on the posttest means and standard deviations of both groups. Effect size provides an estimate of the practical magnitude of the treatment effect and offers additional information beyond statistical significance alone (Cohen, 1988; Lakens, 2013).

RESULTS AND DISCUSSION

Results

Descriptive statistics of critical thinking

The descriptive results showed that students in the experimental group achieved higher critical thinking scores than students in the control group after the intervention. The experimental group obtained a mean posttest score of 82.97 with a standard deviation of 5.31. The control group obtained a mean posttest score of 69.67 with a standard deviation of 7.25. The mean difference reached 13.30 points. This difference indicates that students who learned through CB2L showed stronger critical thinking performance than students who learned through conventional instruction.

Table 1. Posttest critical thinking scores by group

Group	N	Mean	SD	SE Mean
Experimental	30	82.97	5.31	0.97
Control	30	69.67	7.25	1.32

Independent samples test

Levene's test indicated unequal variances for the posttest critical thinking scores, $F = 5.794$, $p = .019$. Therefore, the interpretation used the unequal variance line. The independent samples t-test showed a significant difference between the experimental and control groups, $t = 8.107$, $p < .001$. The mean difference was 13.30 points in favor of the experimental group.

These results support the hypothesis that CB2L produces higher critical thinking achievement than conventional instruction.

The estimated Cohen's d based on the posttest group means and standard deviations was 2.09. This value indicates a very large practical difference between the experimental and control groups. The large effect suggests that the CB2L model did not only produce statistical significance. It also produced a meaningful educational difference in students' critical thinking performance.

Table 2. Independent samples test for posttest critical thinking

Test component	Value
Levene's F	5.794
Levene's Sig.	.019
t value	8.107
Sig. 2-tailed	< .001
Mean difference	13.30
Cohen's d, estimated	2.09

Normalized gain

The normalized gain analysis showed that the experimental group improved from a mean pretest score of 58.42 to a mean posttest score of 81.37. The N-gain was 0.421, which falls in the moderate category. The maximum N-gain reached 0.87. This result indicates that CB2L improved students' critical thinking from the initial condition to the final test. The moderate N-gain also shows that the model gave meaningful progress within a short intervention of three meetings.

Table 3. N-gain result for critical thinking in the experimental group

Indicator	Value
Mean pretest	58.42
Mean posttest	81.37
N-gain	0.421
Category	Moderate
Maximum N-gain	0.87

Discussion

The findings show that the CB2L model effectively enhanced students' critical thinking in Catholic Religious Education. Students who learned through CB2L achieved a higher posttest score than students who learned through conventional instruction. The significant t-test result, the large effect size, and the moderate N-gain provide convergent evidence for the effectiveness of the model. The result also shows that critical thinking can grow in a faith-based subject when teachers design learning around cases, inquiry, collaboration, and reflection.

The first explanation concerns the role of authentic cases. The cases helped students move from abstract religious concepts to concrete moral problems. Students did not only learn the meaning of human dignity, uniqueness, or gender equality. They examined how these values appear in real-life situations. This process required interpretation and analysis. Students had to understand the case, identify the central problem, distinguish relevant and irrelevant information, and connect the issue with Catholic values. These activities align with the core dimensions of critical thinking described by Facione (2011).

The second explanation concerns self learning before class. In CB2L, students accessed the case and materials before face-to-face discussion. This phase gave students time to read, think, and prepare questions. It reduced dependence on the teacher as the only source of information. It also increased readiness for group discussion. Students who came to class with initial understanding could participate more actively in analysis and argumentation. This finding supports the logic of blended learning, which uses online preparation to strengthen classroom interaction (Garrison & Vaughan, 2008; Stein & Graham, 2020).

The third explanation concerns collaborative case analysis. Group work gave students a social space to compare ideas, challenge claims, and refine conclusions. In conventional instruction, students often receive explanations and answer questions individually. In CB2L, they must negotiate meaning with peers. This process can strengthen critical thinking because students encounter different viewpoints and must justify their reasoning. Collaborative analysis also builds accountability. A student cannot only state an opinion. The student must support it with evidence, values, and logical explanation.

The fourth explanation concerns information discovery. Students searched for relevant information from learning materials, digital sources, Scripture, and Catholic teaching. This phase trained students to evaluate sources and connect evidence with moral reasoning. It also helped students understand that Catholic Religious Education involves both faith and reason. Students had to ask whether the information was credible, relevant, and useful for solving the case. This habit directly supports evaluation and inference.

The fifth explanation concerns presentation and evaluation. Presentation required students to explain their reasoning publicly. Peer questions encouraged them to revise weak claims and defend strong ones. The evaluation phase invited students to reflect on how they thought, not only what answer they gave. This phase trained self-regulation, a key element of critical thinking. Students learned to check the clarity, relevance, and consistency of their reasoning.

The results align with previous studies on case-based learning. CBL can improve learning because it situates concepts in meaningful problems and encourages active discussion (Herreid, 1997; Rybarczyk et al., 2007; Thistlethwaite et al., 2012). The findings also align with studies on blended learning, which show that a combination of online and face-to-face activities can improve engagement and learning outcomes when instructional design remains clear and purposeful (Kintu et al., 2017; Stein & Graham, 2020). The present study extends this literature by showing that an integrated case-based blended model can work in Catholic Religious Education at a senior high school in Papua.

The study offers an important contribution to religious education. It shows that critical thinking and Catholic faith formation do not need to stand in opposition. The model allows students to examine real-life problems through reasoned judgment and Catholic values. This approach can help religious education avoid passive doctrinal delivery. It can make the subject more dialogical, contextual, and transformative. Students learn to understand faith as a basis for responsible action in daily life.

The Papuan context also gives the study specific relevance. Students in Jayapura live in a setting marked by cultural plurality, rapid digital change, and social complexity. CB2L gives teachers a way to bring this reality into the classroom. The model supports local relevance because teachers can design cases based on students' actual experiences. It also supports flexibility because students can engage with materials through online and face-to-face activities. This point matters for schools that need learning models suitable for varied access and diverse student backgrounds.

The moderate N-gain deserves careful interpretation. The intervention lasted only three meetings. A moderate gain within this short period suggests that CB2L can produce visible improvement, but it also indicates room for further growth. Critical thinking develops through repeated practice. Longer implementation may produce stronger gains, especially when teachers use CB2L across several units and provide more structured feedback on argument quality.

The large posttest effect size and the moderate N-gain should be read together. The large effect size shows a strong difference between the experimental and control groups at the end of the intervention. The moderate N-gain shows that the experimental group made meaningful progress from its own starting point. These two results support the same conclusion: CB2L strengthens critical thinking. At the same time, the difference between effect size and N-gain reminds researchers to report both statistical and educational indicators.

This study also suggests practical implications for teachers. First, teachers should select cases that are close to students' lives and clearly linked to learning objectives. Second, teachers should provide guiding questions that lead students to interpret, analyze, evaluate, infer, explain, and reflect. Third, teachers should use online learning not as a place to store files only, but as a preparation space for critical discussion. Fourth, teachers should guide students to use credible sources, including Catholic teaching documents and relevant digital resources. Fifth, teachers should assess not only final answers, but also the reasoning process.

The study has several limitations. First, the study used intact classes and did not randomly assign students to groups. This limits causal generalization. Second, the intervention lasted three meetings, so the study cannot show long-term retention of critical thinking. Third, the study took place in one Catholic senior high school in Jayapura. The findings may not represent all schools in Papua or other regions. Fourth, the study measured critical thinking through written case-based responses. Future research can combine written tests with interviews, classroom discourse analysis, and performance-based assessment.

Future studies can extend this research in several directions. Researchers can test CB2L in different Catholic schools, public schools, and other religious education contexts. They can compare different types of cases, such as moral dilemmas, social justice cases, ecological cases, and digital ethics cases. They can also examine how teacher facilitation quality affects student reasoning. In addition, longer studies can measure retention, transfer of critical thinking to other subjects, and the relationship between critical thinking and problem solving.

Overall, the findings demonstrate that the CB²L model contributes to the achievement of the Sustainable Development Goals (SDGs), particularly SDG 4 (Quality Education) and SDG 10 (Reduced Inequalities). By promoting critical thinking through authentic, technology-supported, and student-centered learning, the model supports the development of higher-order competencies required for inclusive and lifelong learning. Furthermore, its successful implementation in the socio-culturally diverse and geographically remote context of Papua suggests that contextual blended learning can help reduce educational disparities by providing meaningful learning opportunities for students in underserved regions. These findings indicate that innovative pedagogical approaches such as CB²L can serve as practical strategies for improving educational quality while fostering greater equity and inclusion in diverse educational settings.

CONCLUSION

Fundamental Finding: He Case Based Blended Learning (CB2L) model effectively enhanced students' critical thinking in Catholic Religious Education among grade X students at a senior high school in Jayapura, Papua. Students in the experimental group achieved significantly higher critical thinking performance than those in the control group, with a mean posttest difference of 13.30 points ($t = 8.107$, $p < .001$). The experimental group also demonstrated a moderate normalized gain (N-gain = 0.421), indicating meaningful improvement from the initial to the final assessment. These findings show that integrating authentic cases, online preparation, collaborative analysis, information discovery, presentation, and reflection can effectively strengthen students' critical thinking within a faith-based learning environment. **Implication:** The findings demonstrate that Catholic Religious Education can foster critical thinking without reducing its faith formation mission. CB²L provides a contextual and student-centered instructional model that encourages learners to analyze real-life moral issues through inquiry, collaboration, evidence-based reasoning, and Catholic values. The study extends the application of case-based and blended learning into religious education and offers a practical model for teachers in Papua and other educational contexts seeking flexible, meaningful, and value-based learning. The findings also support the implementation of SDG 4 (Quality Education) by promoting active learning, higher-order thinking skills, and inclusive, high-quality educational practices. Furthermore, by demonstrating the effectiveness of a contextual and technology-supported learning model in a geographically remote and culturally diverse region, the study contributes to SDG 10 (Reduced Inequalities) by providing evidence that innovative pedagogical approaches can help reduce educational disparities and expand equitable learning opportunities for students in underserved communities. **Limitation:** This study employed a quasi-experimental design using intact classes without random assignment, which limits causal generalization. The intervention was conducted over only three meetings and involved one Catholic senior high school in Jayapura, Papua. Therefore, the findings may not be generalizable to other schools, regions, or educational contexts with different student characteristics and learning environments. **Future Research:** Future studies are recommended to examine the effectiveness of CB2L using larger and more diverse samples, longer intervention periods, and stronger controls for baseline equivalence. Further research should also investigate the implementation of CB2L in different Catholic schools, public schools, and other religious education settings, as well as explore its long-term effects on critical thinking, knowledge retention, problem-solving, and other higher-order thinking skills.

AUTHOR CONTRIBUTIONS

Evaristus Silitubun contributed to the conceptualization of the study, research design, and data collection. **Mustaji** contributed to the data analysis. **Dewi Utari** contributed to the interpretation of findings, and drafting of the manuscript.

CONFLICT OF INTEREST STATEMENT

The authors state that no financial or personal conflicts of interest exist that may have affected the content or findings of this research.

STATEMENT ON THE USE OF AI OR DIGITAL TOOLS IN WRITING

The authors declare that no artificial intelligence (AI) tools or other digital writing assistants were used in the preparation, analysis, or writing of this manuscript. All stages of the

research process, including data analysis, interpretation, and manuscript writing, were conducted solely by the authors. The authors take full responsibility for the originality, accuracy, and integrity of the content presented in this article.

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