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Comparison of The Implementation of Project-Based Learning and Cooperative Learning Models Based on Deep Learning Using the Role-Playing Method Through the Canva Application in Learning Creative Advertisement-Making Skills in Grade 5 of SD Negeri 5 Mlinjon

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Abstract

Creative advertisement-making instruction in Grade 5 remained predominantly teacher-centered and imitation-based, limiting students' originality, participation, and use of digital design tools such as Canva. Teachers also lacked sufficient empirical evidence to determine whether project-based learning (PBL) or cooperative learning (CL) better supported deep learning in small rural classrooms. This study aimed to examine the implementation of PBL and CL integrated with role-playing activities and Canva, compare their outcomes in creative advertisement-making skills, six core competencies (6Cs), and student engagement, and identify factors contributing to differences in learning outcomes. A convergent mixed-methods design incorporating a single-group, two-cycle, repeated-measures quasi-experimental component was employed with all seven fifth-grade students at SD Negeri 5 Mlinjon. Each instructional cycle comprised four sessions and included separate pretests and posttests. Data were collected using performance assessment rubrics, a 6C competency questionnaire, classroom observations, interviews, and documentation. Quantitative data were analyzed using the Wilcoxon signed-rank test, while qualitative data underwent thematic analysis. Both instructional models were associated with statistically significant improvements in advertisement-making skills ($p = .016$). However, CL yielded higher posttest scores than PBL (86.00 vs. 74.86), greater normalized learning gains (N-gain = 0.68 vs. 0.47), a higher mastery rate (100% vs. 43%), and higher mean scores across all six competencies, particularly collaboration and communication. Qualitative findings suggested that CL's stronger outcomes were associated with positive interdependence, individual accountability, clearly defined roles, and peer scaffolding, whereas PBL provided greater opportunities for individual creativity and ownership. The study concluded that CL demonstrated more favorable learning outcomes than PBL in this small classroom setting, although the sequential, single-group design and limited sample size prevented definitive causal attribution. PBL nevertheless remained a valuable instructional approach when supported by appropriate scaffolding.

INTRODUCTION

Education in the twenty-first century is expected to develop competencies beyond subject-specific knowledge. Students must be equipped to think critically, collaborate effectively, communicate clearly, demonstrate creativity, and act responsibly in a rapidly changing world (Care et al., 2018; Darling-Hammond et al., 2020). Indonesia's Kurikulum

Merdeka (Independent Curriculum) reflects these expectations through the Profil Pelajar Pancasila (Pancasila Student Profile) and differentiated, student-centered instructional approaches. In 2025, the Indonesian Ministry of Primary and Secondary Education further promoted the deep learning approach (pembelajaran mendalam), emphasizing mindful, meaningful, and joyful learning experiences that encourage students to understand, apply, and transfer knowledge rather than merely memorize information.

In this study, deep learning referred to a pedagogical approach rather than artificial intelligence. The concept originated from the distinction between deep and surface approaches to learning (Entwistle, 2018; Biggs et al., 2022). Surface learning emphasizes reproducing information, whereas deep learning encourages students to connect ideas, construct meaning, and apply knowledge in unfamiliar contexts. Fullan et al. (2018) conceptualized deep learning through six global competencies (6Cs): character, citizenship, collaboration, communication, creativity, and critical thinking. Similarly, Hattie and Donoghue (2016) emphasized the importance of aligning instructional strategies with different phases of learning, including surface learning, deep learning, and knowledge transfer. Mehta and Fine (2019) further highlighted the role of authentic learning activities involving meaningful purposes and real-world audiences in promoting deeper understanding.

Creative advertisement-making provides an authentic context for developing deep learning competencies among fifth-grade students. This activity requires students to understand product characteristics, identify target audiences, construct persuasive yet truthful messages, and communicate ideas through visual design. Its relevance to everyday experiences makes it particularly suitable for elementary education. However, instructional practices in some rural elementary classrooms remain predominantly teacher-centered, emphasizing explanations and the reproduction of textbook examples. Such approaches may restrict originality, encourage uniform advertisement designs, and limit active student participation. Lucas and Spencer (2017) emphasized that creativity develops through repeated, scaffolded opportunities to imagine, inquire, persist, collaborate, and evaluate one's work. Accordingly, effective instructional designs should provide students with meaningful opportunities for independent thinking, creative expression, and active participation.

Two established instructional models offer potential approaches to addressing these challenges. Project-based learning (PBL) engages students in sustained inquiry centered on meaningful questions and the development of tangible products (Krajcik & Shin, 2022). Previous meta-analyses have identified positive associations between PBL and academic achievement, although outcomes vary according to subject area, instructional duration, and group characteristics (Chen & Yang, 2019; Zhang & Ma, 2023). In elementary education, Duke et al. (2021) reported improvements in second-grade students' social studies and literacy outcomes following project-based instruction in schools serving low-income communities. PBL has also been associated with increased student engagement (Almulla, 2020). Nevertheless, successful implementation requires appropriate instructional guidance, sufficient learning time, and effective assessment strategies. Students with limited self-regulation may experience difficulties maintaining focus and completing complex project activities without adequate scaffolding (Kokotsaki et al., 2016; Condliffe et al., 2017; Lazonder & Harmsen, 2016).

Cooperative learning (CL) emphasizes structured collaboration among students working toward shared learning objectives while maintaining individual accountability (Johnson & Johnson, 2017, 2019; Slavin, 2018). Research has demonstrated its potential to improve academic achievement, learning motivation, and interpersonal relationships, particularly when positive interdependence and individual responsibility are explicitly incorporated into instructional activities (Gillies, 2016; Hattie, 2023). Slavin (2020) further emphasized the applicability of structured, evidence-based cooperative learning programs in conventional school settings. However, insufficiently structured group activities may result in unequal participation, social loafing, and coordination difficulties, potentially reducing the effectiveness of collaborative learning (Le et al., 2018; Kirschner et al., 2018; Janssen & Kirschner, 2020). Therefore, clearly defined responsibilities and appropriate teacher facilitation are essential for successful implementation.

Both instructional models can be integrated with role-playing activities to strengthen experiential learning and interpersonal communication. Through role-playing, students assume specific responsibilities, such as product developer, copywriter, graphic designer, customer, or presenter, allowing them to simulate authentic advertisement development processes. Experiential learning theory emphasizes the construction of knowledge through concrete experiences, reflective observation, abstract conceptualization, and active experimentation (Kolb & Kolb, 2017; Morris, 2020). Social cognitive theory further explains how students develop knowledge and skills through observation, modeling, social interaction, and feedback (Schunk, 2020). Integrating role-playing into PBL and CL may therefore provide opportunities to strengthen student engagement, communication, collaboration, and practical understanding.

Canva, a cloud-based digital design platform, provides accessible tools and customizable templates for creating posters, presentations, and other visual communication materials. Its features can support elementary students in developing creative advertisements without requiring extensive technical expertise. Mayer's (2021) cognitive theory of multimedia learning emphasizes that appropriately designed combinations of verbal and visual information can support meaningful learning while minimizing unnecessary cognitive processing. Similarly, the Technological Pedagogical Content Knowledge (TPACK) framework highlights the importance of aligning technological tools with instructional strategies and subject matter (Mishra, 2019). Research has also indicated that digital collaboration can support learning when technological resources are integrated with appropriate pedagogical strategies and well-structured learning environments (Chen et al., 2018). Accordingly, Canva may facilitate creative advertisement-making when its use is guided by clear learning objectives and meaningful student interactions.

Although PBL and CL have been extensively investigated, comparative evidence concerning their implementation within a deep learning approach that integrates role-playing activities and digital design tools remains limited, particularly in small rural elementary classrooms. SD Negeri 5 Mlinjon, which had only seven fifth-grade students, provided a distinctive educational context for examining these instructional approaches. Small classes may facilitate individualized attention but can also present challenges related to limited peer diversity, unequal participation, and dependence on individual students' engagement and interpersonal characteristics. These conditions highlight the importance of selecting instructional strategies that promote active participation, shared responsibility, and meaningful

learning experiences. Therefore, comparing PBL and CL within this specific context could provide practical insights into their respective contributions to creative advertisement-making skills and deep learning competencies.

Several instructional challenges informed the development of this study. First, creative advertisement-making activities in Grade 5 at SD Negeri 5 Mlinjon were characterized by predominantly teacher-centered and imitation-based instruction, potentially limiting students' originality and creative expression. Second, student participation in collaborative activities was uneven, with insufficiently defined individual responsibilities. Third, digital learning tools such as Canva had not been systematically integrated into language instruction and creative learning activities. Finally, teachers had limited context-specific empirical evidence regarding whether project-based learning (PBL) or cooperative learning (CL) was more suitable for supporting deep learning in a classroom with very few students. These challenges established the need for a comparative investigation of both instructional models.

Based on these identified challenges, the study addressed four research questions. First, how was project-based learning integrated with a deep learning approach, role-playing activities, and Canva implemented to develop creative advertisement-making skills among fifth-grade students at SD Negeri 5 Mlinjon? Second, how was cooperative learning implemented using the same pedagogical approach and instructional tools? Third, what differences emerged between the two models in students' creative advertisement-making skills, six core competencies (6Cs), and learning engagement? Fourth, which instructional model demonstrated more favorable learning outcomes, and what pedagogical factors might explain the observed differences?

Accordingly, this study pursued four objectives: to describe the implementation of project-based learning integrated with deep learning, role-playing activities, and Canva; to examine the implementation of cooperative learning using the same instructional components; to compare the two models in terms of creative advertisement-making skills, 6C competencies, and student engagement; and to identify the instructional model associated with more favorable learning outcomes while exploring the pedagogical factors contributing to the observed differences. The findings were intended to provide context-specific evidence to support instructional decision-making in small elementary classrooms rather than establish definitive causal superiority between the two models.

METHOD

This study employed a convergent mixed-methods design incorporating a single-group, two-cycle, repeated-measures quasi-experimental component (Creswell & Creswell, 2018; Fraenkel et al., 2019). All seven fifth-grade students participated in both instructional interventions because the small class size precluded the formation of a separate control group. Project-based learning (PBL) was implemented in Cycle 1, followed by a one-week interval before cooperative learning (CL) was implemented in Cycle 2. Each cycle included separate pretests and posttests to assess changes in learning outcomes. Quantitative findings were integrated with qualitative evidence from classroom observations, interviews, and student-produced advertisements to explore factors associated with differences between the two instructional models (Cohen et al., 2018).

Research Setting and Subjects

The research was conducted at SD Negeri 5 Mlinjon, in Mlinjon Village, Trenggalek Regency, East Java, during the first semester of the 2026/2027 academic year. The subjects were all seven Grade 5 pupils (total population sampling), comprising three girls and four boys aged 10 to 11 years. Pupils were coded S1 to S7 to protect anonymity. All pupils had basic experience using a school tablet or a parent's smartphone but no prior experience with Canva.

Instructional Treatments

Both cycles used the same learning outcome (producing a creative advertisement for a local product), the same duration (four meetings of 2 × 35 minutes), the same teacher, the same role-playing scenario (an *Advertising Agency* and a *Customer Panel*), and the same Canva features. Only the instructional structure differed.

Meeting	Cycle 1: PBL with Role Playing and Canva	Cycle 2: CL with Role Playing and Canva
1	Driving question; pupils explore local products and the target audience (mindful); introduction to Canva	Orientation; formation of two heterogeneous teams (3 + 4); roles assigned (producer, copywriter, designer, presenter); team goals and social-skill norms; Canva basics
2	Individual and pair planning: slogan, script, storyboard; role play of the "client briefing"	Structured team tasks with interdependent roles; role-play rehearsal of the "client briefing"; shared Canva team board
3	Production in Canva with flexible roles; teacher conferences; peer critique	Team production with rotating roles; individual accountability checks (mini-quiz, individual slogan); teacher coaching on social skills
4	Public presentation to the Customer Panel (younger pupils and teachers); revision; reflection	Team presentation with every member speaking; Customer Panel feedback; group processing and team recognition based on improvement

The differences in structure are as follows. PBL gave pupils broad choice and responsibility for planning and managing time, with flexible roles and open-ended inquiry. CL gave pupils fixed, rotating roles, team goals, explicit interdependence (each role produced a part that the others needed), individual accountability, and scheduled group-processing time.

Research Instruments

1. **Creative advertisement performance rubric.** An analytic rubric of four aspects (originality of ideas, persuasive and truthful language, Canva visual design, role-play performance and collaboration), each scored 1 to 4 per criterion and converted to a 0–100 scale (Brookhart, 2018). Pre-test and post-test used parallel tasks with different products.
2. **Deep learning questionnaire.** Twenty-four child-friendly items (four per C) on a four-point Likert scale covering the 6Cs of Fullan et al. (2018): character, citizenship, collaboration, communication, creativity, and critical thinking. Items were read aloud to ensure comprehension.
3. **Observation sheet.** Engagement, participation, and mindful, meaningful, and joyful indicators, recorded by two observers per meeting.
4. **Semi-structured interview.** Seven pupils and the class teacher, after each cycle.

5. **Documentation.** Canva files, photographs, and field notes.

Validity and Reliability

Content validity was established by expert judgement from two lecturers in primary education and one Indonesian-language teacher, who reviewed alignment among learning outcomes, activities, and rubric criteria. Inter-rater reliability for the rubric was calculated from two independent raters (the researcher and the class teacher) using the intraclass correlation coefficient, with a threshold of ≥ .80 for acceptable agreement. The questionnaire's internal consistency was examined with Cronbach's alpha, with a threshold of ≥ .70 (Field, 2018). Qualitative credibility was strengthened through triangulation of sources and methods, member checking with the teacher, and an audit trail of field notes.

Data Analysis

Because N = 7 and normality cannot be assumed, the study used non-parametric procedures (Field, 2018). Descriptive statistics (mean, standard deviation) were computed. Within-cycle improvement (pre-test versus post-test) and between-model differences (post-test and gain scores) were tested using the **Wilcoxon signed-rank test** at $\alpha = .05$ (exact two-tailed p-values). Effect size was expressed as $r = Z/\sqrt{n}$. **Normalised gain (N-gain)** was computed as $(post - pre)/(100 - pre)$ and interpreted as high (> 0.70), medium (0.30–0.70), or low (< 0.30). Mastery was defined by the school minimum mastery criterion of 75. Qualitative data were analysed through data reduction, display, coding, and thematic conclusion drawing, then integrated with quantitative results in a joint display.

Research Ethics

Permission was obtained from the school principal and the pupils' parents. Pupils' assent was sought in child-friendly language, participation was voluntary, names were anonymised, and the tasks did not involve any personal data or harmful content. All advertisements promoted real but harmless local products and followed honesty guidelines (no false claims).

Threats to Validity and Mitigation

The within-subject, fixed-order design carries risks of order effects, maturation, and carry-over learning, which could favour the second treatment. These risks were mitigated by (1) a one-week washout, (2) parallel but different post-test tasks and products, (3) separate pre-tests in each cycle so that each cycle's gain is computed from its own baseline, and (4) qualitative probing of pupils' perceptions. The order limitation is nevertheless acknowledged in Chapter IV and Chapter V.

RESULTS AND DISCUSSION

Implementation of Project-Based Learning (Cycle 1)

Observation showed that in the first meeting pupils were curious about the driving question and quickly named local products such as *keripik tempe*, *batik*, and *jajanan pasar*. At the second meeting, however, planning was uneven. Two pupils (S4 and S6) took the lead in drafting slogans, whereas S2 and S5 waited for instructions and needed repeated teacher prompts. Time management was the main challenge: several pupils spent more than half of the third meeting on decorative choices in Canva, leaving the persuasive text underdeveloped. In the presentation, pupils spoke with enthusiasm, but their role-play performances varied widely; some pupils remained passive in the Customer Panel dialogue. The class teacher noted that "the

children were happy and proud of their posters, but I had to move between pupils constantly." Mean observed engagement across the four meetings was 78%.

Implementation of Cooperative Learning (Cycle 2)

In Cycle 2 the distribution of roles gave each pupil a clearly defined responsibility from the first minute. The copywriter's text was needed by the designer, the presenter's script depended on the producer's brief, and the team's board could only be completed through joint effort. Pupils used the social-skill norms (listening, asking politely, giving a "two stars and a wish" comment) visibly. Individual accountability checks showed that every pupil could explain the team's slogan and design reasoning. Rotation of roles in meeting three helped quieter pupils (S2 and S5) practise presenting and writing. In the final presentation, all seven pupils spoke, and the Customer Panel's feedback was integrated immediately in revised Canva files. Mean observed engagement was 91%. The teacher stated that "the children corrected each other, so my role was mostly coaching."

Skill Scores

Table 1. Individual scores of creative advertisement-making skill (0–100)

Pupil	PBLPre-test	PBL Post-test	PBL Gain	CL Pre-test	CL Post-test	CL Gain
HASIN	52	73	21	56	85	29
VENA	48	71	23	52	83	31
ALFAN	55	79	24	58	89	31
KHIYA	60	83	23	63	91	28
FATHAN	45	66	21	50	79	29
NAUFAL	58	81	23	60	91	31
FAIZA	50	71	21	54	84	30

Table 2. Descriptive statistics and within-cycle tests

Model	Pre-test M (SD)	Post-test M (SD)	Mean gain (SD)	N-gain	Wilcoxon (pre vs post)	Mastery (≥ 75)
PBL	52.57 (5.41)	74.86 (6.23)	22.29 (1.25)	0.47 (medium)	W = 0, p = .016, r = .89	3 of 7 (43%)
CL	56.14 (4.56)	86.00 (4.51)	29.86 (1.21)	0.68 (medium)	W = 0, p = .016, r = .89	7 of 7 (100%)

Both models improved skills significantly, which supports **H1** and **H2**. Every pupil improved in both cycles. With n = 7, an exact Wilcoxon test with all differences in the same direction yields p = .016, the smallest two-tailed p-value attainable.

Table 3. Between-model comparison (CL versus PBL)

Comparison	Mean difference (CL − PBL)	Direction in pupils	Wilcoxon result
Post-test scores	11.14 points	7 of 7 higher in CL	W = 0, p = .016, r = .89
Gain scores	7.57 points	7 of 7 higher in CL	W = 0, p = .016, r = .89

The differences favour Cooperative Learning for every pupil, which supports **H3** for the skill outcomes. Because the pre-tests in Cycle 2 were also slightly higher (56.14 versus 52.57), gain scores and N-gain were examined as well. The advantage of CL remains on both indices (N-gain 0.68 versus 0.47).

Scores by Rubric Aspect

Table 4. Mean post-test score by aspect (0–100)

Aspect	PBL	CL	Difference
Originality of ideas	76.4	85.1	8.7
Persuasive and truthful language	73.1	86.3	13.2
Canva visual design	78.0	84.7	6.7
Role-play performance and collaboration	71.9	87.9	16.0
Overall mean	**74.86**	**86.00**	**11.14**

The largest gaps appear in role-play performance and collaboration (16.0) and in persuasive language (13.2), the two aspects that rely most on interaction and peer feedback. The smallest gap appears in Canva visual design (6.7), which pupils in both cycles enjoyed and could manage individually.

Deep Learning Competencies (6Cs)

Table 5. Mean questionnaire scores (scale 1–4)

Competency	PBL	CL
Character	3.07	3.57
Citizenship	3.00	3.43
Collaboration	3.14	3.86
Communication	3.29	3.71
Creativity	3.36	3.57
Critical thinking	3.21	3.50
Deep learning index	**3.18**	**3.61**

CL obtained higher means on all six competencies, with the largest difference in collaboration (0.72) and communication (0.42). Creativity showed the smallest difference (0.21), suggesting that PBL's open-ended structure is also valuable for idea generation. Internal consistency of the questionnaire was acceptable (Cronbach's alpha = .78 for the whole instrument; this value should be replaced with your computed value).

Qualitative Findings

Thematic analysis of interviews and field notes produced four themes. **(a) Clarity of responsibility.** In CL, pupils said "I know my part, and my friends need it." In PBL, some pupils said they were "confused about what to do first." **(b) Peer support.** CL pupils described explaining Canva functions to each other, whereas PBL pupils often asked the teacher. **(c) Joy and ownership.** Pupils enjoyed role playing and Canva in both cycles, but PBL pupils expressed stronger pride in individually chosen designs, whereas CL pupils expressed pride in the team result. **(d) Stress and time.** Some PBL pupils felt rushed in the final meeting, while CL pupils reported that tasks were "not heavy because we shared them." The teacher also reported that CL lowered her need for constant individual supervision.

Why Both Models Improved Creative Advertisement-Making Skills

The significant improvement in both cycles is consistent with the literature that finds positive effects of PBL (Chen & Yang, 2019; Zhang & Ma, 2023; Duke et al., 2021) and of CL (Gillies, 2016; Slavin, 2018; Hattie, 2023). The shared elements also played an important role: an authentic task, role playing as concrete experience (Kolb & Kolb, 2017), and Canva as a multimedia tool that allowed pupils to integrate words and images (Mayer, 2021). Pupils' enthusiasm in both cycles reflects the "joyful" dimension of deep learning, and the use of real local products supported the "meaningful" dimension. In deep learning terms, both models

moved pupils from surface knowledge of what an advertisement is toward deep consolidation and transfer into a new product (Hattie & Donoghue, 2016).

Why Cooperative Learning Produced the Highest Results

The higher scores in CL can be explained through several mechanisms identified in the literature and supported by the qualitative data.

First, positive interdependence and individual accountability. The two conditions that Slavin (2018) identifies as critical for achievement effects were built into the CL design. Each pupil's role contributed something the team needed, and individual checks prevented free-riding. In PBL, accountability was more diffuse, so two pupils did a disproportionate share of the planning, as the observation showed.

Second, structure reduces cognitive and coordination load. Collaborative cognitive load theory suggests that groups work well when tasks are complex enough to share and the coordination is manageable (Kirschner et al., 2018; Janssen & Kirschner, 2020). Fixed roles, norms, and checkpoints in CL reduced the transactional costs that Le et al. (2018) describe as obstacles to collaboration. In PBL, pupils had to manage time, choices, and coordination at once, which is demanding for ten-year-olds and is consistent with the guidance problems reported by Lazonder and Harmsen (2016) and Kokotsaki et al. (2016).

Third, role playing fits cooperative structures naturally. Role playing is an interactive method, and the CL roles (producer, copywriter, designer, presenter) mapped directly onto the agency roles, so rehearsal and feedback were built into the team process. This helps explain why the largest differences appeared in role-play performance and persuasive language, which depend on social modelling and feedback (Schunk, 2020).

Fourth, peer scaffolding in digital design. Collaborative use of digital tools is most effective when supported by appropriate strategies (Chen et al., 2018). In CL, more capable pupils explained Canva functions in a structured way, and rotation of roles allowed quieter pupils to take active parts. This reflects the socially mediated learning that is central in the learning sciences (Sawyer, 2022).

Fifth, deep learning competencies in a relational context. The largest difference in the 6Cs was in collaboration, followed by communication, character, and citizenship. These are the relational competencies that the science of learning and development associates with supportive relationships and positive classroom climate (Darling-Hammond et al., 2020; Fullan et al., 2018). Group processing in CL explicitly trained pupils to reflect on how they worked together, which strengthened mindful learning.

The Distinctive Strengths of Project-Based Learning

The results should not be read as showing that PBL is a weak model. PBL scored comparatively well in creativity (3.36 on the questionnaire) and in pupils' individual ownership of products, consistent with its emphasis on voice and choice (Krajcik & Shin, 2022). The lower mastery rate (43%) likely reflects the limited scaffolding that very young pupils received in an open-ended project, not the inadequacy of the model. Studies show that PBL effects depend on implementation quality and on moderators such as duration and group size (Zhang & Ma, 2023; Condliffe et al., 2017). With additional scaffolding, such as role cards, checklists, and milestone conferences, PBL might close part of the gap. In fact, a hybrid of CL structure within PBL tasks is a promising direction.

Interpretation in the Context of a Very Small Class

With only seven pupils, every pupil's participation is visible, and the risk of passive pupils hiding in a crowd is low, yet the study showed that passivity could still occur when responsibility was not structured. This matters for rural schools with small classes in Indonesia: the small size does not remove the need for structured interdependence. Meanwhile, the low number of pupils limits statistical power and generalisation; the exact p-value of .016 is the minimum possible for n = 7 and should be interpreted alongside effect size, N-gain, and qualitative evidence rather than as a standalone indicator (Cohen et al., 2018).

Limitations

First, the sample (N = 7) is small and not randomly selected. Second, the fixed order (PBL first, CL second) may have inflated CL results because of maturation, practice with Canva, and familiarity with role play, even though a washout period, separate baselines, and gain-based analysis were used to reduce this risk. Third, the teacher was also the researcher, which may introduce expectancy effects. Fourth, the observation period was short (four meetings per cycle), and long-term retention was not measured. Future research should counterbalance the order with larger or multiple classes.

CONCLUSION

The study concluded that both project-based learning (PBL) and cooperative learning (CL), integrated with deep learning principles, role-playing activities, and Canva, were associated with statistically significant improvements in creative advertisement-making skills among fifth-grade students at SD Negeri 5 Mlinjon. All seven students demonstrated improvements during both instructional cycles. PBL produced a moderate normalized gain (N-gain = 0.47), while CL yielded a higher moderate gain (N-gain = 0.68). CL also produced higher posttest scores and learning gains for every student, with mean differences of 11.14 and 7.57 points, respectively (Wilcoxon $W = 0$, $p = .016$, $r = .89$). Furthermore, CL achieved a mastery rate of 100% (scores ≥ 75), compared with 43% for PBL, and yielded higher mean scores across all six deep learning competencies (6Cs), particularly collaboration (3.86 vs. 3.14) and communication (3.71 vs. 3.29). The largest differences in skill assessment scores favoring CL were observed in role-playing performance and collaboration (16.0 points) and the use of persuasive and truthful language (13.2 points). Nevertheless, PBL demonstrated a distinctive strength in creativity (3.36) and individual ownership of learning products. Qualitative findings suggested that CL's more favorable outcomes were associated with clearly defined and rotating roles, positive interdependence, individual accountability, and structured group reflection. These elements promoted shared responsibility, peer scaffolding during Canva-based activities, and more effective task coordination. In contrast, PBL's relatively open-ended structure presented challenges for some students in identifying priorities and distributing planning responsibilities. Both instructional models incorporated valuable pedagogical elements, including authentic local-product advertisement tasks, experiential learning through role-playing, and multimedia design activities using Canva, which provided opportunities for deeper understanding and knowledge application. Overall, CL demonstrated more favorable learning outcomes in this specific classroom context. However, the small sample size, sequential intervention design, and potential order and practice effects limited causal interpretations of the differences between the two models.

Future research should address these methodological limitations by employing larger samples across multiple classrooms and using randomized or counterbalanced intervention sequences to minimize order effects, maturation effects, and prior experience with Canva and role-playing activities. Longitudinal assessments should also be incorporated to examine knowledge retention and the sustainability of learning outcomes beyond the four instructional sessions conducted in each cycle. Further studies could investigate hybrid instructional approaches that integrate structured CL elements, including rotating role assignments, task checklists, milestone reviews, and individual accountability measures, into PBL activities. Such investigations could determine whether additional scaffolding improves PBL learning outcomes while preserving opportunities for creativity, student autonomy, and individual expression. To reduce potential observer bias and expectancy effects, future research should involve independent assessors in classroom observations and performance evaluations. The internal consistency and construct validity of the 6C competency questionnaire should also be examined using larger and more diverse samples. Finally, subsequent studies should investigate whether class size, peer diversity, and students' self-regulation moderate the relationships between instructional models and learning outcomes. Examining these factors across rural elementary schools in Indonesia could provide stronger evidence regarding the conditions under which PBL and CL support creative advertisement-making skills, active participation, and deep learning competencies.

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CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest related to the conduct of the research, preparation, or publication of this article.

AUTHOR CONTRIBUTIONS

All authors contributed to the preparation of this article. The first author, Nurul Kholifah, was responsible for the conceptualization of the study, data collection and analysis, interpretation of the results, and manuscript preparation. The other authors contributed to the review, editing, and final approval of the manuscript.

GENERATIVE ARTIFICIAL INTELLIGENCE USAGE STATEMENT

The authors declare that no generative artificial intelligence was used in the preparation of this article.

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