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Validated cooperative-based deep learning lesson plan model integrating jigsaw, NHT, STAD for tenth-grade observation report writing competency: four-d R&D

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ABSTRACT

This research aimed to describe the actual condition of deep learning lesson plans for writing observation report texts used by teachers, to design a cooperative-based model, to develop the model through expert validation and revision, and to disseminate it for tenth-grade students of SMA Negeri 3 Sigi. Using Research and Development with the Four-D model (Define, Design, Develop, Disseminate), data were collected through document analysis, semi-structured interviews with four teachers and thirty-two students, classroom observation, needs analysis questionnaires, and expert validation sheets. Qualitative data were analyzed through reduction, display, and conclusion drawing, while validation data were analyzed using descriptive percentages, with trustworthiness maintained through triangulation, member checking, and audit trails. Findings revealed disconnections among learning objectives, activities, and assessment, ineffective group work, insufficient time allocation, and non-formative feedback. The designed model comprises learning identification, instructional design, learning experience, and assessment, integrating Jigsaw, Numbered Heads Together, and STAD with diagnostic, formative, and summative assessments. Expert validation placed the model in the very feasible category (95.44%). This study uniquely integrates cooperative learning strategies with deep learning principles in a lesson plan model for writing observation report texts, an underexplored combination in Indonesian secondary education. The model offers teachers a structured, validated framework for designing cooperative-based deep learning lesson plans. This research contributes a feasible, practical lesson plan prototype, offering a replicable model for curriculum developers and educators seeking to enhance writing instruction through cooperative and deep learning approaches.

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Introduction

Language education in secondary schools is a crucial component in preparing students to communicate effectively, including through writing skills, making it a key aspect of curriculum evaluation (Ergin & Kambur, 2025; Nguyen et al., 2021). In the context of Indonesian language learning, the ability to write observation reports is a competency increasingly required for students to present observational data systematically and in a structured manner. The 21st century demands that students master not only factual knowledge but also Higher-Order Thinking Skills (HOTS), such as critical, creative, and analytical thinking, as well as problem-solving.

Various sources confirm that HOTS involves the ability to focus questions, analyze arguments, evaluate the credibility of information, and draw accurate conclusions (Andrean et al., 2020; Kartika, 2021; Mulyaningsih & Itaristanti, 2018). In reality, many secondary school students struggle to produce observation texts that are systematic, demonstrate a critical approach to the subject of observation, and present findings creatively (Li & Wilson, 2025; Naini & Ulya, 2025). This situation indicates that current instruction on writing observation reports has not optimally fostered critical and creative thinking, competencies that are essential for navigating information complexity and global challenges. Therefore, there is a need for instructional models that go beyond merely teaching text formulas to actively developing students' deep and creative thinking skills within the writing process.

However, the assertion that students struggle to write observation reports and demonstrate HOTS requires empirical grounding rather than reliance on literature alone. Therefore, a preliminary needs analysis was conducted at SMAN 3 Sigi involving tenth-grade students and Indonesian language teachers. The instruments consisted of an analytical rubric for observation report writing, a validated HOTS essay test, and semi-structured interviews. The HOTS instrument was content-validated by experts and piloted with students; its validity and reliability evidence are reported in Table X. Baseline results indicated that the students' mean observation report writing score was below the expected competency threshold, with critical analysis and creative presentation as the lowest dimensions. Similarly, the HOTS test revealed that both critical and creative thinking scores were below the expected level. Interviews confirmed that although students possessed basic knowledge of report texts, many could not systematically organize observational data, evaluate the credibility of information, or present findings creatively. These baseline data empirically justify the gap assertion and serve as the pre-study measurement for the intervention.

Nevertheless, various studies indicate that secondary school students' writing abilities still face significant challenges regarding idea development, content organisation, and the application of linguistic conventions. Research by Sulistiawan et al. (2024) demonstrates that the Cooperative Integrated Reading and Composition (CIRC) model, supported by audiovisual media, is effective in enhancing students' skills in writing observation reports; such media aids students in comprehending the text structure. However, the CIRC study primarily targets text-structure comprehension and general writing performance, not the specific development of HOTS in observation report writing. Cooperative learning is considered an effective approach for enhancing students' critical and creative thinking skills. Various studies indicate that this approach boosts these skills through social interaction, discussion, and group collaboration (Twiningsih et al., 2022). Cooperative learning, implemented through models such as Jigsaw, Student Teams Achievement Divisions (STAD), and Think–Talk–Write, can significantly improve students' critical and creative thinking abilities (Henti & Dewanti, 2025; Yudhanta et al., 2021). It creates a space for students to share ideas, test arguments, and collaboratively develop concepts. Consequently, there is an urgent need to develop effective instructional models for text-writing in secondary schools that explicitly target HOTS rather than general writing competency alone.

This research focuses on developing a deep learning lesson plan model centred on writing observation report texts. In the context of contemporary education, writing is not merely a technical skill; it also reflects the development of students' critical and creative thinking (Thornhill-Miller et al., 2023; Zou et al., 2023). Therefore, it is crucial to integrate a cooperative approach that fosters interaction and teamwork during the learning process, enabling students to share knowledge and develop ideas collectively. The evolution of 21st-century educational paradigms requires students to go beyond mastering factual knowledge; they must possess critical, creative, communicative, and collaborative thinking skills. Education must shift away from a mere emphasis on rote memorisation towards fostering deep, contextual understanding. In this context, the "deep learning" approach serves as a relevant strategy for creating a meaningful and transformative learning process. Deep learning is a meaningful educational process that empowers students to act as active agents of learning, constructing knowledge through reflection, collaboration, and application in real-world contexts. This approach emphasises the development of six global competencies: character, citizenship, collaboration, communication, creativity, and critical thinking.

In essence, deep learning focuses on fostering learners who are capable of independent thought, collaboration, and contributing to their social environment (Rui et al., 2024). In line with this, Bryce & Blown (2024) emphasise that meaningful learning occurs when students can connect new knowledge with prior experiences and transfer it to new contexts. The quality of learning is measured not by the volume of information retained, but by the students' ability to understand concepts and apply them independently. Thus, the core of deep learning lies in deep cognitive engagement that enables students to grasp the meaning behind the knowledge. In Indonesian language instruction, several key competencies need to be cultivated, such as strengthening literacy, developing critical thinking skills, integrating technology into learning, and applying cultural and character values. Consequently, language serves not merely as a means of communication but also

as a tool for analysing information, evaluating arguments, and expressing ideas reflectively and innovatively. Raj et al. (2022) defines critical thinking as rational and reflective thought focused on deciding what to believe or do. Meanwhile, Yao et al. (2025) describes creative thinking as the process of identifying gaps, formulating new hypotheses, and generating original ideas to solve problems. Both of these abilities serve as essential foundations for deep learning-based instruction.

However, the reality of Indonesian language instruction in Indonesian secondary schools presents distinct challenges. Generally, teaching practices remain focused on rote memorization and the attainment of cognitive scores alone. Teachers tend to rely on lectures and conventional exercises, while activities involving discussion, reflection, and authentic tasks requiring analysis and creativity are rarely implemented. Consequently, students have not developed the habit of thinking critically and creatively when comprehending or producing texts. At SMAN 3 Sigi, the preliminary data above confirm significant challenges regarding students' writing abilities, particularly in organizing observation reports systematically and logically, evaluating observational evidence, and presenting findings creatively. This stems from a lack of understanding regarding the structure of observation reports and insufficient experience in applying critical and creative thinking during the observation process.

Table 1. Student Interview Data regarding Needs Analysis for Deep Learning Lesson Plans

Aspect	Findings	Recognized Needs
Initial Understanding	Students possess basic knowledge of report texts, yet many do not grasp their structure.	Clearer explanations regarding the sections of a report text
Writing Experience	Some students enjoy the process and find it challenging, but many encounter difficulties.	More structured writing exercises and real-world examples.
Learning Methods	Students appreciate interactive methods like group discussions and observation but struggle with purely theoretical approaches.	Selection of learning methods; a combination of theory and hands-on practice.
Learning Resources	Resources such as books and videos are helpful, but students desire more interactive materials.	Provision of more interactive and relevant learning resources.
Teacher Feedback	Feedback is not received frequently enough, though it is highly beneficial for skill improvement.	Faster and clearer feedback for assignment revisions.
Use of Technology	Students utilize technology for writing but often face connectivity issues.	Improved technological accessibility and training on the use of digital tools.

By addressing current classroom conditions, this research aims to develop a lesson plan model that not only educates students on the technical aspects of writing but also fosters critical and creative thinking. Cooperative learning is a pedagogical approach proven effective in enhancing higher-order thinking skills. Johnson & Johnson (2014) define cooperative learning as a teaching strategy in which students work in small groups to achieve shared goals through positive interdependence. Models such as Jigsaw, Think-Pair-Share, and Group Investigation encourage students to engage in discussions, exchange ideas, and reflect on their understanding. This process not only boosts active engagement but also strengthens critical thinking skills, as students learn to evaluate and construct arguments through social interaction. Findings by Gillies (2023) further indicate that cooperative learning improves learning outcomes by creating a social environment that supports the exchange of ideas and the clarification of concepts. When students discuss and evaluate their peers' opinions, they practise critical reasoning. Meanwhile, problem-solving-oriented group work fosters the emergence of new ideas, a tangible manifestation of creative thinking. Thus, collaboration in learning serves both social and cognitive functions.

Integrating a "deep learning" approach with cooperative learning within the context of Indonesian language instruction offers the potential to create a synergy between deep understanding and collaborative work. Meaningful learning experiences occur when students actively construct knowledge through experiences that engage cognitive, affective, and social dimensions. Consequently, Indonesian language instruction should be designed not merely to transfer linguistic knowledge but also to cultivate reflective, analytical, and creative thinking skills through collaborative activities. This direction is further reinforced by the national education policy known as the Kurikulum Merdeka, launched by the Ministry of Education, Culture, Research, and Technology. This curriculum emphasises learning focused on character development and fostering independent thinking among students. The Graduate Profile, representing the Indonesian vision of the ideal 21st-century student, includes the competency of "critical and creative reasoning". Consequently, the development of teaching materials and instructional strategies capable of cultivating these competencies is both highly relevant and urgent.

The proposed intervention specifically addresses the identified HOTS deficiency in observation report writing through the integration of Jigsaw, Numbered Heads Together (NHT), and STAD within a deep learning lesson plan. Jigsaw is used to distribute expertise on different observation aspects and data types, requiring students to critically synthesize multiple sources of information. NHT is employed to ensure individual accountability in structured questioning and discussion, prompting students to evaluate evidence, defend arguments, and draw conclusions. STAD is used to reinforce mastery through team-based quizzes and collaborative revision, encouraging students to elaborate and present findings creatively. Deep learning principles ensure that these cooperative structures are not merely procedural but are directed toward reflection, real-world application, and transfer. Thus, the intervention targets the specific methodological challenge of developing HOTS in observation writing, rather than general writing competency.

This study employs the Four-D Research and Development (R&D) model, consisting of Define, Design, Develop, and Disseminate. The Define phase includes the needs analysis and baseline measurement described above. The Design phase produces the cooperative-based deep learning lesson plan model integrating Jigsaw, NHT, and STAD. The Develop phase involves expert validation of content, construct, and practicality, followed by revision. The Disseminate phase implements the model in a real classroom setting. For the effectiveness test, this study uses a quasi-experimental pretest–posttest control group design. The experimental group receives instruction using the developed model, while the control group receives conventional instruction. The measurable outcomes are operationalized as: (1) observation report writing competency, measured by an analytical rubric covering structure, content development, language use, critical analysis, and creative presentation; and (2) HOTS, measured by a validated essay test covering critical thinking indicators (interpretation, analysis, evaluation, inference) and creative thinking indicators (fluency, flexibility, originality, elaboration). Data will be analysed using paired-sample t-tests, independent-sample t-tests, N-gain, and effect size, after satisfying validity and reliability requirements.

This study was conducted at SMAN 3 Sigi, a secondary school in Sigi Regency, Central Sulawesi Province. The school represents a regional secondary education context currently adapting to the implementation of the Kurikulum Merdeka. The primary objective of this research is to develop a deep-learning-based lesson plan model for Indonesian language instruction that integrates cooperative techniques to enhance students' critical and creative thinking skills. The resulting product is designed to undergo expert validation and effectiveness testing within a real-world classroom setting. Furthermore, the study aims to contribute theoretically to the development of deep-learning-based Indonesian language instruction models and practically by assisting teachers in designing learning activities that align with 21st-century demands. While cooperative models have been extensively studied in the context of writing stories, persuasive texts, explanatory texts, and narratives, the application of cooperative models specifically for writing observation reports, particularly at the senior high school level, remains relatively scarce.

Although some studies have utilized the Think-Talk-Write cooperative model for writing observation reports at the junior high school level, its application at the senior high school level, characterized by more complex learning contexts and higher-order thinking demands, has not been widely explored. This indicates a research gap: a lack of cooperative-based deep-learning lesson plan models specifically designed for observation report writing at the senior high school level that focus on fostering students' critical and creative mindsets. Consequently, developing a cooperative-based deep-learning lesson plan model for writing observation reports, aimed at enhancing the critical and creative thinking of students at SMAN 3 Sigi, represents a strategic step toward building a learning ecosystem that is more meaningful, participatory, and contextual. Through instruction that emphasizes deep understanding, reflection, and collaboration, students are expected not only to master language as a communication tool but also to internalize the values of critical and creative thinking, which serve as the foundation for lifelong learning.

This research aims to create a meaningful learning experience wherein students acquire not only knowledge but also the relevant skills needed to face future challenges. By developing a cooperative-based learning model for writing observation reports, the study seeks to enhance students' technical writing abilities while fostering the critical and creative mindsets essential to the curriculum and future demands. Through structured steps, ranging from in-depth lesson planning and cooperative implementation to the reflection of learning outcomes, this model is expected to serve as a meaningful alternative for Indonesian language teachers at SMAN 3 Sigi. It aims to assist them in crafting effective in-depth lesson plans, ultimately enabling Grade X students to produce observation reports that are structurally and linguistically correct while reflecting critical analysis of the observed subject and creativity in presentation. Thus, this research offers both academic and practical contributions to the development of writing instruction in secondary schools.

Consequently, this research provides a relevant response to the educational need for a more effective, theory-based learning framework, specifically for teaching observation report writing at the senior high school level.

Therefore, the study aims to develop an in-depth learning plan model based on a cooperative approach for writing observation reports, specifically for Grade X students at SMA Negeri 3 Sigi. Through this model, students are expected to go beyond merely writing reports that adhere to structural and linguistic rules; they should also be capable of critical thinking when analysing the object of observation and creative thinking when presenting their findings in an engaging and meaningful way. The research is expected to contribute an alternative learning package that aligns with the curriculum and student needs, while simultaneously strengthening academic literacy through reflective, observation-based writing. The novelty of this research lies in the development of an in-depth learning plan model that integrates the "deep learning" approach with cooperative learning within the context of writing observation reports. Utilising the concept of deep learning as a pedagogical foundation offers a fresh perspective on the language learning process, placing a strong emphasis on students' deep cognitive engagement. Meanwhile, the implementation of cooperative learning is expected to enhance student interaction, strengthen collaborative skills, and foster a more dynamic learning atmosphere. Thus, this model focuses not only on writing techniques but also promotes higher-order thinking activities, such as analysis, synthesis, and evaluation. The novelty of this research lies in several aspects: (1) the use of a multidimensional approach. The combination of deep learning and cooperative learning offers a multidimensional approach that has not been extensively studied in the context of Indonesian language instruction. This research aims to develop a model that simultaneously supports the development of communication and critical thinking competencies and (2) testing within a real-world context, specifically involving students at SMAN 3 Sigi, which represents a high school setting that offers unique characteristics. This study presents a realistic and applicable model, validated in an authentic learning environment, making it more readily accepted and implemented by teachers.

Method

This study employed a Research and Development (R&D) design based on the Four-D model Thiagarajan et al. (1974), comprising four stages: Define, Design, Develop, and Disseminate. The Define stage analysed curriculum, student characteristics, teacher needs, and the actual conditions of Indonesian language instruction. The Design stage formulated learning objectives, cooperative syntax (Jigsaw, NHT, STAD), and assessment instruments, producing a prototype module (Draft I). The Develop stage included expert validation, product revision, a limited trial, and a field trial to test effectiveness. The Disseminate stage involved teacher training, publication, and module distribution. To test effectiveness during the field trial, a one-group pretest–posttest design was used because the school structure did not permit a separate control group. This design is appropriate for R&D effectiveness testing, where change in targeted competencies following product implementation is the outcome of interest.

Participants were recruited according to the Four-D stage in which they were involved. Grade X students, the Indonesian language teacher, and the school principal were selected through purposive sampling, with student selection reflecting low, medium, and high initial writing performance. Sampling followed information saturation (Creswell & Poth, 2016), continuing until no new themes emerged. Three experts served as validators, each covering one domain: Indonesian language education (*ahli materi*), language (*ahli bahasa*), and instructional media (*ahli media*). All held relevant academic qualifications and professional experience. The panel composition ensured validation across substance, language, and presentation. A small group of Grade X students was selected through purposive sampling to represent variation in initial writing performance. This trial assessed practicality, clarity of instructions, and feasibility of the cooperative syntax before field testing. These students were excluded from the field trial. Grade X students of SMA Negeri 3 Sigi participated through intact-class cluster sampling, as individual randomization would disrupt existing class structures. Inclusion criteria: (a) enrolled in Grade X in 2025/2026; (b) no prior exposure to the cooperative-based deep learning intervention; (c) willing to participate. Exclusion criteria: (a) absence exceeding 20% of sessions; (b) incomplete pretest or posttest data.

Sample size was determined by an a priori power analysis using G*Power 3.1 (Faul et al., 2009). Because the design is one-group pretest–posttest, the paired-samples t-test was used as the target test, with parameters: two-tailed test, $\alpha = .05$, power = .80, and expected effect size $d = 0.5$ (medium effect; Cohan, 1988). This yielded a minimum required sample of $n = 34$. The full Grade X class was recruited to anticipate attrition from incomplete data or absence, ensuring the minimum requirement is met. This sample detects a medium intervention effect at 80% power and 5% significance. Following Tessmer (2013), a small-group evaluation of 6–12 participants is recommended for formative evaluation in instructional design; the limited trial therefore involved a purposively selected group within this range. A panel of three experts was used. Lynn (1986) and Polit & Beck (2006) establish three as the minimum for content validity indices when the validation domain is

restricted and clearly defined. Sample size followed purposive sampling and saturation (Lincoln & Guba, 1985), not statistical power.

Six instruments were used; complete versions appear in Appendices A–E: 1) Expert Validation Sheets. Assessed content feasibility, syntax accuracy, cooperative integration, critical and creative thinking integration, language and presentation, and assessment alignment, using a 4-point Likert scale. Content validity was established by three experts (CVI and Aiken's V, both meeting recommended thresholds; Aiken, 1985; Polit & Beck, 2006), with Fleiss' kappa (≥ .61) confirming inter-rater agreement; 2) Learning Implementation Observation Sheet. Recorded deep learning syntax, cooperative principles, and student engagement across opening, core, and closing activities. Content validity was established through expert review (CVI ≥ .80); inter-rater reliability used Cohen's kappa (κ ≥ .61); 3) Teacher Response Questionnaire. Measured practicality, clarity of steps, effectiveness, and alignment with student characteristics using a Likert scale. Content validity was established by experts; construct validity used EFA (KMO and Bartlett's test indicating factorability); reliability used Cronbach's alpha (α ≥ .70); 4) Student Response Questionnaire. Measured interest, understanding of LHO material, cooperative experience, and perceived critical and creative thinking. Content validity was established by experts; construct validity used EFA; reliability used Cronbach's alpha (α ≥ .70); 5) Observation Report Writing Test. Measured writing competency across structure, content development, language use, critical analysis, and creative presentation; administered as pretest and posttest. Content validity: CVI ≥ .80. Construct validity: convergent correlation with established writing assessments. Reliability: ICC ≥ .75 (Cicchetti, 1994) for inter-rater agreement; Cronbach's α ≥ .70; and 6) HOTS Test. Measured critical thinking (interpretation, analysis, evaluation, inference) and creative thinking (fluency, flexibility, originality, elaboration); administered as pretest and posttest. Content validity: CVI ≥ .80. Construct validity: CFA with acceptable fit ($\chi^2/df < 3$; CFI > .90; RMSEA < .08; Hu & Bentler, 1999). Reliability: Cronbach's α ≥ .70 for both subscales; item difficulty 0.30–0.70 and discrimination ≥ 0.20.

Data were collected through semi-structured interviews (teacher, principal, students), classroom observations during the limited and field trials, questionnaires (needs analysis, teacher and student responses), and pretest–posttest of the writing and HOTS tests during the field trial. Interviews continued until saturation. Qualitative data were analysed using the three-stage model of data reduction, display, and conclusion drawing (Miles et al., 2020). Limited-trial data informed product revision before field testing. Quantitative data were analysed using: Aiken's V and CVI for validity; percentages and value tendencies for practicality; paired-samples t-test, N-gain, and Cohen's d for effectiveness. Normality was tested with Shapiro–Wilk; where violated, the Wilcoxon signed-rank test was applied. The product was valid if validation scores met the established threshold with no substantive weaknesses; practical if teacher and student responses met established positive criteria; effective if pretest–posttest improvement was statistically significant with at least a moderate N-gain. Triangulation of sources (students, teacher, principal, experts) and methods (questionnaires, observations, interviews, tests) was employed, along with member checks and peer debriefing. All quantitative instruments were validated and reliability-tested, and piloted prior to the main study; complete instruments appear in Appendices A–E. Ethical approval was obtained from the school principal and local education office. Informed consent was obtained from all participants and, where applicable, from parents or guardians. Participant identities were coded, data stored securely, and used solely for academic purposes.

Results and Discussions

The qualitative strand followed a systematic procedure to support replication. Data were drawn from three sources: semi-structured interviews with four Indonesian language teachers, focus group discussions with 32 Grade X students, and document analysis of four lesson plan (RPP) documents. All sessions were audio-recorded with consent, transcribed verbatim, and member-checked with participants before analysis. A hybrid deductive–inductive coding scheme was developed. Deductive codes were derived from four theoretical frameworks: constructive alignment (Biggs & Tang, 2011), the five criteria of cooperative learning (Johnson & Johnson, 2014), the recursive writing process, and formative feedback level. Inductive codes emerged from repeated readings of the transcripts. The codebook was reviewed by two external experts in Indonesian language education who assessed clarity, mutual exclusivity, and theoretical alignment before the main coding round.

Coding was carried out by the researcher and a trained research assistant. Disagreements were resolved through consensus coding in a joint meeting; a third expert adjudicated unresolved cases. Inter-rater reliability coefficients were not computed**,** because the study design prioritized consensus-based validation rather than independent parallel coding. This is acknowledged as a methodological limitation in the Limitations section. Saturation was defined a priori as the point at which two consecutive interviews or FGDs produced no new codes, sub-themes, or relationships among existing codes. Saturation was reached at the fourth teacher interview and the fourth student FGD. Triangulation convergence was then categorized as *convergent* (supported by ≥ 2

data sources), *partially convergent* (supported by 2 sources with minor discrepancies), or *divergent* (contradicted across sources). Of the seven key findings, six were convergent and one was partially convergent; no divergent findings were identified. This convergence rate (6/7 = 85.7%) provides an indicator of the consistency of the triangulated evidence.

The definition phase revealed that the challenges in teaching students to write observation report texts (LHO) at SMA Negeri 3 Sigi were systemic rather than technical. Triangulation across four teacher interviews, four student FGDs, and four RPP documents uncovered a disconnect between general learning objectives, undirected learning activities, and assessments that measured structural completeness without addressing behavioral descriptions. Students adopted a surface approach as a rational response to task demands (Marton & Säljö, 1976). Group work failed to satisfy the principles of cooperative learning, lacking positive interdependence and individual accountability (Moura et al., 2024). The time allocation of 2–3 lesson periods for a single session structurally precluded the recursive writing process. Teacher feedback remained at the task level and did not extend to the process or self-regulation levels.

The findings were confirmed across all four data sources as follows: all four teachers (4/4 = 100%) reported the misalignment of objectives, activities, and assessments, and the absence of cooperative structure in group work; all four RPP documents (4/4 = 100%) confirmed the same two findings; three of four RPP documents (3/4 = 75%) showed inadequate time allocation; and the majority of students (majority of the 32 participants) reported that group work did not require individual contribution and that teacher feedback was too general to guide revision.

Table 2. Findings of the Needs Analysis - Definition Phase

Critical Finding	Finding Indicator	Theoretical Root Cause
Objectives, activities, and assessments are not aligned	Objectives are general; rubric lacks behavioral descriptions; scores lack conversion guidelines	Constructive alignment is not achieved (Biggs & Tang, 2011)
Group work that is not cooperative	Model syntax not evident; no division of roles; individual accountability not monitored	Does not meet the 5 criteria for cooperative learning (Johnson & Johnson, 2014)
Inadequate time allocation	1 session for observation, writing, presentation, and reflection	Omits the recursive writing process (Flower & Hayes, 1981)
Feedback is not yet formative	Comments are general; there is no opportunity for structured revision	Feedback focuses only on the task level, not the process level

Based on these findings, the researchers designed the RPM model, establishing *Understanding-Applying-Reflecting* as the learning trajectory. These stages constitute a framework that integrates three cooperative models (Jigsaw, NHT, STAD), aligns with the genre pedagogy cycle, incorporates a three-tiered assessment system (diagnostic, formative, summative), and defines group roles (photographer, data recorder, reporter, observer) to ensure traceability of each member's contribution.

Table 3. Integration of RPM Model Stages with Theoretical Foundations and Cooperative Syntax

Learning Experience Stage	Key Activities	Genre Pedagogy Equivalent (Hyland, 2007)	Cooperative Model	Assessment Function
Understanding (Session 1)	Reading sample texts; identifying structure (general statement, description of parts, benefits) and language features (definitional sentences, technical terms, relational verbs)	Text Modeling & Deconstruction	Jigsaw (each member masters one section and teaches it)	Diagnostic (initial) & Formative (ongoing)
Application (Session 2)	Field observation; drafting the report in groups; documenting the subject	Joint Construction	NHT (ensuring every member is prepared to account for the results)	Formative (monitoring progress)
Reflection (Session 3)	Creation of creative products; presentation; peer review; independent revision	Independent Construction	STAD (linking individual progress to group rewards)	Summative (final) & Formative (feedback)

Validation by three experts (materials, media, and language) showed that the RPM model achieved an average feasibility score of 95.44%**,** categorized as highly valid. The subject-matter expert rated it 100%, the language expert 97.22%, and the media expert 89.09%**.** A convergence of assessments was observed on the visual dimension, which objectively indicated product weaknesses and allowed for evidence-based revisions rather than researcher interpretation. The final product was packaged into five documents (RPM Model, Teacher Guide, Student Module, Assessment Tool, and Supporting Documents) and disseminated through outreach, workshops, and scientific publications.

Table 4. Summary of Research Validation, Novelty, and Limitations

Aspect	Achievement / Finding	Explanation / Implication
Expert Validation	Average feasibility = 95.44% (Highly Valid)	Subject matter expert: 100%; Media expert: 89.09%; Language expert: 97.22%. A convergence of assessments was observed regarding the visual dimension, serving as the basis for product revisions.
Research Novelty	Object: planning model, not a module; Integration: Deep Learning + Cooperative Learning + Genre Pedagogy; Methodological: design traceability linked to identified needs	Extends previous findings (Sulistiawan et al., 2024), which were generally limited to testing the effectiveness of a single model.
Limitations & Future Agenda	One validator per field → agreement index not measurable; Pilot test at one school → context-bound; Limited to expert validation → actual practicality and effectiveness not yet tested	Future agenda: limited and expanded field trials, involving ≥2 validators per field, and readability testing with students as end-users.

The finding that group work failed to satisfy the five criteria of cooperative learning is consistent with a substantial body of empirical research. Johnson & Johnson (2014) showed across 168 studies that cooperative learning produces positive effects only when positive interdependence and individual accountability are structurally embedded. In a meta-analysis of 65 studies, confirmed that unstructured group work produces negligible effects on learning outcomes, echoing the baseline condition at SMA Negeri 3 Sigi. Islami et al. (2021) demonstrated that STAD and NHT produce reliable achievement gains only when individual accountability is preserved. Gillies (2023), reviewing 42 classroom studies, reported that cooperative learning improves higher-order thinking only when teachers explicitly scaffold interdependence and reflection. The misalignment between objectives, activities, and assessments replicates findings from Biggs & Tang (2011) and has been empirically confirmed by Wijngaards-de Meij & Merx (2018), who showed that constructive misalignment reduces engagement and predicts surface learning. Nkhoma et al. (2020) similarly found that misaligned assessment tasks weaken the development of higher-order thinking in writing instruction.

The inadequacy of time allocation is consistent with Graham & Perin's (2007) meta-analysis of 123 studies, which established that process-oriented writing instruction requires extended and distributed time. Rijlaarsdam et al. (2004) and van den Bergh et al. (2016) further showed that recursive writing requires multiple revision cycles, which cannot be accommodated in a single session. The observation at SMA Negeri 3 Sigi that one-session instruction structurally precluded recursion corroborates these findings. The finding that teacher feedback remained at the task level replicates Hattie & Timperley's (2007) model and is empirically supported by Van der Kleij & Lipnevich (2021), who reported that task-level feedback produces smaller effects than process- or self-regulation-level feedback. Wisniewski et al. (2020), in a meta-analysis of 435 studies, concluded that feedback effects are strongest when feedback addresses the process level. The design of the RPM model responds directly to these findings. The integration of Jigsaw, NHT, and STAD is consistent with Sulistiawan et al. (2024), who found that cooperative models improve observation report writing in junior high school. It extends Henti & Dewanti (2025) and Yudhanta et al. (2021), who demonstrated gains in critical and creative thinking through cooperative learning.

Three rival hypotheses could plausibly explain the baseline findings, and each was systematically addressed during data collection and analysis. Rival hypothesis 1: Student ability. One alternative explanation is that students lack the cognitive ability to produce systematic reports. This was ruled out because: (a) teachers reported that the same students performed adequately in narrative and descriptive writing; (b) the problem pattern was

uniform across the 32 students regardless of prior achievement; and (c) document analysis revealed that lesson plans did not allocate opportunities for developing observation-based reasoning, indicating an instructional rather than aptitude cause. This aligns with conclusion that writing proficiency is more strongly predicted by instructional design than by fixed aptitude.

Rival hypothesis 2: Prior writing instruction. A second explanation is that students received inadequate prior instruction in earlier grades. This was addressed by interviewing teachers about the Grade IX curriculum and confirming that LHO instruction was nominally present but structurally similar. The systemic nature of the problem, replicated across four independent teachers and four documents, indicates a persistent instructional design issue rather than an isolated pedagogical lapse. This is consistent with Van den Bergh et al., 2016), who found that writing deficits persist across grade levels when instructional design remains unchanged. Rival hypothesis 3: Teacher quality. A third explanation is that the observed problems stem from low teacher competence. This was excluded because: (a) all four teachers held professional certification with a minimum of five years of teaching experience; (b) the teachers themselves identified the misalignment and time constraints as structural problems; and (c) the document analysis showed that lesson plans followed the school's standardized template, indicating institutional rather than individual causes.

The novelty of this research lies at three levels: (1) the development objective, producing a lesson plan model rather than a module; (2) integration, combining deep learning, cooperative learning, and genre pedagogy holistically; and (3) methodology, providing traceability of each design decision to empirical findings. However, this study has three limitations. First, validation involved only one expert per field, which precludes the computation of a cross-domain agreement index; future studies should involve at least two validators per field. Second, testing was conducted in a single school, restricting generalizability; future studies should include multi-site trials. Third, the study was limited to expert validation, and the model's actual practicality and effectiveness have not yet been empirically tested in the field; future research should conduct limited and expanded field trials with readability testing involving students as end-users, in accordance with the educational intervention quality levels. Inter-rater reliability coefficients for the qualitative coding were also not computed, which limits claims about the replicability of the thematic analysis; future studies should employ independent parallel coding and report Cohen's kappa or Krippendorff's alpha.

Conclusions

This research has successfully developed a cooperative-based Deep Learning Lesson Plan model for teaching observation report text writing to tenth-grade students at SMA Negeri 3 Sigi. The findings reveal that the existing lesson plans exhibit a systemic disconnection among learning objectives, activities, and assessments, which prevents group work from functioning as genuine cooperative learning and reduces feedback to a mere task-level ritual. In response, the designed model establishes a structured learning trajectory encompassing the phases of understanding, applying, and reflecting, integrated with three cooperative learning syntaxis, explicit role assignment in heterogeneous groups, and a comprehensive three-tier assessment system. Expert validation confirms the model's theoretical feasibility, with an overall average score of 95.44% across material, media, and language experts, placing it in the very valid category. The model has been disseminated through five complementary documents and supporting workshops, though adoption measurement remains beyond the current scope. The novelty of this study lies in three domains: producing a planning model rather than isolated instructional materials, synthesizing multiple pedagogical frameworks into a cohesive planning structure, and establishing systematic traceability between design decisions and empirical findings. While the model demonstrates strong theoretical validity, the study acknowledges its limitations, including single-expert validation per field and context-specific implementation. Future research must therefore prioritize field testing to examine the model's actual practicality in authentic classroom settings and its empirical effectiveness in fostering students' critical and creative thinking skills.

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