

## Integration of discovery of novelty and research-based learning in academic writing learning

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| Article Info                                                                                                                     | Abstract                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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| <b>Keywords:</b><br>academic writing;<br>discovery of novelty;<br>literature synthesis;<br>research gap; research-based learning | This study was motivated by the low quality of academic writing, particularly in terms of generating original ideas and constructing research-based arguments. The objective of this study is to conduct an in-depth analysis of the integration of discovery of novelty and research-based learning in academic writing instruction. This study employs a qualitative descriptive approach using a case study design involving undergraduate students in the Indonesian Language and Literature Education Program at Makassar State University. Data were collected through observation, in-depth interviews, and document analysis of students' academic writings, and were subsequently analyzed using Miles and Huberman's interactive analysis technique. The results indicate that the integration of these two approaches was implemented through the stages of problem identification, literature exploration, discovery of novel ideas, and the drafting of academic writings. Students demonstrated improvement in identifying research gaps, developing original ideas, and constructing more systematic arguments grounded in scholarly sources. Additional findings revealed limitations in academic literacy and a need for intensive mentoring. In conclusion, the integration of discovery of novelty and research-based learning contributes to fostering more critical academic writing instruction grounded in knowledge construction. |
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### INTRODUCTION

The development of higher education in Indonesia in the era of Independent Learning Independent Campus (MBKM) and the National Higher Education Standards requires universities to not only produce academically competent graduates, but also productive in research activities and scientific publications. Regulations such as Permendikbud No. 3 (2020) explicitly place research as one of the main standards in higher education, on par with education and community service. In this context, academic writing skills, both in the form of research proposals and scientific articles, are key competencies that determine the quality of the output of the *Tridharma* of higher education. Academic writing skills are an important foundation in the development of students' scientific literacy, especially in universities that emphasize research and publication skills as part of their academic culture (Abdullah, et al., 2025; Raitskaya & Tikhonova, 2022).

Various studies show that academic writing is a crucial competency for students in higher education because it is closely related to study success, critical thinking skills, and readiness to enter the scientific community. Bram & Angelina (2022) emphasized that academic writing skills play a significant role in student learning performance and are a prerequisite for participation in global scientific discourse. Other studies also place academic writing as one of the essential skills in formal education that is inherent in almost all assignments and assessments in college (Nurkamto, Prihandoko, Hidayanto, Setyo, & Purwati, 2024). Thus, strengthening academic writing learning in higher education has high urgency, especially in the midst of increasing demands for national and international scientific publications.

However, empirical conditions show that there is a considerable gap between the ideal demands and the reality of students' academic writing ability. A number of studies in various Indonesian universities found that students still face substantial difficulties in writing academic articles and essays, ranging from linguistic aspects (grammar, academic vocabulary, cohesion-coherence) to rhetorical aspects (argument development, paragraph structure, and discourse organization) (Maharani, Hakiki, & Safitri, 2023). Field facts show that many students do not understand the structure of writing good scientific reports, and are not used to compiling ideas systematically and logically (Pradana et al., 2025). This problem, if left unchecked, will have an impact on the low quality of writing, lack of courage in writing scientific articles, and the weakening of the academic literacy culture in the campus environment.

A cross-disciplinary study of the academic literacy of Indonesian students also confirms that many students are not familiar with the academic writing standards expected in higher education (Prasiska & Tohamba, 2021). The biggest problem seen in beginner writers is the lack of understanding of the writing situation in general. Successful academic writing depends on how well you understand what you're doing while writing and how you strategize to complete the writing task (Putri et al., 2024). Difficulties in academic writing are inseparable from the fundamental problem of academic literacy. This is related to the ability to read and understand academic texts, master research methodologies, and utilize reference sources critically and reflectively. Recent research shows that students still have difficulty reading academic texts due to limited vocabulary, unfamiliarity with academic terms, complexity of sentence structure, and inadequate reading strategies (Sumedi et al., 2025).

The results of initial observations made on students of the Indonesian Language and Literature Education Study Program, Faculty of Languages and Letters, State University of Makassar show that students' competence in determining and formulating research novelties is still in the low category. Most students have not been able to explicitly identify the research gap from the literature review that has been read, and have difficulty in formulating novelty contributions in an argumentative and structured manner in scientific proposals and articles. The novelty formulated tends to be implicit, general, or simply a repetition of previous research topics without clear conceptual differentiation. This condition indicates that students do not have systematic guidance in carrying out the discovery process of novelty as one of the fundamental elements in academic writing.

The need for students to obtain systematic guidance in finding novelties is increasingly emerging as the standards of publishing scientific journals, both national, increase as well as international. On the one hand, students are required to prepare scientific proposals and articles that show the state of the art, research gap, and novelty in a structured manner. On the other hand, they do not get much of a learning model that explicitly teaches the steps of novelty discovery. The study of the needs for research-based learning also confirms that the development of students' research skills, including the ability to formulate novelty, is still not optimally facilitated in learning design in many study programs (Daryanes, Zubaidah, Mahanal, & Sulisetijono, 2023).

In Indonesia, a number of sources have emerged that provide technical guidance on how to compile key references, state of the art, and novelty in research, especially in the field of language and language education. However, most of these guides are presented in the form of books or literature review modules that are more informative and have not been integrated into a systematic, contextual, and research based academic writing learning model. This indicates a blank space for the development of a learning model that explicitly organizes the steps of "discovery of novelty" in the context of academic writing in higher education.

Research-Based Learning (RBL) offers a potential framework to address these needs. RBL is defined as a learning model that integrates research activities into the learning process, with the aim of fostering students' research competencies through activities that are directly related to research practices (Yanti et al., 2024). In the higher education system, RBL is seen as inseparable from efforts to link teaching, research, and community service, so that students are

not only consumers of knowledge, but also producers of new knowledge (Sanjayanti, Alamsyah, & Fadhillah, 2025).

A number of recent studies have shown that the RBL model is able to improve various scientific competencies of students, such as scientific thinking skills, scientific reasoning, research skills, and metacognition in solving problems. Swandi (2025), for example, developed a STEM-hybrid RBL model that has proven effective in improving the scientific reasoning of undergraduate students. Another study reported that the RBL model was able to improve students' achievement and metacognitive skills in the context of mathematical and scientific problem-solving (Syamratulagi, Komalasari, & Rumakat, 2025). However, a review of the RBL literature shows that most of the implementation and development of the RBL model focuses on the field of science, STEM, or improving research competence in general, rather than specifically on academic writing skills and novel inventions in writing scientific proposals and articles (Thiem, Preetz, & Haberstroh, 2023).

However, so far research on the application of Research-Based Learning (RBL) in the context of academic writing learning in higher education is still very limited. Yanti, Ruyani, Thohir, & Kinasif (2024) in his research entitled "Implementation Process of RBL for Doctoral Education Program Students: An Exploratory Case Study", it was found that the application of RBL is consistently able to improve students' ability to apply knowledge in practical contexts, improve research skills, and strengthen critical and analytical thinking skills through the process of reporting research progress and structured class discussions. The research also shows that RBL integration helps students develop scientific communication skills, including writing academic articles more systematically and argumentatively.

However, various previous studies have focused on the effectiveness of research-based learning and discovery Learning in improving students' academic writing skills, critical thinking, and creativity. These studies have not specifically developed a learning model that directs students to the process of discovering novelty through the identification of research gaps, systematic exploration of the literature, development of original ideas, and the preparation of evidence-based scientific arguments. In fact, the ability to find novelty is the main indicator in the preparation of quality research articles and is one of the important requirements in scientific publications.

In line with the concept of the writing process put forward by August (2026), that writing research articles is an iterative process and requires assistance at every stage, starting from planning, literature exploration, preparation of initial drafts, providing feedback, revisions, to final evaluation. According to August, the quality of writing is not built through the completion of the final product alone, but through a series of thought and reflection processes that take place gradually. Based on these gaps, this study developed a research-based discovery of novelty model, which is a learning model that integrates the principles of research-based learning with systematic stages to find research novelty. This model is expected to be able to increase creativity, critical thinking skills, and the quality of student research articles through learning that is more contextual, reflective, and oriented towards the development of original scientific ideas.

Conceptually, inquiry learning is based on the constructivist paradigm which views that knowledge is built through active learning experiences. In its implementation, inquiry learning places lecturers as facilitators who provide direction, spark questions, and academic support (scaffolding), while students act as knowledge discoverers through the process of scientific exploration. The stages of inquiry learning generally include: (1) orientation to the problem, (2) problem formulation, (3) preparation of hypotheses or provisional conjectures, (4) data collection, (5) testing or data analysis, and (6) drawing conclusions. This stage aims to develop students' intellectual abilities through direct involvement in the process of investigation and problem-solving, so that learning is not only oriented to the final result, but also to the scientific thinking process taken by students. Findings of a literature review by Rismayanti & Purmadi,

(2025) it shows that the syntax of inquiry learning consistently includes the stages of orientation, problem formulation, hypothesis, data collection, hypothesis testing, and conclusion drawing as a means to foster students' critical and analytical thinking skills. The same thing is also affirmed in a conceptual study by Marfit, A. A., & Kamal, (2025) that Inquiry-Based Learning places students as the main actors in investigation through systematic stages to build an active understanding.

In relation to this study, inquiry learning theory has a very strong relevance to the development of an academic writing learning model based on the discovery of novelty with the research-based learning approach. The process of finding novelty in research is essentially an inquiry process, because students are required to identify research problems, conduct critical literature reviews, find research gaps, compare the results of previous research, and formulate research novelty argumentatively. Thus, students not only learn to write as a linguistic activity, but also learn to build new knowledge through scientific investigation. In this context, inquiry learning theory is a pedagogical foundation that explains how students can develop critical, investigative, and reflective thinking skills as a basis for finding novelty and producing academic writings that have scientific contributions. One of the important aspects of learning to write is the choice of an attractive and student-centered teaching approach (Amalia, 2023). This interactive teaching approach can be found in the process of writing with student-centered learning.

The concept of Discovery of Novelty (DoV) in academic writing is based on the theory of Discovery Learning, constructivism, cognitive theory, and social constructivism. Discovery Learning places students as active learners who acquire knowledge through the process of discovering, exploring, and solving problems (Yunita & Lasmono, 2024). The foundations of constructivism affirm that knowledge is actively constructed through experience, interaction with the environment, processes of assimilation and accommodation, and reflection (Erawati & Adnyana, 2024). The cognitive perspective strengthens the process through thinking skills in the form of analysis, synthesis, and evaluation, while Vygotsky emphasizes the importance of social interaction and guidance from more competent parties in the development of thinking skills (Bustomi & Sukardi, 2024; Habsy et al., 2023). With this foundation, DoV is directed to students not only understand the knowledge that is available, but are able to build understanding through literature exploration and find ideas that have novelty.

The DoV framework is derived from the synthesis of the principles of discovery learning, cognitive processes, and systematic literature review (SLR) which is specifically directed at the discovery process of State of the Art (SoTA), research gap, and novelty. SLR allows students to systematically trace, select, evaluate, and synthesize previous research so that they can understand the development of knowledge and find research gaps (Dinata, Wedi, & Fajariantono, 2024). In the context of novelty discovery, the process moves from understanding relevant research and current developments, identifying research gaps, to formulating novelty as a differentiator and contribution to research. Thus, the DoV stages can be formulated into problem orientation, literature exploration, SoTA mapping, research gap identification, novelty formulation, contribution development, and evaluation and reflection. The relationship between SoTA and novelty is close because novelty is a novelty that emerged after researchers were able to map previous research and find gaps that are still open (Dochy, 2006).

DoV has a difference as well as a relationship with Research-Based Learning (RBL). RBL places research as the basis of the learning experience, while DoV places a more specific focus on the process of discovering and constructing novelty through research. Thus, RBL provides research context and activities, while DoV directs students to use these activities in exploring SoTA, finding research gaps, formulating novelties, and producing scientific contributions. The integration of the two allows learning to write academic writing does not stop at the ability to conduct research and compile articles, but develops into the ability to place research in the development of science and show its novelty. This is in line with the view that novelty can be realized through new ideas, solving unsolved problems, developing methods, and applying research to domains or phenomena that have not been previously researched (Dochy, 2006).

Conceptually, research-based learning departs from the constructivist learning paradigm which emphasizes that knowledge is built through active and meaningful learning experiences. In this approach, students are encouraged to construct knowledge through systematic scientific exploration activities, so that learning is no longer passive, but based on the process of knowledge discovery. The implementation of RBL in learning generally involves several main stages, namely the identification of research problems, the collection and review of literature, the formulation of research focus, the implementation of research or investigation activities, and the preparation and presentation of research results. This stage allows students to comprehensively understand the scientific process while developing high-level thinking skills such as analysis, evaluation, and information synthesis. Thus, RBL not only serves as a learning strategy, but also as a means to foster academic culture and scientific attitudes in students (Sutarto, 2022).

In the context of higher education in Indonesia, the application of research-based learning is considered relevant because it is in line with the demands of strengthening students' research competencies and improving the quality of scientific work. Several studies have shown that the application of RBL is able to improve students' critical thinking skills, problem-solving skills, and scientific writing skills. Research conducted by Dintarini, M., & Kusumawardhana, (2020) it shows that research-based learning can improve students' critical thinking skills and concept understanding because they are directly involved in the scientific investigation process.

In the framework of a national policy that emphasizes strengthening research capacity, improving the quality of *tridharma* outputs, and implementing MBKM (Freedom to Learn-Independent Campus), the development of an academic writing learning model based on discovery of novelty with a research-based learning approach in higher education is very relevant and strategic. This learning model has the potential to meet students' needs for systematic guidance in identifying and formulating research novelties. Therefore, based on real cases in the field regarding student academic writing, it is necessary to analyze the application of Discovery of Novelty and research-based learning in learning academic writing.

## METHOD

This study uses a qualitative descriptive approach with a case study design to analyze the integration of discovery of novelty and research-based learning in academic writing learning in undergraduate students of the Indonesian Language and Literature Education Study Program at Makassar State University. The case study approach was chosen because it allows researchers to understand in depth the learning process in the context of real lectures, especially the integration of discovery of novelty and research-based learning, student involvement, and lecturers' strategies in facilitating the process of discovering novelty and preparing academic writing.

The research participants consisted of 25 undergraduate students of the Indonesian Language and Literature Education Study Program and one lecturer in academic writing courses. Participant selection was carried out purposively (purposive sampling) based on direct involvement in the context of the case being studied. All 25 students were involved because they participated in a series of learning that integrated Discovery of Novelty and research-based learning, including literature search activities, state of the art identification, research gap discovery, novelty formulation, idea development, and preparation of academic articles. Lecturers are chosen because they are directly involved in the planning, implementation, and evaluation of learning. Thus, the research case is limited to the practice of learning academic writing in one class involving 25 students and one lecturer in the Indonesian Language and Literature Education Study Program, State University of Makassar.

The source of research data consists of primary data and secondary data. Primary data was obtained through observation of the lecture process, semi-structured interviews with students and lecturers, and document analysis in the form of academic writings produced by students during the learning process. Secondary data are in the form of scientific literature, journal articles, and learning documents relevant to discovery of novelty, research-based learning, and academic

writing learning. Data collection techniques are carried out through observation, semi-structured interviews, and document analysis. Observations are used to identify the learning process and student engagement; interviews are used to explore the experiences, understandings, and strategies of lecturers and students; Meanwhile, document analysis is used to examine the development of ideas, the use of sources, scientific arguments, and elements of novelty in students' academic writing.

The research procedure is carried out through three stages, namely (1) preparation and planning, (2) implementation of data collection, and (3) data analysis and interpretation. In the preparation stage, the researcher establishes the focus of the case, determines the participants, and prepares guidelines for observation, interviews, and document analysis. The implementation stage is carried out through observation of the lecture process, interviews with lecturers and students, and the collection and analysis of student academic writings. The data were then analyzed interactively through data reduction, data presentation, and conclusion/verification Miles, Huberman, & Saldaña. The validity of the data is carried out through triangulation of sources and techniques by comparing data from observations, interviews, and academic writing documents.

The ethical aspects of the research are considered during the process of data collection and use. Prior to the interview and the collection of student written documents, participants were given an explanation of the research objectives, forms of involvement, use of data, and their right to participate voluntarily and stop involvement in the research. Informed consent was obtained from participants before the data was collected and used in the study. The identities of students and lecturers are protected by using codes or pseudonyms in the presentation of data, including in interview excerpts and analysis of students' personal written documents. The data obtained is used for research purposes only and is presented in the aggregate or in a form that does not allow the identity of the participants to be identified.

## RESULTS AND DISCUSSION

Based on the results of initial observations in academic writing lectures at the Indonesian Language and Literature Education Study Program, State University of Makassar, initial interviews with teaching lecturers, and analysis of student written documents before the implementation of the integration of discovery of novelty and research-based learning, it can be seen that the learning process still tends to be conventional and oriented towards reproducing information from existing sources. Academic writing activities are dominated by material summaries and citations without in-depth thought processing, so that the critical participation and originality of students' ideas is still low. The lecturer said that most students had difficulty in finding novelty ideas, formulating research problems, and compiling arguments based on credible scientific sources.

The results of observations show that students tend to rely on one or two references, lack extensive literature exploration, and are not able to systematically integrate data and theory in writing. Analysis of students' initial written documents shows various problems, such as incoherent writing structure, weak and descriptive argumentation, lack of synthesis between sources, and errors in citation and use of academic language. Most of the writing also shows a tendency for mild plagiarism and a lack of critical development of ideas. These findings confirm that students' academic writing skills are still at a basic level and require a more innovative, research-based learning approach and encourage systematic discovery of novelty.

### ***Integration of discovery of novelty and research-based learning in academic writing learning***

The results of the study show that the integration of Discovery of Novelty (DoV) and Research-based learning (RBL) in academic writing learning directs students not to start writing only from the determination of the topic, but from the understanding of the research that has been carried out and the identification of spaces that can still be developed. The findings of preliminary observations show that students still have difficulties in determining the focus of their writings, using sources critically, synthesizing, and formulating research gaps. This condition is in line with

the findings. (Maharani et al., 2023; Prasiska & Tohamba, 2021) who show that students still face problems in the development of argumentation and organization of academic writing. This problem is also related to the ability to read academic texts, as shown by Sumedi et al., (2025) that students face difficulties in understanding the complexity of texts and implementing academic reading strategies effectively. Thus, the problem of academic writing in this study cannot be separated from the ability of students to read, evaluate, and process knowledge from scientific sources.

DoV-RBL integration provides a different orientation to the activity. M1 states that before participating in the learning he "often has difficulty determining the focus of writing", while after following the learning process he begins to "look for problems and see research gaps before starting to write" (M1). M2 also states that DoV makes him "not just looking for a topic, but trying to find what hasn't been discussed much or a different point of view" (M2). Meanwhile, M3 explained that the RBL process helped him read several articles, compare the results of the research, and then find parts that could still be developed (M3). These findings show that DoV and RBL work on different but interconnected functions: RBL provides a learning experience through research, while DoV provides an orientation so that the experience is directed towards finding gaps and novelty in research.

The findings clarify DoV's position in learning academic writing. DoV does not simply mean asking students to "discover something new", but organizing reading and research activities into the process of discovering the State of the Art (SoTA), research gap, and novelty. The DoV framework in this study is derived from the principles of Discovery Learning, constructivism, cognitive processes, literature review, and identification of SoTA and research gap. Therefore, student activities in comparing previous research can be understood as a form of knowledge construction through the process of exploration, analysis, synthesis, and evaluation.

Changes in the function of literature are one of the important findings in the integration. M8 states that he began to judge articles "not only by their title, but by the methods, results, and limitations of their research" (M8). M12 also states that some studies are no longer "summarized individually, but compared to find patterns" (M12). Thus, scientific sources undergo a change in function: from mere sources of information and citations to materials for conducting analysis and finding research positions. This change is important because one of the problems found in previous research is the tendency of students to use literature in a limited way in building arguments. The findings of this study show that DoV-RBL integration provides a learning context that encourages students to use literature more analytically.

The findings also strengthen the results of research on RBL. Yanti et al., (2024) show that RBL can develop students' research, critical thinking, analytical, and scientific communication skills. Swandi, Sujiono, Khaeruddin (2025) show the contribution of RBL to scientific reasoning, while Syamratulagi et al., (2025) show its relationship with problem-solving and metacognition. However, these studies explain RBL more in terms of research experience and the development of research competencies. This research provides a more specific explanation in the context of academic writing, namely that the research experience can be directed to find research gaps as the basis for the formulation of novelty of writing.

These differences in functions can be formulated as complementary relationships. RBL answers how students learn through research, while DoV directs what needs to be found from the research process. In RBL, students explore problems, read sources, collect and analyze information, while through DoV, students are directed to question what is already known, what is not yet known, and what contributions can be developed. Therefore, the integration of the two does not simply place two models simultaneously, but forms a functional relationship between research experience and novel discovery.

The interview findings also show that the process is not always easy. M4 states that its greatest difficulty is "distinguishing between an interesting topic and something that really has novelty". M16 had difficulty determining novelty when previous research had been very extensive (M4; M16). This finding actually clarifies the theoretical meaning of DoV. Novelty cannot be understood as simply a difference between new research and old research. Students must be able to assess the relevance of these differences to the development of knowledge.

Students' understanding of the dimension of novelty is also beginning to develop. M17 states that he tries to seek novelty from "context, object, method, or perspective, not just from the topic" (M17). These findings show that students are beginning to understand novelty more conceptually. Thus, the main finding of this section is not simply that DoV and RBL can be applied simultaneously, but that the integration of the two gives a specific direction to research activities: the research experience provided by RBL is directed by DoV to generate new positions and possible contributions in academic writing.

### ***Student participation and development of academic writing skills through the integration of discovery of novelty and research-based learning***

The DoV-RBL integration also shows a change in the form of student participation in learning. The participation found is not only in the form of attendance or involvement in discussions, but develops in the activities of finding sources, comparing research, asking questions, developing ideas, drafting arguments, and revising writing. M18 states that RBL makes learning more active because students must "conduct their own investigations, not just receive material" (M18). M7 also states that the discussion provided a "new point of view" to ideas previously considered mundane (M7).

This pattern shows that student participation in DoV-RBL integration is cognitive as well as academic. Students not only carry out learning activities, but also begin to take part in the process of determining problems, choosing sources, assessing previous research, and determining the position of writing. This is in line with the principle of constructivism which places students as knowledge builders through active learning experiences. In the perspective of inquiry learning, the engagement also occurs because students get the opportunity to investigate problems and build understanding through the process of finding evidence.

The change in participation is related to the development of students' ability to use sources and build arguments. M9 states that the model helps connect "problems, research questions, data, and arguments so that the writing is more coherent" (M9). M10 states that he is more courageous in determining the position of the argument because it has the basis of previous research (M10). These findings show that the development of writing is not only seen from the ability to produce texts, but also from the ability of students to connect problems, evidence, and argumentative positions.

These findings can be read together with the research of (Maharani et al., 2023; Prasiska & Tohamba, 2021) which show that students still face problems in argumentation, discourse organization, and the use of academic resources. If previous research shows this problem as one of the challenges in learning academic writing, this research data shows that the DoV-RBL integration provides activities that allow students to practice overcoming these problems through the research process. Students are not asked to formulate arguments separately from research activities, but build arguments based on the results of reading, comparing, and analyzing sources. Thus, the development of writing skills occurs in the context of research experience, not through writing exercises that are separate from the process of seeking knowledge.

The relationship between reading and writing is increasingly evident in M19's statement that "the better I read the research, the easier it is to construct an argument" (M19). The findings are important because they show that students are beginning to understand the relationship between reading literacy and academic writing skills. This finding also provides an explanation for the problem found by Sumedi et al., (2025), that the ability to understand academic texts is related to students' strategies in processing information. In DoV-RBL integration, reading does not stop at understanding the content of the article, but continues with comparing, evaluating, and identifying the development space that then becomes the basis for writing.

The development of writing skills is also seen in the process of literature synthesis. M12 states that he began comparing several studies to find patterns, rather than just summarizing individual sources. This change is important because synthesis is one of the aspects that distinguishes academic writing that is analytical from writing that is only compilative. In the context of DoV-RBL, synthesis has a dual function: students use multiple studies to understand SoTA as well as to find possible research gaps. Thus, literature synthesis becomes a meeting point between DoV and academic writing skills.

This continues in the revision process. M13 states that revisions are not only used to correct the language, but to check whether "arguments and evidence are appropriate". M22 states that lecturer feedback helps to find weaknesses in the focus of the problem and the strength of the argument (M13; M22). These findings are in line with August (2026) which places academic writing as an iterative process through exploration, drafting, providing feedback, revision, and evaluation. In this study, revision does not only have a technical function, but is a process to re-examine the suitability between problems, evidence, arguments, and novelty positions.

The change in participation is also related to the growth of ownership of writing. M24 states that the model increases motivation because students feel they have their own "findings or point of view in their writing". M25 states that he no longer sees academic writing as a mere task, but as "the process of discovering and communicating knowledge" (M24; M25). The findings give a deeper meaning to student participation. Students are not only more actively participating in activities, but starting to see writing as the result of their own thought process and investigation. These findings are in line with (Wessels, I., et al, 2021) who places academic writing learning as a space for the development of academic identity and critical thinking.

Based on data triangulation, these developments appear in several interrelated aspects, namely understanding the research gap and novelty, the use of sources, literature synthesis, academic argumentation, substantive revision, critical thinking, and ownership of ideas. The pattern shows that DoV-RBL integration is not only related to the final product of writing, but to the thinking process that underlies the production of academic writing. Thus, the findings of this study expand on the results of previous RBL research. If Yanti et al., 2024; Swandi et al, 2025; Syamratulagi et al., 2025) show the relationship between RBL and research, critical thinking, reasoning, and problem-solving skills, then this study shows that these abilities can be realized specifically in writing activities through research gap search, literature synthesis, argumentation development, and evidence-based revision. His contribution does not state that DoV-RBL causally improves writing skills, but rather explains the process and pattern of development of these skills in the context of learning academic writing.

### ***Obstacles in the integration of discovery of novelty and research-based learning in academic writing learning***

Despite showing improvements in participation and writing skills, DoV-RBL integration also faces a number of obstacles. The main obstacle is related to the ability of students to distinguish between topics, research gaps, and novelties. M4 states that he still has trouble distinguishing an interesting topic from something that really has novelty. M16 also experienced difficulties when there was a lot of previous research on the chosen topic. Meanwhile, M21 stated that he still had difficulty compiling a literature review so that it was not just a collection of summaries.

These constraints show that finding novelty is a more complex cognitive activity than finding new information for students. Students need to have prior knowledge about the field being studied, the ability to read research critically, the ability to compare findings, and the ability to evaluate whether the differences found have scientific relevance. This is in accordance with the foundation of cognitive theory in DoV which emphasizes the process of analysis, synthesis, and evaluation. Therefore, the difficulty of students finding novelty cannot be understood solely as a lack of motivation, but as a consequence of the cognitive complexity of the process of discovering novelty.

The next obstacle is related to the ability to process literature. M21 is still having trouble converting a literature review from a collection of summaries to a synthesis, while M12 is just beginning to understand that some studies need to be compared to find patterns. This finding is again related to the issue of academic literacy raised by Maharani et al. (2023), Prasiska and Tohamba (2021), and Sumedi et al. (2025). Thus, the DoV-RBL integration does not eliminate the basic problems in academic writing, but opens the problem more clearly because students are required to use literature to build positions and novelties.

In these conditions, the role of lecturers as scaffolding givers is important. The lecturer stated that "the process of finding novelty cannot be instantaneous" and students need "intensive guidance, especially in the early stages". The lecturer also stated that not all students are ready to

read and analyze journals independently. The findings are in line with Vygotsky's social constructivism which places help from more competent parties as part of the development of students' abilities. In the context of DoV-RBL, scaffolding is needed especially when students move from simple activities to more complex activities: from finding articles, understanding the content of articles, comparing articles, finding gaps, to assessing the feasibility of the gap as novelty. Thus, scaffolding should not be seen as an addition that is outside the model, but as an important component in the implementation of DoV-RBL. Lecturers do not take over the discovery process, but provide triggering questions, direct the search for sources, help students test arguments, and provide feedback. This pattern is in accordance with the principle of inquiry learning which places lecturers as facilitators, while students remain the main actors in the investigation process.

Another obstacle appears to be the need for students to make substantive revisions. M13 and M22 show that students still need help assessing the fit between arguments, evidence, problem focus, and writing structure. The findings show that students are not fully able to independently evaluate their writing. Therefore, the revision process in DoV-RBL integration needs to be understood as part of learning, not just the final stage before articles is collected. Feedback allows students to re-test whether the developed idea is really supported by the source and whether the position of the novelty has been logically seen.

The findings also show that DoV-RBL integration requires adequate time and guidance. RBL demanded that students conduct an investigation, while DoV demanded that they conduct further analysis of the results of the investigation. If learning time is limited, students have the potential to only complete the source search without having time to synthesize and evaluate in depth. Therefore, the constraint in this study is not only with students, but also related to the need for learning design that provides enough space for exploration, discussion, feedback, and revision.

Thus, the findings regarding the constraints actually provide a more complete understanding of the position of DoV-RBL. The integration of the two approaches cannot be understood as a procedure that automatically results in novelty. Its success depends on the readiness of students to read and analyze sources, the ability to synthesize, initial knowledge, available time, and the quality of the lecturer's scaffolding. This reinforces the constructivist perspective that knowledge is not transferred directly, but is built gradually through experience, interaction, and appropriate assistance.

Overall, the three parts of the study show a pattern that is interconnected. The integration of RBL provides research experience and an evidence base, DoV directs the experience to identify research gaps and novelties, while writing activities become a space to articulate these findings through synthesis, argumentation, revision, and reflection. At the same time, the process encourages student participation and ownership, but still requires scaffolding, especially in finding and evaluating novelty. Thus, the contribution of this research not only shows that DoV and RBL can be used together, but explains how the integration of the two works in academic writing learning and the pedagogical conditions necessary for the process to take place.

## CONCLUSION

This study concludes that the integration of discovery of novelty and research-based learning in academic writing learning is able to form a more critical, reflective, and knowledge-based learning process. The integration of these two approaches is implemented through the stages of problem identification, literature exploration, discovery of novelty of ideas, and the preparation of research based academic writing. Through these stages, students show improvement in identifying research gaps, developing original ideas, and drafting arguments that are more systematic and supported by relevant scientific sources. This finding answers the formulation of research problems regarding the integration of Discovery of Novelty and research-based learning in writing learning academic as well as achieving the research objective to analyze the application of the two approaches in depth.

However, this study also found that there are limitations in students' academic literacy, especially in the ability to critically examine scientific sources and formulate research novelties. In addition, the application of both approaches requires intensive assistance so that students are able to maintain the coherence of arguments and the quality of academic writing. Overall, the integration of discovery of novelty and research-based learning contributes positively to

improving the quality of student academic writing and encouraging more innovative, analytical, and research-based learning. Therefore, lecturers are advised to develop academic writing learning that is oriented towards research exploration and strengthening scientific literacy, while further research can combine this approach with other learning strategies to obtain more comprehensive results.

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### Author contributions

S.F. conceptualized the study, developed the research methodology, collected the data, conducted the data analysis, interpreted the findings, and drafted the manuscript. A.C.D. contributed to the data analysis, interpretation of the findings, and revision of the manuscript; both authors reviewed and approved the final version of the manuscript.

### Competing interests

The authors declare no competing interests.

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