



How to Implement Discovery Learning in English Language Teaching at Indonesian Higher Education?

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Abstract

This study aimed to investigate the implementation of discovery learning in teaching English. This study was qualitative research, and it applied a case study. The data source was from three lecturers. The researchers used interview guidelines to gather data. The findings release that there were six stages of discovery learning implementation. The stages of this implementation were stimulation, problem identification, data collection, data processing, verification, and generalization. The highest frequency of using marked the selection of each category discovery learning in teaching English. The frequency of implementation of discovery learning can be described into different categories, namely: High Implemented Discovery Learning (HIDL), Moderate Implemented Discovery Learning (MIDL), and Low Implemented Discovery Learning (LIDL). All lecturers are the High Implemented Discovery Learning is marked by the highest frequency of using discovery learning in teaching English education students.

Keywords: *Discovery learning; implementation; English Language Teaching*

Introduction

The success of our education world still seems to be hampered by some obstacles. One of them is the problem of the weak learning process. Students are less encouraged to develop their critical thinking skills in the learning process. Learning in the classroom is still directed at the students' ability to memorize information. The students' brains are forced to remember and hoard new knowledge without comprehensively understanding and applying it daily. As a result, when the students graduate from school, they are theoretically competent but practically more negligible. Still, they are poor at applying theoretical background knowledge,

including foreign languages that they are learning.

Many ways have been attempted by lecturers to overcome above problems. Being a good facilitator to solve the problems mentioned above needs various creativities in teaching English to help the students learn it as a foreign language. In line with those teaching creativities, the research conducted by Kakar found that (1) creative and innovative teaching makes the learning process enjoyable and increases students' participation and motivation because it puts students in the learning center process; (2) some students show resistance to changes from a teacher-centered approach to a student-centered approach when it was implemented, and (3) some instructors need support from higher education to incorporate creative teaching into their courses because there is a glaring lack of professional development needs. Based on those findings, this study considers that creative teaching of English positively impacts students' academic achievement. Consequently, this study presents a significant way to introduce information and strategies about innovative teaching to L2 instructors in the same context in Afghanistan. Besides, those results abovementioned have implications for innovation in teaching productive skills and the future of teaching English in ESL and EFL contexts (Kakar et al., 2020). Therefore, teaching EFL is required to engage with the teaching-learning cycle effectively. That is to say, teachers' part in language learning is just a facilitator, and the students of English absorbing the information provided must be an investigator. That is why appropriate learning strategies become an essential need as a current pattern in teaching English as a foreign language for both teachers and students, one of the strategies is discovery learning.

Discovery learning has a long history in teaching-learning (Ozdem-Yilmaz & Bilican, 2020; Restanti, 2020). However, it has seen a resurgence in prevalence in the most recent decade. One explanation is the adjustment in training towards more constructivist thoughts regarding information and learning. With its accentuation on the student's information development, discovery learning fits into this system over customary explanatory instructing (Veermaans, 2003). The obvious principle of learning in discovery learning is that the materials or content delivered are not in the final form. Still, students are encouraged to identify what they want to know, seek information themselves, and then organize or form (constructive) what they know and understand in a final form. (Schunk, 2012; Smaldino et al., 2011).

Discovery learning is a ground-breaking instructional approach that encourages students to investigate data and ideas, extends new information, and applied new practices (Maheshwari, 2013 Ozdem-Yilmaz & Bilican, 2020)). Discovery learning is a request-based, constructivist learning hypothesis in critical thinking circumstances (Junina & Halim, 2020). The student draws on their own previous experience and existing information to find realities and connections and new certainties to be educated (Chusni, 2022; Murtiyasa & Karomah, 2020). Understudies associate with the world by investigating and controlling articles, grappling with questions and debates, or performing tests. Thus, understudies might be bound to recall ideas and information found alone.

Applying the discovery learning strategy can improve the self-discovery capabilities of the individual concerned. Utilization of a discovery learning strategy can change passive learning conditions to be active and creative learners. Change teacher-oriented learning to student-oriented. Changing the student's Expository mode receives the teacher's general information to discovery mode, the student finds their knowledge (Andayani, 2020; Ozdem-Yilmaz & Bilican, 2020). Sofeny described that his study revealed the effective use of discovery learning for extrovert students rather than introverted students. Following that, the discoveries propose that using direct guidance is also compelling for introverted students instead of extroverted students. The consequences of the discovery learning utilized affect extrovert students more than introvert students (Sofeny, 2017).

The previous researchers also investigated features of the students' issues in procuring language competency in English by utilizing discovery learning (Bernardini, 2016; Cahyani & Yulindaria, 2018; Junizar & Sudiyono, 2020; Sofeny, 2017). The researcher found that discovery learning is more effective in acquiring grammatical competency in English. Thus, it will be helpful to advance the competency of the students in sentence structure. The successful techniques for utilizing the discovery learning strategy were pulled in the youthful students learning English (Isnardiantini et al., 2019).

Regarding to the use of discovery learning, a preliminary study in Universitas Sulawesi Barat Majene West Sulawesi showed that the English lecturers have attempted an innovation by utilizing discovery learning based-instruction in teaching English for students within a series of learning activities designed (Rafiq & Munawir, 2017). It simply figured out that the lecturers tried to change the learning approach used, i.e. teacher-centered learning becomes student-centered learning. It came on the surface as some of the lecturers conventionally conducted their English class making the students lack the motivation to learn productive English skills in which they do not want to learn, and then they do not enjoy attending the class as a result (Lestari P, 2020). Based on the abovementioned teaching and learning phenomenon, the English lectures of Universitas Sulawesi Barat have been implementing discovery learning intensely in teaching English for students. Therefore, this study intended to investigate how lecturers implement discovery learning in their English teaching learning process.

Based on some previous research who have mentioned above, it takes into account that teaching by utilizing discovery learning requires the teachers to prepare and determine what activities can facilitate the students to learn different English language skills at various levels and grades and to achieve some oriented learning goals independently (Aldalur & Perez, 2023; Mahmoud, 2014). Based on the explanation above, the researchers intend to investigate the processes of applying discovery learning in teaching English to the students at Universitas

Sulawesi Barat.

Furthermore, in the concept of learning, the discovery learning strategy is the formation of categories or ideas, allowing generalization. Bruner's categorization theory appears in the discovery learning strategy, that discovery is the formation of types, or more commonly called coding systems (Ozdem-Yilmaz & Bilican, 2020). The construction of categories and coding systems is formulated thus in similarities (differences) between objects and events (Winarni et al., 2020). Furthermore, the discovery learning integrates the following five principles (Harisuddin, 2020; Istiqomah, 2018; Septya et al., 2018) :

1. Problem Solving

Students must be motivated and guided by teachers to solve the problems they face and combine their initial knowledge with the new knowledge gained in the learning process. Thus, students play an active role in the learning process, improving analytical and problem-solving skills.

2. Learner Management

The lecturers let the students complete the work individually and in groups. The students can handle and manage well.

3. Integrating and Connecting

Students learn to connect their experiences with new things they get to apply in everyday life. Therefore, they have the opportunity to develop their knowledge in the future.

4. Information Analysis and Interpretation

Teachers allow students to conduct in-depth analysis and investigate and transform their newly acquired knowledge. Discovery learning emphasizes processes and interactions in learning, not achievement-oriented learning.

5. Failure and Feedback

Providing feedback in learning is the teachers' duty and responsibility. In discovery learning, it is focused on the process of discovering new things not on the results obtained. So it does not require students to find the right answer, demanding to find new facts.

Method

This study constitutes qualitative research, and it applied a case study. A case study is a story about people, organizations, systems, services, communities, structures, and events that may be unusual, exceptional, or interesting stories (Yin, 2018). By illustrating what happened to bring it about, a case study provides the story behind the effect and can be an excellent way to demonstrate the implementation process or bring attention to a specific problem or difficulty in a project. Cases can be chosen because they are highly efficient, popular, representative, or of particular interest (Neale et al., 2006). It can also be a single organization, a person, and an event (Bryman, 2012). This study focuses on discovery learning in English language teaching.

The researchers conducted this study in Universitas Sulawesi Barat Majene

Regency West Sulawesi. This university was selected since some lectures had implemented discovery learning based-instruction in their class; it was based on preliminary research. The data source came from three English lecturers. They implemented discovery learning in English, so their experience can represent the data in this study. The participants demographic of this research was three of the participants females, and the age of the participants is in the range of 29-36 years old. The participants' experience teaching English have started from five years to ten years. To apply the principle of beneficence, specifically, and respondent confidentially in collecting data, the researcher provided a symbol of the name of lecturers. The symbol was Lecturer Respondent (LR1, LR2, LR3).

The researchers were primary instrument in this case study research. The researchers used interview guidelines to gather data. There were three concurrent flows of activities in analyzing qualitative data: data reduction, data displays, and conclusion drawing or verification.

Results

a. Lecturer 1 (LR1)

Based on the data gathered from LR1, she implemented discovery learning based-instruction in teaching English education students for almost one semester. She applied it from the fourth until the fifteenth meeting. The theme is the local culture preservation during seven sessions, and she attempted discovery learning during this teaching-learning process. She stated that:

I asked students to choose one topic from the local cultures to investigate together, and they were divided into some groups. Then they will make field observations about the topic that they choose and collect data through interviews with people directly involved with the local culture. Local culture includes Sandeq, lipa' Sa'be Mandar, and Mandar cultural festival (LR 1).

In the first meeting of applying discovery learning based-instruction, the lecturer (LR 1) stimulated the students. She explained that:

In this stage, the student is faced with something that confuses, so that there is a desire to investigate itself. At this stage, the lecturer asks questions or requests students to read or listen to descriptions containing problems. Stimulation provides learning interaction conditions that can develop and help students explore materials. In this case, the lecturer provides stimulation by using the technique of asking is to ask questions that can confront students' internal conditions that encourage exploration (LR 1).

The lecturer (LR 1) provided some problems about local culture preservation. One of the problems is how technology development influences local culture and how to preserve local culture. It can stimulate students to identify as many problems relevant to the subject matter. Then one of them is selected and formulated in a

hypothesis. Below is the problem identification:

Providing the opportunity to the students to identify and analyze the problems they face is a useful technique in building students so that they get used to finding a problem (LR 1).

The lecturer let the students gather the data and information as much as they need at the data collection stage. She stated that:

The students interviewed with the cultural activist, Sandek maker, and other experts based on their topic. The students also investigated about Polewali Mandar International Folk and Art Festival (PIFAF), so students conducted an interview with the PIFAF Liaison Officers (LOs) (LR 1).

The next stage of discovery learning based-instruction is data processing. Data processing is a processing activity. Students have obtained data and information through interviews, observations, and then interpreted. All readings, interviews, observations, and so on are all processed, scrambled, classified, tabulated, even when necessary to be calculated in a certain way and interpreted at a certain level of trust.

Formulating conclusions is the process of describing findings obtained based on the results of hypothesis testing. The students compose their findings after processing the data. Providing the finding is an essential step in the teaching-learning process using discovery learning. The amount of data obtained often causes the formulated conclusions to focus on solving the problem. Lecturers should be able to show students relevant data to accept accurate findings. This stage is the verification step. The last step is a generalization. The generalization stage is the process of drawing a conclusion that can be used as a general principle and applies to all events or problems in common, considering the verification results.

b. Lecturer 2 (LR2)

Based on the data gathered from LR2, she implemented discovery learning based-instruction in teaching English to education students twice in one semester. The lecturer provided stimulation to the students as the first step. The lecturer also stimulated students to offer the problem related to the local culture. In this case, the lecturer limited the culture, particularly for the local wisdom story or Mandar folklore. The lecturer did not reveal the questions as a part of problem identification, so no hypothesis is needed to be tested. But the lecturer directly asks students to gather data about local wisdom stories.

Students collect data through interviews with some experts and activists of Mandar culture to get information about Mandar folklore. The students asked them to tell one Mandar folklore. They recorded that story after that students wrote the Mandar Folklore because there is no document about it (LR 2).

The students processed and verified the data by repeating the same question to different persons. Data verification is used to re-examine data obtained through observation, interview data, and documentation. The purpose of data verification is for the data obtained to be valid (LR 2).

The above steps were the last, and there was no conclusion needed because

there was no hypothesis tested in this discovery learning. Students only collected and verified the data, and they were only required to present the result of the data collected. The LR2 also implemented discovery learning by bringing the students to be outdoor classes. She provided an outdoor lesson in a park with a beautiful view. She allowed the students to explore around like hero graves, beaches, and beautiful landscapes in which they were asked to explain and write what they found.

c. Lecturer 3 (LR3)

Based on the observations from LR3, the researcher has obtained an overview of the implementation of discovery learning based-instruction in teaching English education students. The lecturer provided discovery learning during six meetings. The content in teaching English is Mandar culture, and it is a process of learning foreign languages combined with local culture, in this case, Mandar culture. In this learning, include elements of Mandar culture in the learning process to understand and preserve their own culture. The result of interview are below:

The lecturer stimulated students by presenting various customs and cultures of Indonesia. This step is similar to the second lecturer. She did not provide some questions to the students, but she described other cultures to stimulate students. Stimulation in learning is done by imitating or manipulating the actual situation to describe or indicate a particular process, condition, or object being studied accompanied by an oral explanation. Stimulation is a practical method that develops learners' skills (cognitive and skills) by moving an actual situation into an activity or study room because of difficulties or limitations to practice in a real case.

The next stage was data collection. In this stage, the students gathered the data by observation, interview, and collecting documents such as record videos related to their topic. The last stage was students process and conduct verification. There was no conclusion because the was no hypothesis tested also.

The frequency of implementation of discovery learning can be described into different categories, namely: High Implemented Discovery Learning (HIDL), Moderate Implemented Discovery Learning (MIDL), and Low Implemented Discovery Learning (LIDL). All lecturers are the High Implemented Discovery Learning is marked by the highest frequency of using discovery learning in teaching English education students. The stages of this implementation are stimulation, problem identification, data collection, data processing, verification, and generalization. The highest frequency of using marked the selection of each category discovery learning based-instruction in teaching English.

Discussion

Identifying students' needs was the first stage in Discovery Learning. Principles selection, conceptual understanding, and knowledge sharing were the first steps in this process. Selecting the right materials, subjects, and assignments. Help and explain the activities and challenges that pupils confront and the part that each student plays; Prepare the lessons and tools that were required; Examine students' comprehension of the issue at hand; Make it possible for pupils to explore new things. If pupils needed information or data, provide it to them. Look inward and ask yourself probing questions to see where your weaknesses lie. Male-female interactions in the classroom. Assist pupils in formulating rules and making generalizations about their findings (Raharjo et al., 2019).

According to the data, it was discovered that the lecturers participated in a number of different activities in order to carry out the stimulation stage. The lecturers kicked off the process of teaching and learning by questioning the students, encouraging them to read books, and engaging them in a variety of different learning activities to get them ready for problem-solving. It is consistent with the findings from other studies, and they discovered that one of the professors who was watched in her research presented questions to motivate the pupils. This discovery is in line with the findings from earlier studies (Efrini, 2016; Zalviani & Zainil, 2021). In addition, the presenter provided images and a glossary. In the meantime, other instructors participating in the research offered their students an example of subject learning and reminded them of the importance of culture in terms of motivating their pupils.

Another researcher came to the conclusion that the teacher who participated in her study employed the technique of asking questions (Efrini, 2016; Hanafi, 2016; Mufida et al., 2015; Zalviani & Zainil, 2021). This agrees with Bruner's findings in Mushtoza (2016). He stimulated the use of questioning to provide exposure for the pupils to internal situations that inspire exploration through the questions he poses. The teacher can foster and encourage discovery learning by creating an environment conducive to the process. Students have the option of making educated guesses at the answers and letting the teacher know that they are doing so. The purpose of stimulation at this stage was to offer learning interaction circumstances that might foster student development and assist them in investigating the information. In this situation, the instructor demonstrated mastery of the strategies of presenting a stimulant to the pupils in order to encourage them to investigate the goal that can be attained. They were confronted with something that makes it difficult for them to make sense of things, and then they proceed to avoid making any broad statements, which sparks their interest in investigating the matter further.

The procedure for implementation or the problem statement. Students were given the opportunity to find as many agendas as possible that are pertinent to the topic that was being discussed by the speakers. The results obtained from other studies were not affected by this discovery in any way (Efrini, 2016; Hanafi, 2016; Mufida et al., 2015; Mukharomah, 2015). According to the findings of their investigation, the stage of formulating a problem statement was given by the instructor in the form of a question regarding the materials that was to be verbally posed by the students to one another and posed in English. According to the findings that were discovered by Efrini (2016), in order to implement the problem statement, the instructor posed the question, assigned listening tasks that were related to the subject, created

examples and posed questions about them, and requested that the students locate difficult words and to mean synonyms based on the text that was provided.

The subsequent action in the procedure for putting discovery learning into action is data collection. According to the findings of this study, the classroom teacher used the step-by-step activities. The professors encouraged the students to read the assigned works of literature. After that, the lecturers gave the students permission to look at various objects. The lecturers provide the question rather than proving the hypothesis, which enables the students to collect (collection) relevant information, read the literature, observe the objects, interview sources, and conduct their own trials, among other things. Students were required to actively seek out information that was relevant to the issues that they were experiencing as a consequence of this step. It connected students, unintentionally, with the knowledge problem that has been owned. This finding is different from the previous study. The researchers found that giving exercises and presenting the practices results in front of the class were the teacher's activities to implement the data collection step (Hanafi, 2016; Mufida et al., 2015; Zalviani & Zainil, 2021).

Mushtoz (2016) discovered that the instructor prompted the students to seek out additional resources so that they could carry out the data collection step. The sources may include dictionaries, books, browsing the internet, or participation in group discussions (Mushtoz, 2016). Nevertheless, Efrini's findings are strikingly comparable to these (2016). She demonstrated that the instructor had requested that the students read a text, search the internet, complete the assignment in LKS, and locate something by reading a text in order to carry out this step (Efrini, 2016).

The step that immediately follows the collection of data is the processing of the data. The findings of this study showed that the professors actually did implement this step. One activity was completed by the lecturers in order to carry out this step. The professors challenged the students to make sense of the data they had gleaned from a variety of sources, including reading, interviews, observations, and others. According to Shah and Mushtoz (2016), data processing is defined as the activity of processing data and information that students have obtained through interviews, observation, and other methods, which are then interpreted. This definition is in line with the findings of Mushtoz (2016). All of the informal readings, discussions, observations, and the like must be processed, randomized, classified, tabulated, and, if necessary, calculated and analyzed in a specific manner at a specific level of confidence.

This finding lends credence to the findings of the earlier research conducted by Mufida (2015), Mushtoz (2016), and Efrini (2016). The findings of the investigation that Mufida carried out led him to the conclusion that the step of processing the data required the instructor to request that the students express the topic by playing games and using other languages. In the study that Mushtoz (2016) conducted, the instructor gave the students an assignment to write a text that was based on the data collection step before having them perform the data processing step. Efrini (2016) found that the teachers asked the students to write a text based on an example and data that was found, do the task, and answer questions about the text in order to implement this step. This finding is very similar to what Mushtoz (2016) found.

Following the step of processing the data, the step of verification comes next. According to the findings of this research, the lecturers did carry out the verification step. This step required the instructor to complete two different activities in order to put it into action. The instructor tasked the students with conducting in-depth research in order to disprove the hypothesis that had been presented earlier by presenting alternative findings that were associated with the outcomes of data processing. The lecturers also gave the students the opportunity to discover a concept, theory, rules, or understanding through the examples that the students had encountered in their own lives. This finding is consistent with the conclusion that was drawn from the research that Mushtoza (2016) and Efrini conducted (2016). Mushtoza (2016) discovered that the activities in this step were carried out by providing correction and feedback to the students through the tasks they were assigned. In the meantime, Efrini (2016) discovered that this step was carried out by comparing the text produced by the students with the example text, other text, or the material taken from sources.

The process comes full circle with a generalization as its final step. The lecturer who participated in this study carried out this action. It was implemented by the instructor through the completion of a specific kind of activity. Under consideration of the findings of the verification, the lecturers requested that the students reach a conclusion in order to obtain general principles and apply them to any and all situations or problems that are identical. In this section, students were also responsible for coding or categorizing the information, which served as the individual formation of concepts and generalizations. The generalization of the student acquired new information regarding alternative answers or settlements that require logical proof.

This finding is consistent with the findings and conclusions obtained from earlier research carried out by Mufida (2015), Mushtoza (2016), and Efrini (2016). Researchers Mufida (2015) and Mushtoza (2016) discovered that this step required the students to draw conclusions based on the activities that they participated in while learning. Efrini (2016) found that this step was implemented by having the instructor ask the students to summarize the overall lesson before providing feedback and assigning homework.

It is possible to draw the conclusion from what has been described so far that the instructors encouraged their students to discuss the approach to education that works best for them. According to Brown's definition in Mushtoza (2016), a teacher is a facilitator who ensures that the appropriate task is carried out. In addition to that, the experience gained from the instructor was very beneficial. It is anticipated that it will become proficient in the step of data processing. The ability to think systematically was the competency that was developed through participation in this activity. Other skills developed included developing attitudes of honesty and tolerance. It is for them to concisely express their opinion and to develop their excellent and appropriate language skills.

During the step of verification, the lecturers also provided the students with corrections and feedback on the work they had completed in groups and individually. According to Harmer in Mushtoza (2015), the idea that one of the roles of the teacher is to respond to the questions and comments of the students is an appropriate one. The definition of the word "response" is "to react to the content and construction of a performing task and suggest ways in which it could be improved." This agrees with

Bruner's findings in Mushtoza (2015). He hopes that the process of learning will be successful and creative if the instructor allows the students to discover a concept, theory, rules, or understanding through the use of examples that he has experienced in his own life.

During the generalization step, the class as a whole came to a conclusion, led by the instructor. It was the method that could be utilized as a guiding principle and applied to any and all events or problems that were analogous in nature in regard to the result of the verification. According to Djamarah's findings in Mushteza (2015), students picked up the skill of drawing specific conclusions or making broad generalizations based on the results of the earlier verification stage. In conclusion, it put into words the fundamental principles that are the foundation of generalizations.

The full implementation of discovery learning in the teaching and learning process could encourage students to think critically (Caprario, 2013; Kusumawardhani et al., 2019; Martaida et al., 2017; Noer, 2018; Nur et al., 2013; Rafiq & Munawir, 2017; Rahmadhani et al., 2021; Sari Nurza et al., 2021; Wilcox et al., 2017). Students can, of course, be encouraged and stimulated to take an interest in the subject matter. It could be found in the works of Barry K. Beyer in Mustheza (2015). He explained that the process of critical thinking involves making clear and well-reasoned judgments. Ideas ought to be rationalized and thoroughly thought out and evaluated whenever one is engaged in critical thinking. The intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and evaluating information gathered from, or generated by observation, experience, reflection, reasoning, or communication, as a guide to belief and action, is how the National Council for Excellence in Critical Thinking defines critical thinking in Musteza (2008). The skills of observation, interpretation, analysis, inference, evaluation, explanation, and metacognition are all included on the list of fundamental abilities required for critical thinking. Students are responsible for carrying out all of the activities and presenting the report in order to put discovery learning into practice in the classroom.

The results of one's education in chemistry can be affected by the discovery-based instructional approach. Students who engage in discovery learning perform significantly better on standardized tests than their peers who engage in conventional learning. Teachers who use discovery learning can facilitate high-quality education for their students (Raharjo et al., 2019). The implementation of discovery learning has a positive impact on improving students' scientific and cognitive attitudes, as marked by an increase in students' learning completeness in each cycle, according to additional conclusions drawn from Syarif's (Syarif et al., 2020). Students' capacities for critical thinking, creative thinking, and working together on projects can all be improved through the application of the guided discovery model (Rahmadhani et al., 2021). The teaching and learning process is positively impacted by the utilization of this tactic.

Students in junior high school as well as students in senior high school benefit favorably from the effect (Zalviani & Zainil, 2021).

Conclusion

The lecturers carried out the process of discovery learning, which consists of six steps. The stimulation step assisted students in identifying topics, encouraged students to learn, and assisted students in exploring in order for them to reach their objective. Following that, the step of formulating a problem statement assisted students in comprehending the material. Students had the opportunity to explore the topic to the fullest extent possible during the data collection step, while they could process the data during the data processing step. Students had the opportunity to get corrections during the verification step, and then during the generalization step, students were given the chance to understand the concept, even if they did not understand the hypothesis.

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References

- Aldalur, I., & Perez, A. (2023). Gamification and discovery learning: Motivating and involving students in the learning process. *Heliyon*, 9(1), e13135. <https://doi.org/10.1016/j.heliyon.2023.e13135>
- Andayani, S. W. (2020). Penerapan Model Discovery Learning Untuk Meningkatkan Kreativitas Belajar pada Mata Pelajaran Ilmu Gizi Siswa Tata Boga di SMK. In *Jurnal KELUARGA* Vol. core.ac.uk. <https://core.ac.uk/download/pdf/322556213.pdf>
- Bernardini, S. (2016). Discovery learning in the language-for-translation classroom: corpora as learning aids. *Cadernos de Tradução*. <https://doi.org/10.5007/2175-7968.2016v36nesp1p14>
- Bryman, A. (2012). *Social Research Methods 4th Edition* (4th ed.). Oxford University Press.
- Cahyani, I., & Yulindaria, L. (2018). The Effectiveness of Discovery Learning Model in Improving Students Fiction Writing. *Indonesian Journal of Learning and Instruction*, 1(1). <https://doi.org/10.25134/ijli.v1i1.1281>

- Caprario, M. (2013). Guided Discovery Grammar Instruction: A Review of the Literature with Original Teaching Materials. *MA TESOL Collection*.
- Chusni, M. M. (2022). AN EVALUATION OF IMPLEMENTATION OF THE DISCOVERY LEARNING MODEL ON NATURAL SCIENCE LEARNING. *Lentera Pendidikan: Jurnal Ilmu Tarbiyah* https://journal3.uin-alauddin.ac.id/index.php/lentera_pendidikan/article/view/22254
- Efrini, M. (2016). Discovery Learning Method Based on Scientific Approach in Curriculum 2013 in Teaching English at Senior High School. *International Seminar on Education*.
- Hanafi, H. (2016). The Effect of Discovery Learning Method Application on Increasing Students' Listening Outcome and Social Attitude. *DINAMIKA ILMU*. <https://doi.org/10.21093/di.v16i2.552>
- Harisuddin, M. I. (2020). Penerapan discovery learning untuk meningkatkan kemampuan pemahaman konsep matematis siswa SMPN 1 Pagaden. *E-Jurnal Mitra Pendidikan*. <http://e-jurnalmitrapendidikan.com/index.php/e-jmp/article/view/673>
- Isnardiantini, S., Usodo, B., & Soegiyan, H. (2019). The Effect Of Discovery Learning-Based Teaching Material By Utilizing Traditional Game On Mathematic Abilities Of The 2nd Graders Of Elementary School. *International Journal of ...* <https://dergipark.org.tr/en/pub/ijere/issue/45614/573773>
- Istiqomah, R. (2018). Improving senior high school student's creativity using discovery learning model in islamic senior high school 1 jambi city. *European Journal of Multidisciplinary Studies*. <https://revistia.com/index.php/ejms/article/view/6028>
- Junina, I., & Halim, A. (2020). The effect of discovery learning-based worksheet on students' metacognition skill and learning outcomes. *Journal of Physics: Conference Series*. <https://doi.org/10.1088/1742-6596/1460/1/012100>
- Junizar, F., & Sudiyono, S. (2020). The Effectiveness between Discovery Learning and Word Wall Methods in Improving Vocabulary At Seventh Grade Students. *PROJECT (Professional Journal of English Education)*, 3(2), 180. <https://doi.org/10.22460/project.v3i2.p180-186>
- Kakar, A. F., Sarwari, K., & Miri, M. A. (2020). Creative Teaching in EFL Classrooms: Voices from Afghanistan. *Journal of Foreign Language Teaching and Learning*. <https://doi.org/10.18196/ftl.5252>
- Kusumawardhani, A. D., Mulya, D., & Faizah, A. (2019). Empowering Students' Creativity and Critical Thinking through Discovery Learning-based Writing Assessment. *Linguists: Journal of Linguistics and Language Teaching*, 5(1), 1. <https://doi.org/10.29300/ling.v5i1.1913>
- Lestari P, O. (2020). Discovery Learning to Increase Motivation in Writing Indonesian Students of Education FKIP UMSU. *Budapest International Research*

and Critics Institute (BIRCI-Journal): Humanities and Social Sciences, 3766–3775.

- Mahmoud, A. K. A. (2014). The Effect of Using Discovery Learning Strategy in Teaching Grammatical Rules to first year General Secondary Student on Developing Their Achievement and Metacognitive Skills. *International Journal of Innovation and Scientific Research ISSN*.
- Martaida, T., Bukit, N., & Ginting, E. M. (2017). The Effect of Discovery Learning Model on Student's Critical Thinking and Cognitive Ability in Junior High School. *IOSR Journal of Research & Method in Education*.
- Mufida, I., Hafifah, G. N., & Mayasari, L. (2015). The Implementation of Discovery Learning To Teach Speaking At the First Grade Students At Smp Institut Indonesia. *Tell Journal*.
- Mukharomah, L. (2015). The Use of Discovery Learning Method to Improve Students' Writing Descriptive Text. *PROJECT (Professional Journal of English Education)*.
- Murtiyasa, B., & Karomah, I. I. Al. (2020). The impact of learning strategy of problem solving and discovery towards learning outcomes reviewed from students learning motivation. In *Universal Journal of Educational academia.edu*. https://www.academia.edu/download/64806694/UJER36_19516658.pdf
- Mushtozza, D. A. (2016). Discovery Learning in Teaching Report Writing for Junior High School Students Based on 2013 Curriculum. *IJET (Indonesian Journal of English Teaching)*, 5(1), 55–77. <https://doi.org/10.15642/ijet2.2016.5.1.55-77>
- Neale, P., Thapa, S., & Boyce, C. (2006). *PREPARING A CASE STUDY: A Guide for Designing and Conducting a Case Study for Evaluation Input*. May. http://books.google.com.py/books/about/Preparing_a_Case_Study.html?id=jW6uNwAACAAJ&redir_esc=y
- Noer, S. H. (2018). Guided discovery model: An alternative to enhance students' critical thinking skills and critical thinking dispositions. *Jurnal Riset Pendidikan Matematika*. <https://doi.org/10.21831/jrpm.v5i1.16809>
- Nur, S., Patak, A. A., & Naim, H. A. (2013). *Using English instructional package model through Problem Based Learning approach in Vocational High School*. 27–32.
- Ozdem-Yilmaz, Y., & Bilican, K. (2020). Discovery Learning—Jerome Bruner. *Science Education in Theory and Practice*. https://doi.org/10.1007/978-3-030-43620-9_13
- Rafiq, R., & Munawir, A. (2017). Mandar Culture-Based English Education. *ELT WORLDWIDE*.
- Raharjo, T. J., Kisworo, B., & . H. (2019). The Implementation Effect of Discovery Learning Model for Non-Formal Education Student. *International Journal of Academic Research in Business and Social Sciences*. <https://doi.org/10.6007/ijarbss/v9-i9/6294>
- Rahmadhani, F. L., Miharja, F. J., & Hudha, A. M. (2021). Guided Discovery in Genetic Learning: Implementation and Impact on Higher-Level Thinking Skills. *Jurnal Pendidikan Biologi*. <https://doi.org/10.24114/jpb.v10i1.20912>
- Restanti, R. (2020). Meningkatkan Hasil Belajar Biologi Tentang Keanekaragaman

- Hayati Melalui Model Discovery Learning Siswa Kelas X IPA 3 SMA Negeri 3 Madiun Semester I Tahun *Jurnal Revolusi Pendidikan (JUREVDIK)*. <https://www.ejurnalkotamadiun.org/index.php/JUREVDIK/article/view/593>
- Sari Nurza, U. M., Suyanti, R. D., & Dewi, R. (2021). Effect of Inquiry Learning Model on Science Process Skills and Critical Thinking Ability in Human Movement Organs in Class v Public Elementary School 050666 Lubuk Dalam Stabat. *Journal of Physics: Conference Series*. <https://doi.org/10.1088/1742-6596/1811/1/012097>
- Schunk, D. H. (2012). Learning theories: An educational perspective. In *Reading*.
- Septya, E., Febriana, R., & Delyana, H. (2018). Penerapan Model Pembelajaran Discovery Learning Terhadap Penalaran Komunikasi Matematis Siswa. *IV (1)*. <http://ejournal.stkip-pgri-sumbar.ac.id/index.php/jurnal-lemma/article/view/2738>
- Smaldino, S. E., Lowther, D. L., & Russel, J. D. (2011). *Instructional Technology & Media For Learning* (9th ed.). Pearson Prentice Hall.
- Sofeny, D. (2017). the Effectiveness of Discovery Learning in Improving English Writing Skill of Extroverted and Introverted Students. *Jurnal Penelitian Humaniora*, 18(1), 41. <https://doi.org/10.23917/humaniora.v18i1.3639>
- Syarif, E., Syamsunardi, S., & Saputro, A. (2020). Implementation of Discovery Learning to Improve Scientific and Cognitive Attitude of Students. *Journal of Educational Science and Technology (EST)*. <https://doi.org/10.26858/est.v6i1.11975>
- Veermans, K. (2003). Intelligent Support for Discovery Learning. In *Educational Research*. <http://doc.utwente.nl/38699/1/t000001b.pdf>
- Wilcox, D., Liu, J. C., Thall, J., & Howley, T. (2017). Integration of Teaching Practice for Students' 21st Century Skills: Faculty Practice and Perception. *International Journal of Technology in Teaching and Learning*, 13(2).
- Winarni, E. W., Hambali, D., & Purwandari, E. P. (2020). Analysis of language and scientific literacy skills for 4th grade elementary school students through discovery learning and ict media. *International Journal of Instruction*, 13(2). <https://doi.org/10.29333/iji.2020.13215a>
- Yin, R. K. (2018). *Case Study Research and Applications. Sixth Edition*.
- Zalviani, N., & Zainil, Y. (2021). The Implementation of Discovery Learning for Reading Skill in EFL Classroom at SMPN 8 Padang. *Journal of English Language Teaching*.