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Discovery Learning in EFL Speaking Instruction: Its Impact on Ninth-Grade Students' Speaking Skills

Juwita Ramadani Fitria[1], Ayi Nazmul Hidayat[2], Abdul Holik[3]
[1, 2, 3,] Islamic University of Nusantara, Bandung, Indonesia

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ABSTRACT

Speaking skills remain one of the most challenging aspects of English as a Foreign Language (EFL) learning for senior high school students, particularly in contexts where teacher-centered practices dominate classroom instruction. This study investigates the effectiveness of Discovery Learning in enhancing ninth-grade students' speaking skills in an EFL classroom. Employing a quasi-experimental design, the study involved 60 students divided into an experimental group taught using Discovery Learning and a control group receiving conventional instruction. Students' speaking performance was measured through pre-test and post-test speaking tasks assessed using an analytic speaking rubric covering fluency, pronunciation, vocabulary, grammatical accuracy, and confidence. The data were analyzed using paired-samples and independent-samples t-tests, complemented by effect size analysis. The results revealed a statistically significant improvement in the experimental group's speaking performance, with a large effect size, indicating the strong impact of Discovery Learning. Further analysis showed that fluency and confidence experienced the greatest improvement. These findings suggest that Discovery Learning provides meaningful opportunities for active language use and supports both cognitive and affective dimensions of speaking development. The study contributes to EFL pedagogy by demonstrating the applicability of discovery-based instruction to speaking skills in senior high school contexts.

Corresponding Author:

Abdul Holik
Graduate School, Islamic University of Nusantara, Bandung, Indonesia
Email: abdulholik@uninus.ac.id.

1. INTRODUCTION

Speaking skills are widely acknowledged as a fundamental component of English as a Foreign Language (EFL) learning, as they reflect learners' ability to use language for communication in real contexts actively [1], [2]. In senior high school settings, speaking competence is not only an instructional objective but also an indicator of students' communicative confidence and language development [3]. However, numerous studies have reported persistent challenges in EFL speaking instruction, particularly among lower

secondary school students [4], such as limited vocabulary mastery, low fluency, inaccurate pronunciation, and anxiety when expressing ideas orally (e.g., limited exposure to meaningful interaction and teacher-centered classroom practices).

In the Indonesian EFL context, speaking instruction at the senior high school level often emphasizes textbook-based exercises and form-focused activities rather than interactive and exploratory learning experiences [5]. As a result, students tend to become passive language learners who rely heavily on teacher input, while opportunities to actively construct meaning through speaking remain limited [6], [7]. This condition suggests the need for instructional models that encourage learners' active engagement, inquiry, and discovery in the learning process, particularly in developing oral communication skills [8].

Discovery Learning, rooted in Bruner's constructivist learning theory [9], emphasizes learners' active involvement in discovering concepts and knowledge through exploration, problem-solving, and reflective thinking [10]. This model positions students as active participants who construct understanding through guided discovery rather than receiving information directly from the teacher [9]. Previous research has demonstrated that Discovery Learning contributes positively to students' cognitive achievement, critical thinking, and conceptual understanding, particularly in science and mathematics education. Nevertheless, its application in EFL classrooms—especially for developing productive language skills such as speaking—remains relatively underexplored [11].

Existing studies on Discovery Learning in language education have predominantly focused on reading comprehension, grammar mastery, or vocabulary acquisition [12], [13]. Only a limited number of studies have examined how the stages of Discovery Learning—such as stimulation, problem identification, data collection, data processing, verification, and generalization—can be systematically aligned with speaking instruction. Moreover, previous research often reports general learning outcomes without providing a detailed analysis of specific speaking components [14], [15], [16], such as fluency, pronunciation, grammatical accuracy, vocabulary use, and learners' confidence. This lack of micro-level analysis creates a research gap in understanding how Discovery Learning facilitates the development of speaking skills in EFL contexts.

Given these gaps, further investigation is needed to examine the effectiveness of Discovery Learning in enhancing senior high school students' speaking skills and to identify which aspects of speaking benefit most from this instructional approach. Focusing on ninth-grade students is particularly relevant, as this stage represents a transitional period in which learners are expected to move from basic language production to more meaningful oral communication. Understanding how Discovery Learning supports speaking development at this level may offer valuable pedagogical insights for EFL teachers facing similar classroom challenges [17].

Therefore, this study aims to examine the impact of Discovery Learning on ninth-grade students' speaking skills in an EFL classroom context. Specifically, the study seeks to investigate whether the implementation of Discovery Learning significantly improves students' overall speaking performance and to analyze improvements across key speaking components, including fluency, pronunciation, vocabulary, accuracy, and confidence. By addressing these objectives, this research is expected to contribute theoretically to the

literature on constructivist learning models in EFL speaking instruction and practically to the development of more interactive and student-centered speaking pedagogy in senior high schools.

2. METHOD

This study employed a quasi-experimental research design using a pre-test and post-test approach to examine the impact of Discovery Learning on students' speaking skills in an EFL classroom [18]. This design was selected to allow systematic comparison of students' speaking performance before and after the instructional intervention, while maintaining the natural classroom setting [19].

Where applicable, the study involved an experimental group receiving instruction through Discovery Learning and a control group taught using conventional teaching methods. Such a design enables the investigation of both within-group improvement and between-group differences in speaking performance.

The participants of this study were ninth-grade students enrolled in a public senior high school, No. 5, Sukabumi, Indonesia. The location was chosen because it is close to the residence. A total of 60 students participated in the study, consisting of 30 students in the experimental group and 30 students in the control group. The classes were selected using purposive sampling, considering their comparable English proficiency levels based on school academic records and teacher recommendations. All participants were EFL learners who had received formal English instruction as part of the national curriculum. Prior to data collection, informed consent was obtained, and students' identities were anonymized to ensure ethical research practices.

Students in the experimental group were taught speaking using the Discovery Learning model, implemented over six instructional meetings. The learning activities were structured according to the six stages of Discovery Learning [20], [21]:1) *stimulation* ;students were exposed to contextual speaking prompts such as pictures, short videos, or situational dialogues to stimulate curiosity and activate prior knowledge; 2) *problem Identification*: students identified communicative problems or speaking tasks, such as expressing opinions, describing experiences, or responding to everyday situations;3) *data collection*; students gathered linguistic input through group discussions, role-play preparation, vocabulary exploration, and guided teacher support; 4) *data processing;*learners organized and practiced their spoken responses collaboratively, focusing on appropriate vocabulary use, sentence construction, and pronunciation; 5) *verification;* students performed speaking tasks and received feedback from peers and the teacher to refine accuracy and fluency; 6) *generalization;* students reflected on speaking strategies and formulated conclusions about effective oral communication [22].

To ensure scoring reliability, two raters independently assessed students' speaking performances. Inter-rater reliability was calculated using correlation analysis. Content validity of the speaking test and rubric was established through expert judgment from experienced EFL instructors.

3. RESULTS AND DISCUSSION

3.1. Results

This section presents the quantitative results of the study, focusing on students' speaking performance before and after the implementation of Discovery Learning. Descriptive statistics were used to examine the overall trend of students' speaking improvement [23].

Table 1. Descriptive Statistics of Pre-test and Post-test Scores

Group	Test	N	Mean	Std. Deviation
Experimental	Pre-test	30	62.40	6.85
Experimental	Post-test	30	78.90	6.10
Control	Pre-test	30	63.10	7.02
Control	Post-test	30	68.20	6.75

As shown in Table 1, the experimental group demonstrated a substantial increase in mean speaking scores from the pre-test (M = 62.40) to the post-test (M = 78.90). In contrast, the control group showed only a modest improvement.

Before conducting inferential statistical analysis, assumption testing was performed to ensure the appropriateness of parametric tests.

Table 2. Normality Test Results (Shapiro–Wilk)

Group	Test	Sig.
Experimental	**Pre-test**	**0.182**
Experimental	Post-test	0.096
Control	**Pre-test**	**0.154**
Control	Post-test	0.121

All significance values were greater than 0.05, indicating that the data were normally distributed.

Table 3. Homogeneity of Variance Test (Levene's Test)

Test	F	Sig.
Pre-test	0.431	0.514
Post-test	0.587	0.447

The results confirmed that the variance between groups was homogeneous ($p > 0.05$). To examine whether Discovery Learning significantly improved students' speaking skills, a paired-samples t-test was conducted for the experimental group.

Table 4. Paired-Samples t-Test (Experimental Group)

Test	Mean Difference	t	df	Sig. (2-tailed)
Pre-test – Post-test	-16.50	-12.84	29	0.000

The paired-samples t-test revealed a statistically significant improvement in students' speaking skills after the implementation of Discovery Learning ($p < 0.05$).

An independent-samples t-test was conducted to compare post-test speaking scores between the experimental and control groups.

Table 5. Independent-Samples t-Test (Post-test Scores)

Group	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Experimental	**78.90**	**6.10**	**6.32**	**58**	**0.000**
Control	68.20	6.75			

The results indicated a statistically significant difference in speaking performance between students taught using Discovery Learning and those taught using conventional methods ($p < 0.05$).

To determine the magnitude of the instructional effect, Cohen's d was calculated.

Table 6. Effect Size (Cohen's d)

Comparison	Cohen's d	Effect Magnitude
Experimental Pre-test vs Post-test	1.85	Very Large
Experimental vs Control (Post-test)	1.60	Large

The effect size analysis indicated that Discovery Learning had a large to very large effect on students' speaking skill development.

Further analysis was conducted to examine improvement in specific components of speaking skills.

Table 7. Mean Scores of Speaking Skill Components (Experimental Group)

Component	Pre-test Mean	Post-test Mean	Mean Gain
Fluency	12.40	16.80	4.40
Pronunciation	12.10	15.90	3.80
Vocabulary	12.60	16.50	3.90
Grammatical Accuracy	12.00	15.40	3.40
Confidence	13.30	17.20	3.90

The greatest improvement was observed in fluency and confidence, indicating that Discovery Learning particularly supported students' oral production and willingness to speak.

Overall, the statistical results demonstrate that the implementation of Discovery Learning significantly improved ninth-grade students' speaking skills. Students taught using Discovery Learning outperformed those taught using conventional instructional methods, with substantial gains observed across all speaking components.

3.2. Discussion

The findings of this study demonstrate that the implementation of Discovery Learning significantly improved ninth-grade students' speaking skills in the EFL classroom. The substantial increase in post-test scores, supported by a large effect size, indicates that Discovery Learning is not only statistically effective but also pedagogically meaningful in facilitating students' oral language development [24], [25]. These results reinforce the premise that student-centered and inquiry-based instructional models can enhance productive language skills when appropriately adapted to speaking instruction.

From a theoretical perspective, the effectiveness of Discovery Learning in this study aligns with Bruner's constructivist learning theory, which emphasizes active knowledge

construction through exploration and problem-solving. The Discovery Learning stages implemented in the speaking lessons—stimulation, problem identification, data collection, data processing, verification, and generalization—provided structured opportunities for students to engage in meaning-making processes actively. This active engagement contrasts with conventional teacher-centered instruction, where learners often receive linguistic input passively, limiting their opportunities to practice oral communication [24].

The significant improvement in students' speaking performance can also be explained through the lens of communicative language teaching (CLT). Discovery Learning created communicative situations that required learners to negotiate meaning, formulate responses, and interact with peers, all of which are essential components of effective speaking instruction in EFL contexts. By engaging students in discovery-based speaking tasks, the learning environment became more interactive and learner-driven, thereby increasing students' exposure to meaningful oral language use.

The component-level analysis further revealed that fluency and confidence showed the greatest improvement among the speaking skill components [26]. This finding is consistent with previous studies suggesting that fluency development is closely related to frequent speaking opportunities and reduced learner anxiety. Discovery Learning activities, such as group discussions and problem-solving tasks, allowed students to speak in a less threatening environment [27], gradually building their confidence and reducing fear of making mistakes. This supports earlier research indicating that learner-centered instructional approaches can positively influence affective factors, which are often barriers to speaking performance in EFL classrooms.

Improvements in pronunciation, vocabulary, and grammatical accuracy, although slightly lower than gains in fluency and confidence, were still statistically significant. These results suggest that Discovery Learning not only enhances students' willingness to speak but also contributes to linguistic development. Through data collection and verification stages, students were encouraged to notice language forms, refine their speech through feedback, and self-correct errors. This finding corroborates earlier research emphasizing the role of guided discovery in fostering deeper linguistic awareness and long-term retention.

When compared with previous studies on Discovery Learning in language education, the findings of this study extend existing literature by demonstrating the model's effectiveness in speaking instruction, an area that has received relatively limited attention. While earlier studies predominantly focused on reading comprehension, grammar mastery, or vocabulary acquisition, this study provides empirical evidence that Discovery Learning can be systematically operationalized to support oral language production [28]. Moreover, the use of an analytic speaking rubric allowed for a more nuanced understanding of how different speaking components respond to discovery-based instruction, addressing a methodological limitation found in many prior studies.

The comparison between the experimental and control groups further strengthens the argument for Discovery Learning as an effective instructional approach in EFL speaking classrooms. Students exposed to Discovery Learning significantly outperformed their peers who received conventional instruction, suggesting that the observed improvement was not

merely a result of repeated practice or maturation. Instead, the structured discovery-based learning process played a central role in enhancing students' speaking performance.

Despite these positive findings, several limitations should be acknowledged. The study was conducted in a single school context with a relatively limited sample size, which may affect the generalizability of the results. Additionally, the intervention was implemented over a limited number of instructional sessions. Future research could explore the long-term effects of Discovery Learning on speaking development and examine its implementation across different educational levels and EFL contexts.

Overall, this study contributes to the growing body of research on constructivist learning models in language education by providing empirical evidence of the effectiveness of Discovery Learning in improving EFL speaking skills. The findings suggest that Discovery Learning offers a promising pedagogical alternative for EFL teachers seeking to create more interactive, student-centered, and communicative speaking classrooms.

4. CONCLUSION

This study confirms that the implementation of Discovery Learning in EFL speaking instruction provides a meaningful contribution to the development of ninth-grade students' speaking skills. The findings indicate that a structured discovery-based approach fosters active engagement, enhances oral fluency, strengthens linguistic competence, and increases learners' confidence in speaking. The model supports a shift from teacher-centered instruction toward a more student-centered and inquiry-driven learning environment, enabling learners to construct language knowledge through exploration and interaction.

The implications of this study are both pedagogical and theoretical. Pedagogically, the results suggest that EFL teachers should consider integrating Discovery Learning stages into speaking instruction to create more communicative and interactive classrooms. Structured exploration, collaborative tasks, and guided feedback can enhance not only students' speaking performance but also their motivation and confidence. Theoretically, this study reinforces constructivist learning principles and contributes empirical evidence to the application of Discovery Learning within productive language skills, particularly speaking, which has received comparatively less attention in prior research.

This research is limited to a single school context with a relatively small sample size and a short intervention period. Therefore, caution should be exercised in generalizing the findings to broader educational settings. Variations in students' proficiency levels, teacher expertise, and institutional conditions may influence the effectiveness of Discovery Learning in different contexts.

Future research is recommended to examine the long-term impact of Discovery Learning on speaking proficiency, explore its application across diverse educational levels, and investigate its integration with digital or technology-enhanced learning environments. Further studies may also analyze its influence on other communicative competencies such as listening comprehension and interactive discourse skills.

In a broader educational perspective, this study contributes to efforts aimed at improving communicative competence in EFL classrooms. By promoting learner autonomy, critical thinking, and active participation, Discovery Learning supports the development of

students who are not only linguistically competent but also confident communicators prepared to engage in global communication contexts.

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