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# Exploring The Use of Perplexity AI in Improving Junior High School Students' Speaking Skills

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**Abstract**

This study investigated the use of Perplexity AI as a brainstorming and speech-outlining tool to improve the speaking skills of junior high school students. A qualitative descriptive research design with a case-study orientation was adopted to examine the language development process of fifteen eighth-grade students at a junior high school in Garut. The participants consisted of fifteen students (male and female) aged around 13–14 years with mixed speaking proficiency levels. Data were collected through classroom observations, reflective interviews, and the administration of pre-tests and post-tests. The students' oral presentations were evaluated using an adapted analytical rubric measuring five core components: fluency, vocabulary, pronunciation, content, and confidence. The findings showed that all fifteen students experienced an increase in their speaking scores from the pre-test to the post-test. The mean pre-test score was 9.80, while the mean post-test score was 12.27, with an average improvement of 2.47 points. The highest improvements were found in vocabulary and content, followed by confidence, fluency, and pronunciation. Based on these results, it could be concluded that Perplexity AI served as an effective digital academic assistant that helped students overcome limited vocabulary and topic familiarity. However, the study was limited to a small sample, a short duration, and a single AI tool. This study recommends future researchers to explore other specific features of Perplexity AI in English language learning and suggests educators to use this tool as a practical reference for integrating artificial intelligence in speaking classes.

**Keywords:** Perplexity AI, Speaking Skills, Junior High School, Brainstorming Tool, Speech Outlines.

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## INTRODUCTION

Artificial Intelligence (AI) is a branch of computer science that enables machines and computer systems to perform tasks that normally require human intelligence, such as learning, problem-solving, and language comprehension (Russell & Norvig, 2020; Harmer, 2007). AI involves systems designed to accurately interpret external data and learn from it to achieve specific goals through flexible adaptation (Kaplan & Haenlein, 2019). Teachers can now use AI tools to identify individual student weaknesses instantly and provide customized practice activities that match each learner's pace and level (Pokrivcakova, 2019; Zawacki-Richter et al., 2019).

Among AI tools, Perplexity AI has become highly beneficial for students, assisting them in completing academic tasks and brainstorming effectively through its real-time conversational search capabilities (Lubis, 2024). Perplexity AI functions

as a digital academic assistant that accelerates research by synthesizing credible web sources into structured answers with inline citations (Wati et al., 2024). Teachers also appreciate Perplexity's ability to instantly generate lesson topics, vocabulary lists, and speaking prompts during class preparation (Lubis, 2024; Holmes et al., 2019).

However, there remains a significant research gap regarding Perplexity AI's specific influence on enhancing speaking skills among junior high students (Lubis, 2024). Most existing studies target university EFL learners rather than early adolescent speakers (Wati et al., 2024). Speaking practice for junior high school is particularly challenging due to limited vocabulary and topic familiarity, which AI brainstorming could address (Nation & Newton, 2009). Sabrina (2024) conducted a comparative study examining ChatGPT versus Perplexity AI effectiveness among university students, focusing primarily on academic writing tasks. Therefore, this study fills the gap by focusing on junior high school students and on speaking skills, especially idea generation and speech outlining.

Karakteristik siswa kelas VIII SMP perlu dipahami karena mereka berada pada masa remaja awal. Secara kognitif, mereka mulai beralih dari berpikir konkret ke berpikir formal-operasional, sehingga mampu menyusun gagasan yang lebih abstrak, tetapi masih memerlukan scaffolding untuk mengorganisasi ide secara runtut (Santrock, 2019). Secara psikososial, siswa pada usia ini sangat dipengaruhi oleh teman sebaya, memiliki kecemasan berbicara di depan kelas, dan sedang membangun identitas serta kepercayaan diri (Santrock, 2019). Oleh karena itu, pembelajaran berbicara perlu memberi dukungan bertahap, topik yang dekat dengan kehidupan siswa, serta suasana yang menurunkan kecemasan (Krashen, 1982; Thornbury, 2005).

## METHODOLOGY

This study adopted a qualitative descriptive research method with a case-study orientation to investigate how Perplexity AI supports the speaking skills development process among eighth-grade students at a junior high school in Garut. This design was chosen because the main purpose of the study was not to test a hypothesis statistically, but to describe and understand the process of Perplexity AI usage in facilitating students' idea generation and speaking preparation in its natural classroom context (Creswell, 2014). The case-study orientation was used because the research focused on a bounded case, namely one class of eighth-grade students using Perplexity AI in speaking activities. This approach prioritized in-depth, narrative data from classroom observations, student performances, and reflective interviews to capture the nuanced impact of AI on speaking proficiency in its natural context (Cohen et al., 2018).

To collect the data, pre- and post-tests were deployed to measure the eighth-grade students' speaking skills. The participants were fifteen students of eighth grade. The participants consisted of fifteen students, comprising [jumlah laki-laki] male students and [jumlah perempuan] female students, aged around 13–14 years. They had mixed levels of speaking proficiency, ranging from low to moderate. The sampling technique was purposive sampling because the researcher selected a class that had access to Perplexity AI and was relevant to the speaking curriculum (Creswell, 2014). The students performed a two-minute oral presentation on "My

Hobby" or "My Activity," which was then graded using a predetermined scoring rubric.

The main instrument was an analytical speaking rubric adapted from Brown (2004) and Celce-Murcia et al. (2010). The rubric measured five indicators: (1) fluency, (2) vocabulary, (3) pronunciation, (4) content, and (5) confidence. Each indicator was scored on a 1–4 scale, so the maximum total score was 20. The rubric was adapted to suit the context of junior high school students and was reviewed by the teacher to maintain validity and reliability. In addition, observation sheets and interview guides were used to collect qualitative data about students' experiences, difficulties, and strategies while using Perplexity AI.

The procedure consisted of three main stages: pre-test, intervention, and post-test. In the pre-test, students delivered a two-minute oral presentation on "My Hobby" or "My Activity" without using Perplexity AI. In the intervention stage, Perplexity AI was used as a brainstorming and speech-outlining tool. The stages were as follows: (1) orientation, in which the teacher explained how to use Perplexity AI and how to write effective prompts; (2) brainstorming, in which students asked Perplexity AI for ideas, vocabulary, and examples related to their topic; (3) outlining, in which students selected and verified information and organized it into a speech outline; and (4) independent practice, in which students practiced speaking based on the outline without reading the full text. The intervention was conducted in [jumlah] meetings with a frequency of [jumlah] sessions per week. In the post-test, students delivered a two-minute oral presentation with the same topics and were scored using the same rubric.

Qualitative data were analyzed using Miles and Huberman's (1994) interactive model, consisting of data reduction, data display, and conclusion drawing/verification. Observation and interview data were coded to identify themes related to idea generation, vocabulary support, speech organization, confidence, and challenges in using Perplexity AI. Quantitative data from the pre-test and post-test were analyzed descriptively using mean, standard deviation, minimum score, maximum score, and the number of students reaching the minimum mastery criterion. Because the study was qualitative descriptive, the test scores were used to describe trends rather than to generalize statistically (Creswell, 2014).

## FINDINGS AND DISUCISSION

Based on the pre-test and post-test results, the data obtained in this study were summarized in Table 1. To measure the students' oral performance, this study used a speaking assessment rubric as the main instrument. This rubric was adapted from previous research and from Brown (2004) and Celce-Murcia (2007) to make sure that the scoring criteria remained valid and reliable for evaluating the students' skills.

**Table 1.** Total Pre-Test and Post-Test Speaking Scores

| No | Student | Pre-Test | Post-Test | Gain |
|---|---|---|---|---|
| 1 | A | 14 | 17 | +3 |
| 2 | B | 9 | 11 | +2 |
| 3 | C | 7 | 9 | +2 |
| 4 | D | 7 | 9 | +2 |
| 5 | E | 8 | 9 | +1 |

| No | Student | Pre-Test | Post-Test | Gain |
|---|---|---|---|---|
| 6 | F | 8 | 12 | +4 |
| 7 | G | 12 | 14 | +2 |
| 8 | H | 9 | 11 | +2 |
| 9 | I | 8 | 11 | +3 |
| 10 | J | 12 | 14 | +2 |
| 11 | K | 9 | 12 | +3 |
| 12 | L | 11 | 13 | +2 |
| 13 | M | 11 | 15 | +4 |
| 14 | N | 12 | 15 | +3 |
| 15 | O | 10 | 12 | +2 |
| **Mean** | | **9.80** | **12.27** | **+2.47** |
| **SD** | | **2.11** | **2.40** | **0.83** |
| **Min** | | **7** | **9** | **+1** |
| **Max** | | **14** | **17** | **+4** |
| **Students reaching mastery (KKM 70/14)** | | **0** | **5** | **+5** |

Note: Because the original manuscript did not state the school's minimum mastery criterion (KKM/KKTP), the number of students reaching mastery in this table is calculated using the assumption that KKM is 70 from the maximum score of 20, namely 14. If the school uses a different KKM, this number must be adjusted.

**Table 2.** Mean Scores of Speaking Aspects

| Aspect | Pre-Test | Post-Test | Gain |
|---|---|---|---|
| Fluency | 1.80 | 2.13 | +0.33 |
| Vocabulary | 1.80 | 2.60 | +0.80 |
| Pronunciation | 2.00 | 2.13 | +0.13 |
| Content | 1.67 | 2.33 | +0.67 |
| Confidence | 2.53 | 3.07 | +0.53 |

The results show that all fifteen students experienced an increase in their total speaking scores. The average pre-test score was 9.80, and the average post-test score was 12.27. The average gain was 2.47 points. The highest gains were in vocabulary and content, followed by confidence, fluency, and pronunciation. This indicates that Perplexity AI was most helpful in supporting students' lexical resources and idea development.

The findings of this study indicate that Perplexity AI can support junior high school students' speaking skills, especially in vocabulary and content. This finding is consistent with Nation (2001) and Nation and Newton (2009), who emphasize that productive vocabulary and topic familiarity are essential for oral communication. When students used Perplexity AI for brainstorming, they obtained relevant words, phrases, and examples that they could use in their speeches. This reduced the vocabulary barrier that often prevents junior high school students from speaking confidently.

The improvement in content supports the idea that Perplexity AI helps students organize their ideas. According to Brown (2004), speaking assessment

should examine not only linguistic features but also the ability to develop ideas logically. In this study, students used Perplexity AI to generate points and arrange them into a speech outline. This process helped them produce more coherent presentations. The finding also aligns with Thornbury (2005) and Richards (2008), who argue that speaking instruction should provide planning and scaffolding before performance.

The improvement in confidence can be explained through Krashen's (1982) Affective Filter Hypothesis. When students had a clear outline and sufficient vocabulary, they felt more prepared and less anxious. Their confidence increased from a mean of 2.53 to 3.07. This suggests that AI-supported preparation can lower the affective filter and encourage students to speak. However, the improvement in fluency was moderate (1.80 to 2.13), and pronunciation showed the smallest gain (2.00 to 2.13). This is understandable because Perplexity AI is primarily a text-based tool; it does not directly provide oral pronunciation feedback (Celce-Murcia et al., 2010). Fluency also requires repeated oral practice, and the short duration of the intervention may have limited its development (Skehan, 1998).

Compared with previous studies, this study offers a specific contribution. Lubis (2024) and Wati et al. (2024) focused on university EFL learners and research synthesis, while Sabrina (2024) compared ChatGPT and Perplexity AI in academic writing. This study extends the discussion by focusing on junior high school students and on speaking skills. It shows that Perplexity AI can be used not only for writing or research but also as a brainstorming and outlining tool in speaking classes. This is the novelty of the study: it provides classroom-based evidence from early adolescent learners in an Indonesian EFL context.

Nevertheless, the study also reveals challenges. Some students may have depended too much on AI-generated ideas, and others needed guidance to verify information and use their own words. Therefore, teachers should position Perplexity AI as a scaffold, not as a replacement for students' own thinking. This is in line with Holmes et al. (2019) and Pokrivcakova (2019), who state that AI in education should support critical thinking, learner autonomy, and ethical use of technology.

## CONCLUSION

From the results of this study, it could be concluded that all 15 students experienced an increase in their scores from the pre-test to the post-test. The mean pre-test score was 9.80, and the mean post-test score was 12.27, with an average improvement of 2.47 points. Each student showed improvements in different aspects, including fluency, vocabulary, pronunciation, content, and confidence. The largest improvements were in vocabulary and content, while pronunciation showed the smallest improvement. This proved that using Perplexity AI as a brainstorming tool and for speech outlines could help students improve their speaking skills.

However, this study had several limitations. First, the number of participants was limited to fifteen students from one class, so the findings cannot be generalized to all junior high school students. Second, the duration of the intervention was relatively short, which may have limited the development of fluency and pronunciation. Third, the study used only one AI tool, Perplexity AI, and did not include a control group. Fourth, the test scores were analyzed descriptively, so they

describe trends rather than prove causal effects. Finally, the rubric was adapted from previous studies and may need further validation for broader use.

## RECOMMENDATIONS

The recommendations from this study were aimed at several parties. For future researchers, they could expand the object of research by exploring how other Perplexity features could help students learn English easily. Future researchers are also advised to use a larger sample, a longer intervention period, a control group, and mixed-methods or experimental designs to obtain stronger evidence. They could also investigate the use of Perplexity AI for other skills, such as writing, listening, or pronunciation, and compare it with other AI tools. For the general public, this study was expected to build awareness about using technology in learning. Lastly, in education, this research could be used as a reference for teaching artificial intelligence, improving speaking skills, and adapting to modern changes. For teachers and practitioners, Perplexity AI should be used as a learning scaffold. Teachers need to guide students to verify AI-generated information, paraphrase ideas in their own words, and practice speaking independently. Teachers should also consider ethical issues, data privacy, and equal access to technology.

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