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DEVELOPING AN AI YOODLI-BASED INSTRUCTIONAL MODULE TO ENHANCE STUDENTS' SPEAKING SKILL

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ABSTRACT

This study aims to develop an AI Yoodli-based instructional module that is valid, practical, and effective, while also examining its impact on students' speaking skills. The module incorporates AI-powered feedback from Yoodli, which evaluates aspects such as speech pace, clarity, pronunciation, and filler word usage. Employing a Research and Development (R&D) approach through the ADDIE model, the study focused on senior high school students in Cirebon. Data collection involved expert validation questionnaires, observation sheets, pre- and post-speaking tests, and student response surveys. Findings indicate that the developed module meets established validity and practicality standards and significantly improves students' speaking abilities. The module allows students to receive immediate AI feedback while enabling teachers to monitor the learning process efficiently, alleviating concerns about individual student progress. The study's novelty lies in integrating the instructional module with AI usage, moving beyond previous research that primarily focused on AI application in classroom activities. Consequently, this approach offers educators a structured, practical tool that combines both AI assistance and instructional guidance for enhancing classroom learning.

Keywords: AI Yoodli, Instructional Module, Students' Speaking Skill, RnD.

1. INTRODUCTION

English is globally recognized as a lingua franca, playing a crucial role in education, commerce, and cross-cultural communication. Among the four primary language skills, speaking is often considered the most challenging, as it requires not only linguistic competence but also confidence, fluency, and continual practice(Jaya et al., 2025; Mahesti et al., 2025; Rosdiana et al., 2024). In educational contexts, many students encounter significant difficulties in speaking English. They frequently hesitate, struggle to construct coherent sentences, and find it hard to express their ideas clearly. This challenge is partly due to the traditional emphasis on grammar and writing in teaching, which limits students' opportunities for oral practice (Shi et al., 2024; Azamatova et al., 2023). Additionally, teachers often provide insufficient feedback, which hampers students' ability to identify and correct errors. Research in Indonesia indicates that speaking is the most difficult skill for students, largely due to anxiety, fear of making mistakes, limited vocabulary, inadequate practice, and teacher-centered methods (Elisathusilawani, 2023; Mustamir, 2024). These findings are consistent with the EF EPI 2024 report, which categorizes Indonesia as having "Low Proficiency" in English and underscores the need for improved instructional strategies to enhance students' speaking skills (EF EPI, 2024).

The rapid advancement of technology, particularly Artificial Intelligence (AI), offers novel opportunities to enhance teaching and learning (Molina et al., 2024; Russell & Norvig, 2019; Chen et al., 2020). One such tool is Yoodli, an AI-

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driven platform that automatically evaluates users' speech, including pace, filler word usage, sentence structure, and other delivery features. Yoodli provides immediate, objective feedback, enabling users to identify and correct errors efficiently. Integrating Yoodli into instructional modules allows teachers to support students systematically, measurably, and in a personalized, data-driven, and scalable manner, particularly for productive skills like speaking, which have traditionally suffered from limited and delayed feedback. By monitoring learner performance in real time, Yoodli delivers actionable insights on fluency, pacing, pronunciation, and clarity, enhancing formative assessment while alleviating teachers' feedback burden in large classes.

Yoodli demonstrates its potential by offering instant feedback during or after students' practice, helping learners regulate filler word use, maintain consistent pacing, and refine delivery independently of teacher intervention. When applied strategically across multiple lesson cycles, the tool promotes autonomous learning, allowing students to set goals and track progress through performance dashboards, while also providing teachers with detailed analytics to optimize instruction. Although prior research has highlighted AI's positive impact on classroom activities, few studies have explored the development and implementation of instructional modules specifically integrated with specialized AI tools like Yoodli for English language learning. This study addresses that gap, aiming to support both students and teachers by creating a more meaningful teaching process and achieving measurable learning outcomes.

2. LITERATURE REVIEW

Nowadays, technology and AI are widely used in the educational field. Numerous studies highlight the potential of AI-assisted learning applications to revolutionize traditional English language instruction models by offering individualized learning pathways and real-time pronunciation correction (Xu & Ismail, 2024; Wei, 2023; Madhavi et al., 2023). For instance, by providing individualized and interactive learning experiences, AI can greatly enhance communication abilities; nevertheless, further research is required to examine its long-term impacts and optimal integration into language learning environments (Rusmiyanto et al., 2023; Pokrivcakova, 2019; Puspitasari, 2020). Specifically, AI-driven tools, such as chatbots, speech recognition systems, and mobile apps, provide instant feedback on pronunciation and fluency, which helps reduce language anxiety and boost student engagement. (Nguyen, 2024; Su, 2025).

Furthermore, research conducted by Acuna & Darao (2024) revealed that AI's capacity to analyze large volumes of linguistic data allows for more accurate and personalized assessments of speaking ability, moving beyond conventional evaluation methods. Despite these advancements, a systematic review of AI-powered chatbots in education reveals that while their use is increasing, research on developing their full potential in English-speaking instruction remains limited (Du & Daniel, 2024; Sihite et al., 2024; Yang et al., 2024). Several systematic reviews indicate a growing trend in integrating AI into English as a Foreign Language speaking instruction, particularly between 2018 and 2024, with a notable increase in higher education settings since 2022 (Wang et al., 2025; Zou et al., 2023).

Similar findings were presented by Ilma (2025), which found that AI tools like chatbots and speech recognition improve vocabulary, grammar, pronunciation, and student confidence. Risma Dwi Aryanti et al., (2024) specifically highlighted AI apps like ELAi, ELSA Speak, and Lyra Virtual Assistant as positively influencing pronunciation development. Research resuls

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from Nur Khalizah et al. (2024) also demonstrated ELSA Speak's effectiveness in enhancing speaking proficiency across grammar, vocabulary, pronunciation, fluency, and content. Thus, Oke Oluwafemi Ayotunde et al. (2023) confirmed that AI is helpfulness in foreign language learning, improving speaking skills, and providing personalized learning experiences.

All previous studies above only focused on how AI is used in classroom activity, but the researchers do not pay attention to how it can be integrated to an instructional module to be permanently used in classroom activity. Hence, that's the novelty of this study, which is integrating AI Yoodli in the instructional module so it can help teachers in the teaching process.

3. METHODS

This research investigated the implementation of an AI Yoodli-based instructional module in English language learning, with a particular emphasis on enhancing students' speaking skills, aiming to evaluate its effectiveness. To accomplish these objectives, the study utilized a Research and Development (R&D) approach, employing the ADDIE model comprising Analysis, Design, Development, Implementation, and Evaluation as outlined by Branch (2009) and Sugiyono (2021).

a. Research Design

This study applied a Research and Development (R&D) design using ADDIE model Branch (2009). This design was used to systematically analyze, design, develop, implement, and evaluate AI Yoodli-based teaching module to enhance students' speaking skills.

The Analysis stage identified learners' and teachers' needs and speaking challenges, while the Design stage focused on analyzing learning obstacles and reviewing the curriculum. The Design stage involved creating the AI Yoodli–based teaching module. Then, the Development stage involved further developing the module that has been designed. Furthermore, the implementation stage consists of applying the module in classroom instruction, and the evaluation stage involves analyzing the effectiveness of the implemented module. This systematic process ensured that the developed module was pedagogically valid, contextually relevant, and applicable for broader use (Haviz, 2013).

b. Data Sources

The participants were 240 high school students in Cirebon. Data were collected through interviews, questionnaires, and speaking tests (Pre-test and Post-test), which were then analyzed descriptively and statistically to assess the effectiveness of the module.

c. Instruments

This study used three main instruments to get valid findings. The instruments used were questionnaire sheets to assess students' perceptions towards the use of AI Yoodli in speaking activities. The interview sheets contained semi-structured questions for teachers and students. Furthermore, the observation used to record students' participation, engagement, and behavior when using AI Yoodli in speaking activity during the learning process (Anufia, 2019).

d. Data collection

To collect the data, the researcher needs over two months to conduct all the stages of the research. Data were collected using a mixed-methods design across the ADDIE cycle. Quantitative data came from the pre-test and post-test. The pre-test was conducted before applying Yoodli in speaking activity. Students were asked to make one statement dealing with the chosen motion. In this step, teachers measured

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students' performance by focusing on their fluency, pronunciation, pace, and filler words. Therefore, the post-test was conducted to measure students' progress after integrating AI Yoodli in their speaking activities. During the learning process, students were also asked to use Yoodli in their exercises. It was useful to sharpen their speaking skills week by week.

Furthermore, qualitative data came from questionnaires and interviews. In the end of the process, the questionnaires were distributed to know the students' perception using Yoodli in their speaking activity. Then, the interviews were also given to validate students' and teachers' perceptions during the process.

e. Data Analsys

After following the cycle of ADDIE model, the researcher got the data from pre-test and post-test. Therefore, to validate the quantitative data, questionnaire and interview was also conducted.

In this case, the object of this study was taken from experiment class and control class. To analyze pre-test and post-test, the researcher used N-Gain score to know the improvement of using Yoodli in experiment class. Therefore, a control class was also obtained to know the enhancement of using manual feedback from teachers.

Formula N-Gain Score for experiment and control class

$$N - Gain = \frac{\text{Skor Posttest} - \text{Skor Pretest}}{\text{Skor maksimal} - \text{Skor Pretest}}$$

In qualitative data, the questionnaire results were analyzed descriptively by calculating the mean score for each indicator to determine students' satisfaction and perceptions of the AI Yoodli-based learning. Therefore, interview and observation data were analyzed thematically in three steps: familiarization with the data through repeated reading, coding key statements, and grouping similar codes into overarching themes.

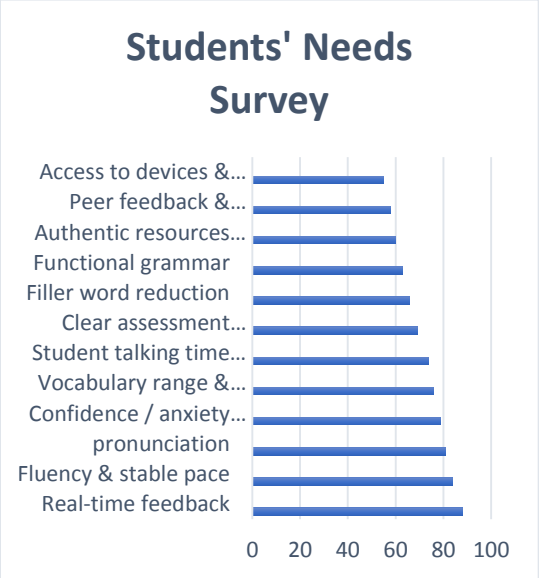
4. RESULTS AND DISCUSSION

4.1 Result

This study has revealed 3 questions; a) what are the students' needs in speaking class? b) how is the AI-Yoodli-based teaching module designed to be suitable for speaking lessons in high school? c) to what extent is the teaching module effective in improving students' speaking skills?

Students' Needs in Speaking Class

To know students' needs, the researcher conducted preliminary research and followed the ADDIE model. In this case, the researcher used the first step in the ADDIE model, which is the analysis stage. Based on observations from 3 different schools, the findings of the analysis stage showed that students have many difficulties improving their speaking skills. The main reason is that they don't get enough practice opportunities and seldom receive direct feedback. The needs analysis conducted via surveys and interviews revealed a significant demand for a learning tool that aids students in practicing speaking and assists teachers in delivering direct (interactive) feedback.



Among all aspects, the real-time feedback achieved the highest mean score. The survey showed that students need help improving

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their speaking skills by receiving direct feedback to correct their mistakes. From that finding, the researcher tried to develop an instructional module integrated with AI technology, which is suitable for students' needs. The AI Yoodli is chosen because the features on that tool serve interactive speaking practice, immediate and instant feedback for the users. This technology gives an easier solution for students to fix their mistakes right away when they speak.

AI-Yoodli-Based Teaching Module Design

All the data from the analysis stage has been completed. The researcher designed the instructional module based on the analysis stage. The module was designed to use all Yoodli features to help students improve their skills. The goal of this module is to help students speak more fluently and accurately, use fewer filler words, learn more vocabulary and sentence structure, and feel more confident when they speak. All activities in the module were designed to be completed using Yoodli.

Researchers designed an AI-based teaching module called Yoodli for 11th-grade high school students in 4 meetings that lasting 2 JP (90 minutes) in every meeting. It was designed to focus on reducing fillers, stabilizing pace, and improving pronunciation accuracy in a debate format. The following flows are followed in every session: a phonology and diction warm-up (drilling minimal pairs and stress–intonation), guided input (argument and rebuttal models), structured practice on Yoodli (recording, receiving real-time metrics filler count, WPM/pace, mispronounced words, pauses), and paired/small group debate tasks with gradual scaffolding (script-cuecards-impromptu).

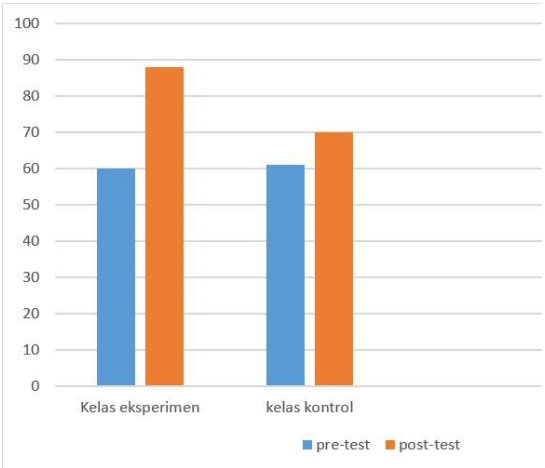
Session breakdown:

- Session 1:Foundational mini-discussion and Yoodli diagnostics and personal goals (stable pace 120-160 WPM, minimize fillers ≥30%).
- Session 2: Pronunciation and tempo management clinic (shadowing, chunking), a brief rebuttal exercise with a peer checklist, and Yoodli feedback.
- Session 3: Argument simulation (opening, rebuttal, and closing) with role-switch and reflection based on the Yoodli dashboard.
- Session 4: Summative discussion, Yoodli post-test, achievement reflection, and uploading an audio-visual portfolio.

Yoodli scores (filler, pace, pronunciation) and instructor rubrics (coherence, evidence, delivery) are combined in the assessment process. All artifacts are kept as proof of progress for reporting and class evaluation.

The Effectiveness of Implementing AI-Yoodli-Based Instructional Module

To measure the effectiveness of the Yoodli-based teaching module, researchers collected data from pre-tests and post-tests. During data collection, 240 students were involved and divided into two types of classes. 120 students were involved in the experimental class, and 120 students were involved in the control class. Each student came from three different classes with a population of 40 students per class. The results proved that there was equality in the initial results between the experimental class and the control class. The following bar chart visualizes the average results of the students' pre-test and post-test.



The data in the diagram above shows that the students had almost the same initial

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results (pre-test). Meanwhile, the post-test results show significant progress, with the experiment class achieving the highest score.

To determine its effectiveness, researchers used the N-Gain Score calculation.

Experiment class:

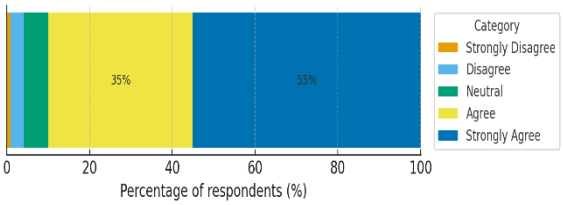
$$\overline{gE} = \frac{88{,}0 \ - \ 60{,}0}{100 - 60.0} = \frac{28{,}0}{40{,}0} = 0.70$$

Control class :

$$\overline{g\mathrm{k}} = \frac{70{,}0 \ - \ 61{,}0}{100 - 61.0} = \frac{9{,}0}{39{,}0} \approx 0.23$$

The data shows that the experimental class achieved an N-Gain Score of 0.70, which is in the high category (N-Gain ≥0.7). Meanwhile, the control class achieved an N-Gain Score of 0.23, which is in the low category (N-Gain <0.3). The control group's improvement was typically the result of non-significant external influences or traditional learning mechanisms. The improvement in the control class is only for certain students who are active in the learning process and get direct feedback from the teacher.

Other than that, the findings from the students' questionnaire also found the highest percentage that yoodli has a positive impact



on themselves.

Figure 1: Students' perception of the effectiveness of Yoodli

The questionnaire of students' perceptions showed that 90% of students in the experimental group felt more motivated and confident in speaking after using the Yoodli in their activity. They considered the yoodli feedback very helpful for identifying mistakes and correcting them independently. Hence, it is evident from qualitative data and quantitative comparison of these N-Gain scores that Yoodli integrated modules are far more effective than traditional techniques. This demonstrates how well a Yoodli-based instructional module can help students become more proficient speakers.

Discussion

The results of this study demonstrate the successful development of an AI Yoodli-based instructional module for teaching and learning activities. These findings are consistent with research by Ulfa (2025) and Abimanto (2023), which suggest that integrating AI into English language instruction, particularly for speaking skills, offers substantial potential for enhancing student performance. This effectiveness stems from AI's ability to provide personalized learning experiences, allowing learners to progress at their own pace and according to their preferred learning strategies. Consequently, educators can offer more targeted support, delivering feedback tailored to each student's competency level. As Johnson (2019) observes, AI has the potential to transform language education, making it more accessible and efficient for learners from diverse backgrounds.

Moreover, Gyawali (2022) emphasizes that one of AI's primary advantages in language teaching is its capacity to customize instruction to meet individual learner needs. By aligning content with specific proficiency levels and learning preferences, AI fosters instruction that is both relevant and adaptive. AI also promotes self-directed learning, enhancing learners' ability to regulate their own progress and focus on key language skills. Studies indicate that AI-driven applications not only improve overall language proficiency but also cultivate autonomous learning environments, empowering students to take ownership of their academic growth (Rusmiyanto et al.,

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2023). Similarly, Zhou (2023) notes that integrating AI into educational settings can boost student motivation, strengthen self-confidence, and positively influence attitudes, thereby supporting the achievement of targeted learning outcomes.

5. CONCLUSION

Based on the findings, it can be concluded that the AI Yoodli-based instructional module is effective in enhancing students' speaking skills. Many of Yoodli's features align closely with the expectations of both students and teachers during the learning process. Teachers' feedback indicates that the module reduces their workload in providing interactive and personalized feedback while offering students greater opportunities for structured, self-directed practice. Therefore, it is recommended that educators integrate AI tools into their instructional strategies as an effective approach to achieving learning outcomes.

For future research, it is suggested to explore the long-term impact of AI-based instructional modules on students' speaking proficiency across diverse educational contexts. Further studies could also investigate the integration of AI tools with other language skills, such as writing, listening, and reading, as well as examine students' motivation, engagement, and attitudes toward AI-assisted learning. Additionally, research could assess the scalability and adaptability of AI-driven modules in larger classroom settings or in schools with limited technological resources to provide a more comprehensive understanding of their educational potential.

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