

iSpeak-Smart: A Differentiated Mobile Learning Medium for Public Speaking Courses to Stimulate Students' Interpersonal Intelligence and Self-Regulated Learning

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Abstract

The rapid transformation of vocational education demands innovative digital environments that cultivate professional communication and independent learning skills. Static, unstructured learning resources often lead to low interpersonal intelligence and self-regulated learning (SRL) among students. This study developed and tested the effectiveness of iSpeak-Smart, a knowledge-based mobile learning system designed to stimulate interpersonal intelligence and improve students' SRL in an adaptive and personalized manner within the Public Speaking subject at SMK Negeri 1 Malang. This study employed the Research and Development (R&D) method using the ADDIE model, covering analysis, design, development, implementation, and evaluation stages. Quantitative data from validation results, practicality questionnaires, and test scores were analyzed using descriptive statistics and the N-Gain Score, while qualitative data were collected through interviews with teachers and students and validator suggestion sheets. iSpeak-Smart met the "very feasible" criteria for content, language, and graphics, with an average validation score above 88%. The media significantly increased students' interpersonal intelligence in empathy, effective communication, and social interaction, and significantly improved SRL, particularly in planning, monitoring, and evaluating independent learning. It also increased learning motivation through differentiated learning, gradual scaffolding, and self-reflection, fostering a meaningful, mindful, and enjoyable learning experience. iSpeak-Smart is proven effective as an adaptive learning ecosystem integrating public speaking skills, interpersonal intelligence, and SRL development, supporting digital learning practices in vocational high schools (SMK) amid the challenges of dynamic and heterogeneous communication learning in educational digitalization.

Keywords: Interpersonal Intelligence, iSpeak-Smart, Mobile Learning, Public Speaking, Self-Regulated Learning.

1. Introduction

Education in the era of globalization and digitalization is becoming increasingly complex, requiring educational institutions to provide flexible and open-access learning. This aligns with the mandate of the National Education System Law Number 20 of 2003, which emphasizes that education is a conscious and planned effort to create a learning atmosphere so that students can actively develop their potential, including self-control, personality, intelligence, and skills needed by society. The implementation of mobile learning is one strategic solution because it allows students to obtain learning support in real-time and in a personalized manner according to their needs. This personalized technology support has proven crucial in increasing student engagement and meeting their psychological learning needs independently (Chiu, 2021).



Research shows that mobile-assisted language learning (MALL) can support the development of self-regulated learning skills, particularly in aspects of planning, monitoring, and student learning reflection (Lei et al., 2022; Viberg et al., 2023). More broadly, global bibliometric studies confirm that MALL effectively empowers learners through the utilization of ubiquitous and flexible educational technology (Karakaya & Bozkurt, 2022). Furthermore, mobile learning has also been proven to increase learner autonomy and student engagement in digital-based learning through more flexible and contextual learning support (Baars & Viberg, 2022; Yu, 2023). Viberg and Kukulska-Hulme (2022) demonstrate that mobile language learning can improve self-regulation, collaboration skills, and student social interaction outside the classroom, proving that mobile-based media has a stronger impact than conventional approaches in the digital learning ecosystem.

Aligned with this, the implementation of student-centered differentiated learning strategies has proven effective in fostering student learning independence. Hasanuddin et al. (2024) proved that differentiated learning based on prior knowledge significantly improves students' self-regulated learning. In the vocational high school (SMK) context, teachers as facilitators play an important role in handling diverse student learning needs through the implementation of adaptive learning. Knowledge-based innovations supported by mobile learning mechanisms further strengthen this process by providing support for students to plan and evaluate their own learning progress (Gandi et al., 2023). With a personalized mobile system, material mastery can be facilitated more deeply and directionally compared to conventional systems. This adaptive mechanism in mobile learning has a significantly positive impact on learning achievement and students' ability to construct their own knowledge (Lai & Hwang, 2014).

Meanwhile, one of the crucial competencies that students must master to face the challenges of the world of work and social life is public speaking skills, which include the ability to discuss, give speeches, debate, and deliver effective academic presentations. The effectiveness of public speaking skills does not only depend on linguistic ability but is also strongly influenced by students' psychological maturity. High interpersonal intelligence makes it easier for students to establish effective communication and empathy with others (El-Yunusi et al., 2022; Prastyo et al., 2025). This intelligence is an essential component in forming communication skills, cooperation, and the courage to speak in public, which correlates significantly with learning achievement. On the other hand, Nazilah and Mayarni (2023) proved that interpersonal intelligence can be developed through active, communicative, and collaborative learning processes. Low interpersonal intelligence triggers a tendency to withdraw and creates obstacles in understanding others' perspectives (El-Yunusi et al., 2022).

In the digital era, interpersonal intelligence and the quality of social interaction can be managed and improved effectively through collaborative online-based learning environments. The relationship between self-regulated learning (SRL) and speaking skills has been proven by Sukma (2022), who found that high school students' public speaking abilities are directly shaped by their ability to manage the learning process independently. Further, the integration of informal digital instruments in a structured manner has been proven effective in increasing academic engagement and speaking skill performance (Peng et al., 2025). Sari et al. (2025) further reinforced this finding by showing a positive correlation between SRL and students' speaking motivation, while Nurjanah et al. (2021) confirmed that digital or online-based speaking learning requires adequate SRL strategies whereby students can learn effectively.

However, observations at SMK Negeri 1 Malang show a gap between these competency demands and the current learning conditions. Public speaking learning is still hindered by

limited static learning resources, such as conventional presentation slides and unstructured internet references. This condition leads to low student interpersonal intelligence, manifesting in excessive public speaking anxiety and fear when performing in public. In fact, interventions using immersive screen-based or virtual reality technology have been widely recognized as capable of significantly reducing anxiety in speaking foreign languages (Kaplan-Rakowski & Gruber, 2019). This finding is reinforced by Artemi et al. (2025), who proved that personal digital technology-based exposure, even for a short duration, is effective in reducing subjective distress and anxiety during public speaking.

Additionally, low levels of learning independence or self-regulated learning were found. Students tend to be passive and highly dependent on teacher instructions. Without formal assignments, students' independent initiative is very low because there is no digital media available that facilitates real-time access with structured and differentiated presentation of material. In such conditions, students who lack confidence tend to be increasingly hindered by speaking anxiety, while students with low SRL are increasingly dependent on teacher direction (Nurjanah et al., 2021; Sukma, 2022). Recent research on SRL in secondary education also shows that students need digital scaffolding that can assist the continuous monitoring and evaluation of learning processes so that self-regulation skills can develop optimally (Cheng et al., 2025). Therefore, there is a need for smart learning environments that can be utilized as digital scaffolding to optimize students' learning independence (Adler et al., 2025).

This gap indicates the need for learning innovation that is not only technology-based but also integrated with pedagogical approaches capable of encouraging meaningful learning. In this case, the development of knowledge-based system media combined with a deep learning approach and differentiated learning is a relevant solution. Through the deep learning approach, students are encouraged to participate actively in building knowledge through direct experience and reflection. In this context, the application of mobile-assisted task-based learning is proven effective in facilitating spoken language production and creating meaningful interactions for students (Jia & Lu, 2025). Viberg & Kukulska-Hulme (2022) proved that a mobile learning approach that integrates SRL strategies and social collaboration results in more meaningful learning and encourages sustainable active student engagement.

Based on this urgency and gap, this research offers novelty through the development of iSpeak-Smart as Differentiated Mobile Learning Media for Public Speaking Subjects. Unlike previous studies that tended to separate the development of speaking skills, SRL, and interpersonal intelligence, this research integrates these three aspects into one adaptive and personal learning system, as recommended by Hasanuddin et al. (2024) regarding the importance of prior knowledge-based differentiation to encourage SRL. iSpeak-Smart is designed not just as a source of material, but as a learning ecosystem that guides students in understanding concepts, practicing independently, performing reflections, and managing their own development continuously. Thus, iSpeak-Smart is expected to answer the challenges of public speaking learning in the digital era more comprehensively, namely improving communication skills while stimulating students' interpersonal intelligence and Self-Regulated Learning through deep, meaningful, and student-centered learning experiences.

2. Literature Review

2.1. Constructivism and Self-Regulated Learning

This research is based on constructivist theory, which emphasizes that students build knowledge through learning experiences, social interaction, and self-reflection. In the digital context, mobile learning allows students to learn flexibly and actively through more personal and adaptive experiences (Zimmerman, 2008). Self-Regulated Learning theory is also a foundation for this research, explaining that students need to be able to plan, monitor, and evaluate their learning processes independently. The implementation of mobile learning is proven effective in supporting students' self-regulation abilities through real-time learning access and digital scaffolding. Research by Baars and Viberg (2022) as well as Yu (2023) shows that mobile learning can increase students' self-regulated learning and learner autonomy.

2.2. Interpersonal Intelligence in Public Speaking

Furthermore, this research refers to Gardner (1996) Multiple Intelligences theory, specifically interpersonal intelligence, which relates to the ability to understand emotions, effective communication, empathy, and social interaction. In public speaking learning, interpersonal intelligence is an important factor because speaking ability requires not only verbal skills but also social sensitivity to the audience. Research by El-Yunusi et al. (2022) as well as Nazilah and Mayarni (2023) proved that active and collaborative learning can improve students' interpersonal intelligence.

2.3. Mobile Learning and Differentiated Instruction in Speaking Skills

Previous research also shows that mobile-assisted language learning (MALL) is effective in improving students' speaking skills. Lei et al. (2022) found that mobile learning increases students' self-regulatory capacity in language learning. Viberg et al. (2023) added that mobile learning can support self-reflection and sustainable learning engagement. The use of speaking-based digital media is also proven to reduce public speaking anxiety and increase students' confidence in speaking in public (Huang et al., 2025; Kahlon et al., 2023). In the context of differentiated learning, Hasanuddin et al. (2024) explained that prior knowledge-based differentiation can significantly improve students' self-regulated learning. This approach gives students the opportunity to learn according to their level of readiness and ability so that learning becomes more meaningful and humanistic.

2.4. Research Novelty: The iSpeak-Smart System

Based on these various theories and previous studies, this research presents novelty through the development of iSpeak-Smart as a differentiated knowledge-based mobile learning system that integrates the development of public speaking, interpersonal intelligence, and self-regulated learning into one adaptive digital learning system.

3. Methods

3.1. Research Design and Development Model

This research is a type of Research and Development (R&D). The development procedure adapts the ADDIE model (Analysis, Design, Development, Implementation, Evaluation). The research development procedure was carried out through five systematic stages are depicted in figure 1 and explained below.

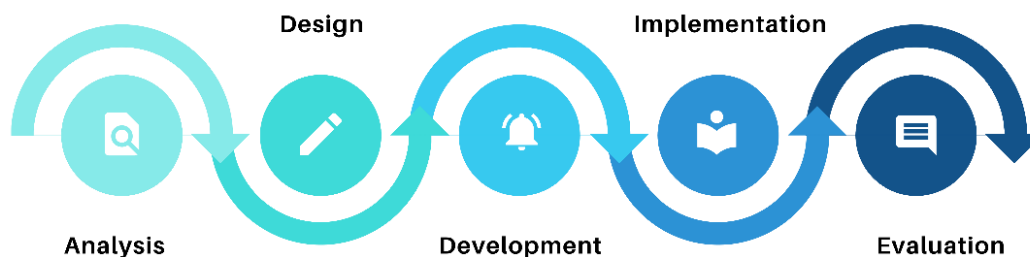


Figure 1. The ADDIE Model Stages of Research and Development

This model outlines the process applied in this study, beginning with analysis and design before progressing to development, implementation, and evaluation, as described below.

- A. **Analysis:** In this stage, researchers identified product needs through direct observation in the Public Speaking learning of class XI MPLB at SMK Negeri 1 Malang, which revealed obstacles due to static and unstructured learning resources and low intrapersonal intelligence and self-regulated learning of students.
- B. **Design:** This stage includes designing the material structure and features of iSpeak-Smart as a Differentiated Knowledge-Based Mobile Learning system based on Google Apps Script, creating storyboards, and compiling validation instruments.
- C. **Development:** The design was realized into a real product with a focus on knowledge-based integration and content differentiation features, followed by a validation process by material and media experts to obtain improvement suggestions.
- D. **Implementation:** The validated product was applied on a small scale to 10 students of class XI MPLB at SMK Negeri 1 Malang to test its effectiveness and practicality in real learning situations.
- E. **Evaluation:** This stage carried out to measure the achievement of development goals through analysis of validation results data, student responses, and comparison of student intrapersonal intelligence and SRL levels before and after using the media as a basis for determining the final feasibility of the iSpeak-Smart product.

3.2. Data Collection and Instruments

This study utilizes a mixed-methods approach to gather comprehensive data. The instruments and data types are structured as follows:

- A. **Quantitative Data:** Derived from validator assessment scores (material and media experts), student practicality questionnaire scores, and pre-test/post-test scores.
- B. **Qualitative Data:** Gathered through open-ended suggestion/criticism sheets from validators and structured interviews with teachers and students. Student interviews were conducted twice, once before and once after the iSpeak-Smart media intervention to map changes in perception.
- C. **Measurement Scales:**
 - 1) **Interpersonal Intelligence:** Measured using an interpersonal intelligence scale adapted from Gardner's indicators (including effective communication, empathy, and social interaction).
 - 2) **Self-Regulated Learning (SRL):** Measured via a modified Motivated Strategies for Learning Questionnaire (MSLQ), specifically tailored to a digital-based independent learning context.

3.3. Data Analysis Techniques

To evaluate the improvement and effectiveness of the iSpeak-Smart system, the data are analyzed using the following methods:

- A. Descriptive Statistical Analysis: Used to calculate and categorize the quantitative data obtained from expert validation sheets (material and media) and student practicality questionnaires. This analysis determines the percentage of feasibility and practicality of the developed product.
- B. Normalized Gain (N-Gain) Score Analysis: Applied to the pre-test and post-test data to measure the actual improvement in students' interpersonal intelligence and self-regulated learning after using the iSpeak-Smart media. The resulting N-gain criteria (high, medium, or low) will determine the level of effectiveness of the developed digital learning system.

4. Results and Discussion

4.1. Research Results

This research and development resulted in the iSpeak-Smart (Interactive Public Speaking Smart-App) learning media, which is a web-based platform designed to improve interpersonal intelligence and self-regulated learning of students in Public Speaking subjects in class XI MPLB. The iSpeak-Smart development output uses Google Apps Script technology that can be accessed online via a smartphone browser without having to download additional applications. The iSpeak-Smart teaching material product can be accessed online via the following link: <https://bit.um.ac.id/DOUIRfPuFY>. The appearance of iSpeak-Smart is designed to be modern, responsive, and interactive to create a fun learning experience. This media is equipped with scaffolding-based learning features to increase self-confidence and learning independence through the provision of graded practice assignments (Basic, Intermediate, Advanced). In addition, iSpeak-Smart integrates multimedia material as well as self-reflection columns that allow students to evaluate their speaking progress and the effectiveness of their interactions personally and in a structured manner. iSpeak-Smart displays the identity and main page accessible to the user, as shown in Figure 2 below.

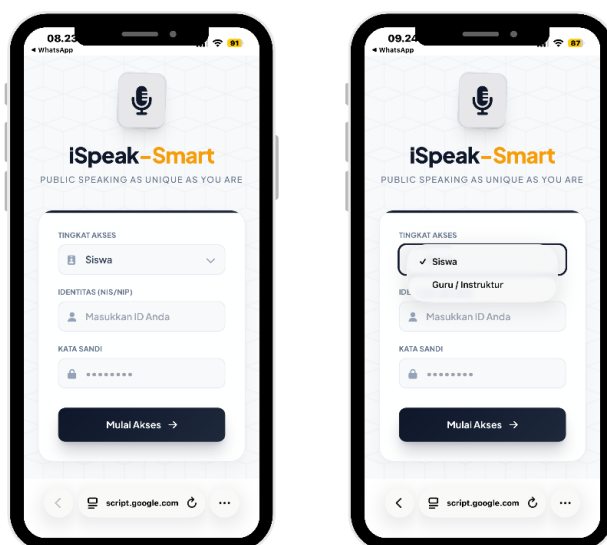


Figure 2. iSpeak-Smart Login Page

The initial display of iSpeak-Smart carries a modern and professional visual identity, characterized by a blend of energetic orange and elegant dark blue. The microphone logo and the tagline “Public Speaking as Unique as You Are” reinforce the application’s focus as a personalization platform for public speaking skills. The user interface design is very clean with a card-based approach, giving the impression of an application that is light yet sophisticated for its users. In terms of functionality, this application provides a role-based access system that distinguishes between Students and Teachers/Instructors. Technically, the use of the Google Apps Script platform visible in the URL indicates that iSpeak-Smart is a Web App that is highly accessible and efficient. Without the need for additional installation, users can access it directly via a smartphone.

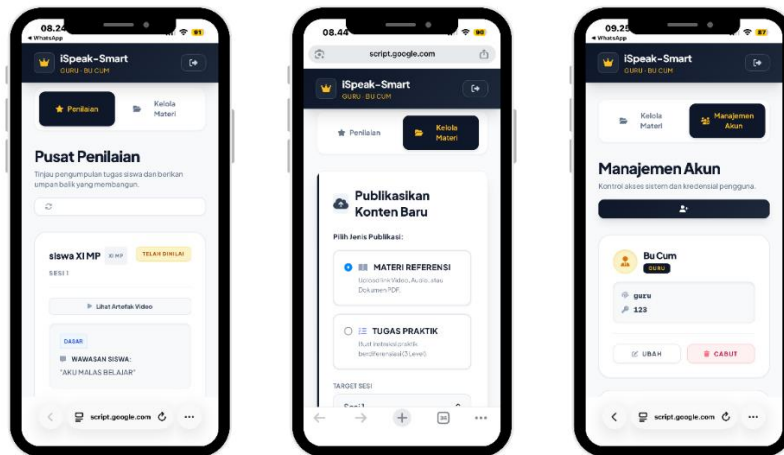


Figure 3. Features of the iSpeak-Smart Teacher Dashboard

The iSpeak-Smart teacher dashboard as in Figure 3 functions as a practical control center for assessing student video assignments, distributing materials (PDF/Audio/Video), and managing user account security. Teachers can provide personal feedback through the “Assessment Center” feature and create practice assignments based on the scaffolding method through 3 levels of difficulty tailored to student abilities to support learning independence gradually. With a responsive card-based interface, this system allows teachers to monitor class progress and update learning content at any time directly from their phones in an organized manner.

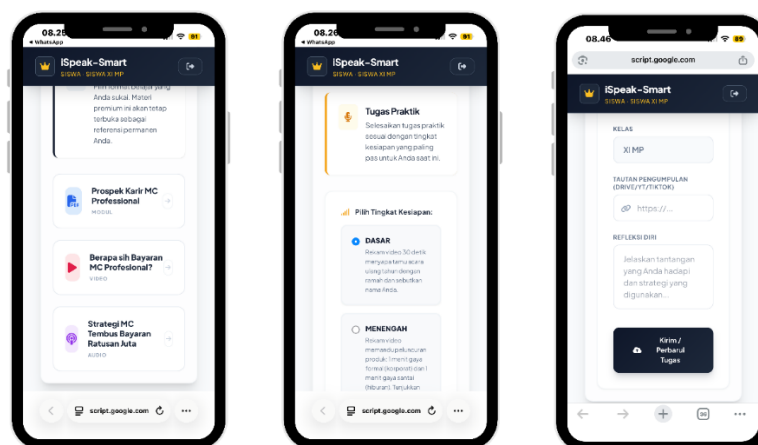


Figure 4. Features of the iSpeak-Smart Student Dashboard

The student dashboard (as in Figure 4) is designed as an adaptive learning space that supports independence through integrated multimedia material access (PDF, Video, Audio). By applying the scaffolding method, this system allows students to choose the difficulty level of assignments (Basic, Intermediate, Advanced) according to their readiness, so the process of developing confidence in speaking can proceed gradually without pressure. The integration of the assignment collection feature, which is equipped with a self-reflection column, provides an opportunity for students to evaluate their challenges and learning strategies, creating a meaningful, mindful, and joyful learning experience.

Furthermore, the feasibility level of the iSpeak-Smart media was tested based on the results of expert validators, then analyzed using percentage descriptive analysis. Table 1 below shows the results of the material expert validation from a Public Speaking teacher of Office Management in class XI MPLB:

Table 1. Material Expert Validation Results

No.	Aspect	Percentage	Criteria
1.	Content Feasibility	91.11%	Very Feasible
2.	Contextual Assessment	100.00%	Very Feasible
3.	Language Feasibility	97.50%	Very Feasible
Average		96.20%	Very Feasible

Source: Data processed by Researcher (2026)

The validation results by material experts show that the iSpeak-Smart media obtained an average score of 96.20%, which places this media in the “Very Feasible” criteria. Perfect achievement (100%) in the contextual assessment aspect indicates that the material presented is highly relevant to the students’ real-world situation. In the content feasibility aspect, the media obtained a score of 91.11%, which shows that the material is very consistent with the learning objectives and curriculum. This is supported by the language feasibility aspect of 97.50%; the use of precise diction and effective sentence structures helps minimize extraneous load, so students can focus entirely on mastering core concepts. Thus, iSpeak-Smart media has substantially met high pedagogical quality standards to be implemented as a means of independent or classical learning. Table 2 below shows the results of validation by a teaching material expert who is a lecturer in teaching planning from the Faculty of Economics and Business, Universitas Negeri Malang:

Table 2. Teaching Material Expert Validation Results

No.	Aspect	Percentage	Criteria
1.	Graphic Feasibility	92.50%	Very Feasible
2.	Media Quality	86.67%	Very Feasible
3.	Media Layout	86.67%	Very Feasible
Average		88.61%	Very Feasible

Source: Data processed by Researcher (2026)

Validation results by teaching material experts shown in table 2 conclude that iSpeak-Smart media obtained an average score of 88.61%, which places this media in the “Very Feasible” criteria. The highest achievement is seen in the graphic feasibility aspect of 92.50%. The high score indicates that the use of contrasting and sharp visual elements in the media functions effectively as cognitive cues that help students process important information without being burdened by irrelevant decorative elements (extraneous load). Along with this, the media quality and layout aspects each obtained a score of 86.67%. This systematic placement of instructional elements supports the spatial contiguity principle, where the

integration of information into the student's working memory becomes easier because text and images are placed close together. With a reliable system, students feel they have full control over their learning process, so technical obstacles are no longer an obstacle in achieving learning goals. Thus, iSpeak-Smart media has met quality standards in terms of aesthetics, technicality, and pedagogy to be used on a wider learning scale.

Table 3. User Trial Validation Results

No.	Aspect	Percentage
1.	Ease of Use	85.83%
2.	Usefulness	86.67%
3.	Attractiveness	88.89%
Average		87.13%

Source: Data processed by Researcher (2026)

Based on the user trial results summarized in table 3, the I-Speak Smart knowledge-based digital media received a very positive response with an overall average of 87.13%. Attractiveness was the aspect with the highest score (88.89%), showing that the media's visuals and interface are highly desirable. Usefulness reached 86.67%, indicating that this media is considered effective in assisting the learning process. Ease of use was at 85.83%, which means users can operate the media without significant technical obstacles.

Table 4. Interpersonal Intelligence Results Data

Indicator	Before	Criteria	After	Criteria
Empathy	73.38%	Sufficient	86.40%	High
Prosocial Attitude	73.38%	Sufficient	86.40%	High
Self-Awareness	81.45%	High	97.10%	Very High
Situation & Social Ethics Understanding	71.77%	Sufficient	89.10%	High
Problem Solving Skills	81.45%	High	88.80%	High
Effective Listening	82.25%	High	90.60%	Very High
Effective Communication	77.95%	Sufficient	91.40%	Very High
Average	77.38%	Sufficient	90.11%	Very High

Source: Data processed by Researcher (2026)

Based on the table 4, there is a significant increase in all indicators of student interpersonal intelligence after the intervention. The self-awareness indicator is the aspect with the highest achievement in the after-results, reaching 97.10%. In addition, the effective communication indicator also showed a very drastic category jump, from previously being in the "Sufficient" category to "Very High" with a score of 91.40%. Overall, the class average experienced a very significant increase, from the "Sufficient" category of 77.38% to the "Very High" category of 90.11%. This empirically proves the effectiveness of using the I-Speak Smart knowledge-based digital media in improving students' interpersonal intelligence comprehensively.

Table 5. Self-Regulated Learning Results Data

Indicator of SRL	Before	Criteria	After	Criteria
Metacognitive	62.35%	Sufficient	81.18%	High
Motivational	64.12%	Sufficient	83.24%	High
Behavioral	61.18%	Sufficient	86.27%	High
Average	62.55%	Sufficient	83.56%	High

Source: Data processed by Researcher (2026)

The implementation of iSpeak-Smart media has been proven capable of significantly increasing students' Self-Regulated Learning abilities. Based on Table 5, the average SRL ability increased from 62.55% (Criteria: Sufficient) to 83.56% (Criteria: High). The most prominent increase is seen in the Behavioral indicator (+25.09%), which confirms that this media is very effective in changing students' real actions in managing their time and learning environment.

4.2. Discussion

The results of the study show that the implementation of iSpeak-Smart media has a significant positive impact on improving students' interpersonal intelligence and self-regulated learning in public speaking learning. These findings reinforce constructivist theory, which emphasizes that learning will be more effective when students are given the opportunity to build knowledge through direct experience, self-reflection, and meaningful social interaction. In the context of digital learning, the integration of scaffolding based on mobile learning in an adaptive learning environment not only encourages deep knowledge construction but also critically facilitates directed social interaction (Sudarma et al., 2026). The integration of tiered scaffolding features in iSpeak-Smart allows students to learn according to their respective readiness levels so that the process of concept internalization takes place more deeply. From a constructivist perspective, an adaptive and personal learning experience like this is capable of encouraging students' cognitive and emotional engagement while learning takes place (Hou & Zhou, 2025; Putri et al., 2024). In addition, the presence of self-reflection features in the media also strengthens students' metacognitive processes, which are the main foundation in the development of self-regulated learning in digital learning environments (Baars & Viberg, 2022; Gambo & Shakir, 2021).

The increase in interpersonal intelligence shown through the increase in the average score from 77.38% to 90.11% indicates that iSpeak-Smart media successfully created a learning space capable of fostering empathy, effective communication, self-awareness, and students' ability to understand social situations. These findings are in line with Gardner's multiple intelligences theory, which places interpersonal intelligence as an individual's ability to understand emotions, motivations, and behaviors of others in the context of social interaction. In public speaking learning, interpersonal intelligence plays an important role because the ability to speak in public not only requires verbal skills but also social sensitivity and the ability to build emotional relationships with the audience (Melati & Maryam, 2023; Rahmadhanian et al., 2025). The use of differentiation-based media allows students to practice communication gradually according to their abilities, so self-confidence develops more naturally. These findings support research by Nurfadilah et al. (2024), which states that adaptive learning can improve students' social interaction and self-confidence in the learning process.

Specifically, the effective communication indicator experienced the most significant increase, namely from the "Sufficient" category to "Very High." This condition indicates that the use of interactive digital media can reduce students' psychological barriers when practicing speaking in public. Before the use of iSpeak-Smart, students tended to experience public speaking anxiety, which caused low active participation during learning. After the media intervention, students showed higher courage in expressing opinions, making presentations, and interacting with peers. These findings are in line with research by Ali et al. (2025) which explains that digital media based on reflection and independent practice can help students overcome speaking anxiety through a more flexible and personal practice process. More specifically, a comprehensive analysis by Huang et al. (2025) regarding digital oratory underscores that digital media intervention can significantly reduce cognitive anxiety

parameters, thereby optimize students' nonverbal performance when speak. This is also reinforced by an experiment by Kahlon et al. (2023) which proved the efficacy of modified virtual environment exposure (mobile and VR-based) in reducing symptoms of public speaking anxiety in adolescents. In addition, the use of interactive multimedia in speaking learning is proven effective in increasing engagement and students' courage in academic communication (Rochmawati et al., 2024; Siregar et al., 2025).

On the other hand, the increase in self-regulated learning from 62.55% to 83.56% shows that iSpeak-Smart media successfully encouraged students to be more independent in managing their learning processes. The most dominant increase occurred in the behavioral indicator, which shows that students began to be able to manage study time, set learning targets, and set learning strategies more effectively. These findings reinforce Zimmerman's theory on self-regulated learning, which emphasizes the importance of an individual's ability to plan, monitor, and evaluate the learning process independently. Research by Zang and Shen (2024) validates this by demonstrating that e-learning systems based on pocket gadgets have a massive impact on accelerating students' goal-setting skills and metacognitive monitoring. Through tiered assignment and self-reflection features, students obtain learning experiences that allow them to develop control over learning activities sustainably. This aligns with research by Baars and Viberg (2022) which states that mobile learning can provide "just-in-time support" for students' self-regulation processes in digital learning environments. Research by Hou and Zhou (2025) also confirms that technology based on adaptive learning can significantly improve students' metacognitive abilities because the system provides a learning path that suits individual needs.

The findings of this research also show that the differentiated learning approach integrated into mobile learning has a major contribution to increasing student learning motivation. When students are given the freedom to choose the difficulty level of assignments based on their readiness, a sense of having control over the learning process emerges. This directly represents the implementation of a cutting-edge pedagogical framework where the integration of structured instructions based on mobile learning efficiently accommodates competence heterogeneity (Widora et al., 2025). This condition encourages increased intrinsic motivation because students do not feel pressured by uniform learning demands. In the perspective of self-determination theory, a learning experience that provides autonomy to students will increase internal motivation, a sense of competence, and learning engagement more optimally (Gambo & Shakir, 2021). In other words, this dynamic manipulation of learning content empirically reduces cognitive friction that kills motivation (Fitriyah et al., 2023). Thus, the success of iSpeak-Smart lies not only in the technological aspect but also in its ability to present a learning experience that is humanistic and adaptive to the diversity of student characteristics.

Furthermore, the synthesis of research results shows that the integration of knowledge-based mobile learning with a deep learning approach can create public speaking learning that is more meaningful than conventional learning based on lectures and static slides. So far, public speaking learning in vocational high schools tends to focus on theoretical aspects without providing adequate space for reflection and independent practice. The presence of iSpeak-Smart changes that paradigm through the provision of learning experiences that are mindful, meaningful, and joyful. Students not only receive material passively but are actively involved in speaking practice, self-reflection, and evaluation of their personal development sustainably. This innovative leap through a deep learning approach in this personal digital ecosystem is widely recognized as disrupting traditional auditory-verbal methods in a way that is much more inclusive and down-to-earth (Rakhmadi et al., 2026). These findings support

research by Putri et al. (2024) which states that deep learning-based learning can strengthen students' emotional and cognitive engagement through authentic learning experiences. In addition, the differentiation approach applied is also proven effective in building students' character and personal intelligence more comprehensively (Fitriyah et al., 2023; Saputra et al., 2025).

Overall, this research shows that iSpeak-Smart is not just a digital learning medium, but an adaptive learning ecosystem capable of integrating the development of public speaking skills, interpersonal intelligence, and self-regulated learning into one integrated system. The novelty of this research lies in the integration of these three aspects through a differentiated knowledge-based mobile learning approach which has not been widely found in previous studies. Thus, the results of this research provide a theoretical contribution to the development of adaptive digital learning models and a practical contribution to the implementation of public speaking learning in vocational high schools in the era of digital education transformation.

5. Conclusion

The development of iSpeak-Smart media as a differentiated knowledge-based mobile learning system in Public Speaking learning presents a substantive innovation in the context of vocational education. The success of this media lies not only in its sophisticated and interactive technological aspects but also in a pedagogical approach that values diversity in student abilities and learning needs personally, as well as focuses on the development of interpersonal intelligence and self-regulated learning. Through the integration of tiered scaffolding and self-reflection features, iSpeak-Smart is capable of creating a meaningful, adaptive learning experience that empowers students to become independent learners who are more confident and socially sensitive. These findings underscore the importance of synergy between digital technology and modern pedagogical approaches to overcome the challenges of communication learning in the digital era. Furthermore, this research confirms that effective learning is learning that does not just transfer knowledge but also builds character and social-emotional skills that are essential in real life. Therefore, iSpeak-Smart offers a learning model that has the potential to disrupt traditional paradigms, providing space for teachers and students to collaborate in a learning process that is more humane and meaningful. Furthermore, this study contributes to future research by providing a replicable framework for integrating adaptive mobile learning with social-emotional skills. Future researchers can scale this model to larger cohorts, adapt it to other vocational subjects, or integrate AI-driven feedback. This opens new pathways for investigating the long-term impact of mobile instruction on professional readiness. The final reflection of this research encourages the sustainable development of similar media and approaches in other educational contexts so that digital transformation can truly empower all learners inclusively and holistically.

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