Implementation a Real Monitoring Information System for English Languange Skill

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Abstract: This study aimed to implement, and evaluate a real-time monitoring information system to enhance the development of English language skills among students. Traditional methods of language learning often lack immediate feedback and individualized tracking, which are critical for skill improvement. To address this gap, a web-based system was developed to monitor student performance in listening, speaking, reading, and writing, providing real-time analytics to both students and teacher.The research employed a design and development approach using a mixed-methods evaluation. Fifty students and five English teachers at SDN Pasir Jengkol II Karawang participated in this reasearch. Quantitative data from system, and pre-tests and post tests were analyzed alongside qualitative feedback from surveys and interviews. Results indicated significant improvements in student performance across all skill areas, with an average increase of over 12% in post-test scores. User feedback revealed high levels of satisfaction with the system's usability and usefulness, and indicating excellent usability. In conclusion, the real-time monitoring system effectively supported English language learning and instructional practices by providing timely feedback, increasing student motivation, and enabling data-driven decision-making. The findings suggest that such systems have strong potential for broader implementation in language education.

Keywords: *Real-time monitoring, English language skills, Educational technology, Information System*

INTRODUCTION

Educational institutions, are increasingly emphasizing the development of English language skills among students. However, traditional methods of tracking and evaluating students' English proficiency often rely on periodic assessments, which fail to capture students' learning progress in real-time. This can hinder timely interventions and personalized support. Education is essentially a process leading to the enlightenment of mankind, an effort to actualize one's potential to improve to a better level (Nurliana & Ulya, 2021)

The advent of digital technologies offers a promising solution through real-time monitoring systems that provide instant feedback and continuous assessment. By integrating such systems into the learning process, educators can obtain immediate insights into students' strengths and weaknesses, making it possible to tailor instructional methods accordingly.

In improving the quality of education, especially at the Elementary School level, the introduction and implementation of technology is an important thing. One of them is information system. In (Nurfitriana et al., 2020), Fridayanthie and Charter state that "Information systems are activities of organized procedures utilized tosupplying data to support organizational oversight and decision-making. In contrast, Kadir states in Tabrani et al. (2021) that "An information system is a series of formal procedures where data is grouped, processed into information, and distributed to users."

Existing technology can be utilized to carry out appropriate monitoring and evaluation processes related to the development of students in schools. Monitoring is an activity of carefully observing a situation or condition, including certain behaviors or activities, with the aim that all input data or information obtained from the results of these observations can be used as a basis for making decisions regarding follow-up needs (Nasihi et al., 2022).

A Real-Time Monitoring Information System for English language skills is a digital platform or system that continuously collects, processes, and displays data about a learner's progress in English, covering the four core language skills: listening, speaking, reading, and writing. The key feature of such a system is its real-time capability, which allows educators and learners to receive immediate feedback,

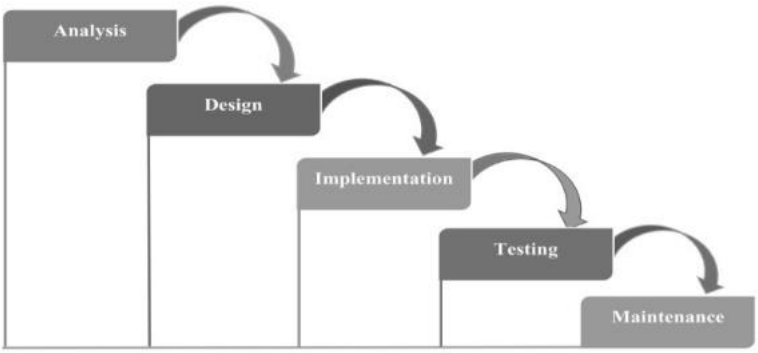
progress tracking, and performance analytics.Despite the potential, there remains a gap in the implementation of such systems, particularly those specifically designed for English language skills across listening, speaking, reading, and writing.

Several studies have explored the use of technology in language learning. For instance, mobile-assisted language learning (MALL) applications have been shown to improve engagement and vocabulary acquisition (Godwin-Jones, 2017). Similarly, learning analytics platforms have been developed to track student progress in online courses, providing educators with useful dashboards and reports (Siemens & Long, 2011). However, research specifically focusing on real-time monitoring for all four major English language skills remains limited.

Some recent efforts have explored automated speech recognition (ASR) to assess speaking skills in real-time, and others have used AI-driven writing assessment tools to provide immediate feedback on grammar and structure (Burstein et al., 2018). Despite these advancements, most existing tools are either skill-specific or not fully integrated into a cohesive monitoring system. This research aims to bridge that gap by designing and implementing a comprehensive, real-time information system that supports dynamic assessment and feedback for holistic English language development.

METHOD

The research used a mixed-methods approach, combining quantitative data from system analytics and performance metrics and qualitative feedback from user evaluations and interviews to assess the effectiveness and usability of the system.This research used Waterfall Model, which includes the following phases: Analysis, Design, Implementation, Testing and Maintanace.



Source : (Senarath, 2021)

Novita sari defines that “The waterfall method is something that describes a systematic and sequential (Step by step) Approach to software development” (H. Kurniawan et al.,2020). This study involves designing, developing, and evaluating a real-time monitoring information system. The objective is to implement a functional prototype that facilitates the tracking and evaluation of students’ English language skill performance in real-time.

In addition(Arfianto et al., 2023). This development method has a systematic and structured workflow, consisting of the following stages:

1.Needs Analysis

In the initial stage of the waterfall method in designing a student development monitoring system, the author divided three access rights based on user needs, consisting of admin, teacher and parent.The analysis stage is an observational stage aimed at identifying any issues within the system (Listiyan & Subhiyakto, 2021).

2.System Design

At the system design stage in this Final Project, the author uses system modeling tools, namely Unified Modeling Language (UML), which consists of Use Case Diagram, Activity Diagram, Sequence Diagram, and Class Diagram. In addition, the author also designed the user interface to provide a visual

representation of the appearance and user interaction with the system using Figma tools. To support database design, the author uses Entity Relationship Diagram (ERD) and Logical Record Structure (LRS) as tools to illustrate the structure and data relationships that will be used in the system.

3. Implementation

In the third stage of the waterfall method, the system implemented based on the design results that have been made previously. The system can be operated by three types of users, namely admin, teacher and parents. Each user has a user interface that has been designed according to their respective access rights and functions. The admin will have full access to user data, student data, and system settings.Teachers can conduct daily monitoring of students' character development, provide notes, and review evaluation history. Meanwhile, parents can access information about their child's development through the monitoring menu, attendance, and the provided development reports.

4.Testing

At the unit testing stage of the student development monitoring system that the Black Box Testing method is used. Testing with the black box testing method aims to validate the design of the interface and system flow. This testing can include the user login process, data monitoring input, report access, and data management by the admin.

5.Maintanance

The maintenance of this system is designed to cover several aspects, such as: fixing bugs that may arise, adjusting to changes in user needs (such as adding features), and improving system performance to remain relevant and responsive to technological developments and school needs.

The study conducted at SDN Pasir Jengkol II Karawang, specifically involving English language students and teachers. Participants included 50 Students class IV n V (users of the system), 5 English teacher. A purposive sampling method used to select participants who are directly involved in English language teaching and learning. The study used System Log Data: Real-time data collected by the system and used Questionnaires: To assess user satisfaction, ease of use, and perceived usefulness, Interviews: Semi-structured interviews with selected users (students and teachers) to gather qualitative insights and Observation: Monitoring of users during system use to identify usability issues and behavioral patterns.

RESULTS AND DISCUSSION

A. System Implementation Overview

The real-time monitoring information system was designed and deployed using a web-based platform. It featured real-time dashboards for students and teachers, automated tracking of performance across four English skills (listening, speaking, reading, and writing), and data analytics for progress monitoring. The system was implemented at SDN Pasir Jengkol II Karawang, involving 50 students and 5 English teachers.

The implementation of the real-time monitoring information system not only enhanced learners' engagement and performance but also aligned with several key educational theories. It supported constructivist and self-regulated learning principles by fostering autonomy and reflection, reinforced behaviorist principles through instant feedback, and demonstrated strong usability and acceptance in line with TAM. Amelia et al (2024) says TAM (Technology acceptance Model) is a model that can be used to analyze factors that influence the acceptance of a system / information system.The system's data-driven features also resonate with contemporary learning analytics frameworks, making it a theoretically sound and practically impactful innovation in English language education.

For teachers, the Real Monitoring Information Systems serves as a valuable tool in informing instructional strategies. The system's real-time data collection allows teachers to identify students' strengths

and weaknesses promptly. Putri et al. (2023) discuss the use of Socrative as an online formative assessment tool, highlighting its effectiveness in fostering reading comprehension and enabling teachers to tailor instruction based on student performance. Additionally, the integration of artificial intelligence in formative assessments, as explored by Alazemi (2024), demonstrates significant improvements in students' reading comprehension and academic mindfulness. Such advancements suggest that systems like the RMIS can play a crucial role in enhancing educational outcomes by providing data-driven insights for educators. Moreover, the reliability of automated assessments, particularly in evaluating complex language skills like writing and speaking, remains a concern. Wang et al. (2024) discuss the integration of automated writing evaluation with corrective feedback, emphasizing the need for systems that can provide accurate and individualized feedback to learners. Ensuring the validity and fairness of such assessments is crucial for the credibility of Real Monitoring Information System.

The findings obtained from the implementation and evaluation of the real-time monitoring information system for English language skills. The discussion aligns the results with relevant educational and technological theories to provide deeper insight into the effectiveness and implications of the system.

B. System Functionality and Performance

Key functions of the system included:

1. Skill Tracking:

Each student's performance was automatically recorded per skill area after each activity or assessment.

2. Real-Time Feedback:

Students received immediate feedback on quiz scores and activity completion.

3. Instructor Dashboard:

Teachers could monitor student progress, identify struggling learners, and download individual reports.

4. Analytics Visualization:

Charts and graphs displayed trends in performance over time.

System uptime was 99.2%, and average response time for real-time data updates was under 2 seconds. During the system recorded the following:

a. Total logins: 1,720
b. Average logins per user per week: 8.6
c. Activities completed: 1,240 (reading: 340; listening: 310; speaking: 280; writing: 310)
d. Quiz completion rate: 92%

This indicates a high level of user engagement with the system.

C. Students' Performance Improvement

Performance data showed improvements across all skill:

Skill	Pre-Test Mean Score	Post-Test Mean Score	Improvement (%)
Listening	68.5	76.2	+11.2%
Reading	70.1	79.8	+13.8%
Speaking	65.7	74.3	+13.1%
Writing	67.2	75.5	+12.3%

The results show a consistent improvement in students' English language skills during the system's use.

D.User Feedback and Evaluation

1.Student Feedback (n = 50)

Ease of Use: 92% rated the system as "easy" or "very easy" to use.Motivation: 85% said the system helped motivate them to practice more regularly.Usefulness: 88% believed the system helped them track their improvement effectively. Common positive commentsfrom interview:"I liked seeing my progress in real time,"The instant feedback helped me know what to focus on....''**,**however there some Suggested improvements: Include more speaking exercises, Add gamified elements for engagement.

2. English Teachers' Feedback (n = 5)

All English teachers found the system helpful for monitoring students. 4 out of 5 said it reduced their workload in tracking and reporting. They appreciated the real-time alerts for underperforming students. The English teachers involved in the study expressed positive feedback regarding the implementation of the real-time monitoring information system. They noted that the platform significantly streamlined the process of tracking student progress across the four core language skills :listening, speaking, reading, and writing. Most teachers highlighted the system's real-time feedback feature as particularly beneficial, allowing them to identify struggling students quickly and provide timely interventions. Additionally, the visual dashboards helped teachers gain a clearer, data-driven understanding of class performance, which informed their lesson planning and differentiated instruction strategies. One teacher commented that the system "made it easier to see who needed help and in which skill area, without having to go through each student's paper manually." While the teachers were generally satisfied, a few suggested future improvements, such as adding more interactive speaking tasks and customizable assessment tools. Overall, the teachers agreed that the system enhanced their teaching effectiveness and recommended its continued use and development for wider classroom application.

Pre-Test vs. Post-Test Scores by Skill

The improvement in students' English language skills.

Skill	Pre-Test	Post-Test
Listening	68.5	76.2
Reading	70.1	79.8
Speaking	65.7	74.3

Writing	67.2	75.5

Student Feedback on System Usability

a. Very Easy to Use – 56%
b. Easy to Use – 36%
c. Neutral – 6%
d. Difficult – 2%
e.

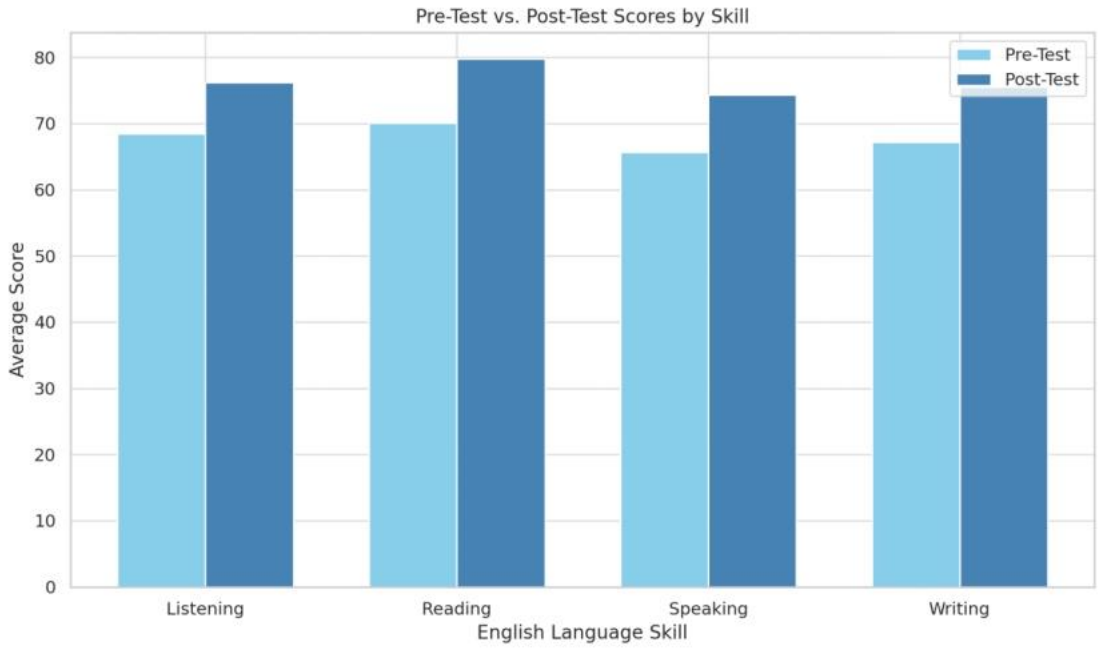
Activity Completion

Data Example:

Week	Listening	Reading	Speaking	Writing
1	65	70	60	68
2	75	80	70	78
3	85	90	80	88
4	95	100	90	96

Teacher Evaluation of System

a. Useful for Monitoring – 5/5
b. Reduced Workload – 4/5
c. Easy to Use – 5/5
d. Recommended for Future Use – 5/5



Pre-Test vs. Post-Test Scores by English Language Skill.

The implementation of the real-time monitoring information system for English language skills was conducted over at SDN Pasir Jengkol II Karawang, involving 50 students and 5 English language teachers. The system was designed to track and display student performance in the four key skill areas: listening, speaking, reading, and writing. The system featured user dashboards, automated data recording, real-time feedback, and visual analytics to support both student learning and teachers evaluation.

During the implementation, the system demonstrated high reliability and functionality. It maintained a 99.2% uptime and an average response time of under two seconds for real-time updates. Usage logs showed that the system recorded 1,720 total logins, with students logging in an average of 8.6 times per week. A total of 1,240 learning activities were completed, with each skill area receiving relatively balanced attention. The quiz completion rate reached 92%, indicating that students were actively engaging with the platform.

Performance data indicated that students made notable improvements across all English language skill areas. Pre-test and post-test comparisons revealed the following average score increases: listening improved from 68.5 to 76.2, reading from 70.1 to 79.8, speaking from 65.7 to 74.3, and writing from 67.2 to 75.5. These results suggest an improvement range of 11% to nearly 14%, which supports the system's effectiveness in enhancing students' language proficiency during the study period. The real-time feedback and consistent practice opportunities likely contributed to these gains.

User feedback was overwhelmingly positive. Among the 50 students surveyed, 92% reported that the system was easy or very easy to use, while 88% felt it helped them better track their learning progress. Additionally, 85% said the platform motivated them to practice more regularly. Students highlighted the benefits of immediate feedback and visual progress tracking, which helped them identify strengths and areas needing improvement. However, some students recommended including more interactive speaking exercises and gamification elements to increase engagement further. Students exhibited a greater interest in studying English when blended learning is used (Muhria, 2022).

Teacher feedback also supported the system's value. All five teachers reported that the platform made student monitoring more efficient and insightful. Four of the five teachers noted that the system reduced their manual workload related to tracking progress and generating reports. The ability to access real-time alerts for underperforming students allowed for quicker interventions and personalized support.

In summary, the implementation of the real-time monitoring information system proved to be both technically feasible and pedagogically effective. The system not only improved the efficiency of language skill tracking but also contributed to measurable student progress and high user satisfaction. The findings suggest that such systems can play a significant role in supporting language learning, especially in contexts where personalized feedback and continuous monitoring are essential. Future development may focus on expanding the range of activities and enhancing speaking modules to maximize the platform's impact.

CONCLUSION

Based on the aim of this research was to design, implement, and evaluate a real-time monitoring information system to support the development of English language skills among learners. The system was successfully developed using modern web technologies and deployed in a real educational setting. It featured real-time dashboards, automated data tracking, feedback mechanisms, and performance analytics

for students and teachers. The results of the study clearly indicate that the system contributed to meaningful improvements in student performance across all four core language skills: listening, speaking, reading, and writing. Quantitative data showed a consistent increase in test scores, while qualitative feedback from students and instructors affirmed the system's usability, effectiveness, and motivational impact. Students appreciated the instant feedback and progress tracking, which helped them take greater ownership of their learning. teachers reported that the system enhanced their ability to monitor students and reduced their administrative workload.

Despite the benefits, implementing Real Monitoring Information Systems presents challenges that need to be addressed. Identify issues such as students' academic dishonesty and teachers' limited digital literacy as obstacles in the effective use of online formative assessments. These challenges highlight the necessity for comprehensive training and support for teachers to maximize the potential of Real Monitoring Information System and these become the limitation of this research. In conclusion, the implementation of a real-time monitoring system for English language skills proved to be both pedagogically valuable and technologically feasible. The system not only enhanced student learning outcomes but also supported teachers in delivering data-informed instruction. These findings suggest that similar digital solutions can play a significant role in improving language education, especially in settings where timely feedback and individual tracking are essential. Future improvements to the system may include additional interactive features, mobile optimization, and the integration of artificial intelligence for personalized learning recommendations.

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