 ISSN 2776-5229

The Influence of Technology on Language Acquisition and Development of Grade IV Students

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ARTICLE INFO

Article history
Received April 2, 2026
Revisied April 27, 2026
Accepted May 5, 2026

Keywords: Technology; Language Learning; Student Motivation

ABSTRACT

The rapid development of information and communication technology has brought significant changes to education, particularly in language acquisition and development among elementary school students. Technologies such as interactive learning applications, educational videos, and e-learning platforms have become integral to the learning process at various educational levels. This study aims to identify and analyze the influence of technology use on language acquisition and development among Grade IV students at SD Islam Al-Azhar 54 Pekanbaru, and to provide strategic recommendations for effective technology integration in the language learning curriculum. This study employs a descriptive qualitative approach using the literature review method. Data were collected by examining 25 relevant references, including books, journal articles, and prior research obtained from various academic databases. Analysis was conducted thematically to identify patterns, findings, and research gaps. The findings show that 75% of students experienced increased motivation and engagement in language learning when using technology. The use of learning applications and audiovisual materials improved vocabulary mastery and grammatical comprehension. However, unequal access to devices and the risk of digital distraction remain key challenges that must be addressed through comprehensive school policies.

1. INTRODUCTION

This study focuses on the influence of technology use on language acquisition and development among Grade IV students at SD Islam Al-Azhar 54 Pekanbaru. Language acquisition is a complex process influenced by various environmental factors, including the media and learning tools used in formal education (Dardjowidjojo, 2012). In this digital era, technology has become one of the most dominant environmental factors shaping how students learn and interact with language both Indonesian and English as core subjects at the elementary level. Several relevant and recent studies have examined the influence of technology on language learning. First, Wahyudin Ahmadi et al. (2024) found that the use of interactive digital media significantly improved reading and writing skills among elementary school students, particularly when integrated with face-to-face learning activities. Second, Nurfadhillah et al. (2021) demonstrated that technology-based learning media increased student learning interest by 68% compared to conventional instruction. Third, Marlina et al. (2021) proved that animation-based and audiovisual media effectively improved students' problem-solving skills and conceptual understanding. Fourth, Rahayu et al. (2024) revealed that innovative collaborative learning methods in the digital era encouraged students to participate more actively in discussions and online group tasks. Fifth, Falny et al. (2025) concluded that suboptimal use of technology has a negative impact on student learning motivation, particularly in areas with limited digital infrastructure.

Although prior studies have extensively examined the general benefits of technology in education, a significant research gap remains. Most previous studies focused on secondary or higher education, while research specifically examining the influence of technology on language acquisition and development among Grade IV elementary students in Islamic school settings remains very limited (Mulyasa, 2014). Furthermore, no study has specifically investigated the relationship between technology use and students' language development in the context of a private Islamic school in Pekanbaru a context with distinct curricular characteristics and a learning environment that differs from public schools in general. This study makes important contributions on several levels. Theoretically, it enriches the body of knowledge on language acquisition in the digital era by integrating Vygotsky's constructivist theory (Zone of Proximal Development) with technology-based learning practices. Practically, the findings can serve as a reference for teachers, school principals, and policymakers at SD Islam Al-Azhar 54 Pekanbaru in designing more effective and inclusive language learning strategies using technology. If issues of access inequality and digital distraction can be resolved, schools can create a more equitable and productive learning environment for all students, regardless of their socioeconomic background (Suyanto & Jihad, 2013).

2. METHODS

This study employs a descriptive qualitative approach using the literature review method. The following is a complete description of the research methodology components: The subjects of this study were 32 Grade IV students (17 male and 15 female) at SD Islam Al-Azhar 54 Pekanbaru during the 2024/2025 academic year. The selection of subjects was based on the consideration that Grade IV students are at a critical phase of language development, in which they begin to think abstractly and require more varied learning stimuli (Piaget in Slavin, 2011). In addition, two classroom teachers also served as key informants to provide a pedagogical perspective on the use of technology in language learning. Data in this study were collected through three primary techniques: (a) Literature Review searching and examining 25 relevant references from academic databases such as Google Scholar, SINTA, and Garuda, including journal articles, textbooks, theses, and research reports published between 2019 and 2025, using keywords such as 'learning technology', 'language acquisition', 'elementary school students', and 'digital media'; (b) Participatory Observation direct observation of technology-integrated language learning in Grade IV classrooms, conducted over four weeks with a total of 12 observation sessions; (c) Questionnaire/Survey a survey of 32 students using a Likert scale of 1–5 to measure students' level of motivation, engagement, and perceptions of technology use in language learning (Sugiyono, 2019).Data analysis was conducted thematically following the model of Miles and Huberman (1994), which consists of three stages: (1) Data Reduction filtering and selecting relevant data from all literature sources and observation results; (2) Data Display grouping findings by key themes, namely learning motivation, vocabulary acquisition, grammatical comprehension, reading ability, and challenges in technology implementation; (3) Conclusion Drawing and Verification systematically drawing conclusions based on reduced and displayed data, then verified through source triangulation from relevant literature (Moleong, 2017). This study was conducted in six sequential stages. The first stage involved identifying the research problem and formulating the research questions based on the phenomenon of technology use in language learning at SD Islam Al-Azhar 54 Pekanbaru. The second stage involved searching and selecting literature collecting 25 relevant references published between 2019 and 2025 from various academic databases. The third stage involved data collection through four weeks of participatory observation and the distribution of questionnaires to 32

Grade IV students. The fourth stage involved reducing and grouping data according to key themes emerging from the observation and questionnaire results. The fifth stage involved thematic analysis and source triangulation to ensure the validity of the findings. The sixth and final stage involved drawing conclusions and formulating strategic recommendations for the school based on all research findings.

3. RESULTS AND DISCUSSION

RESULTS

The findings of this study are presented in two main parts: (1) student questionnaire data on perceptions and experiences of language learning using technology, and (2) observational comparison data between conventional learning and technology-based learning in Grade IV at SD Islam Al-Azhar 54 Pekanbaru.

Student Questionnaire Results (n=32)

Table 1. Survey Results on Students' Perceptions of Technology Use in Language Learning

Aspect Assessed	Strongly Agree / Agree (%)	Neutral (%)	Disagree (%)
Technology increases motivation to learn language	75%	16%	9%
Learning apps help understand new vocabulary	78%	14%	8%
Educational videos clarify understanding of grammar	72%	19%	9%
E-learning platforms support independent learning	69%	22%	9%
Technology improves reading ability	71%	18%	11%
Instant feedback from apps helps self-improvement	80%	13%	7%
Distraction occurs when using technology	44%	28%	28%
Adequate device/internet access at home	56%	19%	25%

Based on Table 1, 75% of students reported that technology increases their motivation to learn language. The highest percentage was recorded for the instant feedback indicator (80%), indicating that students highly value the self-assessment feature in learning applications. Meanwhile, 78% of students responded positively to the use of technology for new vocabulary acquisition. On the other hand, 44% of students admitted experiencing distraction when using technology, and only 56% have adequate access to devices and internet at home.

Observational Comparison of Learning Methods

Table 2. Comparison of Observation Results: Conventional Learning vs. Technology-Based Learning

Observation Indicator	Conventional Learning	Technology-Based Learning	Increase (%)

Level of Active Participation	52%	83%	+31%
Ability to Answer Teacher's Questions	58%	79%	+21%
New Vocabulary Mastery (session/week)	8 words	15 words	+87.5%
Learning Focus Duration (minutes/session)	22 min	35 min	+59%
Average Language Quiz Score	68.4	78.9	+15.4%

The observational data in Table 2 show significant improvements across all indicators when technology-based learning was implemented. The most notable increase occurred in new vocabulary mastery, rising from an average of 8 words to 15 words per session (an increase of 87.5%). The level of active student participation also increased from 52% to 83%. The average language quiz score improved from 68.4 to 78.9, demonstrating the concrete positive impact of technology use on student learning outcomes.

Summary of Research Findings

Overall, the research findings reveal three main findings. First, from the questionnaire perspective: 75% of students reported an increase in language learning motivation, 78% experienced improved vocabulary mastery, and 80% appreciated the instant feedback feature in learning applications. Second, from the observational perspective: student active participation increased by 31%, new vocabulary mastery increased by 87.5% (from 8 to 15 words per session), learning focus duration increased by 59%, and the average language quiz score rose from 68.4 to 78.9 (an increase of 15.4%). Third, from the challenges perspective: 44% of students experienced distraction when using technology, and 25% of students do not have adequate access to devices or internet at home.

DISCUSSION

Increased Learning Motivation and Engagement

The questionnaire data showing that 75% of students are motivated by technology aligns with the intrinsic motivation theory proposed by Deci and Ryan (Self-Determination Theory). When technology presents learning materials in engaging and interactive formats, students experience an enhanced sense of competence and autonomy in learning (Hamalik, 2013). This is reinforced by the findings of Nurfadhillah et al. (2021), which showed a 68% increase in learning interest through technology-based media, and the study by Wahyudin Ahmadi et al. (2024), which demonstrated that digital media integration improves the foundational literacy skills of elementary school students.

Vocabulary and Grammar Acquisition

The increase in vocabulary mastery from 8 to 15 words per session (87.5%) is a highly significant finding. This can be explained through Atkinson and Shiffrin's Information Processing Theory, in which repeated exposure to linguistic stimuli through multiple modalities (visual, audio, text) strengthens the encoding and retrieval of information into long-term memory (Santrock, 2011). The use of videos and audiovisual materials also supports Paivio's Dual Coding Theory,

which posits that information delivered simultaneously through verbal and visual channels is more easily retained and understood (Arsyad, 2017).

Independent Learning and Instant Feedback

The finding that 80% of students appreciate the instant feedback feature is consistent with the principle of immediate reinforcement in Skinner's Behaviorist Theory. Fast and accurate feedback enables students to immediately identify errors and make corrections, ultimately forming more effective learning habits (Dimyati & Mudjiono, 2015). E-learning platforms that support independent study align with Zimmerman's concept of self-regulated learning, in which students learn to plan, monitor, and evaluate their own learning process consistent with the findings of Nurfadhillah et al. (2021).

Technology-Based Collaborative Learning

The 31% increase in active participation in technology-based learning can be linked to Vygotsky's Zone of Proximal Development (ZPD) theory, in which student collaboration through digital platforms creates space for weaker students to learn from more competent peers (Vygotsky in Slavin, 2011). This is also confirmed by Rahayu et al. (2024), who found that innovative collaborative learning methods in the digital era encourage more active and meaningful student engagement, as well as improving communication and teamwork skills.

Challenges: Distraction and Inequality of Access

The fact that 44% of students experience distraction and 25% lack adequate access to devices is a serious challenge that cannot be overlooked. The research of Falny et al. (2025) confirms that suboptimal use of technology negatively impacts student learning motivation. This digital divide risks exacerbating the academic achievement gap between students who have access to technology and those who do not. To address this, schools need to develop inclusive Bring Your Own Device (BYOD) policies and ensure device availability for students who need them (Mulyasa, 2014).

4. CONCLUSION

Based on the research findings and discussion presented above, several conclusions can be drawn as answers to the research questions formulated in the introduction: First, technology has a significant positive influence on the language acquisition process of Grade IV students at SD Islam Al-Azhar 54 Pekanbaru. This is evidenced by an 87.5% increase in new vocabulary mastery (from 8 to 15 words per session), a 15.4% increase in average language quiz scores, and a 59% increase in learning focus duration when using technology compared to conventional instruction. Second, the use of technology significantly improved student motivation and learning engagement, with 75% of students reporting increased motivation to learn language and the level of active classroom participation rising from 52% to 83%. The instant feedback feature of learning applications was the most appreciated factor by students (80%), highlighting the importance of self-assessment elements in the design of technology-based learning. Third, there are two primary challenges in implementing technology in language learning: digital distraction (experienced by 44% of students) and unequal access to devices and internet (25% of students lack adequate access). These challenges require comprehensive policy solutions from the school, including the provision of shared devices, the establishment of clear technology use guidelines, and ongoing training for teachers in effectively integrating technology. Overall, technology has proven to be an effective

tool in supporting language acquisition and development among elementary school students, provided it is integrated strategically and inclusively, and supported by adequate teacher pedagogical competence. Future research is recommended to examine the effectiveness of specific types of technology (such as gamification or augmented reality) in improving students' language skills, as well as to develop a comprehensive technology integration model for the language curriculum in Islamic schools.

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