

Students' Perception of Digital Learning Resources in Enhancing their Vocabulary-Building Skills

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Abstract

Language education has evolved significantly with the rapid advancement of digital technology, providing students with more interactive and engaging resources for vocabulary building. However, despite the increasing availability of digital learning resources (DLRs), a gap remains in students' perceptions of how these tools support their vocabulary development—particularly among high school students. This study investigates high school students' perceptions of DLRs in enhancing vocabulary-building skills. A quantitative method was employed, collecting data from 236 high school students in the JABODETABEK area via an online questionnaire adapted from a previous study. The instrument demonstrated high internal reliability (Cronbach's Alpha = 0.907). Descriptive analysis revealed that over 70% of students agreed or strongly agreed that DLRs are effective, enjoyable, and beneficial for vocabulary learning. Simple linear regression analysis showed a strong and significant positive correlation ($R = 0.730$, $R^2 = 0.533$, $p = 0.001$) between students' perceptions and the enhancement of their vocabulary-building skills. These findings indicate that positive student perceptions significantly predict vocabulary development. By offering a flexible, media-rich, and self-directed learning experience, DLRs play a crucial role in enhancing vocabulary acquisition. To maximize student learning outcomes, the integration of DLRs into language instruction should be prioritized.

Keywords: *digital learning, language learning, vocabulary-building, students' perception*

INTRODUCTION

Advancements in digital technology have significantly transformed education by introducing innovative teaching methodologies and expanding access to a wide array of learning resources. As noted by Timotheou et al. (2023), digital technologies have altered the nature and scope of education, offering new opportunities for pedagogical development. In this digital era, the integration of digital learning resources (DLRs) has become essential to support interactive, flexible, and accessible learning experiences.

Digital learning resources refer to materials such as e-books, online journals, social media platforms, and videos that are designed to facilitate and enhance the learning process. According to Sari et al. (2020), DLRs encompass a broad range of digital materials containing educational content, including audio-visual media, interactive games, graphic illustrations, photographs, videos, animations, programmed learning modules, e-textbooks, and scholarly articles. These resources, often featuring multimedia elements like text, audio, and video, cater to diverse learning preferences and styles by providing engaging and dynamic instructional content (Nurmalisa et al., 2023). Tools such as e-books, PowerPoint presentations, and platforms like YouTube have gained popularity in contemporary education due to their user-friendly nature and ability to deliver content in an engaging format.

The role of DLRs is particularly significant in the context of vocabulary acquisition. By offering interactive and diverse content, they have emerged as powerful tools in supporting language learning. As Czébely (2023) suggests, DLRs have become increasingly recognized for their effectiveness in enhancing language acquisition, challenging traditional instructional methods. Their potential lies in offering personalized and flexible learning experiences tailored to individual student needs. For instance, Zou et al. (2019) highlight the growing use of digital games in vocabulary learning, emphasizing their ability to enhance comprehension, pronunciation, motivation, engagement, and reduce learning anxiety compared to conventional techniques.

DLRs are particularly advantageous for language learning due to their accessibility, adaptability, and multimedia features, which foster both self-directed and collaborative learning environments. As Nurmalisa et al. (2023) note, the inclusion of text, audio, and visual components allows learners to access content through various modalities, promoting greater retention and understanding. By accommodating different learning styles and promoting active engagement through interactive elements, DLRs provide learners with opportunities for repeated exposure and context-rich vocabulary usage, thereby supporting more effective vocabulary development.

Perception plays a critical role in shaping learners' engagement with educational tools. Defined as the process through which individuals interpret sensory information to understand and interact with their environment, perception is closely linked to beliefs, attitudes, and personal experiences (Hornby, 2006). It may be either positive or negative, influencing the way individuals relate to learning tools and environments. According to Ishtiaq Khan et al. (2021), students often recognize the value of DLRs in improving their language skills, as seen in their use of platforms such as WhatsApp for learning. However, several challenges hinder the optimal use of these tools. Nartiningrum & Nugroho (2020) identified barriers such as limited access to personal digital devices, unstable internet connectivity, insufficient data, and low digital literacy, all of which restrict the effective utilization of DLRs. These issues highlight a gap between the potential benefits of digital resources and their actual implementation in the classroom.

Students' perceptions of learning materials are crucial in determining the effectiveness of teaching methods and educational technologies. Schunk (2012) defines students' perception as the way learners interpret and make sense of their educational experiences, encompassing their attitudes, beliefs, and opinions about teaching strategies, classroom environments, and learning tools. These perceptions can significantly influence students' motivation and learning outcomes. Consequently, understanding students' views on DLRs is vital for evaluating their effectiveness in enhancing vocabulary-building skills. Therefore, exploring students' perceptions of digital learning resources is essential, particularly in relation to vocabulary development. Such an inquiry can yield valuable insights into the most effective digital tools and the improvements needed to align educational technologies with students' needs and expectations.

The purpose of this study is to investigate high school students' perceptions of digital learning resources in enhancing vocabulary-building skills. Understanding these perceptions can help educators identify and implement more effective digital tools and instructional strategies that resonate with learners. The findings of this research will contribute to the broader discourse on the role of technology in language education and inform curriculum design and pedagogical practices. Moreover, it may stimulate further exploration into how digital resources can be optimized to support interactive and meaningful vocabulary acquisition. Despite the increasing adoption of digital tools in education, limited research has specifically addressed high school students' perceptions of DLRs in the context of vocabulary development. This study seeks to fill that gap by addressing the research question: *What are high school students' perceptions of using digital learning resources to enhance vocabulary-building skills?* It aims to explore these

perceptions in depth to understand the role and impact of digital resources on students' vocabulary learning experiences.

METHOD

Design

This study employed a quantitative research design to investigate high school students' perceptions of digital learning resources in enhancing their vocabulary-building skills. A structured questionnaire was used as the primary data collection instrument. According to Taherdoost & Hamta (2017), questionnaires are widely utilized in research to obtain valid and reliable data efficiently. The quantitative approach was deemed appropriate for this study because it allows the collection of measurable and consistent data from a relatively large sample, facilitating the identification of general trends and patterns in students' perceptions. The use of a questionnaire was particularly suitable in an educational setting, where time constraints and access limitations often exist. It enabled systematic data collection and ensured that responses could be easily quantified and analyzed. The questionnaire consisted of closed-ended questions formatted on a Likert scale, allowing students to express their level of agreement or disagreement with various statements related to the use of digital learning resources for vocabulary acquisition. This method was considered both practical and effective in achieving the research objectives. The collected data were analyzed statistically to identify prevailing trends and insights regarding students' attitudes and perceptions toward digital learning resources.

Respondents

The participants in this study consisted of 236 high school students, aged between 13 and 21 years, from various schools located in the JABODETABEK area (Jakarta, Bogor, Depok, Tangerang, and Bekasi). Participants were selected using convenience sampling, also known as incidental sampling, which involves selecting individuals based on their availability and willingness to participate (Mweshi & Sakyi, 2020). This sampling method was chosen due to the researcher's practical access to the target population through ongoing educational activities, teacher networks, and established relationships with local schools. These existing connections enabled efficient data collection within a limited timeframe. Questionnaires were distributed to students who were present and willing to participate during the data collection period. Schools that agreed to be part of the study were contacted individually, and formal permission was obtained from school authorities prior to administration.

Participation was voluntary, and all students who completed the questionnaire had prior experience using digital learning resources in their English language learning process. This ensured the relevance and appropriateness of the respondents for the research focus. Because students were reflecting on their actual usage and experiences with digital tools, the data collected were both rich and meaningful. Moreover, the voluntary nature of participation contributed to more authentic and reliable responses, enhancing the overall validity of the findings.

Instruments

Data were collected using an online questionnaire adapted from previously validated research instruments. The first source was a study by Mistar & Embi (2016), which examined students' perceptions of using WhatsApp as a digital learning resource in ESL (English as a Second Language) classrooms. The second source was a study by Ishtiaq Khan et al. (2021) that explored students' perceptions of using WhatsApp for acquiring EFL (English as a Foreign Language) vocabulary. For the purposes of this study, the term "Digital Learning Resources" was substituted for "WhatsApp" in both questionnaires to broaden the scope and relevance to various digital platforms beyond a single application.

To ensure clarity and accessibility for the participants, the questionnaire was translated from English into Indonesian. The questionnaire consisted of items presented on a 5-point Likert scale, ranging from 1 (“strongly disagree”) to 5 (“strongly agree”). This type of scale was selected for several reasons. First, Likert scales are cost-effective, easy to administer, and allow researchers to collect standardized data efficiently (Rattray & Jones, 2007). Second, they provide a normative measure, which enables researchers to compare individual scores across groups or respondents (Cohen et al., 2018; Rattray & Jones, 2007). The adapted and translated questionnaire aimed to accurately capture students’ perceptions of digital learning resources in the context of vocabulary learning, ensuring both relevance to the study objectives and accessibility for the target population.

Questionnaire

Table 1. Reliability analysis of the questionnaire

No	Questionnaire part	Statistical test used	Reliability
1	Students’ perception of DLRs	Cronbach Alpha	0.850
2	Enhancing vocabulary-building skills	Cronbach Alpha	0.833
3	Global analysis	Cronbach Alpha	0.907

The reliability of the questionnaire was assessed using Cronbach’s Alpha, a widely used measure for evaluating internal consistency. The results indicated high reliability, with Cronbach’s Alpha values of 0.850, 0.833, and 0.907 across different components of the instrument. A reliability coefficient of 0.907 indicates a high level of internal consistency, suggesting that the items in the questionnaire consistently measure students’ perceptions of digital learning resources in relation to vocabulary-building skills. These values fall within the acceptable to excellent range, supporting the use of the questionnaire as a valid tool for exploring high school students’ perceptions in this context.

Data Collecting Technique

The data for this study were collected using a 5-point Likert-scale questionnaire, adapted from Mistar & Embi (2016) and Ishtiaq Khan et al. (2021). The instrument was translated into Bahasa Indonesia and modified to reflect a broader focus on digital learning resources (DLRs) rather than a specific platform such as WhatsApp. The questionnaire demonstrated strong internal consistency, with a Cronbach’s Alpha value of 0.907, indicating a high level of reliability. Prior to data collection, permission was obtained from participating schools, and the questionnaire was administered online via Google Forms. Students participated voluntarily, and the form included a consent section to ensure ethical compliance. Completion of the questionnaire took approximately 15 minutes.

The questionnaire consisted of multiple sections: (1) demographic information, (2) students’ general perceptions of digital learning resources, and (3) their perceptions of the effectiveness of DLRs in enhancing vocabulary-building skills. To ensure clarity and appropriateness of the items, a pilot test was conducted with a small group of students. Based on the feedback, minor linguistic adjustments were made to improve comprehension. During the full data collection phase, the researcher collaborated closely with teachers to ensure that students completed the questionnaire independently and in a comfortable environment, either at school or at home, depending on their availability. This approach helped to maintain the integrity and authenticity of the responses.

Data analysis

The data were analyzed using a quantitative approach. Responses from the questionnaire were processed using JAMOVI version 2.6.26. The analysis included validity testing, reliability testing using Cronbach’s Alpha, descriptive statistics, assumption testing

(normality and linearity), and simple linear regression to examine the relationship between students' perceptions of digital learning resources and their vocabulary-building skills. Reliability was assessed using Cronbach's Alpha, with a threshold of ≥ 0.70 considered acceptable for internal consistency. To evaluate the assumption of normality, the Shapiro-Wilk test was employed, with a p-value greater than 0.05 indicating that the data were normally distributed. These statistical procedures ensured that the data met the necessary assumptions for further analysis and that the results were valid and interpretable.

RESULTS

This section presents the results of the study, based on the analysis of questionnaire data regarding high school students' perceptions of digital learning resources (DLRs) in enhancing their vocabulary-building skills. The findings are organized to reflect key trends and insights derived from students' responses. Following the presentation of results, a discussion is provided to interpret and contextualize the findings in relation to existing theories and previous studies relevant to the topic. This section aims to explain how the students' perceptions align with or diverge from current literature, offering a deeper understanding of the role and effectiveness of digital learning resources in vocabulary acquisition.

Students' Perception of Digital Learning Resources

Table 2. Tabulated Data: Students' Perception of Digital Learning Resources

No	Items	SD	D	N	A	SA	Total
1	Digital Learning Resources is a good source of interaction for language purposes	4 (1.7%)	2 (0.8%)	41 (17.4%)	126 (53.4%)	63 (26.7%)	236 (100%)
2	Learning Vocabulary using digital learning resources is a great idea	-	1 (0.4%)	37 (15.7%)	138 (58.5%)	60 (25.4%)	236 (100%)
3	Vocabulary-building using digital learning resources is a fun way of language learning.	1 (0.4%)	1 (0.4%)	48 (20.3%)	137 (58.1%)	49 (20.8%)	236 (100%)
4	Learning Vocabulary is suitable using digital learning resources	-	1 (0.4%)	66 (28%)	127 (53.8%)	42 (17.8%)	236 (100%)
5	Vocabulary learning using digital learning resources makes attractive learning	1 (0.4%)	-	53 (22.5%)	112 (47.5%)	70 (29.7%)	236 (100%)
6	It takes less time to pass the Vocabulary related information using digital learning resources	1 (0.4%)	12 (5.1%)	95 (40.3%)	105 (44.5)	23 (9.7%)	236 (100%)
7	Vocabulary learning using digital learning resources saves the time	1 (0.4%)	7 (3%)	71 (30.1%)	109 (46.2%)	48 (20.3%)	236 (100%)
8	Vocabulary learning through Digital Learning Resources is easy for enhancing	1 (0.4%)	2 (0.8%)	66 (28%)	119 (50.4%)	48 (20.3%)	236 (100%)
9	The use of digital learning resources can enhance vocabulary-building skills	-	-	59 (25%)	126 (53.4%)	51 (21.6)	236 (100%)
Average		0.56%	1.60%	25.89%	51.03%	20.92%	100%

The findings indicate that students generally hold positive perceptions regarding the use of digital learning resources (DLRs) to enhance their vocabulary-building skills. More than 70% of students agreed, and an additional 20.92% strongly agreed, that DLRs significantly support vocabulary acquisition. This strong endorsement suggests widespread recognition of DLRs as valuable tools in language learning. Meanwhile, the remaining

neutral responses may reflect variations in students' prior exposure to digital tools, personal learning preferences, or perceived alignment of DLRs with their academic needs. Overall, the results support the integration of DLRs in vocabulary instruction, although a subset of learners appears to remain uncertain about their effectiveness.

Item 1 explored whether students perceive DLRs as interactive tools for language learning. A substantial 80.1% of students responded positively—53.4% agreed and 26.7% strongly agreed. Only 0.8% disagreed and 1.7% strongly disagreed, while 17.4% were neutral. These results suggest that students do not view DLRs as passive content repositories but rather as interactive environments that foster participation, collaboration, and communication—crucial aspects of effective language learning.

Item 2 examined students' support for using DLRs specifically for vocabulary learning. An overwhelming 83.9% either agreed (58.5%) or strongly agreed (25.4%), with 15.7% neutral and only 0.4% disagreeing. This high level of agreement demonstrates that students not only accept but actively endorse the use of DLRs for vocabulary development.

Item 3 focused on students' enjoyment of vocabulary learning through DLRs. Approximately 78.9% of students agreed (58.1%) or strongly agreed (20.8%) that DLRs made vocabulary-building more enjoyable, with 20.3% neutral and just 0.8% disagreeing. These findings underscore the positive affective impact of DLRs, suggesting they may increase motivation and reduce anxiety, thus making learning experiences more engaging and less monotonous.

Item 4 further reinforces students' belief in the utility of DLRs, with 71.6% of respondents (53.8% agree; 17.8% strongly agree) affirming their usefulness in vocabulary enhancement. Only 0.4% disagreed, while 28% remained neutral. This alignment points to a generally strong perception of DLRs as effective resources for language development.

According to Item 5, DLRs are also perceived as making vocabulary learning more attractive. A total of 77.2% of students responded positively (47.5% agree; 29.7% strongly agree), while 22.5% were neutral and 0.4% strongly disagreed. The high level of agreement likely reflects the role of design features such as gamification, multimedia elements, and interactive interfaces in enhancing students' attention and interest.

Students' perceptions about the time-efficiency of DLRs, however, appeared more mixed. In Item 6, 54.2% agreed (44.5%) or strongly agreed (9.7%) that DLRs save time during vocabulary learning. However, a notable 40.3% were neutral, and 5.5% disagreed. This variation may be attributed to disparities in digital literacy, internet connectivity, and familiarity with platforms, which affect how efficiently students navigate and benefit from DLRs.

A similar pattern is evident in Item 7, where 66.5% of students agreed (46.2%) or strongly agreed (20.3%) that DLRs are time-efficient. Still, 30.1% were neutral and 3.4% disagreed. Although the majority maintained a positive outlook, the substantial proportion of neutral responses suggests inconsistent user experiences with DLRs.

Item 8 assessed students' perceptions of the usability of DLRs. Approximately 70.7% of students agreed (50.4%) or strongly agreed (20.3%) that DLRs are easy to use. 28% were neutral, and only 1.2% disagreed. These findings emphasize the user-friendliness and accessibility of digital tools, which are essential for fostering independent learning and sustaining student engagement.

Finally, Item 9 evaluated students' views on whether DLRs contribute to vocabulary expansion. A total of 75% agreed (53.4%) or strongly agreed (21.6%), and 25% were neutral. Notably, none disagreed, highlighting a consensus that DLRs positively support vocabulary acquisition.

In summary, the statistical findings demonstrate that students largely perceive digital learning resources as effective, engaging, and relevant tools for vocabulary development. While some students maintained neutral positions—likely due to personal or contextual factors—the overall trend affirms the importance of incorporating well-

designed, interactive DLRs into language learning to enhance both the efficacy and appeal of vocabulary instruction.

Enhancing Vocabulary-Building Skills

Table 3. Tabulated Data enhancing Vocabulary-Building Skills

No	Items	SD	D	N	A	SA	Total
1	Digital learning resources usage provided better opportunities in enhancing vocabulary-building skills	1 (0.4%)	4 (1.7%)	58 (24.6%)	128 (54.2%)	45 (19.2%)	236 (100%)
2	Digital Learning offered varied ways of vocabulary-building	1 (0.4%)	-	58 (24.6%)	128 (54.2%)	49 (20.8%)	236 (100%)
3	I found that digital learning resources is useful in my vocabulary-building	2 (0.8%)	1 (0.4%)	57 (24.2%)	132 (55.9%)	44 (18.6%)	236 (100%)
4	The use of Digital Learning Resources increased my vocabulary-building productively	2 (0.8%)	5 (2.1%)	96 (40.7%)	99 (41.9%)	34 (14.4%)	236 (100%)
5	Using digital learning resources was effectively enhanced my vocabulary-building skills	1 (0.4%)	2 (0.8%)	64 (27.1%)	127 (53.8%)	42 (17.8%)	236 (100%)
6	My performance in vocabulary-building skills was enhanced by the used of digital learning resources	-	4 (1.7%)	68 (28.8%)	120 (50.8%)	44 (18.6%)	236 (100%)
7	Difficulties levels are varied in vocabulary-building using digital learning resources.	-	9 (3.8%)	69 (29.2%)	112 (47.5%)	46 (19.5%)	236 (100%)
Average		0.61%	1.61%	27.34%	51.83%	18.61%	100%

This section presents the analysis of how digital learning resources (DLRs) contribute to the enhancement of students' vocabulary-building skills. The data reveal that, on average, 70.44% of students reported perceived improvement in their vocabulary, with 51.83% agreeing and 18.61% strongly agreeing with the relevant statements. Meanwhile, 27.34% of respondents remained neutral, which may suggest variability in engagement or perceived effectiveness depending on the type or usage of digital tools. Notably, only 2.22% of students expressed disagreement, reinforcing the overall positive perception of DLRs. These findings underscore the potential of DLRs to support vocabulary development, validating their integration into language learning environments to enhance student outcomes.

Item 1 explored students' perceptions of DLRs' effectiveness in improving vocabulary-building skills. A significant 73.4% either agreed (54.2%) or strongly agreed (19.2%) with the statement, while only 2.1% expressed disagreement. Approximately 24.6% remained neutral. These results suggest that most students view DLRs as productive environments for vocabulary acquisition, supporting constructivist perspectives that emphasize exposure to resource-rich and contextualized learning settings.

Item 2 focused on the flexibility and variety offered by DLRs. A total of 75% of respondents agreed (54.2%) or strongly agreed (20.8%) that digital tools provide diverse strategies for vocabulary learning, whereas 24.6% gave neutral responses. The neutrality may point to a need for greater familiarity with the full range of features and affordances available within digital platforms.

In Item 3, students affirmed the usefulness of DLRs in facilitating vocabulary

growth. A combined 74.5% of students agreed (55.9%) or strongly agreed (18.6%), while 24.2% were neutral and 1.2% disagreed. The high agreement rate suggests that DLRs provide frequent and meaningful exposure to authentic vocabulary use, aiding retention and contextual understanding.

Item 4 yielded a slightly more moderate response. While 56.3% of students agreed (41.9%) or strongly agreed (14.4%) that DLRs enhanced their productivity in vocabulary learning, 40.7% remained neutral, and 2.9% disagreed. This distribution may reflect differences in learning styles or varied experiences with specific digital tools, indicating that while many students benefit from DLRs, not all perceive a direct link to productivity gains.

Item 5 reinforced the prevailing perception of DLRs' effectiveness, with 71.6% of students in agreement (53.8% agree; 17.8% strongly agree), 27.1% neutral, and only 1.2% disagreeing. These findings align with cognitive load theory, which posits that well-designed digital platforms can reduce extraneous cognitive load and facilitate learning through structured, scaffolded content delivery.

For Item 6, the majority of students again affirmed the benefits of DLRs: 69.4% agreed (50.8%) or strongly agreed (18.6%), while 28.8% remained neutral and 1.7% disagreed. This result indicates that, although DLRs are generally viewed as helpful, not all students attribute their vocabulary progress directly to digital tools. This may be influenced by variations in teaching quality, consistency in DLR usage, or students' metacognitive awareness of their own learning processes.

Item 7 addressed students' perceptions of the difficulty levels presented by DLRs in vocabulary learning. A total of 67% agreed (47.5%) or strongly agreed (19.5%) that DLRs present varying degrees of challenge, 29.2% remained neutral, and 3.8% disagreed. These responses suggest that students recognize the differentiated nature of digital platforms, which may offer adaptive content and allow learners to engage at levels appropriate to their proficiency and needs.

In summary, the results indicate a generally positive and nuanced perception of DLRs among students regarding their role in enhancing vocabulary-building skills. Students view digital resources as flexible, engaging, and effective tools that provide diverse and interactive experiences. They also recognize the role of DLRs in fostering productivity, supporting various levels of difficulty, and improving learning outcomes. These findings suggest that DLRs are a valuable component of modern language education, promoting autonomous, motivated, and differentiated learning suited to the needs of contemporary students.

Statistic Descriptive

Table 4. Statistic Descriptive

	Students' Perception of DLRs	Enhancing Vocabulary-Building Skills
Mean	35.3	27.0
Median	35.0	27.0
Standard deviation	4.28	3.55
Minimum	26	18
Maximum	45	35

The descriptive statistical analysis provides a summary of the central tendency and dispersion of the two key variables: students' perceptions of digital learning resources (DLRs) and their vocabulary-building skills.

For the perception of DLRs, the mean score was 35.3 out of a maximum of 45, indicating a generally positive overall attitude toward the use of digital tools in language learning. The median score of 35.0 closely aligns with the mean, suggesting a relatively symmetrical distribution of responses with limited skewness. The standard deviation of 4.28 indicates a moderate level of variability, implying that while most students had favorable views, there were some differing opinions.

Similarly, for vocabulary-building skills, the mean score was 27.0 out of a possible 35, reflecting a relatively high level of vocabulary competence as perceived by the students. The median score, also at 27.0, reinforces the indication of a balanced distribution. With a standard deviation of 3.55, the spread of responses for vocabulary-building was slightly narrower than that for DLR perceptions, suggesting more consistency among students in this aspect.

Overall, both variables demonstrated high central tendency values and low standard deviations, which indicate that most participants shared similar perspectives and self-assessed abilities. The close alignment between the mean and median for both variables further supports the assumption of approximate normal distribution, thus justifying the application of simple linear regression analysis in the subsequent section of the study.

Simple Linear Regression Test

Table 5. Model Fit Measures

Model	R	R ²	Overall Model Test			
			F	df1	df2	p
1	0.730	0.533	267.1	1	234	<.001

Note. Models estimated using sample size of N=236

A simple linear regression analysis was performed to examine the relationship between students' perceptions of digital learning resources (DLRs) and the enhancement of their vocabulary-building skills. The analysis yielded a strong positive correlation between the two variables ($R = 0.730$), indicating a meaningful association.

The model accounted for approximately 53.3% of the variance in vocabulary-building skills ($R^2 = 0.533$), demonstrating that students' perceptions are a substantial predictor of their vocabulary development outcomes. The regression model was statistically significant ($F(1, 234) = 267.1, p < 0.001$), confirming the model's overall validity. Furthermore, the standardized regression coefficient ($\beta = 0.730$) was also significant at $p < 0.001$, reinforcing the strength and direction of the relationship. These results suggest that positive perceptions of digital learning resources significantly contribute to students' ability to enhance their vocabulary-building skills, supporting the integration of such tools in language education.

Omnibus ANOVA Test

Table 6. ANOVA Test

	Sum of Squares	df	Mean Square	F	p
Total Students' Perception of DRLs	1582	1	1581.52	267	<.001
Residuals	1385	234	5.92		

Note. Type 3 sum of squares

The ANOVA test confirms the statistical significance of the regression model

examining the relationship between students' perceptions of digital learning resources (DLRs) and their vocabulary-building skills. The model produced an F-value of 267.00 with a p-value less than 0.001, indicating that the overall regression is statistically significant.

This result supports the conclusion that students' perceptions of DLRs significantly predict their vocabulary-building outcomes, aligning with the earlier regression findings and reinforcing the relevance of DLR integration in language learning pedagogy.

Table 7. Model Coefficients of Students' Perception of DLRs and Enhancing Vocabulary-Building Skills

Predictor	Estimate	SE	t	p	Stand. Estimate
Intercept ^a	5.565	1.3208	4.21	<.001	
Total Students' Perception	0.607	0.0371	16.34	<.001	0.730

^a Represents reference level

The regression analysis reveals that the coefficient for students' perception of digital learning resources (DLRs) is 0.607, with a t-value of 16.34 and a p-value < .001, indicating a statistically significant and strong positive relationship. This suggests that for each unit increase in students' perception score, there is an estimated increase of 0.607 units in vocabulary-building outcomes. The standardized coefficient ($\beta = 0.730$) further confirms the strength of this relationship, indicating that students' perception is a strong predictor of vocabulary-building skills enhancement.

Additionally, both the predictor and intercept show p-values well below the significance threshold ($p < .05$), supporting the acceptance of the research hypothesis. This confirms that as students' perception of digital learning resources improves, their vocabulary-building skills also tend to improve. These findings validate the role of DLRs as effective tools in supporting language acquisition and underscore the importance of fostering positive learner attitudes toward digital platforms.

DISCUSSION

This study investigated students' perceptions of digital learning resources (DLRs) in enhancing vocabulary-building skills. The data were collected from senior high school students with prior exposure to a variety of digital learning tools, including but not limited to YouTube, e-books, online quizzes, and educational games. The questionnaire, adapted from previous validated instruments, employed a Likert-scale format and was piloted for clarity and reliability before full distribution. The primary focus of the data collection was to assess students' perceptions regarding the usefulness, engagement, and effectiveness of DLRs in supporting vocabulary acquisition. This method enabled the systematic identification of patterns across diverse student groups.

The results reveal a generally positive perception among students regarding the use of DLRs for vocabulary learning. Over 70% of respondents agreed, and approximately 21% strongly agreed, that digital resources contributed significantly to their vocabulary development. However, the presence of neutral responses suggests that not all students experience these benefits uniformly. This variation may be attributed to individual differences in digital literacy, preferred learning modalities, and the extent to which students engage with various types of digital content. These findings are consistent with those of Noskova et al. (2021), who emphasized that learner preferences and levels of digital competence shape the perceived effectiveness of technology-mediated instruction.

The integration of DLRs into vocabulary instruction has also been supported by recent literature. For instance, Sufi & Ningsih (2024) found that platforms such as TikTok can positively influence vocabulary mastery by aligning educational content with students' digital habits and preferences. Similarly, Muryani & Yunus (2024) highlighted that the use

of interactive and multimedia-rich digital tools fosters vocabulary enhancement through features such as immediate feedback, individualized pacing, and multimodal content delivery. The findings of the present study are congruent with these perspectives, suggesting that DLRs serve not merely as repositories of information but as dynamic, learner-centered environments.

Nonetheless, the neutral and negative responses observed in the study underscore that the efficacy of DLRs is not universal. Variability in access, motivation, or digital confidence may mediate student experiences. Procel et al. (2024) noted that effective digital learning systems often incorporate adaptive mechanisms that respond to learners' individual progress and challenges, thereby offering differentiated and personalized learning trajectories. Such systems can enhance affective outcomes, including increased motivation and reduced language anxiety—factors that are essential for sustained engagement. Waluyo (2024) further argued that affective responses such as enjoyment and inspiration correlate positively with academic achievement, whereas negative emotional states such as frustration may hinder learning progress.

Students in this study also perceived DLRs as interactive and engaging, which reflects their potential to enhance learner motivation and cognitive investment. These findings align with Zhang & Hashim (2025), who posited that gamified and adaptive learning platforms provide opportunities for personalized instruction, real-time feedback, and increased learner autonomy—elements essential for vocabulary retention. Moreover, the researchers contended that as technological infrastructure becomes more widely accessible, the effectiveness of digital resources is increasingly determined by the quality of content, pedagogical design, and interactivity, rather than hardware capabilities alone.

The results further indicate that students find DLRs to be useful, efficient, and engaging tools for vocabulary learning. Positive perceptions were particularly linked to gamified features, multimedia content, and interactive exercises. These elements were also emphasized by Toha et al. (2023), who demonstrated that multimedia design enhances cognitive engagement and facilitates vocabulary acquisition. However, some respondents expressed uncertainty about the direct impact of DLRs on vocabulary enhancement, suggesting that resource efficacy may depend on individual learning preferences and the nature of the digital content employed.

The present findings underscore the importance of providing diverse types of digital resources to accommodate varied learner profiles. As noted by Noskova et al. (2021), while some students may prefer traditional text-based approaches, others benefit more from interactive, multimodal, or visually enriched content. Furthermore, students' motivation, readiness, and digital proficiency are critical variables that mediate the effectiveness of DLRs.

In conclusion, this study reinforces the notion that DLRs are an increasingly indispensable component of modern language education. Their capacity to support autonomous learning, personalize instruction, and enhance engagement makes them particularly well-suited for vocabulary acquisition. As supported by the findings of Dwiaugita & Ningsih (2023), ongoing professional development is crucial in equipping educators to design and implement effective digital pedagogies. When deployed strategically, DLRs can play a pivotal role in enhancing students' vocabulary-building skills and overall language competence.

CONCLUSION

This study concludes that digital learning resources (DLRs) play a significant role in enhancing students' vocabulary-building skills by providing interactive, flexible, and engaging learning environments. The findings reveal that the majority of senior high school students hold positive perceptions toward the use of DLRs, which strongly correlate with improvements in vocabulary acquisition.

The results of the simple linear regression analysis demonstrated a robust and statistically significant relationship between students' perceptions of DLRs and their vocabulary-building outcomes. Specifically, students' perceptions accounted for approximately 53.3% of the variance in vocabulary acquisition ($R^2 = 0.533$), with a strong correlation coefficient ($R = 0.730$) and a standardized regression coefficient ($\beta = 0.730$, $p < 0.001$). The overall model was statistically significant ($F(1, 234) = 267.1$, $p < 0.001$), as confirmed by both the regression and ANOVA results. These findings validate the research hypothesis and affirm that students' positive perceptions of DLRs are a significant predictor of vocabulary-building success.

The study aimed to investigate students' perceptions of using DLRs to enhance their vocabulary. The results indicate that students generally perceive DLRs as enjoyable, time-efficient, user-friendly, and effective tools for vocabulary acquisition. These perceptions align with the affordances of DLRs, which include multimedia integration, gamified content, and personalized feedback—features that not only support cognitive engagement but also enhance emotional motivation.

Despite the predominantly positive responses, a portion of students expressed neutral views. This suggests variability in student experience, which may stem from differing levels of digital literacy, access to technology, or personal learning preferences. As such, while DLRs offer significant benefits, their implementation must consider inclusivity and accessibility to maximize their impact across diverse student populations.

In sum, the study underscores the critical role of students' perceptions in shaping the effectiveness of digital learning resources for vocabulary development. The evidence suggests that when effectively designed and implemented, DLRs can significantly contribute to improved language learning outcomes. Therefore, it is recommended that educators and institutions strategically integrate DLRs into English language instruction, ensuring that these tools are not only pedagogically sound but also responsive to the varied needs and contexts of learners. Prioritizing thoughtful integration will help optimize student engagement, foster independent learning, and ultimately enhance vocabulary-building competencies in the digital era.

REFERENCES

- Cohen, L., Manion, L., & Morrison, K. (2018). *Research Method in Education*.
- Czébely, S. (2023). *The Role of Innovative Technologies in Learning a Foreign Language*.
- Dwiaugita, S., & Ningsih, S. K. (2023). *The correlation between continuing professional development and creative pedagogical activities*. 11(1), 8–13. <https://doi.org/10.25273/etj.v11i1.15943>
- Hornby, A. S. (2006). *Oxford Advanced Learner's Dictionary of Current English* (S. Wehmeier & M. Ashby (eds.); 7th ed.). Oxford University Press, 2006.
- Ishtiaq Khan, R. M., Radzuan, N. R. M., Farooqi, S. U. H., Shahbaz, M., & Khan, M. S. (2021). Learners' Perceptions on WhatsApp Integration as a Learning Tool to Develop EFL Vocabulary for Speaking Skill. *International Journal of Language Education*, 5(2), 1–14. <https://doi.org/10.26858/ijole.v5i2.15787>
- Mistar, I. B., & Embi, M. A. (2016). Students' Perception on the Use of Whatsapp as A Learning Tool in ESL Classroom. *Journal of Education and Social Sciences*, 4, 96–104. <https://jesoc.com/wp-content/uploads/2016/08/Edu-76.pdf>
- Muryani, R. N., & Yunus, M. (2024). Students' Digital Vocabulary Learning: Experiences, Barriers, and Adaptive Strategies Exploration. *English Review: Journal of English Education*, 12(1). <https://doi.org/10.25134/erjee.v12i1.9328>
- Mweshi, G. K., & Sakyi, K. (2020). Application of Sampling Methods for the Research Design. *Archives of Business Research*, 8(11), 180–193. <https://doi.org/10.14738/abr.811.9042>

- Nartiningrum, N., & Nugroho, A. (2020). Online Learning amidst Global Pandemic: EFL Students' Challenges, Suggestions, and Needed Materials. *ENGLISH FRANCA: Academic Journal of English Language and Education*, 4(2), 115. <https://doi.org/10.29240/ef.v4i2.1494>
- Noskova, T., Pavlova, T., & Yakovleva, O. (2021). A Study of Students' Preferences in The Information Resources of The Digital Learning Environment. *Journal on Efficiency and Responsibility in Education and Science*, 14(1), 53–65. <https://doi.org/10.7160/ERIESJ.2021.140105>
- Nurmalisa, Y., Sunyono, S., Yulianti, D., & Sinaga, R. M. (2023). An Integrative Review: Application of Digital Learning Media to Developing Learning Styles Preference. *International Journal of Information and Education Technology*, 13(1), 187–194. <https://doi.org/10.18178/ijiet.2023.13.1.1795>
- Procel, G. J. O., Medina, M. L. F., Sanchez, D. J. S., & Tacuri, M. A. P. (2024). *Using Technoogy in English Teaching*. https://doi.org/10.37811/cli_w1048
- Ratray, J., & Jones, M. C. (2007). Essential Elements of Questionnaire Design and Development. *Journal of Clinical Nursing*, 16(2), 234–243. <https://doi.org/10.1111/j.1365-2702.2006.01573.x>
- Sari, A. I., Suryani, N., Rochsantiningsih, D., & Suharno, S. (2020). Digital learning, smartphone usage, and digital culture in indonesia education. *Integration of Education*, 24(1), 20–31. <https://doi.org/10.15507/1991-9468.098.024.202001.020-031>
- Schunk, D. H. (2012). *Learning Theories: An Educational Perspective* (6th ed.). Pearson.
- Sufi, E. A., & Ningsih, S. K. (2024). @Zelynafah TikTok Videos Influence Vocabulary Mastery Learning Strategies: Followers Perception. *Jurnal Pendidikan Guru*, 5(1), 52–66.
- Taherdoost, H., & Hamta, G. (2017). Validity and Reliability of the Research Instrument ; How to Test the Validation of a Questionnaire / Survey in a Researchfile:///C:/Users/admin/Desktop/RISACHI REPORT 2021/reference B/2190-8050-1-PB-1 SOCIO.pdf. *International Journal of Sport, Exercise & Training Sciences*, 5(3), 27–36. <https://hal.science/hal-02546799/document>
- Timotheou, S., Miliou, O., Dimitriadis, Y., Sobrino, S. V., Giannoutsou, N., Cachia, R., Monés, A. M., & Ioannou, A. (2023). Impacts of Digital Technologies on Education and Factors Influencing Schools' Digital Capacity and Transformation: A Literature Review. In *Education and Information Technologies* (Vol. 28, Issue 6). Springer US. <https://doi.org/10.1007/s10639-022-11431-8>
- Toha, M., Dzulfikri, & Yusroh, M. (2023). Exploring Students' Perceptions Toward Vlogging as a Tool for Enhancing English Vocabulary Acquisition. *Abjadia: International Journal of Education*, 8(2), 168–179. <https://doi.org/10.18860/abj.v8i2.22867>
- Waluyo, B. (2024). *The Role of Digital Technologies in Sustaining Emotional Engagement in Foreign Language Learning* (Issue ICoETS). Atlantis Press SARL. <https://doi.org/10.2991/978-2-38476-331-3>
- Zhang, M., & Hashim, A. M. (2025). Research on Gamification and Perceptual Improvement of Online Course Interaction Design in Children's Online Education. *Multidisciplinary Science Journal*. <https://doi.org/10.31893/multiscience.2025477>
- Zou, D., Huang, Y., & Xie, H. (2019). Digital Game-Based Vocabulary Learning: Where are We and Where are We Going? *Computer Assisted Language Learning*, 34(5–6), 751–777. <https://doi.org/10.1080/09588221.2019.1640745>