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The Correlation Between Informal Digital Learning of English (IDLE) and Vocabulary Mastery Levels of Grade XI Marketing Students at Vocation High School

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Abstract

This study investigated the correlation between Informal Digital Learning of English (IDLE) and vocabulary mastery among eleventh-grade Marketing students at SMK Negeri 2 Purworejo. Vocational students were selected because they frequently interact with digital media and require practical English skills for future professional contexts. This study utilized a quantitative correlational design involving 33 students selected purposively based on their involvement in digital English learning activities. Data were collected through an IDLE questionnaire and a vocabulary test. The reliability analysis showed that both instruments were highly reliable, with Cronbach's Alpha coefficients of 0.945 and 0.872 respectively. The data were analyzed using Pearson Product-Moment Correlation. Prior to the correlation analysis, normality and reliability testing were conducted to ensure that the data met the assumptions required for Pearson correlation analysis. The findings revealed a strong positive correlation between IDLE and vocabulary mastery ($r = 0.670$, $p < .001$). The findings suggest that students who frequently engaged in digital English learning activities outside the classroom tended to achieve higher vocabulary scores. Exposure to English through digital platforms contributed positively to students' vocabulary development by providing authentic language input. Therefore, IDLE can support vocabulary mastery and complement formal English learning. The findings also imply

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that integrating digital learning exposure into English instruction may support students' autonomous vocabulary development.

1. Introduction

Language is essential to human interaction as it enables individuals to express ideas, share experiences, and interact with others. English is used as a foreign language in Indonesia across educational levels, with students expected to become proficient in four language abilities such as listening, speaking, reading, and writing and also language elements such as vocabulary, grammar, and pronunciation. Among these, vocabulary is essential because it supports comprehension and communication. However, many students still face difficulties in vocabulary mastery despite formal instruction.

Vocabulary is a fundamental element of language proficiency, enabling students to comprehend and convey meaning in both spoken and written communication (Ghalebi, Sadighi, & Bagheri, 2021; Muhayyang, Asriati, & G, 2023). Vocabulary knowledge can be categorized in several ways. One common classification distinguishes among active and passive vocabulary. Active vocabulary comprises terms that students may use in communication, whereas passive vocabulary includes phrases that students may realize or comprehend but rarely use (Febi, Farhan, Sutopo, & Mukhlisin, 2023). Similarly, vocabulary knowledge is frequently classified as receptive and productive vocabulary. Receptive vocabulary relates to understanding words in literacy and auditory comprehension, whereas productive vocabulary denotes the ability to use terms in verbal and written interaction (Ndraha, 2022).

Because of the limited vocabulary taught in class, students try to learn vocabulary through digital. In this relation, the explosive growth of digital tools has significantly influenced how students access and interact with English beyond the classroom. Students frequently access online media for instance social networking platforms, streaming platforms, and online games, which provide authentic English materials and allow students to participate with the language within natural contexts (Rahmawati, Drajati, & Asib, 2019).

This phenomenon is referred to as Informal Digital Learning of English (IDLE), defined as self-sufficient learning via digital mediums beyond conventional educational contexts and is often driven by learners' interests (Maulida, Mardiana, & Irfan, 2022). Through platforms such as blogs, YouTube, and social media, students can engage with English in real-life contexts (Dressman & Lee, 2021; Faizah, Drajati, & Yunus, 2022). Consequently, online resources have become prominent tools for supporting language practice beyond formal learning environments.

IDLE activities include both receptive and productive forms (Lee & Lee, 2021). Receptive behaviors, such as viewing films and reading online materials, facilitate incidental vocabulary learning (Liu, Soyoof, Lee, & Zhang, 2025), while productive activities involve active language use, such as online interaction (Lee & Sylvén, 2021). In addition, meaning-focused activities emphasize communication in authentic contexts, enabling learners to use language meaningfully in real-life situations. Such activities encourage learners to focus on understanding and conveying messages, which can support vocabulary mastery and overall language proficiency (Zou, Teng, Soyoof, & He, 2025).

Previous studies show that IDLE contributes positively to language learning. Engagement in IDLE activities has been linked to vocabulary mastery and improved communication skills (Lee & Sylvén, 2021). Exposure to English through digital media also supports incidental vocabulary learning and increases learners' enjoyment and self-efficacy in using English (Lee & Sylvén, 2021; Liu et al., 2025; Soyoof, Reynolds, Vazquez-Calvo, & McLay, 2023).

The correlation between Informal Digital Learning of English (IDLE) and vocabulary mastery can also be explained through the concept of authentic language exposure and meaning-focused learning in digital environments. Digital platforms such as YouTube, online games, music streaming applications, and social media expose learners to authentic English input in meaningful communication contexts. Through repeated interaction with English content, learners may gradually develop vocabulary knowledge naturally and contextually. Reynolds (2025) emphasized that informal and incidental digital exposure contributes positively to second language vocabulary development because learners encounter vocabulary repeatedly in authentic situations rather than isolated classroom exercises.

In addition, incidental vocabulary learning theory explains that vocabulary mastery may occur unintentionally while learners focus on understanding messages and participating in communication activities. Through activities such as watching videos, listening to songs, reading online texts, and playing online games, learners repeatedly encounter vocabulary in contextualized situations, which strengthens vocabulary retention and comprehension. Wei & Hu (2025) explained that repeated exposure to vocabulary through meaning-focused activities contributes positively to incidental vocabulary learning and long-term vocabulary retention. Similarly, Teng (2025) found that audiovisual digital input and captioned videos significantly support incidental vocabulary mastery because learners receive visual, textual, and auditory input simultaneously.

Furthermore, autonomous learning theory also supports the implementation of IDLE activities in language learning. Autonomous learning emphasizes learners' ability to independently regulate and direct their own learning processes based on their interests and preferences. In digital learning environments, students are able to select learning materials, platforms, and activities independently, which may

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increase motivation and engagement in language learning. Lee & Lee (2021) argued that informal digital learning environments encourage learners to become more autonomous and actively engaged in English learning activities outside formal classroom settings. In line with this, Soyoof et al. (2023) stated that self-directed digital learning environments contribute positively to learners' motivation, confidence, and language engagement.

Despite its potential benefits, IDLE may also present several challenges for learners. Students may experience digital distractions because online platforms frequently contain entertainment content unrelated to educational purposes, which can reduce learners' concentration and meaningful engagement with language input. Soyoof et al. (2023) explained that although IDLE promotes autonomous learning, learners may also encounter difficulties in maintaining consistent and focused learning behaviors in digital environments.

In addition, unequal access to stable internet connections and digital devices may limit students' opportunities to participate actively in digital English learning activities, particularly in developing educational contexts. Lee & Drajati (2019) also highlighted that learners' participation in informal digital learning may vary depending on technological access and digital literacy levels. Furthermore, some learners may experience superficial language exposure in which they consume English content passively without deeply processing vocabulary meaning or language use. Therefore, although IDLE provides valuable opportunities for language learning, its effectiveness may depend on learners' motivation, engagement quality, and access to digital resources.

Despite the increasing number of studies on IDLE, several limitations remain. Previous research has mainly focused on general language proficiency rather than specifically on vocabulary mastery (Lee & Sylvén, 2021). In addition, limited attention has been given to how different types of IDLE activities contribute to vocabulary development (Zou et al., 2025), and studies in the Indonesian vocational high school context are still limited. These gaps indicate the need for further investigation.

This study aims to examine the correlation between students' engagement in IDLE activities and their vocabulary mastery. The research question addressed is: "Is there a significant relationship between students' participation in IDLE activities and their vocabulary mastery?" The objective of this study is to analyze the role of IDLE to vocabulary development. The novelty of this study lies in its focus on vocabulary mastery within IDLE practices in the context of Indonesian vocational high school student.

2. Method

This study utilized a quantitative method with a correlational study design to explore the correlation between Informal Digital Learning of English (IDLE) and students' vocabulary mastery. A quantitative method is commonly utilized to find correlations between variables with numerical results and statistical analysis of statistics (Sugiyono, 2020). Therefore, this design was considered appropriate as it aimed to identify whether there is a substantial correlation between students' participation in IDLE activities and their vocabulary mastery.

This study's participants were 33 eleventh-grade students of the Marketing program at SMK Negeri 2 Purworejo. The sample was selected purposively based on the students' frequent engagement with digital media relevant to IDLE actions, for example viewing English films, listening to music, playing internet games, and interacting with English content on online media. These characteristics were considered suitable for investigating the relationship between IDLE and vocabulary mastery. The sample size was considered adequate for conducting correlational analysis in small-scale educational research.

Data were gathered utilizing two instruments: an IDLE questionnaire and a test of vocabulary. The questionnaire consisted of 20 items using a Likert scale with four points (1 = Never, 2 = Rarely, 3 = Often, and 4 = Always). The items covered various IDLE habits, including streaming English movies, hearing to English music, playing online games, and interacting with English material via social networks. The questionnaire was developed by the researcher based on the concept of IDLE proposed by Dressman & Lee (2021), which emphasizes self-guided English acquisition through digital technologies in lieu of formal school settings.

Meanwhile, the vocabulary test included of 20 questions with multiple choices with four choices in each question. Each correct answer was earned as one point, for an overall point score range of 0 to 20. The vocabulary test was designed to measure students' vocabulary mastery related to commonly used English words encountered in digital learning activities. To ensure content validity, the questionnaire and vocabulary test were reviewed by an English education lecturer to evaluate the relevance, clarity, and appropriateness of the items. The reliability of both the IDLE questionnaire and the vocabulary test was measured using Cronbach's Alpha to ensure the consistency of the instruments.

The data collection procedure was conducted by first distributing the IDLE questionnaire to the students, followed by administering the vocabulary test during school hours. Before conducting the correlation analysis, the assumptions of normality and linearity were examined to ensure that the data met the requirements for parametric analysis. Normality was tested using the Shapiro–Wilk test in Jamovi, while linearity was examined through scatter plot analysis. After the assumptions were examined, Pearson Product-Moment Correlation was used to prove the correlation between IDLE and students' vocabulary mastery. Pearson correlation is commonly used to measure the strength and orientation of the link among two variables in quantitative studies. The level of significance used

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in this study was 0.05.

3. Result

The results of this study are presented to show the correlation between students' digital learning habits and their vocabulary scores. The data were collected from 33 participants and analyzed using four sequential steps. First, a normality test was conducted to ensure the data was normally distributed. Second, the reliability of the tools was checked to make sure the questions were consistent. Third, the descriptive statistics were calculated to see the average scores. Finally, a correlation test was done to see if there is a real connection between the two variables.

Before conducting the correlation analysis, a normality test was performed to examine whether the data were normally distributed. The Shapiro–Wilk test was applied because the sample size consisted of fewer than 50 participants.

Table 1. Normality Statistics

	Questionnaire	Vocabulary Test
N	33	33
Shapiro-Wilk W	0.980	0.777
Shapiro-Wilk p	0.777	<.001

Table 1 presents the normality statistics for both variables. The questionnaire scores showed a Shapiro–Wilk value of W = 0.980 with p = 0.777, indicating that the questionnaire data were normally distributed because the significance value was higher than 0.05. In contrast, the vocabulary test scores produced W = 0.777 with p < .001, suggesting a deviation from perfect normality.

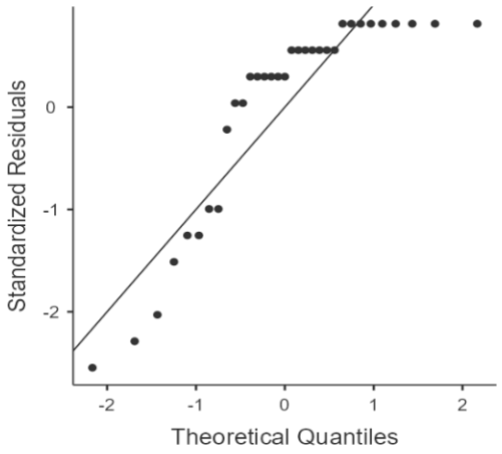

Figure 1. Vocabulary Test Q-Q plot

Although the vocabulary test scores deviated from strict normality according to the Shapiro–Wilk test, the sample size (N = 33) and the visual inspection of the Q-Q plot (Figure 1) demonstrated that the data points closely followed the diagonal reference line without severe distortions. Furthermore, in psychological and educational research, Pearson's correlation coefficient is robust to minor deviations from normality when the sample shows a clear linear trend and lacks extreme outliers, as confirmed by the scatter plot analysis (Figure 2). Therefore, proceeding with the Pearson Product-Moment Correlation was deemed appropriate and statistically valid for this data.

The Q-Q plot of the vocabulary test scores indicates that several points slightly deviated from the diagonal reference line, particularly at the lower score range. Nevertheless, the overall pattern still followed the expected linear distribution pattern. This suggests that although the vocabulary scores were not perfectly normal, the deviation was not substantial enough to seriously affect the correlation analysis.

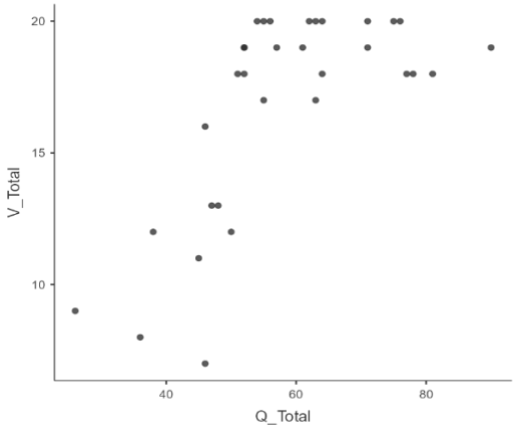

Figure 2. Scatter Plot Analysis

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Scatter plot analysis indicated a positive linear correlation between IDLE and vocabulary mastery variables. Therefore, the assumption of linearity for Pearson Product-Moment Correlation was fulfilled.

Table 2. Reliability Statistics

Scale Reliability Statistics
Questionnaire

	Cronbach's α
scale	0.945

Scale Reliability Statistics
Vocabulary Test

	Cronbach's α
scale	0.872

An analysis of reliability was performed to assess the internal consistency of the study instruments using Cronbach's Alpha. As presented in the first reliability table, the questionnaire obtained a Cronbach's Alpha coefficient of 0.945. This value indicates a high level of reliability, suggesting that the questionnaire items were internally consistent and reliable for measuring the intended construct.

Furthermore, the second reliability analysis showed that the vocabulary test achieved a Cronbach's Alpha coefficient of 0.872. This result indicates an excellent level of reliability, meaning that the vocabulary test items demonstrated very strong internal consistency. Following to these findings, both instruments were considered valid and appropriate for application in the present research.

Table 3. Descriptive statistics of variables

	Questionnaire Total	Vocabulary Test Total
N	33	33
Missing	0	0
Mean	58.0	16.8
Median	55	18
Standard deviation	14.0	3.87
Minimum	26	7
Maximum	90	20

Table 3 presents the descriptive statistics of the questionnaire scores and vocabulary test scores obtained from 33 participants. The results show that there were no missing data in either variable. For the questionnaire total scores, the

mean score was 58.0 with a median of 55, indicating that the participants generally demonstrated a moderate to high level of responses toward the questionnaire items. The standard deviation was 14.0, suggesting a relatively wide variation in participants' responses. In addition, the minimum score was 26, while the maximum score reached 90.

Meanwhile, the vocabulary test total scores showed a mean of 16.8 and a median of 18. The standard deviation was 3.87, indicating a moderate spread of scores among participants. The scores varied with a minimum of 7 to a maximum of 20. Overall, these findings indicate that most participants achieved relatively high vocabulary test scores, although some variability in performance was still observed.

Table 4. Correlation matrix of variables

		Q_Total	V_Total
Q_Total	**Pearson's r**	—	
	df	—	
	p-value	—	
	95% CI Upper	—	
	95% CI Lower	—	
V_Total	**Pearson's r**	0.670***	—
	df	31	—
	p-value	<.001	—
	95% CI Upper	0.824	—
	95% CI Lower	0.425	—

Note. * p < .05, ** p < .01, *** p < .001

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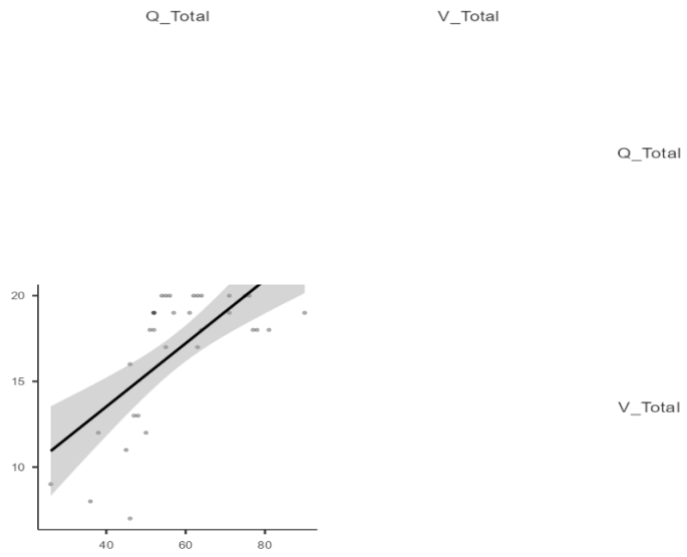

Figure 3. Scatter plot

Table 4 presents the Pearson correlation analysis between the questionnaire total scores (Q_Total) and vocabulary test total scores (V_Total). The findings showed a positive and statistically substantial relationship between the two variables, evidenced by a Pearson's correlation coefficient of r=0.670 and a significance value of p<.001. As well as, the analysis established a 95% confidence interval ranging from a lower bound of 0.425 to an upper bound of 0.824, indicating that the true correlation in the wider population remains strong and positive. This study demonstrates a strong positive correlation between questionnaire scores and students' vocabulary test performance.

Students who scored higher on the questionnaire generally attained superior vocabulary test scores. Exposure to English through digital platforms may provide students with repeated encounters with new vocabulary in meaningful and authentic contexts. Activities such as watching English videos, listening to music, reading online content, playing online games, and interacting on social media may contribute to vocabulary development because students are exposed to language input continuously outside formal classroom settings.

Furthermore, the degree of freedom (df) was 31, which was based on the total number of participants included in the analysis. The scatter plot also supports the correlation result by displaying a clear upward linear trend. Most data points were distributed consistently around the regression line, indicating a stable positive correlation between the variables. Also, no extreme outliers were identified, suggesting that the correlation was not influenced by only a few participants. This pattern strengthens the evidence that higher engagement in IDLE activities was associated with better vocabulary mastery among the participants.

4. Discussion

The findings of this study revealed a significant positive correlation between students' engagement in Informal Digital Learning of English (IDLE) and their vocabulary mastery ($r = 0.670$, $p < .001$). This result indicates that students who participated more frequently in digital English learning activities outside the classroom tended to achieve higher vocabulary test scores. The strength of the correlation demonstrates that IDLE may play an important role in supporting vocabulary mastery among vocational high school students. The results align with prior research indicating that exposure to authentic English input via digital platforms favorably influences language development, particularly vocabulary acquisition (Lee & Sylvén, 2021; Soyoof et al., 2023).

The positive relationship found in this study can be explained through the nature of IDLE itself. Unlike formal classroom instruction, IDLE makes learners with chance to interact with English in meaningful, authentic, and enjoyable contexts. Through activities such as watching YouTube videos, using TikTok, playing online games, listening to music, and engaging on social media, students are repeatedly exposed to contextualized vocabulary input that supports incidental vocabulary learning. Liu et al. (2025) stated that repeated exposure to vocabulary in authentic digital environments significantly improves learners' lexical retention and comprehension.

Similarly, Boroughani, Behshad, & Xodabande (2023) found that mobile-assisted vocabulary learning positively influenced students' vocabulary mastery and self-regulatory capacity. In addition, informal digital engagement encourages learners to notice unfamiliar vocabulary naturally while focusing on communication and entertainment purposes (Lee & Lee, 2021).

The findings also indicate that different types of IDLE activities may contribute differently to vocabulary mastery. Receptive activities such as watching YouTube videos, listening to podcasts, reading online articles, and listening to music mainly provide language input and increase learners' vocabulary exposure. Meanwhile, productive and interactive activities, including commenting on social media, participating in online discussions, online gaming communication, and creating digital content, may support deeper vocabulary processing because learners actively use English for communication purposes. Zou et al. (2025) suggested that productive digital activities often generate stronger vocabulary gains since learners are required to apply vocabulary actively rather than only receiving input passively.

Likewise, Dressman & Lee (2021) emphasized that interactive online communication encourages incidental vocabulary mastery through meaningful language use. This supports the current findings that students who frequently engaged with English content through digital media tended to achieve better vocabulary scores.

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Among various digital platforms, video-based applications such as YouTube and TikTok may be particularly effective for vocabulary learning because they combine subtitles, audio pronunciation, contextual visuals, and authentic communication simultaneously. Short-video platforms help learners understand vocabulary through multimodal input, which improves comprehension and memory retention. Setiawan & Fediyanto (2026) found that short-video media effectively supported vocabulary mastery among EFL learners because visual and audio elements enhanced students' understanding of word meaning and contextual usage.

In addition, online games and social media interactions may support vocabulary mastery by encouraging repeated language exposure and real-time communication. Fahmi & Purnawan (2025) also reported that gamification and digital applications significantly improved students' vocabulary mastery and learning engagement.

Although the findings demonstrate positive effects of IDLE, several challenges should also be considered critically. First, digital environments may create distractions that reduce learning effectiveness because students often use digital platforms for entertainment purposes rather than educational goals. Excessive exposure to social media and online entertainment may reduce students' concentration and learning quality. Pérez-Juárez, González-Ortega, & Aguiar-Pérez (2024) explained that digital distractions significantly influence students' academic performance and reduce learning focus in technology-supported learning environments.

Second, not all digital exposure leads to deep vocabulary mastery. Some learners may experience only superficial language exposure by scrolling through short content without fully processing word meanings or contextual usage. Lai & Wang (2024) emphasized that the effectiveness of online informal English learning depends on learners' purposes and the depth of their engagement with digital content. Passive exposure alone may not always result in substantial vocabulary mastery.

Third, unequal access to technology and internet connectivity may influence students' opportunities to participate in IDLE activities effectively. Students with better technological facilities may obtain greater exposure to English compared to those with limited digital access. Xu & Hu (2020) noted that although ICT-based informal language learning offers many benefits, unequal technological access and varying digital literacy levels remain important limitations in informal digital learning environments.

The descriptive statistics showed that students achieved relatively high vocabulary scores, indicating that the participants generally possessed moderate to strong vocabulary mastery. Their frequent interaction with English digital content may have contributed to this outcome. Previous studies similarly reported that frequent interaction with English media contributes positively to vocabulary

size and language comprehension (Bangun & Simanjuntak, 2022; Fan, 2020). In addition, the high reliability coefficients of both instruments strengthened the credibility of the findings, suggesting that the questionnaire and vocabulary test consistently measured the intended variables.

The positive correlation identified in this study corresponds with the principles of autonomous learning. IDLE encourages students to independently explore English materials according to their personal interests and preferences. This autonomous learning process increases learner motivation and promotes long-term language exposure. Soyoof et al. (2023) found that students who actively participated in informal digital learning environments demonstrated higher motivation and confidence in using English. Also, Le (2024) explained that autonomous vocabulary acquiring plays an essential role in increasing learners' enjoyment and engagement in vocabulary mastery.

In digital learning environments, students tend to participate more actively when they have greater control over their learning experiences. Similarly, Maulida et al. (2022) explained that self-directed digital learning enables learners to control their own pace and learning strategies, making vocabulary mastery more effective and enjoyable.

Moreover, vocational high school students may particularly benefit from IDLE because they often require practical English skills for future professional contexts. Students in vocational education need vocabulary related to communication, marketing, business, and technology. Exposure to authentic English materials through digital media may help them acquire practical vocabulary relevant to real-life situations. In this study, the participants were marketing students who likely encountered English terms related to business communication and online marketing during their digital activities. Consequently, IDLE may provide contextualized vocabulary exposure that complements formal classroom instruction.

Despite the positive findings, several factors should be considered carefully. First, this study only explored the correlation between IDLE and vocabulary mastery using a correlational design. Therefore, the results cannot confirm a direct causal relationship between the two variables. Although students with higher IDLE engagement tended to have better vocabulary mastery, other factors may also influence vocabulary mastery, such as motivation, learning strategies, prior knowledge, frequency of English exposure, and socio-economic background. Fan (2020) emphasized that vocabulary learning results are affected through multiple cognitive and tactical factors, including learners' vocabulary learning strategies and proficiency levels.

Second, this study involved a relatively small sample consisting of only 33 students from one vocational high school, which may introduce sampling bias and limit the generalizability of the findings. As a result, the findings may not fully represent wider student populations across diverse educational settings. Further

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studies should involve broader and more varied samples to enhance the applicability of the results. In addition, further research may compare students from different majors, educational levels, or geographical regions to explore whether IDLE affects vocabulary mastery similarly across contexts.

Another limitation relates to the measurement of IDLE activities. This study measured students' general engagement in digital English learning activities without distinguishing the specific effects of different types of activities. In reality, different IDLE activities may contribute differently to vocabulary learning. Watching English videos, reading online articles, listening to music, playing games, and interacting on social media may each develop different aspects of vocabulary mastery. Zou et al. (2025) suggested that productive and interactive digital activities may provide stronger vocabulary gains because learners actively use language rather than merely receiving input. Therefore, further studies should investigate which types of IDLE activities contribute most significantly to vocabulary mastery.

Furthermore, the positive findings in this study indicate important pedagogical implications for English teachers and educational institutions. Teachers should recognize that language learning no longer occurs only inside classrooms. Students already engage extensively with digital English content in their daily lives, and this exposure can be utilized as a valuable resource for vocabulary mastery. Teachers may encourage students to participate in beneficial IDLE activities, like streaming English educational videos, listening to podcasts, reading online articles, or interacting in English-speaking online communities. Integrating classroom instruction with informal digital learning experiences may help students develop vocabulary more effectively.

Teachers may also guide students in selecting appropriate digital resources that support language learning goals and help them use technology productively. Since not all digital content provides educational value, developing students' digital literacy skills is essential for promoting meaningful and sustainable vocabulary learning.

In addition, educational institutions should consider incorporating digital learning approaches into language education policies. Schools can provide support through internet access, digital learning platforms, and technology-based learning activities that encourage English exposure beyond classroom instruction. The expanding function of technology in language learning suggests that digital literacy and autonomous learning skills are becoming essential competencies for modern students.

Overall, the findings of this study strengthen previous evidence that Informal Digital Learning of English contributes positively to vocabulary mastery. Students who frequently engaged with English through digital media demonstrated higher vocabulary achievement, indicating that informal digital exposure can complement formal language instruction effectively. This study extends the growing literature

on IDLE in providing evidence from the context of Indonesian vocational high school students, which remains relatively underexplored in prior studies. The findings prove that digital learning environments provide meaningful opportunities for vocabulary acquisition and emphasize the necessity of appliying technology-supported learning toward contemporary English education.

5. Conclusion

This study investigated the correlation between Informal Digital Learning of English (IDLE) and vocabulary mastery among eleventh-grade Marketing students at SMK Negeri 2 Purworejo. Results revealed a significant positive correlation between IDLE activities and vocabulary mastery ($r = 0.670$, $p < .001$). This indicates that students who frequently participated in digital English learning outside the classroom tended to achieve better vocabulary test scores. Therefore, the research question of this study was successfully answered, showing that IDLE contributes positively to students' vocabulary mastery.

The findings suggest that exposure to English through online platforms such as YouTube, social internet, virtual games, music, and videos provides meaningful opportunities for vocabulary mastery. Through these activities, students encounter authentic English input in enjoyable and contextualized situations, which supports incidental vocabulary learning and strengthens their understanding of word meaning and usage. In addition, this study highlights that informal digital learning can complement formal classroom instruction by increasing students' exposure to English beyond school environments.

This study also provides pedagogical implications for English teachers and educational institutions. Teachers are encouraged to integrate digital learning resources into language learning activities and motivate students to contribute in beneficial IDLE practices independently. Schools may additionally support students by facilitating technology-enabled learning settings that encourage autonomous and substantive English learning activities.

However, this study has several limitations. The size of the sample was rather small and confined to one vocational high school, potentially impacting the applicability of the results. In addition, this study only focused on the correlation between IDLE and vocabulary mastery without examining causal relationships or the specific effects of different IDLE activities. Therefore, future researchers are recommended to involve wider and more varied participants, apply different research designs, and investigate specific digital activities that contribute most effectively to vocabulary mastery.

Overall, this study confirms that Informal Digital Learning of English has an essential role in supporting students' vocabulary mastery and demonstrates the

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growing significance of digital technology in contemporary English language learning.

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