

ARCHIVE OF OUR OWN AS AN INFORMAL DIGITAL LEARNING ENVIRONMENT FOR ENGLISH VOCABULARY DEVELOPMENT

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ABSTRACT

Vocabulary demands in higher education often exceed the English repertoire of Indonesian university students. Therefore, they need supplementary resources. While Informal Digital Learning of English (IDLE) is gaining traction, research on fanfiction-based practices within higher education contexts remains notably limited. Addressing this gap, this study examined how the fanfiction platform Archive of Our Own (AO3) functions as an IDLE environment for lexical development. Using an explanatory sequential mixed-methods design, data were collected from 30 university students via comprehensive questionnaires. Descriptive results indicated students primarily engaged with AO3 for enjoyment, perceiving it as highly beneficial for vocabulary growth and exposure to authentic English. Thematic analysis revealed that this lexical expansion occurred incidentally during reading, supported by autonomous strategies such as contextual inference, dictionary use, note-taking, and rereading. However, participants were tentative about AO3's impact on understanding university-level texts, suggesting its value lies more in general vocabulary enhancement than in targeted academic instruction. This study contributes to IDLE research by illustrating how fanfiction integrates intrinsic motivation, incidental word acquisition, and learner autonomy. Pedagogically, AO3 can be considered a supplementary learning resource.

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INTRODUCTION

Vocabulary knowledge is important to successful English language use because it shapes learners' ability to comprehend texts, participate in discussions, and engage with academic texts in higher education (Milton & Treffers-Daller, 2013). When students go to university, they encounter a lot of specialized vocabulary in academic texts and papers. Without adequate vocabulary knowledge, students face many challenges in understanding the content of an academic paper. Students who often struggle with vocabulary development are university students. University students' abilities and what they need differ quite significantly. It creates a gap between students' current linguistic competence and the demands for higher education academic texts (Laoli et al., 2025).

This issue of vocabulary mastery is particularly visible among Indonesian students as they enter higher education. Hartono & Prima (2021) revealed that only one-third of the participants had sufficient vocabulary for academic reading comprehension. Most of them demonstrate vocabulary knowledge below the level required for university-level texts. Thus, vocabulary mastery remains a significant challenge for Indonesian English learners. Students are reporting confusion about word choice, formal language usage, and the application of specialized academic terminology (Esperanzate, 2025). According to Hartono & Prima (2021), persistent limitations in students' vocabulary mastery for academic purposes. Such findings suggest a mismatch between the lexical demands of higher education and the vocabulary resources that many students bring into university study (Milton & Treffers-Daller, 2013).

The gap between demand and ability became more obvious when students read academic materials. Formal and traditional learning methods often do not provide enough exposure to the low-frequency (Kulakhmetova & Daulbayeva, 2024). Meanwhile, much of the vocabulary used in higher education consists of low-frequency words. The gap made the students unprepared to process the text. This challenge is worsened by limited exposure to authentic English language use outside the classroom. Indonesian EFL learners have few opportunities for learning vocabulary naturally compared to students who live in English-speaking environments.

Digital learning emerged as a promising tool for vocabulary development. It offers students access to authentic materials and diverse learning contexts (M. S. Kulakhmetova & Daulbayeva, 2024; Taufiqurrohman & Sofiana, 2025). Research shows that digital learning can improve students' vocabulary acquisition (Taufiqurrohman & Sofiana, 2025). Digital platforms increase exposure and input to varied linguistic contexts while providing immediate access to definitions. When the students repeatedly encounter new vocabulary on a digital platform, they can retain the vocabulary learned. The integration of digital literacy into language learning shows potential in Indonesia, where students demonstrate a high interest in technology-enhanced learning (Arono et al., 2021; Verawati et al., 2025).

Archive of Our Own (AO3) represents one such environment, yet it remains underexamined in the literature on vocabulary learning. It can support students' vocabulary development with the reading material. AO3 is a nonprofit, open-source library for fanfiction and transformative works (Organization For Transformative Works, 2012). It is one of the world's largest collections of user-generated creative writing. Unlike traditional educational materials, AO3 offers millions of stories in contemporary, authentic English across diverse genres and topics. It provides exposure to current language, including colloquial expressions, slang, and vocabulary. The language used in AO3 mirrors the real-world language use.

Recent research has recognized the educational potential of fanfiction platforms, particularly in vocabulary development and reading comprehension. One study found that AO3 fanfiction significantly improved students' vocabulary mastery (Surya R, 2021). The students showed increased motivation and engagement due to the platform's flexibility and accessibility. Another investigation revealed that AO3 reading materials can improve vocabulary (Zhai et al., 2024). Reading platforms like AO3 can enhance vocabulary learning through their authentic language exposure, engaging content, and flexibility.

However, there are challenges in using fanfiction for vocabulary learning. Students might encounter unfamiliar vocabulary, slang expressions, and informal language structures that initially hinder their reading comprehension (Biseko, 2025; Surya et al., 2021). The quality of user-generated content and language accuracy are not all good. There are no quality checks on AO3 that make sure each story has correct language use, which potentially exposes learners to non-standard language forms. Despite challenges, previous research shows that the benefits of authentic material exposure outweigh these factors. Moreover,

these learners develop learning strategies to overcome these problems (Austin & Santoso, 2023; Treve, 2023).

Archive of Our Own has a great strength in its authentic language use and text. Studies consistently demonstrate that authentic materials increase student motivation and engagement compared to traditional textbook materials because they reflect real-world language use and connect to personal interests (Kulakhmetova & Daulbaeva, 2024; Nurlia, 2023). The participatory nature of fanfiction communities provides social interaction and collaborative learning opportunities, potentially enhancing vocabulary acquisition through peer interaction and feedback (Ningrum & Apoko, 2025).

Despite growing recognition of fanfiction's educational potential, significant gaps remain in understanding how and why university students use AO3 for vocabulary learning. Most studies have focused on fanfiction and not looked at specific popular platforms like AO3, and few have investigated the particular motivations and experiences of Indonesian university students (Austin & Santoso, 2023; Surya R, 2021; X. Zhai et al., 2021). Mixed-methods research capturing the usage patterns and nuanced experiences of AO3 users for vocabulary learning remains limited.

This study addresses these gaps by exploring Indonesian University students' lived experiences in using AO3 for vocabulary learning. It explores students' reasons, vocabulary-learning strategies, challenges, and perceived benefits. By employing a mixed-methods design, the study aims to provide quantitative insights into usage patterns and a qualitative understanding of student experiences and motivations. The research offers new viewpoints for language educators, curriculum developers, and students in integrating authentic digital materials into formal language instruction.

RESEARCH METHOD

Research Design

This study employs an explanatory sequential mixed-methods design that involves both quantitative and qualitative methods. The research will collect quantitative data and analysis, which will be followed by qualitative data collection to support the quantitative findings (Creswell & Clark, 2017). This approach is suitable for exploring the vocabulary learning process, as it allows researchers to identify patterns and trends quantitatively while capturing students' lived experience and perceived benefits (Dawadi, 2020; RIAZI, 2021; Schoonenboom & Johnson, 2017). The mixed-methods approach covers both measurable behaviors (such as frequency of use, reading habits, and perceived effectiveness) and lived experiences (including personal motivations, perceived benefits, and challenges) (Bai, 2024; Riazi, 2021). Integrating two data types will provide a more comprehensive understanding of how and why students use AO3 for vocabulary learning (Creswell & Clark, 2017; Gamage, 2025).

Participants

Participants were selected through purposive sampling, a non-probability technique that allows researchers to intentionally select individuals who meet specific criteria relevant to the research (Saunders et al., 2023). This approach was chosen to ensure the inclusion of respondents with direct, relevant experience reading fanfiction on AO3, rather than relying on a random sample (Palinkas et al., 2015; Teddlie & Yu, 2007). To provide meaningful insights, the selection criteria required participants to be currently enrolled students at a Yavin (pseudonym) University and have experience using the Archive of Our Own for reading fanfiction. All participants, university, and location names were anonymized using pseudonyms. All subjects gave their informed consent for inclusion before participating in the study. A total of 30 students completed the survey phase. This sample size aligns with

recommendations for mixed-methods studies in educational contexts, providing sufficient data for quantitative analysis while remaining manageable for in-depth qualitative exploration (Campbell et al., 2020). To explore their reasoning, use of AO3, and vocabulary learning experiences, the participants completed closed- and open-ended questionnaires.

Instruments

This research employed both closed- and open-ended questionnaires to collect the necessary data. The survey instrument was developed through an extensive literature review and pilot testing to ensure validity and reliability. The closed-ended question was organized into three main areas. The first collected demographic information, while the second examined participants' AO3 reading behaviors to provide quantitative data on platform usage, including access frequency, duration, preferred genres, and primary reading purposes. The third area focused on motivations for vocabulary learning using 20 Likert-scale items (1 = strongly disagree to 4 = strongly agree). Grounded in motivational theory, these items measured intrinsic motivation (enjoyment, personal interest), extrinsic motivation (academic requirements, future benefits), authentic material preferences, community engagement, and perceived learning effectiveness (Rahman, 2025).

An open-ended questionnaire was designed around four key themes. It first investigated how participants discovered AO3, what initially attracted them to the platform, and how their usage patterns evolved. Second, it explored the specific learning processes and strategies students utilized when encountering unfamiliar vocabulary in fanfiction. Third, the questionnaire examined motivational factors, specifically how students' motivation to use AO3 compared with traditional learning materials and other digital resources. Finally, it gathered a comprehensive evaluation of the perceived academic and personal benefits and challenges of using AO3 for vocabulary development. This was done to explore participants' experiences in depth while maintaining sufficient structure to ensure comparability (Dawadi, 2020).

Data Analysis

The mixed-methods design will analyze the quantitative and qualitative data separately. Then the results of those data will be compared and synthesized to create a report that supports each other (Creswell & Creswell, 2017). Survey data were analyzed descriptively using Microsoft Excel. Descriptive statistics were conducted to examine frequencies, percentages, means, and standard deviations for demographic variables, AO3 usage patterns, and Likert-scale motivation items.

Open-ended survey responses were analyzed using basic content analysis to identify recurring themes and representative quotations (Xu & Zammit, 2020). The answers underwent systematic thematic analysis following Braun and Clarke's six-phase approach: familiarization with the data, initial coding, theme searching, theme reviewing, theme defining and naming, and report writing. Quantitative and qualitative findings will be reported through several strategies to display the results based on the explanatory sequential designs (Creswell & Creswell, 2017).

RESEARCH FINDINGS AND DISCUSSION

Research Findings

This section presents the findings collected from a survey of 30 students at a university. Based on a mixed-methods design, the results are organized into three parts. First, quantitative data on participant profiles and their engagement with the Archive of Our Own (AO3) platform are provided. Second, quantitative findings on students' perceptions of AO3 for vocabulary learning are presented. Third, qualitative findings on students' motivations

and experiences are analyzed thematically. Finally, an integrated synthesis of quantitative and qualitative results is offered.

Participant Profile and Platform Engagement Patterns

The study involved 30 students from various majors at Universitas Negeri Yogyakarta. Participants were not limited to language-focused fields and included English Education, Psychology, Civil Engineering, Indonesian Literature, Communication Science, Chemistry, and other disciplines. The sample mainly consisted of female students aged 18 to 23 years. The wide range of students who read English-language fanfiction on AO3 indicates that this activity extends beyond language majors. Table 1 summarizes participant demographics and AO3 usage patterns.

Table 1
Participant demographics and AO3 usage patterns

Characteristic	Category	%	Characteristic	Category	%
Age	18 - 19	33.3	Reading Frequency	Every day	23.3
	20 - 21	23.3		A few times a week	33.3
	22 - 23	26.7		Rarely	6.7
Gender	Female	70.0	Hours Per Week	Less than 2 hours	26.7
	Male	6.7		2 - 4 hours	33.3
	Preferred not to say	13.3		5 - 7 hours	20.0
				More than 7 hours	13.3

As shown in Table 1, reading frequency varied. The most common frequency was a few times per week (33.3%), followed by every day (23.3%). Time spent on the platform also varied, with the largest group reporting 2–4 hours per week (33.3%). These patterns suggest that AO3 serves as a flexible resource: some students use it for casual entertainment, while others engage more intensively.

Quantitative Findings on Perceptions of AO3 for Vocabulary Learning

Participants' perceptions of AO3 as a vocabulary-learning resource were generally positive, especially regarding enjoyment, vocabulary exposure, and motivation. Table 2 presents descriptive statistics for six perception items.

Table 2
Descriptive statistics for perceptions of AO3 in vocabulary learning

Statement	Mean	Std. Deviation
I read AO3 because it is enjoyable.	4.76	0.57
Reading AO3 helps me learn new English vocabulary.	4.70	0.53
Reading AO3 motivates me to keep improving my English.	4.43	1.04
AO3 makes vocabulary learning easier compared to textbooks or apps.	4.33	0.88
Reading AO3 gives me authentic examples of English in use.	4.40	0.81
AO3 helps me understand university-level English texts.	3.73	1.20

The highest-rated statement was enjoyment ($M = 4.76$), followed by vocabulary learning ($M = 4.70$). Participants also rated AO3 positively for authenticity ($M = 4.40$), perceived ease ($M = 4.33$), and motivation ($M = 4.43$). In contrast, the item on academic transfer received the lowest mean ($M = 3.73$) and the largest standard deviation ($SD = 1.20$). This pattern indicates that students clearly valued AO3 for general vocabulary development and exposure to authentic language, but were less certain that such reading directly prepared them for university-level academic texts.

Qualitative Findings on Students' Motivations and Experiences

Analysis of open-ended survey responses revealed four themes, organized logically from motivation to learning process to strategies and finally to academic implications.

Intrinsic Motivation and Entertainment

Students reported using AO3 primarily for entertainment and personal satisfaction rather than academic learning. The platform serves as an enjoyable space to explore fandom interests. Students stated they read AO3 because "It's fun," "Because it's enjoyable," and simply to "enjoy." Positive feedback also praised the platform's user-friendly interface, free access, effective filtering system, large content library, and better features compared to other websites. One student summarized the appeal: "I loveeee the tag system so much." This theme supports the view that AO3 is a reading platform whose educational benefits emerge as a secondary gain.

Vocabulary Acquisition as an Incidental Outcome

Participants consistently reported vocabulary acquisition as an unplanned but welcome consequence of entertainment reading. Learning is not the main focus but a natural outcome of engaging with fanfiction. One participant explained they did "not purposely read here because they want to learn some vocabulary, but to enjoy literature and get a bonus where they learn new vocabulary." Another respondent captured this dynamic succinctly: "I am addicted to AO3. Vocabulary acquisition is just the byproduct." A third student noted that "it helps me expand my vocabulary without it feeling like studying." These responses indicate that vocabulary learning occurs incidentally through intrinsically motivated reading.

Diverse and Autonomous Strategies for Vocabulary Engagement

Students reported using independent methods to learn new vocabulary during incidental learning. These self-directed methods reflect metacognitive awareness and can be classified into passive and active engagement levels (Septiani et al., 2024). Passive strategies relied on exposure and contextual inference. Students described reading material multiple times until unfamiliar words became familiar, often inferring meanings from context. One participant described an intuitive process: "I re-read it, I could figure out what those words mean... instinctively."

Active strategies involved more deliberate actions, including immediate word lookups via Google Translate, recording information in notebooks or note-taking apps, and practicing new words through conversational exercises. Students also utilized third-party applications, such as taking a "screenshot of the part and searching for more vocab." One student explained: "I use an app called ReadEra. So I download my AO3 fanfics, and read them there, and I can add little notes or look up words in the dictionary." This variety of strategies highlights learners' agency in creating personalized approaches.

Perceived Authenticity and Academic Transfer

Participants valued AO3 because the language felt "real," emotionally engaging, and connected to stories they cared about. They contrasted this with textbooks, which some perceived as less personally meaningful. However, not all respondents interpreted authenticity in the same way. Some appreciated colloquial expressions, jokes, and slang, while others implicitly recognized that such language did not always resemble the English used in university reading. This tension aligns with the quantitative finding that academic transfer was the least strongly endorsed among the perception items. Thus, authenticity functioned as a motivational strength, but it did not automatically imply equivalence with academic discourse.

Convergence around enjoyment as the condition for sustained exposure. Both data types indicated that enjoyment was the primary driver of AO3 use, which, in turn, enabled repeated

exposure to English. Complementarity of vocabulary learning and motivation. Quantitative results showed high ratings for vocabulary learning and motivation, while qualitative responses explained that these outcomes were tied to narrative involvement, repeated exposure, and self-selected strategies. Tension around academic transfer. Both strands suggested that AO3 supports general lexical development, but neither justified a strong claim about direct preparation for academic reading. The quantitative item on university-level texts received the lowest mean and highest variability, while qualitative comments distinguished between conversational/narrative language and academic discourse. This integrated reading strengthens the explanatory sequential designs as the qualitative strand does not merely repeat the survey results but explains why students valued AO3 and where they themselves perceived its limits.

Discussion

The findings demonstrate the intersection of Informal Digital Learning of English (IDLE), incidental learning, and learner autonomy with how AO3 indirectly teaches academic vocabulary. Archive of Our Own fits with IDLE as students participate in English-language reading voluntarily, outside formal instruction, and through digitally mediated practices shaped by personal interest. In this study, enjoyment was the main factor that sustained exposure. This pattern is consistent with self-determination theory, which emphasizes the role of intrinsic motivation in maintaining long-term engagement (Ryan & Deci, 2020). It is also in line with work on IDLE, showing that digitally mediated, interest-driven participation can support learners' willingness to engage with English beyond the classroom (Lee et al., 2024).

This research extends previous discussions of fanfiction as authentic materials by showing that vocabulary development occurs in AO3. Though participants rarely described reading with explicit lexical targets in mind. Instead, they encountered unfamiliar words while following narratives they valued. This is important because it helps explain why AO3 may sustain vocabulary learning even when it is not designed as an instructional platform. The role of fanfiction here is not simply to provide more text, but to provide meaningful, affectively engaging text that encourages repeated reading. In that sense, the present findings support earlier claims about the motivational value of authentic materials (Austin & Santoso, 2023; Fauzia Sari & Sari, 2016; Fortuna & Fortuna, 2025; Lees & Webb, 2018; Nurlia, 2023). This also highlights students' behavior from personal investment in characters, plots, and fandom communities that appear to make lexical encounters more memorable and less burdensome.

Learner autonomy is fostered strongly on AO3 through strategic behavior. Participants did not depend on teacher guidance to handle unfamiliar vocabulary. Students drew on contextual inference, rereading, translation tools, and note-taking according to their immediate goals. This supports the view that autonomy in language learning involves not only independence from formal instruction but also the capacity to select, adapt, and regulate strategies in context (Najeeb, 2013; Raoofi et al., 2013). The responses also repeated on metacognitive vocabulary strategies, suggesting that informal reading environments can still involve deliberate learning behaviors when comprehension becomes difficult (Septiani et al., 2024). From a cognitive perspective, this matters because vocabulary that is processed repeatedly in context and linked to meaningful narrative content may be retained more effectively than vocabulary encountered through decontextualized memorization alone (Rodríguez-Fornells et al., 2009; Vahed & Rodríguez, 2021).

At the same time, the study does not justify a strong claim that AO3 directly develops academic vocabulary or academic reading proficiency. The lowest and most variable quantitative response concerned the usefulness of AO3 for understanding university-level

English texts, and the qualitative responses similarly suggested that students valued AO3 primarily for natural, conversational, and narrative language. This distinction is theoretically important. Authentic material and language should not be equated with academic text. The discourse patterns of fanfiction differ from the lexical density and rhetorical organization of academic texts (Biber & Gray, 2010). Therefore, although AO3 may help expand general vocabulary, improve reading endurance, and increase confidence in handling English texts, its contribution to academic literacy is likely indirect rather than immediate.

This more cautious interpretation also provides a point of dialogue with earlier research. Whereas some studies describe fanfiction reading as producing broad literacy or vocabulary gains (Argawati & Suryani, 2020; Zhai et al., 2024). The present study supports a narrower and more defensible claim. Because the evidence is based on self-report rather than pre- and post-testing, and because the least strongly supported item concerned university-level texts, AO3 should be understood primarily as a low-stakes environment for extensive reading, lexical exposure, and self-regulated engagement rather than as a direct substitute for formal vocabulary learning. This means that AO3 for education is best positioned as a supplementary resource. Teachers might encourage optional AO3-based extensive reading, followed by reflective vocabulary logs, discussion of register differences, or activities that compare narrative vocabulary with academic vocabulary.

Several limitations should frame the interpretation of this study. The sample was small and purposively drawn from a single university, which limits generalizability. The data were also self-reported, so the study captures students' perceptions and practices rather than objective vocabulary gains. In addition, the quantitative data relied on descriptive statistics, meaning that the study cannot establish relationships among variables or make causal claims about learning outcomes. Future research could therefore combine self-report data with vocabulary tests, reading logs, or comparative designs that examine how different types of digital reading contribute to lexical development over time.

CONCLUSION

This study examined how university students used Archive of Our Own (AO3) for English vocabulary learning within an Informal Digital Learning of English (IDLE) framework. The findings suggest that AO3 is valued primarily as an enjoyable, interest-driven reading environment in which vocabulary learning occurs incidentally rather than through explicit study. Students perceived the platform as helpful for encountering new words, engaging with authentic English, and sustaining motivation, and their open-ended responses showed that they employed a range of autonomous strategies when dealing with unfamiliar vocabulary.

The study contributes to the literature by clarifying how fanfiction reading on AO3 can be theorized as a form of self-directed digital language engagement in which intrinsic motivation sustains participation, incidental learning supports lexical growth, and learner autonomy shapes strategy use. At the same time, the results do not support an unqualified claim that AO3 directly develops academic vocabulary or substitutes for formal academic reading instruction. Its contribution appears more plausibly located in general lexical development, extensive reading habits, and learners' confidence in engaging with English outside the classroom.

These conclusions should be read in light of the study's exploratory design, small purposive sample, and reliance on self-reported data. Practically, AO3 may be considered a supplementary resource for vocabulary development when accompanied by guidance about register, genre, and reflective strategy use. Future studies can strengthen this line of inquiry by incorporating larger samples, multi-site designs, direct measures of vocabulary growth,

and mixed-methods procedures that test more explicitly how informal fanfiction reading interacts with formal language learning.

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INFORMED CONSENT STATEMENT

Participation in this study was voluntary. Prior to participation, all participants were provided with clear information regarding the study's objectives, procedures, potential risks, and anticipated benefits. Participants were assured of the confidentiality of their personal information and informed that all data collected would be used solely for research purposes. They were also informed of their right to withdraw from the study at any time without penalty. Informed consent was obtained from all participants prior to data collection.

DATA AVAILABILITY STATEMENT

The data generated and analyzed in this study are not publicly available because they contain information that could compromise participant privacy and confidentiality. Restricting public access ensures compliance with ethical research principles and applicable data protection regulations. Nevertheless, the dataset may be made available to qualified researchers upon reasonable request for verification or further analysis. Any such request will be reviewed on a case-by-case basis and will require prior approval from the appropriate institutional ethics authority.

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