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EFL postgraduate students' adoption and experiences of chatbot-assisted academic writing

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Recently, chatbots have undoubtedly become valuable tools for foreign language learning, particularly in the context of academic writing. They influence the writing process, writing output, and language acquisition; however, their use also raises significant ethical and pedagogical concerns. This qualitative study employs the Technology Acceptance Model (TAM) framework to investigate the adoption and perceptions of chatbot-assisted academic writing among English as a Foreign Language (EFL) learners. Data were collected from 25 EFL learners enrolled in an English Language Education (ELE) postgraduate program through surveys and interviews. The study examines the use of chatbots across all phases of academic writing and explores the characteristics that contribute to their efficacy. The data was analyzed following the three stages of qualitative analysis by Miles et al. (2014), i.e., data condensation, data display, and drawing and verifying conclusions. Specifically, the study examines EFL learners' adoption and perceptions of chatbot-assisted writing based on perceived ease of use, perceived usefulness, attitudes toward usage, intention to use, actual use, and external variables. By investigating the experiences and attitudes of postgraduate EFL learners, the study aims to provide insights into the extent to which chatbots facilitate or potentially hinder the development of academic writing skills. The findings indicate that postgraduate students generally hold positive perceptions of chatbots, considering them useful tools for enhancing writing quality and efficiency. Future research could explore the long-term effects of chatbot-assisted writing and the complexities of student engagement and interaction with chatbot technology in various academic writing contexts.

Keywords: chatbots, writing instruction, academic writing, EFL learners, technology adoption

INTRODUCTION

Artificial intelligence (AI) has advanced rapidly, resulting in contemporary manifestations and modifications in many different aspects of education (Jain & Jain, 2019). A notable example of this progress is the launch of ChatGPT by OpenAI on November 30, 2020. The introduction of Generative AI (GenAI) to the public was subsequently followed by other companies such as Google with Bard, Microsoft with Bing, and several others. These chatbots are currently employed to perform tasks such as providing information and responding to commonly asked questions (Smutny & Schreiberova, 2020). They can engage in conversations and interact with users by processing and responding to inputs in natural language. Given their potential benefits, AI has been increasingly integrated into various fields, including language learning and education.

The use of AI has recently expanded significantly across various sectors, including education. This rapid development has introduced innovative applications and brought transformative changes to different facets of the educational field (Jain & Jain, 2019). In academic settings, students perceive chatbots as valuable writing assistants that can enhance their writing skills by offering feedback on style, coherence, and grammar, leveraging their programmed capabilities (Aljanabi et al., 2023). As a result, the integration of chatbots in English language learning has gained increasing attention due to their innovative nature and engaging appeal. In particularly, academic writing instruction can benefit significantly from chatbot-assisted learning. These tools support researchers and students by assisting with content organization, initial draft creation, and revisions (Salmi & Setiyanti, 2023). Consequently, this technological innovation has revolutionized foreign language learning and instruction by significantly influencing language teaching, learning processes, and skill development. Language learners now have access to virtual assistants that not only aid them in writing in a foreign language but, in some cases, generate written content on their behalf.

Previous studies have emphasized that chatbots can support foreign language writing and enhance learners' academic writing skills. However, their use in academic writing also raises several concerns, particularly regarding the reliability of the information provided and the potential overreliance on technology for writing in a foreign language. More specifically, concerns have been raised about excessive dependence on AI, risks of plagiarism, and the necessity for fostering critical thinking skills (Yuan et al., 2024). Despite their potential benefits, integrating chatbots into academic writing practices presents several challenges. Emma et al. (2024) highlight the risks associated with AI technology, such as the generation of spam and malicious content, which pose ethical concerns for both users and developers. Additionally, because chatbots rely on statistical learning patterns derived from large datasets, they may inadvertently reinforce biases and stereotypes present in the data (Dale, 2017; Lucy & Bamman, 2021). Furthermore, language learners may struggle to adapt to chatbot interfaces or feel that interactions with chatbots cannot fully replace the guidance and support provided by human instructors or tutor.

To address these challenges, previous studies have emphasized the importance of teaching students effective prompting strategies, enabling them to utilize chatbots efficiently while also recognizing their limitations (Huang et al., 2023). As chatbots provide opportunities for personalized learning and immediate feedback, language educators must carefully consider their integration into the curriculum to maintain a balance between technological assistance and traditional language pedagogy (Pitychoutis, 2024; Yuan et al., 2024). Furthermore, to facilitate the effective integration of chatbots into language learning, it is essential to examine students' attitudes and perceptions, particularly in terms of how these tools influence their academic writing and overall learning experience.

Language learners have diverse perspectives on technology; while some perceive it as a valuable tool, others remain skeptical due to perceived challenges and limitations (Irwanto, 2002). Their perceptions of technological innovations, such as Generative AI (GenAI), along with their concerns, experiences, and attitudes toward the technology, influence their willingness to adopt it. Consequently, these perceptions also determine the extent to which the tool is integrated into the learning process (Chan & Hu, 2023). This is particularly relevant in the context of technology integration in language learning, where students' perceptions as users play a crucial role (Sumakul et al., 2022). Interest in GenAI for language education has grown significantly, as learners are more likely to engage with technology when they find it user-friendly and beneficial for their academic needs. However, research on the use of chatbots for academic writing and students' attitudes toward them, particularly among English as a Foreign Language (EFL) postgraduate students, remains limited.

Most existing research has primarily focused on the general educational applications of chatbots or their use in broader language learning contexts, often overlooking the specific challenges and needs that EFL learners encounter in academic writing. In particular, EFL postgraduate students face unique difficulties, such as mastering advanced academic writing conventions, developing a critical understanding of research topics, and effectively structuring academic arguments. These challenges underscore the importance of exploring how chatbots can support these learners in enhancing their writing skills. Moreover, there is limited empirical evidence on language learners' perceptions of the ease of use, usefulness, intention to use, and overall experience of employing chatbots for academic writing development. This is particularly relevant within the framework of the Technology Acceptance Model (TAM), which explains how users accept and adopt technology based on perceived usefulness and ease of use. Addressing this gap is essential, as understanding EFL postgraduate students' perspectives can offer valuable insights for educators, curriculum designers, and technology developers, ultimately helping to refine chatbot technologies to better meet the specific needs of this group.

Therefore, examining EFL postgraduate students' adoption and perceptions of chatbot-assisted academic writing is critical for informing best practices and facilitating the effective integration of GenAI technologies in academic writing instruction. This study seeks to answer the following research questions:

1. How do postgraduate English as a Foreign Language (EFL) students incorporate chatbots into the various stages of academic writing?
2. How do postgraduate EFL students perceive the use of chatbots in academic writing within the framework of the Technology Acceptance Model (TAM)?

METHODS

Research Design

The study employed a descriptive qualitative approach, using the Technology Acceptance Model (TAM) as its theoretical framework. Developed by Davis (1989), ATM is one of the most widely applied models in information technology research, particularly for examining how users accept and use new technologies. According to TAM, two key factors – perceived ease of use and perceived usefulness – play a critical role in determining users' intention to adopt a given technology. In the context of this study, TAM is particularly relevant because it provides framework for understanding how language learners perceive and adopt chatbots in academic writing.

In this study, 'adoption' refers to the intention to use chatbots, which is influenced by students' perceptions of the tool's usefulness and ease of use in improving their academic writing. 'Perception' refers to how students evaluate chatbots in terms of their effectiveness in supporting writing tasks, including the clarity, accuracy, and relevance of the feedback provided. These factors were central to the analysis of chatbot adoption in academic writing, as they influence whether students choose to incorporate these tools into their writing practices.

The qualitative approach adopted in this study emphasizes an in-depth understanding of participants' experiences with chatbots rather than aiming for broad generalizations. This approach facilitates a deeper exploration of how and why chatbots are perceived as useful – or not – in academic writing tasks, as interpreted through the lens of the TAM framework (Creswell, 2009).

Research Setting and Participants

The participants of this study were 25 fourth-semester EFL postgraduate students enrolled in the Department of English at a public university in East Java, Indonesia, who had been using chatbots as academic writing assistants. The rationale for selecting postgraduate students as research participants was their frequent engagement in academic writing tasks, such as essays, research reports, and journal articles, as well as their ability to provide informed perspectives on the use of chatbots as an academic writing tool. Additionally, participants were selected based on their willingness to participate, the variety of chatbots they used (e.g., ChatGPT, Grammarly, or Quill Bot), and their varying levels of experience in utilizing chatbots for academic writing.

Table 1 presents the demographic profile of the participants, including their age, gender, length of EFL study, and duration of academic writing experience in the target language.

TABLE 1 | Demographic profile of the participants (N = 25)

Characteristics	Detail	f	%
Age	20 - 24 years old	4	16
	25 - 29 years old	18	72
	30 - 35 years old	3	12
Gender	Male	4	16
	Female	21	84
Length of EFL Learning Experience	≥ 20 years	4	16
	≥ 15 years	11	44
	< 15 years	10	40
Length of Academic Writing Experience	≥ 10 years	7	28
	≥ 5 years	11	44
	< 5 years	7	28

Data Collection Instruments

In this study, data in the form of EFL students' perceptions and adoption of chatbots in academic writing were collected through a survey and interviews. The survey employed a questionnaire designed to examine students' adoption and perceptions of chatbot-assisted academic writing. The questionnaire included multiple-choice items, 4-point Likert scale items, short-answer questions, and long-answer questions. It was divided into four sections: (1) demographic information and experience with chatbots in language learning and academic writing, (2) adoption of chatbots at different stages of academic writing, (3) perceptions of chatbot use in academic writing, and (4) consent for

interview participation.

To ensure the validity of the instrument, the researcher sought validation from two expert lecturers – one specializing in educational technology and the other in academic writing. Both experts provided feedback on the clarity, relevance, and alignment of the instrument with the research objectives. Additionally, a pilot test was conducted with a small group of respondents to evaluate the clarity and coherence of the questionnaire and interview questions, ensuring the instrument's reliability and cultural appropriateness. Based on the pilot test results, several adjustments were made to enhance the clarity and relevance of the instrument before the main study.

The semi-structured interviews were designed to expand on the questionnaire responses, focusing on clarifying participants' demographic profiles, exploring their general experiences using chatbots in academic writing, examining their adoption of chatbots at various stages of the writing process, and eliciting their perceptions of chatbot use. Participants were also asked to provide further descriptions, explanations, and comments on emerging issues. Both the questionnaire and interview guide were developed based on the six main components of the Technology Acceptance Model (TAM) proposed by Davis (1989) for modeling technology adoption. As shown in Figure 1, the TAM indicators used to develop the instruments include: (1) Perceived Ease of Use, (2) Perceived Usefulness, (3) Attitudes Toward Using Technology, (4) Intention to Use Technology, (5) External Variables, and (6) Technology Usage.
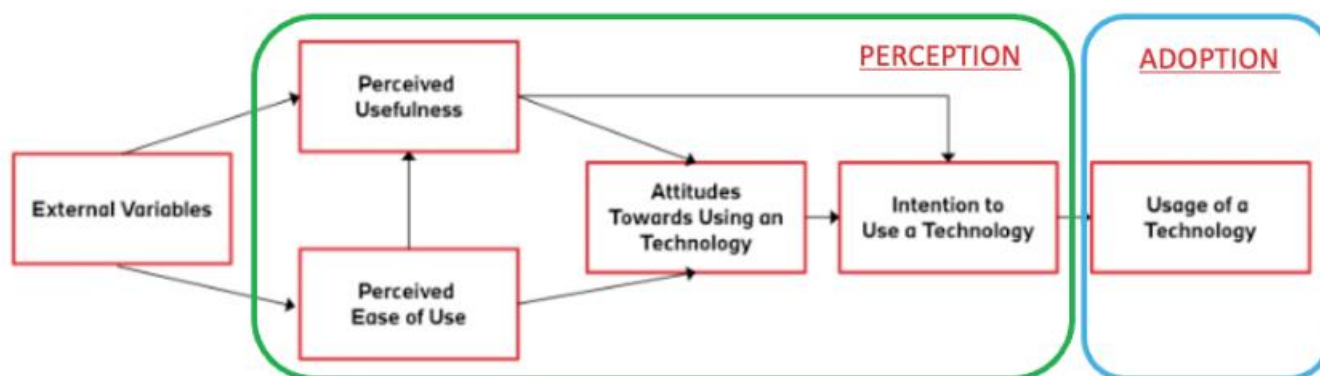
FIGURE 1 | The Technology Acceptance Model (TAM) by Davis (1989)

Data Collection Procedure

The questionnaire was distributed to the respondents via Google Form – with a two-week period allocated for responses. Only students who utilized chatbots as academic writing assistants were eligible to complete the form. Following the initial analysis of the questionnaire data, the researchers conducted face-to-face or online interviews with five selected respondents. These participants were selected based on their willingness to participate, the variety of chatbots they used (e.g., ChatGPT, Grammarly, or Quill Bot), and their differing levels of experience in utilizing chatbots for academic writing. The interviews aimed to clarify questionnaire responses that were limited, ambiguous, or required further elaboration. The mode of conducting the interviews – whether face-to-face or online – was determined by the respondents' preferences. After reviewing the initial interview data, the researchers conducted follow-up interviews with the same participants to obtain a more comprehensive dataset.

Data Analysis

Quantitative data collected from the questionnaire were tabulated and analyzed descriptively using frequency, percentage, and mean values. The results were then presented in summary tables. Qualitative data were analyzed using the three-stage process outlined by Miles et al. (2014): (1) data condensation, (2) data display, and (3) conclusion drawing and verification. In this study, data condensation involved organizing and refining the raw data from questionnaires and interviews by categorizing it into themes related to chatbot usage, perceptions, and adoption in academic writing. The researchers summarized and coded the data to highlight key insights relevant to the research objectives. Data display was achieved through visual representations, such as tables and thematic charts, to present the findings clearly and facilitate pattern recognition. In the final stage—drawing and verifying conclusions—the researchers analyzed the displayed data, identified overarching themes, and cross-verified the findings through triangulation, ensuring that the conclusions were well-supported and aligned with the study's objectives.

RESULTS AND DISCUSSION

Before addressing the two research questions – (1) How do English as a Foreign Language (EFL) learners adopt chatbots at various stages of academic writing? and (2) How do they perceive the use of chatbots in academic writing from the perspective of the Technology Acceptance Model (TAM) framework? – it is essential to first revisit the purpose and significance of these inquiries. Understanding how EFL learners adopt and perceive chatbots is crucial for identifying their support needs in academic writing. Chatbots have the potential to enhance the writing process by assisting at different stages, such as brainstorming, drafting, and revising. Therefore, examining learners' usage patterns and perceptions of chatbots can provide valuable insights into effective strategies for integrating such tools into academic writing instruction and support. The following section presents the chatbots utilized by the respondents in this study and their patterns of use in supporting academic writing.

Chatbots Usage in Academic Writing

The respondents reported using several types of chatbots in academic writing. As shown in Table 2, eleven different

chatbots were identified, each serving distinct purposes. The most widely used chatbots was ChatGPT, followed by Quill Bot, Grammarly, and Scite.ai. The remaining seven chatbots were used less frequently in the academic writing process.

TABLE 2 | Types Chatbot Used by the Respondents (N = 25)

No.	Chatbot	f	%	Functions
1	ChatGPT	17	68	Engage in conversation, answer questions, and provide information on a wide range of topics.
2	Quill Bot	8	32	AI-powered tool that helps in paraphrasing, rewriting, and enhancing text clarity for improved readability and comprehension.
3	Grammarly	3	12	AI-driven writing assistant that helps users improve their writing by checking grammar, punctuation, and style
4	Scite.ai	3	12	Provides insights and contextual analysis of scientific papers, aiding in literature review and citation management.
5	Perplexity	2	8	Conversational AI designed to provide precise answers and explanations, often used for specialized or complex queries
6	Gemini	2	8	Offers context-aware writing suggestions, assisting in refining and enhancing text clarity
7	Windows Copilot	1	4	Enhances productivity by integrating system features, offering quick access to tools such as grammar checkers and citation managers
8	Google Assistant	1	4	A virtual assistant developed by Google that helps users perform tasks, set reminders, and retrieve information through voice commands
9	Google Translate	1	4	A machine translation service by Google that facilitates text, documents, and website translation between multiple languages
10	IBM Watson Assistant Primarily	1	4	An AI assistant designed for businesses applications, providing customer support, answering queries, and automating routine tasks
11	U Dictionary	1	4	AI-powered translation and dictionary application that offers definitions, translations, and language learning resources

The data presented in Table 2 indicate that while ChatGPT is the most widely used chatbot, there is also significant interest in specialized tools such as Quill Bot and Grammarly for writing assistance. Interview findings on the use of chatbots at different stages of academic writing revealed that ChatGPT and Perplexity were the most preferred options among users. Additionally, the interview data suggested that while both ChatGPT and Perplexity serve similar functions in academic writing, Perplexity is perceived as more user-friendly and more accurate in providing academic writing support.

TABLE 3 | Description of Chatbot Usage (N = 25)

Questionnaire Items	f	%
I feel comfortable using chatbots to support the language learning process.		
Uncomfortable	3	12
Comfortable	20	80
Extremely comfortable	2	8
Using chatbots in language learning has made learning more convenient and accessible.		
Strongly disagree	0	0
Disagree	2	8
Agree	19	76
Strongly agree	4	16

Questionnaire Items	*f*	%
I use more than one chatbot in academic writing.		
Yes	20	80
No	5	20
How often do you use chatbots as a writing assistance in academic writing?		
Rarely	3	12
Sometimes	4	16
Often	16	64
Always	2	8
Do you have any preferences for the type of chatbot you use to assist you in the academic writing process?		
Yes	19	76
No	6	24

In terms of chatbot use, frequency, impact, and user preferences, the analysis of questionnaire data presented in Table 3 indicates a positive reception of chatbots in language learning. The majority of respondents (80%) reported feeling comfortable using chatbots, while 8% expressed being extremely comfortable utilizing them for academic writing support. Furthermore, 92% of participants agreed or strongly agreed that chatbots have made learning more convenient and accessible. Regarding academic writing, 64% of respondents frequently used chatbots for writing assistance. Notably, 80% of the total respondents reported using more than one chatbot for academic writing, with 64% using them often and 8% always relying on chatbots. These findings suggest that chatbot technology is widely adopted among postgraduate students. The popularity of chatbots was further explained by the respondents in the interviews, as illustrated in the following excerpts, which highlight chatbots' convenience, accessibility, and time-saving capabilities as key factors influencing their use in academic writing.

> *The reason I used Chatbot for my academic writing is to maximize the desired results and also to simplify and save time. (S2)*

> *Because it helps me correct grammar, is easy to access, and shortens the completion time. (S3)*

> *As long as we can ask the right questions or focus correctly, using the chatbot becomes comfortable. (S5)*

Overall, the findings confirm positive perceptions of chatbot use in both language learning and academic writing. Participants reported feeling comfortable using chatbots, found them convenient, and frequently utilized multiple chatbots to maximize their effectiveness. Their preference for specific chatbot types further highlights the importance of tailoring these tools to meet individual needs. As chatbot technology continues to evolve, integrating user insights will be crucial for enhancing the design and functionality of future educational and writing assistance tools.

How do postgraduate EFL students adopt chatbots at different stages of academic writing?

The adoption of chatbots across various stages of academic writing, as presented in Table 4, demonstrates high levels of utilization in the initial six stages: planning, literature review, drafting, revising, editing, and proofreading. However, their usage is notably lower in the formatting, citation, and referencing stages. The highest levels of chatbot use occur during the drafting, revising, and editing stages, with mean scores of 2.96, 2.96, and 3.20, respectively. The overall average mean score across all eight stages of academic writing is 2.75, indicating a generally high level of chatbot adoption in academic writing among postgraduate EFL students.

TABLE 4 | Chatbot Adoption in Academic Writing Stages (N = 25)

Writing Stage	Very low		Low		High		Very high		Mean ($\bar{x}$)	Category
	f	%	*f*	%	*f*	%	*f*	%		
Planning	1	4	5	20	17	68	2	8	2.80	High
Reviewing Literature	2	8	10	40	9	36	4	16	2.60	High
Drafting	1	4	3	12	17	68	4	16	2.96	High
Revising	0	0	5	20	17	68	3	12	2.92	High
Editing	0	0	2	8	16	64	7	28	3.20	High
Proofreading	1	4	8	32	13	52	3	12	2.72	High
Formatting	2	8	14	56	6	24	3	12	2.40	Low
Citing and referencing	2	8	12	48	10	40	1	4	2.40	Low
Average	**1.125**	**0**	**7.375**	**12**	**13.125**	**76**	**3.375**	**12**	**2.75**	**High**

Planning Stage

Overall, chatbots are perceived as highly supportive tools in the planning stage of academic writing. As shown in Table 4, 68% of respondents reported a high level of chatbot adoption during this stage, while 8% fell into the very high category. With a mean score of 2.80, this finding indicates a strong reliance on chatbots for planning academic writing. Supporting the survey results, the interview data further highlight the value of chatbots in the planning stage, as respondents found them helpful in identifying research gaps, formulating research questions, brainstorming ideas, and structuring content. Specifically, participant S3 limited chatbot use to particular tasks, such as title generation, while participant S4 utilized them to craft engaging introductions.

The following excerpts from the interviews illustrate these findings:

Of course, it helps me to find the gap for my research and formulate the RQ efficiently and timelessly. (S1)

For creating writing plans or timelines for my academic assignments, it's almost always used for brainstorming and outlining. For brainstorming, I usually ask for ideas on how to structure paragraphs for a specific topic, especially what the topic sentences should be. (S2)

I rarely use chatbots at the planning stage, but I usually use them to determine the title. (S3)

In the planning stage, I usually ask about opening sentences for writing new paragraphs and subsequent paragraphs. (S4)

Literature Review Stage

The adoption level of chatbots during the literature review stage indicates varied usage patterns. As shown in Table 4, 48% of respondents reported low or very low adoption levels, while the remaining respondents fell into the high or very high categories. The mean score of 2.60 suggests a generally high adoption level despite some reservations. Interview data revealed a mixed approach to chatbot use in this stage of academic writing. While some students relied on tools such as Perplexity, Scite.ai, and IBM Watson Assistant to find credible sources and summaries, others avoided chatbots due to their limitations in accessing specific articles or citations. These findings suggest that students prefer chatbots capable of providing access to reliable academic sources, highlighting the need for further improvements in their integration into research practices.

The following excerpts from the interviews illustrate these findings:

Sometimes, I find it hard to find the latest and newest references for my topic. Therefore, I used Chatbot for finding the literature review and I used perplexity. (S1)

Yeah, but for literature, I tend to use Perplexity and Scite.ai. Scite.ai really provides articles that are published in journals, not just regular websites. (S2)

Oh no, I've never used a chatbot because ChatGPT can't provide that. For example, when I asked about reviewing, I once asked, "Can you give me an article to read about critical thinking?" If it can't provide sources, it just gives me general information about the topic

without any citations. (S3)

For reviewing literature, I used Scite.ai. Scite.ai is the assistance helps me to find journals in a more convenient way that google scholar. (S4)

I use IBM Watson assistant to gather information, search for articles and sources related to specific topics. It provides summaries, presenting summaries of relevant articles or studies. (S5)

Drafting Stage

The adoption level of chatbots during the drafting stage indicates a strong preference for their use. As shown in Table 4, 84% of respondents reported high or very high adoption levels, with a mean score of 2.96, confirming a high overall adoption rate. Interview data revealed mixed attitudes toward chatbot-assisted drafting. Some respondents (S1, S2, S3) preferred to draft independently, emphasizing the importance of originality and critical thinking. Conversely, others (S4, S5) utilized AI tools such as Windows Copilot and IBM Watson primarily for idea generation and content organization, particularly in the early stages of writing. These findings suggest that while chatbot adoption for drafting remains somewhat limited, there is a growing openness to AI-assisted writing support.

The following excerpts from the interviews illustrate these perspectives:

I never use chatbots for drafting academic writing because I prefer the ideas or sentences to come directly from my own thoughts. (S1)

Usually, I just need the topic sentence, and then I come up with the rest of the sentences on my own. Because ChatGPT generates sentences and paragraphs for us, but I often don't like the supporting sentences, so I usually write those myself. (S2)

I don't use chatbot for drafting my academic papers. (S3)

Yes, I use Windows Copilot to help draft my academic papers. It's particularly useful for generating ideas and organizing my thoughts. When I'm stuck or unsure how to start, I can type in my topic or a question, and it suggests different ways to approach the subject. It's like having a brainstorming partner. (S4)

Yes, I do use IBM Watson for drafting my academic papers. It helps me generate ideas and structure my thoughts, especially when I'm stuck or unsure about how to start a paper. However, I usually use it more for brainstorming and getting initial drafts rather than for the final version of my papers. (S5)

Revising Stage

The adoption level of chatbots during the revising stage indicates a strong preference for their use. As shown in Table 4, 80% of respondents reported high or very high adoption levels, with a mean score of 2.92, confirming a high overall adoption rate. Interview findings highlight the significant role of chatbots and AI tools in the revision process of academic writing. Respondents S1 and S2 utilized ChatGPT and Perplexity to interpret feedback and make necessary revisions, while S3 and S4 primarily relied on

chatbots for grammar and structural improvements. S5, though using chatbots less frequently, depended on tools such as Grammarly for grammar checking and paraphrasing. These findings suggest that although chatbot use in the revising stage is not universal, these tools are highly valued for enhancing clarity, providing constructive feedback, and facilitating the revision process.

The following excerpts from the interviews illustrate these perspectives:

Basically, I use ChatGPT and perplexity for formulating and revising my academic writing. It helps me to discover what my lecturer wants, because sometime he gives difficult feedback to be understood. (S1)

For revising, I've tried that with ChatGPT. For example, when I get comments from my professor and don't know how to start the revisions, I ask, "You are my supervisor, and I'm doing my thesis." Then I input the comments from my supervisor and ask, "What should I do?" Usually, it provides clear suggestions that are relevant and aligned with my needs. (S2)

Yes, I use chatbots to revise my writing, check grammar, and make my text more academic and well-structured. (S3)

I mostly use it to help with grammar revisions. (S4)

I rarely use it for revision, but I have used it to check grammar and for paraphrasing. For checking grammar, I use Grammarly. (S5)

Editing Stage

Chatbots during the editing stage indicates strong usage among postgraduate EFL students. As shown in Table 4, no students reported a very low adoption level, while 2 students (8%) fell into the low category. In contrast, 16 students (64%) reported high adoption, and 7 students (28%) reported very high adoption. The mean score of 3.20—the highest among all academic writing stages—further confirms that chatbot usage during editing is notably high.

The interview findings highlight diverse approaches to using AI tools for editing academic writing. S1 used chatbots exclusively for grammar checking, demonstrating a limited application of these tools in the editing process. S2 relied primarily on Google Docs for automatic correction of minor errors, noting that ChatGPT-generated text generally exhibited high grammatical accuracy. S3 viewed editing as an extension of the revision process, focusing on correcting inappropriate word choices and grammatical errors. S4 preferred Windows Copilot for editing, appreciating its ability to detect grammatical mistakes and suggest improvements in clarity and style. S5 favored specialized grammar and style-checking tools like Grammarly for editing, considering IBM Watson more suitable for content generation than detailed editing. Overall, while students recognize the value of AI tools in editing, their preferences vary, with many relying on specialized grammar-checking tools or built-in software features for comprehensive editing support.

The following excerpts from the interviews further illustrate these perspectives:

I use it only for checking the grammar. (S1)

For editing, not really, because I usually work a lot in Google Docs. So if there are mistypes, misspellings, or minor grammar errors, Google Docs automatically corrects them. Also, when I ask ChatGPT to generate sentences or paragraphs, the grammar is usually very good and even complex. (S2)

Yes, my editing is similar to revising; I just edit words that seem inappropriate and correct the grammar. (S3)

Yes, I do use Windows Copilot for editing my academic writing. It helps me catch grammatical errors and suggests improvements in clarity and style. Sometimes it highlights awkward phrasing or helps me rephrase sentences to make them more formal or academic. (S4)

I don't typically use IBM Watson for editing my academic writing. For editing, I prefer tools that are more focused on grammar and style, like Grammarly or the built-in tools in word processors. IBM Watson is more useful for generating content and helping with initial drafts, while editing requires a more detailed and nuanced approach that I find other tools handle better. (S5)

Proofreading Stage

At the proofreading stage, chatbots adoption varied among respondents. As shown in Table 4, 1 respondent (4%) reported a very low-level adaptation, while 8 respondents (32%) fell into the low category. In contrast, 13 respondents (52%) reported in a high category of adaption, and 3 respondents (12%) reported a very high level of adoption. The mean score of 2.72 suggests a moderate to strong adoption level based on the proofreading indicator.

The interview findings highlight distinct approaches to using AI tools for proofreading academic writing. Most respondents (S1, S2, S3, and S5) did not utilize chatbots for proofreading, preferring manual review or alternative methods at this stage. S1 and S3 explicitly stated that they relied on their own proofreading processes rather than AI tools. S2 expressed a preference for revision over AI-assisted proofreading. In contrast, S4 used Windows Copilot for proofreading, valuing its ability to detect typos, correct spelling errors, and improve sentence structure and coherence. These findings indicate a prevailing preference for human oversight in the proofreading process, although some respondents acknowledge the usefulness of AI tools in enhancing clarity and refining their work.

The following excerpts from the interviews further illustrate these perspectives:

No, I don't use it for proofreading. I read by myself and chatbot only for checking the grammar. (S1)

Oh no, never. I prefer just revising. (S2)

I never use chatbot for proofreading stage. (S3)

Yes, I use Windows Copilot for proofreading as well. It helps me spot typos, spelling mistakes, and any other errors I might have missed. Additionally, it offers suggestions for improving sentence structure and coherence, which is really useful for making sure my writing is clear and polished before submitting it. (S4)

I don't usually use IBM Watson for proofreading my academic writing. (S5)

Formatting Stage

The analysis of chatbot adoption at the formatting stage indicates relatively low usage among respondents. As shown in Table 4, 2 respondents (8%) reported a very low level of adoption, while 14 respondents (56%) fell into the low category. In contrast, 6 respondents (24%) reported a high level of adoption, and 3 respondents (12%) reported an extremely high level of adoption. The mean score of 2.40 suggests a low overall adoption level of chatbots for formatting purposes.

Interview findings further confirm that most respondents preferred manual formatting rather than relying on AI technology. S1 and S3 expressed a preference for manual formatting due to the diverse formatting requirements of academic papers and the inconsistencies that may arise when using AI-generated content. Similarly, S2 and S4 stated that they did not use AI for formatting, with S4 specifically emphasizing that formatting is handled separately from the drafting, editing, and proofreading stages. S5 reported using word processing tools such as Microsoft Word and Google Docs for formatting, noting that IBM Watson lacked specialized formatting features. Overall, while AI tools are widely utilized for drafting, editing, and proofreading, formatting remains a task that most respondents prefer to manage manually or with conventional word processing software to ensure accuracy and adherence to specific academic requirements.

The following excerpts from the interviews further illustrate these perspectives:

I prefer to do formatting manually because each academic paper has different formatting requirements. (S1)

Oh no, I don't use that. It could be done, but I don't use it. (S2)

No. Because usually, when ChatGPT generates an essay for us and we copy it to Word, the formatting can get messed up and change. So, I handle the formatting manually. (S3)

Not really. While Windows Copilot is great for drafting, editing, and proofreading, I usually handle formatting separately. (S4)

No, I don't use IBM Watson for formatting my academic papers. Formatting is something I usually handle directly in word processing software like Microsoft Word or Google Docs. IBM Watson doesn't offer specific formatting features, so I rely on other software for that aspect of my work. (S5)

Citing and Referencing Stage

The results of this study indicate a low level of chatbot adoption at the citing and referencing stage, with most participants opting for manual methods or dedicated reference management tools such as Mendeley. Among the 25 respondents, 2 (8%) reported a very low adoption level, 12 (48%) fell into the low category, 10 (40%) were in the high category, and 1 (4%) was in the very high category.

The mean score of 2.40 suggests that chatbot adoption for citing and referencing remains limited.

Interview data further support these findings, as most participants expressed a preference for manual citation methods or specialized reference management tools rather than relying on chatbots for this stage of academic writing. These results are consistent with the study by Hutson et al. (2024), which highlights the limitations of AI, including chatbots, in generating accurate citations and references. While chatbots provide convenience for other writing-related tasks, citation accuracy remains a significant challenge. This limitation may explain why the participants in this study preferred manual citation methods or established reference management tools that have been proven more reliable.

The following interview excerpts further illustrate these findings:

I do not use a chatbot for citing and referencing. Usually, I directly copy the references from google scholar. (S1)

I usually only ask for reference suggestions, but I don't use a chatbot for formatting references, I write them manually. (S2)

I don't use a chatbot for references; I usually use Mendeley. (S3)

No, I don't use Windows Copilot for citing and referencing. I usually handle that part manually. (S4)

I don't use IBM Watson for citing and referencing my academic papers. For citing and referencing, I rely on citation management tools like Mendeley. (S5)

How do postgraduate EFL students perceive the use of chatbots in academic writing from the perspective of the TAM framework

The perception level in chatbot usage aims to provide an overview of the general perception level of chatbot usage among the postgraduate EFL students in this study. Overall, 91.2% of the survey respondents rated chatbots positively, with an average mean of 1.912. In general, chatbots were valued for their ease of use, accessibility, and user-friendly interfaces, as well as their usefulness in assisting academic work, increasing productivity, and boosting writing quality.

TABLE 5 | Description of Perception Levels in Chatbot Usage (N = 25)

Perception	Negative		Positive		Mean Score	Category
	f	%	f	%		
Perceived Ease of Use	1	4	24	96	1.96	Positive
Perceived Usefulness	1	4	24	96	1.96	Positive
Attitudes toward Using Technology	5	20	20	80	1.80	Positive
Intention to Use Technology	2	8	23	92	1.92	Positive
External Variables	2	8	23	92	1.92	Positive
Average	2.2	8.8	22.8	91.2	1.912	Positive

Perceived Ease of Use

The perception level based on the ease-of-use indicator shows that 1 respondent (4%) fell into the negative category, while 24 respondents (96%) were in the positive category. The mean score obtained is 1.96, placing it in the positive category, indicating that the respondents' perception of ease of use was generally positive. This finding is further supported by the respondents' statements during the interviews.

The interviewees generally expressed a positive perception of the accessibility and ease of use of various AI tools. S1 rated accessibility highly, emphasizing that formulating clear questions were crucial for maximizing the tool's effectiveness. S2 found the tools very easy to use, provided a stable internet connection was available, and appreciated their ease of interaction. S3 also found the chatbots easy to access, preferring ChatGPT's interface over other tools like Perplexity. S4 described Windows Copilot as user-friendly, highlighting its intuitive interface and helpful suggestions. Similarly, S5 found chatbots straightforward and responsive, appreciating their ease of use and effective interface. Overall, the respondents consistently reported a favorable experience with the accessibility and usability of their chosen AI tools, emphasizing user-friendly interfaces and responsive interactions.

Perceived Usefulness

The usefulness of chatbots in academic writing encompasses familiarity with the technology and its effectiveness in supporting academic writing tasks. The perception level based on the perceived usefulness indicator falls into the positive category, with a mean score of 1.96. The interview data revealed that chatbots were highly effective for academic writing, as their responses were relevant to the academic tasks. Participants demonstrated a good understanding of how to use chatbots effectively. Moreover, chatbots were perceived as tools that could enhance students' productivity and efficiency in academic writing. Overall, students expressed satisfaction with the chatbots' performance in assisting them with academic writing tasks.

The following interview excerpts further illustrate these findings:

I give 9 for the accessible as long as your question is clear so it can help you maximally. (S1)

Very easy, as long as the internet connection is good. It's also easy to interact with. (S2)

The chatbot I use is very easy to access. Perplexity is the same, but in terms of appearance, I think ChatGPT looks better. (S3)

I find Windows Copilot quite easy to use. The interface is user-friendly, and the suggestions it provides are usually relevant and helpful. (S4)

I find the chatbot fairly easy to use. The interface is usually straightforward, and it's quite responsive when I ask questions or need help generating content. (S5)

Attitudes toward Using Technology

Attitudes towards using chatbots in academic writing encompass students' enthusiasm and engagement with these tools throughout the writing process. The survey results indicate that the perception level based on the attitude indicator falls into the positive category, with a mean score of 1.80. The interview data further confirm that students demonstrated considerable enthusiasm for utilizing chatbots in academic writing. Rather than relying on a single chatbot, they explored multiple options to identify the tools that best aligned with their expectations for producing high-quality written work.

Intention to Use Technology

The participants' intention to use chatbots in academic writing is overwhelmingly positive, with 92% expressing confidence in their willingness to adopt the technology. The average score of 1.92 indicates a strong conviction regarding chatbots' utility. The interview data further support this favorable perspective, with participants emphasizing several key benefits. They reported significant improvements in their writing abilities, including a broader vocabulary selection, enhanced sentence construction, and increased confidence, as a result of chatbots support. Chatbots were valued for their efficiency, providing immediate response and assisting in the organization of ideas, thereby making the writing process more manageable and effective. While some participants, such as S2, acknowledged the need to double-check grammatical suggestions due to potential errors, the overall sentiment remained positive. Chatbots were regarded as effective tools that improved writing quality and provided substantial assistance in idea generation and refinement, making them a reliable resource for academic writing. Moreover, the participants expressed confidence in using chatbots, as they saved time, provided significant assistance, and offered a valuable companion in academic writing process.

The following interview excerpts further illustrate these findings:

I feel that my writing has improved, and I am confident in using the chatbot because it can provide hooked ideas and topics, as well as good diction for academic writing. (S1)

As for grammar, in my opinion, when it comes to checking grammar, it's about 90% accurate. Since it's a machine, I can't say it's 100% reliable. So, if I'm unsure about ChatGPT's response, I double-check it with another application. I don't rely entirely on it. (S2)

The function of this chatbot is very convenient and helpful for academic writing. It is easy to access and is an ideal companion for writing. I also feel an improvement in my academic writing, especially in learning new vocabulary and creating well-structured sentences. (S3)

I feel confident using Windows Copilot because it provides clear, actionable suggestions and has a straightforward interface. It's enhanced my ability to organize my thoughts, refine my arguments, and present

my ideas more clearly. (S4)

I feel confident using this chatbot because it gives me quick feedback and ideas. As for improvement, I do think my academic writing has gotten better with the chatbot's help. It's not that the chatbot writes for me, but it helps me organize my thoughts and explore different ways to express ideas. (S5)

External Variables

The findings on postgraduate students' attitudes toward the use of chatbots in academic writing present a largely positive outlook. The majority of respondents (92%) expressed a favorable perception of various external variables, including subjective enjoyment, objective usability, and social influence, with an average score of 1.92. Moreover, interview participants regarded chatbots as enjoyable, efficient, compatible, and socially acceptable.

Consistent with the findings of the present study, existing research highlights the increasing value of chatbots in academic writing. Language learners generally appreciate chatbots for their ease of use, convenience, and ability to provide fast, personalized feedback (Huang et al., 2021; Haristiani, 2019). Chatbots are also valued for their responsiveness, accuracy, and 24/7 accessibility (Amelia et al., 2024). Additionally, they serve diverse instructional purposes, such as conversational practice, writing assistance, and vocabulary development (Brinegar, 2023; Huang et al., 2021).

The findings of study align with Soodan et al. (2024), who reported that 76% of respondents demonstrated high or very high adoption levels of chatbots for academic writing. However, the present study found that chatbot adoption was primarily high during the early stages of academic writing—such as planning, literature review, drafting, revising, editing, and proofreading—but significantly lower in later stages, including formatting, citing, and referencing. Similar findings were reported by Alqadi et al. (2023), who noted that while chatbots were widely used for idea generation, research assistance, and proofreading, students were hesitant to rely on them for formatting and citation tasks (Hutson et al., 2024). These results underscore the need for chatbots to be adapted to the specific requirements of different stages of academic writing and for users to select tools that align with their learning objectives (Brinegar, 2023).

The utility of chatbots in literature review tasks has also been widely explored. For example, large language models (LLMs) such as ChatGPT have demonstrated the potential to streamline literature reviews in undergraduate research, improving efficiency while raising concerns regarding paraphrasing and academic integrity (Aydın & Karaarslan, 2022; Antu et al., 2023). The challenges associated with obtaining authentic sources and generating accurate citations, as identified in the present study, are consistent with findings by Wollny et al. (2021). Recommendations for improvement include integrating proper referencing capabilities and establishing guidelines for responsible usage (Gervacio, 2023). Factors influencing chatbot adoption in academic writing are well-documented in the literature. In line with the Technology Acceptance Model (TAM), perceived usefulness, ease of use, attitudes, and intention to use have been identified as critical determinants (Zou & Huang, 2023; Mukred et al., 2023). The Value-Based Adoption Model further highlights enjoyment and perceived value as significant predictors, whereas perceived risk appears to be a less influential factor (Al-Abdullatif, 2023). Additionally, external variables such as task-technology fit, social network characteristics, and prior experience play a crucial role in shaping chatbot acceptance (Soodan et al., 2024; Mukred et al., 2023). Moreover, trust in chatbot design, interactivity, and ethical considerations has been shown to influence behavioral intentions in academic settings (Mohd Rahim et al., 2022).

Despite their potential, chatbots have certain limitations. Students often prefer manual approaches for tasks where chatbots are less effective, such as understanding complex contexts or generating creative content (Brinegar, 2023). Opinions regarding their accuracy and reliability remain mixed, emphasizing the need for responsible implementation and further research (Alqadi et al., 2023; Soodan et al., 2024). As Hutson et al. (2024) suggest, effectively integrating AI tools into writing instruction requires a hybrid approach that combines traditional methods with the strategic use of technology. Ongoing research is crucial to gaining a deeper understanding both the potential and limitations of chatbots in academic writing. Until then, researchers and educators are encouraged to view AI tools as complementary aids rather than replacements for human effort (Mondal & Mondal, 2023; Altmäe et al., 2023).

CONCLUSION

The findings of the present study highlight that while EFL learners have widely adopted various chatbots for academic writing – particularly in the stages of planning, literature review, drafting, revising, editing, and proofreading – their use in formatting and citation tasks remains limited due to current technological constraints. Postgraduate students perceive chatbots as valuable tools for enhancing writing quality and efficiency; however, many remain skeptical of AI-generated content and prefer to retain personal control over tasks such as editing and formatting. The study underscores the importance of integrating user feedback into the design of AI tools to better support various phases of academic writing, as well as the role of educators in helping students balance AI assistance with critical thinking and manual oversight. Overall, the positive reception of chatbots usage in academic writing, as reflected in the TAM framework, suggests a high likelihood of future adoption, albeit with caution due to the technology's current limitations.

Despite the promising findings, this study has certain limitations that should be acknowledged. The small sample size of 25 postgraduate EFL students may restrict the generalizability of the findings to a broader population. Furthermore, the study primarily relies on self-reported data, which may introduce biases in respondents' attitudes and behaviors regarding chatbot use. Furthermore, the exclusive use of the TAM framework may overlook other influential factors in chatbot adoption for academic writing, such as cultural differences, individual learning styles, or the quality

of generative AI. These limitations suggest that future research should involve larger, more diverse samples as well as a more comprehensive exploration of the variables influencing chatbot adoption. Furthermore, future studies could investigate the long-term effects of chatbot-assisted writing and the complexities of student engagement and interaction with chatbot technology across various academic writing contexts.

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Division or integration of labor: An exploration of four L2 students' experiences in separated and integrated undergraduate composition courses

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This study explores the narrated experiences of four L2 students enrolled in required undergraduate composition courses, ENG 101 and ENG 202. It pursues two primary purposes: first, to enrich and deepen our understanding of the participants' narratives; and second, to draw upon these narratives to develop pedagogical implications for writing program administrators regarding the two major structures of First Year Composition (FYC) programs; integration and separation. Conducted at public university in the northeastern United States, the study employed a narrative research methodology, in which the four participants were interviewed and asked to share study materials and artifacts. The findings are presented through five salient themes that reflect the participants' experiences in ENG 101 and ENG 202. These themes are: 1) factors influencing the participants' section selection, 2) L1 classmates as both a resource and a challenge, 3) the impact of section type on student engagement, 4) how participants' perception of the curriculum influenced their performance, and 5) the negotiation of student identity. The study concludes that writing programs should not impose a single structure on L2 students but should offer both options, thereby supporting students' agency in making informed choices.

Keywords: Integration, Separation, FYC, L2 writing, writing program structures, international students

INTRODUCTION

Although required undergraduate composition courses are essential for students' academic development and experiences (Garrett, Bridgewater, & Feinstein, 2017), writing programs adopt varying practices and philosophies regarding the placement of multilingual students in these courses. Some institutions integrate L2 students with their L1 peers in the same sections, while others place them in separate sections. The separation of L1 and L2 students is often based on belief that multilingual students have distinct writing needs compared to domestic (L1) student (Silva & Leki, 2004). L2 writers are perceived to face a range of complex challenges that distinguish their writing development. As Raimes (1985) said that L2 writers require "more of everything" (p. 250). Research by Ramanathan and Atkinson (1999) found that L2 writers struggle with critical thinking, peer review activities, and

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a sense of writing ownership. Norris and Ortega (2000) emphasize the need for more targeted feedback on linguistic errors. Similarly, Huster (2012) and Kwon (2009) highlight vocabulary-related challenges among L2 writers. Eckstein, Chariton, and McCollum (2011) found that L2 writers often face difficulties in understanding writing as a process. More recent studies have identified challenges related to vocabulary proficiency, structural complexity, coherence, and the logical development of arguments (Alavi, Nemati, & Dorri kafrani, 2020; Altınmakas & Bayyurt, 2019; Casal & Lee, 2019; Higginbotham & Reid, 2019; Larsson & Kaatari 2020). Based on such findings, many writing programs opt to place L2 writers in dedicated composition course sections.

On the other hand, scholars who advocate for the integration of L2 and L1 students in required undergraduate composition courses argue that L2 writing is not a temporary phenomenon that can be addressed by placing L2 students in separate sections for a semester or two. Rather, L2 writing is a long-term developmental process that may extend over several years of undergraduate and even graduate coursework (Ferris & Thaiss, 2011). Ferris and Thaiss (2011) also argue that L2 student population is highly diverse, making it unrealistic to assume that a single writing section or program can accommodate their varied linguistic, cultural, and racial backgrounds. There is no one-size-fits-all policy or program capable of fully addressing these students' complex needs.

What has not yet been given enough attention in this academic discourse surrounding integration versus separation is the focus on L2 writers' perspectives and their narrated experiences. This article seeks to address that gap by examining the narratives of four L2 students enrolled in both integrated and separated undergraduate composition courses.

The historical development of program structures in composition studies is rooted in earlier discussions about the differences between writings of L2 students and that of their L1 peers. These discussions have given rise to various labels and theoretical framework within the field of composition and have contributed to the establishment of second language writing as a distinct discipline. When L1 students write, their work is typically categorized as composition, whereas the writing multilingual students is classified as second language writing (Silva & Leki, 2004). Multilingual students often face complex challenges in their writings (Alavi, Nemati, & Dorri kafrani, 2020; Altınmakas & Bayyurt, 2019; Casal & Lee, 2019; Higginbotham & Reid, 2019; Larsson & Kaatari 2020). These challenges include limited proficiency in reading and writing, difficulties with accurate vocabulary use, grammar complexity, effective argumentation, cultural awareness, and self-confidence (Eckstein, Chariton, & McCollum, 2011; Huster, 2012; Kwon, 2009; Norris & Ortega, 2000; Raimes, 1985; Ramanathan & Atkinson, 1999). Leki, Cumming, and Silva (2008) found 35 categories in which the writings of L2 students differs from that of L1 students. These differences include issues related to cohesion, essay organization, and sentence structure. Similarly, Staples and Reppen (2016)

found that L2 writers often lack vocabulary complexity, resulting in the use of less sophisticated language and greater redundancy.

Casal and Lee (2019) reported that L2 writers have challenges with syntactic complexities in their writing and require explicit instruction on how to construct syntactically complex texts. Higginbotham and Reid (2019) analyzed essays written by 472 L2 students to evaluate vocabulary sophistication. Their findings indicated that less proficient L2 writers tended to rely heavily on high-frequency words, whereas more advanced L2 writers used such words less frequently. Similarly, Eckstein and Ferris (2018), in their analysis of texts from 115 participants, found that L2 writers accounted for 93% of all verb errors, 89% of all noun errors, 80% of all word form errors, 78% of all word choice errors, 77% of all sentence boundary errors, 70% of all the run-on sentence errors, and 64% of all fragment errors.

While the differences in writings between L1 and L2 students are well-documented, Ferris and Hedgcock (2014) argued that no "developmental or remedial L2 program or a first-year writing program can meet all of these students' needs as they progress through various levels of their studies and face increasingly difficult academic literacy demands" (p. 30). In the same vein, Wolfe-Quintero and Segade (1999) argued that a single course cannot adequately address the diverse needs of L2 students. In fact, their writing skills continue to develop throughout the entirety of their higher education, requiring ongoing attention and support as they work toward earning their degree.

Regarding instructional design for L2 students, Preto-Bay and Hansen (2006) argued that it is neither responsible nor "advisable to conceive and design instruction without taking into account the learners for whom that instruction is being designed" (pp. 42-43). Friedrich (2006) identified three primary groups of students for whom such instruction is typically designed. Drawing upon the works of Leki (1992), Blumenthal (2002), Blanton (1999), Harklau, Losey, and Siegal (1999), and Thonus (2003), Friedrich categorized First-Year Composition (FYC) students as follows: (1) Monolingual Basic Writers (i.e., L1 students), (2) Resident ESL students (those who have completed K–12 education in the United States), and (3) International ESL students. According to Friedrich, the instructional needs of each group can vary significantly.

Ferris and Hedgcock (2014) argue that L2 students possess diverse cultural and linguistic backgrounds, life experiences, demographics, skills, abilities, parental educational levels. Therefore, it is unrealistic to assume that these students' "abilities or their instructional needs will be identical," and it is also inaccurate if writing program administrators and teachers generalize any policy that stereotypes these diverse students (Ferris & Hedgcock, 2014). Indeed, providing a single, comprehensive definition of this student group is challenging (Roberge, Siegal, & Harklau, 2009). Schwartz (2004) noted that some of the labels used to describe the L2 population have "become diluted so that [they] no longer serve to be very useful in identifying, describing, and placing such students".

Similarly, Ortmeier-Hooper (2008) argued that "[t]he wide range of origins, immigration status, prior education, prior experience with ESL courses, feelings about home language and culture make these students difficult to box into a single definition" (p. 392). She further stated that "ESL" label is often problematic for students, not simply because of placement concerns, but also because the term is linked to a student's institutional experience with the term." (p. 392). This article, therefore, explores the narrated experiences of four L2 students enrolled in required undergraduate composition courses, ENG 101 and ENG 202, in hopes of better understanding how composition program structures affect L2 students' experiences.

This study is committed to exploring possible answers to the following questions:

RQ1: What are the narrated academic experiences of four L2 students in separated and integrated composition courses, ENG 101 and ENG 202?

RQ2: What pedagogical implications can be drawn from the participants' narrated experiences, and what, if any, do these experiences reveal about undergraduate composition program structures?

METHODS

In this study, the researcher employed narrative research to guide the design, analysis, and discussion of findings. The research was conducted at the main campus of a public research university located in the Northeastern United States. According to the university's English Department website, all undergraduate students were required to complete three Liberal Studies English (LSE) courses: ENG 101, ENG 121, and ENG 202 (Liberal Studies English, 2019). For L2 students, the program website stated: "All of our LSE courses are offered in separate sections designated as 'MLW' for international students. These sections have fewer students and were taught with attention toward global awareness and cultural sensitivity, while still presenting the same academic rigor and challenge as our other sections of composition and literature" (Liberal Studies English, 2019). Regarding instructors, some of these sections were taught by temporary teaching assistants (TAs), who were typically PhD candidates in the English Department and had completed their two-year coursework requirements (LSE Annual Report, 2019).

Data Collection and Analysis

The researcher started with a familiarization phase. Prior to data collection, he reviewed the website of the English department and read all available information about the writing program and the required composition courses for undergraduate students. He also contacted the program director via email to request additional information not provided on the website. In response, she shared two annual reports, which included comprehensive details about the curriculum, placement procedures, enrollment statistics, pedagogical initiatives, instructor training, and other relevant aspects of the program. The researcher collected data from participants using a semi-structured interview approach. As Riessman (2008) noted, this style resembles a conversation in which both the researcher and the participants took turns, while maintaining systematic questioning to gain an in-depth understanding of the participants' narratives and experiences. In addition to interview, the researcher gathered data from syllabi, writing materials, and pictures. These artifacts served as stimuli to support and enrich the discussion during the interviews. Data collection began with the first round of interviews in the first week of April 2019 and continued until the last week of the month, spanning approximately four weeks (see Appendix I). The timing of the interviews was intentional. They were not conducted too early in the semester – which began on January 21, 2019—to ensure that participants were able to share more reflective and authentic insights into their experiences.

The follow-up interviews took place five months later. One participant, Mohamed, did not respond to the invitation to participate in the follow-up interview. During the follow-up sessions, the researcher reminded the participants of the topics discussed in the initial interviews and invited them to continue their narratives. The researcher also asked them to reflect on their experiences as L2 writers, particularly in relation to the ENG 101 and ENG 202 courses, now that they had completed both. The researcher revisited my original interview questions (see Appendix I) to examine whether their perspectives had changed over time. This step was essential to the narrative research methodology, as Narayan and George (2003) argued that narratives involve processes of storying and re-storying. The participants listened to excerpts of their earlier narratives as the researcher integrated and re-framed them. This allowed them to view their experiences with greater clarity and to elaborate on or refine previously shared details. For data analysis and theme development, I employed Riessman's thematic narrative analysis. This analytical approach is applied to narratives that emerge from interview conversations and focuses primarily on what is said, rather than how it is said, to whom, or for what purpose (Riessman, 2008, pp. 53–54).

For the analysis, the researcher began by listening to the audio recordings and engaging in multiple readings of the interview transcripts. After several rounds of reading and re-reading, the researcher annotated the margins of the printed transcripts. Following Riessman's (2008) guidance, open-ended comments were made, such as identifying and categorizing narratives into distinct stories and providing reflective notes on each. At times, the researcher focused on language use or noted linguistic and non-linguistic features captured in the transcripts, including laughter, hesitations, and pauses. As the transcripts were explored, interpretive connections were made, and relationships across the narratives were identified. Recurring patterns were grouped into emerging themes, which gradually became more coherent as narratives converged around central ideas. Subsequently, the researcher began clustering related themes

and engaged in a reflexive process – a kind of negotiation – between the transcripts and the researcher's interpretations. A word processor was used to document the superordinate themes, while maintaining attentiveness to the differences, complexities, and struggles that made each participant's narrative unique. Finally, the researcher grouped the codes into thematic categories and guided by the research questions, developed five overarching themes, which were then discussed in relation to each participant's experiences.

RESULTS AND DISCUSSION

Participants

After the study received approval from the Institutional Review Board (IRB; Log No. 19-090), an invitation to participate was distributed via a WhatsApp group for international students. In addition, instructors were asked to email the invitation to their students. The following table 1 provides contextual information to help interpret the participants' responses.

TABLE 1 | Participants Description

Participant	Gender	Age	Country	L1	Major	Type of section*
Malek	Male	34	Saudi Arabia	Arabic	Marketing	ENG 101: MWL ENG 202: Regular
Shahd	Female	18	Saudi Arabia	Arabic	Criminology & Psychology	ENG 101: Regular ENG 202: Regular
Mohamed	Male	25	Saudi Arabia	Arabic	Accounting	ENG 101: MWL ENG 202: MWL
Khalaf	Male	23	Egypt	Arabic	English	ENG 101: Regular ENG 202: Regular

MWL is multilingual/international section, and Regular is the mainstream section.

This study identified five salient themes that emerged from the participants' narrated experiences: 1) factors influencing participants' section selection, 2) L1 classmates as both a source of support and a burden, 3) the impact of section type on participants' engagement, 4) participants' perceptions of the curriculum, and 5) participants' identity negotiation.

Theme 1: Factors Influencing Participants' Section Selection

Not all participants were aware of section distinction within the composition courses – that is, some did not know that the courses were offered in both mainstream and multilingual sections. The following sub-themes illustrate the key factors related to this theme.

Impact of Academic Advising on Section Selection

Each first-year student at the research site was assigned an academic advisor responsible for helping students select their courses. As Malek noted, "My advisor told me I have to take it, it is mandatory." Both Malek and Khalaf reported that they were not presented with a choice regarding which section of ENG 101 to enroll in; they simply followed their advisor's recommendation. In contrast, Mohamed, who completed both ENG 101 and ENG 202 in the multilingual (MLW) sections, stated, "In ENG 101, I did not know I could take the American section." For ENG 202, the participants followed three distinct enrollment patterns:

a. Continuing in the same mainstream section,
b. Continuing in the same multilingual section, or
c. Transitioning from a multilingual section to a mainstream section.

Mohamed continued in the multilingual section, while Khalaf and Shahd remained in the mainstream sections.

Malek, however, chose to move from the multilingual section in ENG 101 to the mainstream section in ENG 202. Notably, no participant moved from a mainstream section to a multilingual one for ENG 202. This decision-making process appeared to reflect the participants' growing confidence. For example, after completing ENG 101 in a separated (multilingual) section, Malek voluntarily enrolled in the integrated (mainstream) ENG 202 course.

Participants' Perception of the MWL Section as Less Challenging

Another factor that impacted the participants' section selection was their perception that the Multilingual (MWL) sections were less academically demanding than the mainstream sections. Khalaf, for example, described the international section, "it would be slower, and the teachers would talk slowly … He would also go over something multiple times more than he would do in a regular class." Khalaf continued, "it is because English is not the first language for international students." According to Khalaf, this perceived linguistic barrier led instructors to modify their teaching by slowing down their speech and simplifying instruction, which contributed to the belief that MWL sections were less challenging.

Mohamed, a participant who enrolled in both MWL sections, expressed the belief that "if the level of the student high, he can take it with the Americans, and a low, I think it's better to take it with international." He supported this view by referencing a friend who had found the mainstream section difficult. Mohamed stated, "for 202, I know a Korean friend who suggested I take the class with international because American was hard." His decision was also influenced by his desire to achieve a high grade, noting, "I may not get the A I want in American section."

Impact of Peer or Friend on the Selection Process

While advisor often have a significant influence on the participants' course selection, the advice of experienced friends appears to be taken more seriously. Mohamed voiced that his friend recommended he choose the MWL section for ENG 202. Similarly, Malek shared a comparable experience, stating, "I took the international section because I had a friend that told me that it was easier, and I did not feel comfortable taking it [i.e., ENG 101] in the section with American classmates. You know, I did not have enough confidence for doing that."

Previous Experience as a Selection Factor

Previous experience plays a significant role in influencing international students' decisions regarding the type of composition section they select. This impact was particularly evident among the international participants who had prior experience in American pre-college education, namely Khalaf and Shahd. Their previous exposure to English classes with American classmates did not seem to negatively affect their decision-making process. For example, Shahd, who obtained her high school diploma in the United States, expressed that a regular section was more rigorous and better suited for her.

Having the Same Teacher as a Selection Factor

When participants have a chance to enroll in a section taught by the same professor with whom they had a positive previous experience, they tend to choose that professor again, table 2.

TABLE 2 | The Participants' Reasons for Selecting a Particular Section Type

Participants	Type of ENG 101	Selection Reason	Type of ENG 202	Selection Reasons
Malek	MWL	Less challenging, friend, advisor, lack of confidence	Regular	Confidence
Mohamed	MWL	Less challenging, advisor, lack of info. that Regular ENG 101 is an option	MWL	Easier, friend
Shahd	Regular	Confidence	Regular	Confidence
Khalaf	Regular	Advisor, lack of knowledge of the int'l section.	Regular	Confidence, lack of knowledge of the int'l section.

Theme 2: L1 Classmates as a Source and/or a Burden

This finding indicates that some MWL students perceive L1 classmates as a hinderance to their engagement and participation, while others view them as valuable source for language development.

Perception of L1 Classmates as Better Writers

All participants, except Malek, expressed the belief that American classmates were stronger writers than their multilingual peers. This perception was particularly evident in the responses of Mohamed, an MWL participant who had never taken a section with L1 classmates, and Khalaf and Shahd, who had not taken sections with MWL classmates. For instance, Shahd stated,

Americans … have a deeper understanding of the language. So, they are more able to express their thoughts. It's not like, it's not that the international students is not able to do that, but it just that they don't have a full grasp of the language to be really to express their ideas.

The same perception was held by Khalaf. However, this finding did not apply to Malek—the only participant who took ENG 101 with international classmates and ENG 202 with American classmates. Malek stated:

I used to think, think that American students write better than international students, but, you know, after I took the course with American students, I, you know, realized that some international students write better than some American students.

Malek refuted the myth that L1 students represent the standard for academic writing, demonstrating that an international student can write more professionally and academically than an L1 peer.

L1 Classmates as a Burden on Participation and Engagement

Some participants expressed the view that the presence of L1 classmates posed a challenge to their participation and engagement in class. Malek, who took ENG 202 with American students after completing ENG 101 with international peers, stated, "I was more engaged in the international section because all students were international, and the teacher also was international, so, you know, I was more confident and was, you know, not afraid of my mistakes because I know everyone else in the class can make mistakes too, since we are in the same boat".

Preference of American or International Classmates

While the presence of L1 classmates can sometimes hinder participation and engagement, some participants expressed a preference for having American classmates. Mohamed stated, "I prefer American classmate because he, this will improve my language." Khalaf offered a more nuanced perspective, suggesting that both groups offer different advantages. He remarked that international classmates tend to be more serious, explaining, "[American] classmates did not take these classes as a serious matter." In his view, international students are more dedicated because they left their home countries specifically for academic purposes.

However, he also acknowledged the benefits of having American classmates, noting that their presence provides greater opportunities to learn about local culture and daily life. The following table 3 and table 4 summarizes the participants' perceptions regarding which section type they considered more beneficial.

TABLE 3 | Summary of the Participants' Perception of Which Section Type of ENG 101 is Better

Participant	Selection Type		Reasons
	Separation	Integration	
Malek		✓	More challenging, a chance to learn about American peers and their culture, and a chance for American peers to learn about international students' cultures, as well.
Mohamed	✓		Only if the level of the student in English is high, she/he can take the integrated section, but other than that, he/she should take the separated one.
Khalaf	✓		International students take it more seriously.
Shahd		✓	To avoid talking with the same background peers in their 1st language.

TABLE 4 | Summary of the Participants' Perception of Which Section Type of ENG 202 is Better

Participant	Selection Type		Reasons
	Separation	Integration	
Malek		✓	More challenging, a chance to learn about American peers and their culture, and a chance for American peers to learn about international students' cultures, as well.
Mohamed	✓		Only if the level of the student in English is high, she/he can take the integrated section, but other than that, he/she should take the separated one.
Khalaf		✓	Because MWL students can learn more about the culture of the Americans.
Shahd		✓	Because American classmates can benefit MWL students since American understands English.

Theme 3: The Impact of Section Type on Participants' Engagement

The type of section seems to affect students' level of engagement. During the interview, Malek shared that he was more engaged in the MWL section of ENG 101 than in the mainstream section of ENG 202. He remarked, "In the beginning [of ENG 202] I felt intimidated and afraid to talk or participate. I was afraid to make mistakes." Although Malek gradually became more active and participative as the semester progressed, his level of engagement remained lower than it had been in the MWL section of ENG 101. Sufficient responses could not be obtained from the other two participants who did not switch sections and took both ENG 101 and ENG 202 in the same format - either entirely separated or entirely integrated - since they did not experience both settings and therefore could not offer comparative reflections on their participation across section types.

Engagement in Composition vs. Major classes

One of the findings that emerged under this theme is that two participants compared their engagement in composition courses with that in their major-specific courses. The first, Malek, perceived the composition course as a distinct and valuable experience due to its focus on discussion and socially relevant topics. He explained that, unlike his business major courses, which have different content and teaching styles, the composition class encouraged him to engage critically with various issues and to develop his own stance. Malek expressed appreciation for the course, noting that it helped him broaden his perspectives and formulate positions on diverse matters.

In contrast, Mohamed regarded the composition course as significantly less important than his major courses. He stated that full comprehension of the material was not essential, as him main objective was simply to "pass" and "get an A." However, he emphasized that understanding every aspect of his major coursework was crucial, as it would directly impact his future employment opportunities.

Mohamed appeared to struggle with cognitive engagement in the composition course, demonstrating a more instrumental approach. While he may have participated behaviorally to earn participation points and achieve a high grade, his interest in deeply understanding the course content appeared limited.

Theme 4: The Participants' Perception of the Curriculum

Perception of the curriculum are central to the discussion of integrated versus separated composition course sections. The term curriculum is broad and encompasses a wide range of components; therefore, it is important to clarify its meaning within the context of this study. In this research, curriculum specifically refers to the reading materials and writing assignments used in the composition courses, as understood and discussed by the participants during the interviews.

Perception of Reading Materials

In composition classes, students are typically assigned readings and are expected to reflect upon or respond to them. Shahd expressed a lack of interest in some of the assigned readings, stating, "sometimes, the topics are just not interesting to me. Sometimes I find some of the readings to not be relevant to what we're talking about, or maybe the teacher sees it in another way." demonstrated a more positive perception of the materials. He noted, "we read an article about Martin Luther King and his speech, and we digested his speeches and I liked it because all what he said is everyone has a voice and people should not be done wrong and that was a very interesting topic. It was interesting to hear different opinions. I also learned some words that I did not know before."

Perception of Writing Assignments

Regarding the perception of writing assignments, participants' responses varied in terms of their views on topic selection, the act of writing itself, and the workload or frequency of assignments. Malek's instructor assigned specific topics rather than allowing student choice. This aligns with Shahd's earlier comment: "maybe the teacher sees it in another way." If the teacher's perception of a topic diverges from that of the students, it may reduce students' motivation to engage meaningfully with the writing task.

In terms of assignment structure and frequency, Malek observed a difference between ENG 101 and ENG 202. In ENG 202, the course was centered on developing a single paper throughout the entire semester, whereas ENG 101 involved a variety of topics and multiple assignments. Malek expressed a preference for the ENG 101 format, finding it more engaging. Conversely, Mohamed criticized the curriculum, stating, "I think the curriculum is weak." While he acknowledged learning how to write a research paper, he felt that the pacing was too slow, "the things we take in 12 weeks we can study in 6 or 7 weeks only." For Mohamed, the extended timeline for breaking down research components across the semester contributed to a sense of monotony and disengagement.

Theme 5: The Participants' Identity Negotiation

Given that all participants self-identified as Muslims, it was necessary to explore whether identity negotiation played a role in their experiences within the composition program. Malek, who enrolled in the mainstream section of ENG 202, reported feeling uncomfortable during a classroom discussion in which some American classmates suggested that certain religions promote violence. He stated, "I felt like they were talking about Islam, and that did not make me feel comfortable at all" (Malek's interview). When asked whether he responded to those comments, Malek indicated that he did not. His reluctance to speak up may suggest a sense of discomfort in defending his religion alone, possibly preferring that someone else - ideally a non-Muslim peer - would intervene, thereby offering a sense of support and validation.

While discussing this situation, Malek recalled, "I remember another thing." He shared an incident involving one of his classmates who, whenever they worked together in a group, would refer to him as "you, whatever your name is." Malek noted that this occurred more than once. When he eventually decided to respond and asked her why she did not use his name, she replied, "sorry I cannot pronounce your name; it is hard." Malek reflected, "if she really, you know, does not know how to pronounce my name, she should ask me how to pronounce it, but calling me 'you, whatever your name is' is racist in my opinion" (Malek's interview, 2019). In contrast, Shahd, who completed high school in the United States and took both ENG101 and ENG202 in mainstream sections, appeared more able to respond to such situations and initiate discussions on topics she believed her classmates should be aware of. She explained the difficulty many Americans have in distinguishing between what is Islamic and what is cultural. In class discussions and group work, Shahd would share aspects of her Saudi Arabian culture, clarifying misconceptions about practices often perceived as religious. For instance, she mentioned "women driving cars and covering faces." She said, "they [her classmates] get excited to hear that, and like we get engaged in a conversation and it becomes interesting."

Similar to Shahd, Khalaf seems to initiate discussions about his religion and cultural backgrounds. He stated, "I think I stood out not only because I am a Muslim, but also because I look different from everyone else. My skin tone looks completely different from everyone else. For the most part, most of the students are White, except for two classes, there were two Black girls." Khalaf explained that being in classes with American classmates presents a valuable opportunity for him to share his beliefs so that others can gain a clearer understanding of what Islam is - and what it is not. He remarked, "most of the horrific acts or the hatred is because of people's lack of exposure to Muslims." He further noted that by sharing his personal experiences, he has become a point reference on Islam for his American peers. Khalaf strongly identifies with his Muslim identity in class. He is aware of the presence of anti-Muslim sentiment and rhetoric, which motivates him to help his classmate overcome stereotypes and misunderstandings about Muslims

and Islam. Notably, this concern in MWL sections, nor by Malek in his MWL ENG 1101 class. This contrast supports the argument that integrating Muslim L2 students with American classmates can yield mutual benefits for all students involved.

The debate on which structure is best suited for MWL students is contextually unresolved. Based on where the school is located and its international population, universities should decide how composition programs should be structured. These findings cannot speak to one of the two structures as "better" or "the best." However, when the issue of separation or integration is viewed from the angle of benefit, we can conclude that – in the context of my findings – integration is more beneficial for both MWL and L1 students. It is good for MWL students themselves because they can understand the stereotypes being perceived about them and can thus better correct the distorted image of themselves and their communities, as in the case of Muslim students. Integration is also beneficial for the L1 students, who have the opportunity to work with international students and gain a better understanding of them. In discussions of the integration vs. division debate, we usually find that the focus is on international students, while minimal to no attention is given to the L1 local students themselves, who are an indispensable part of the debate and cannot be ignored. The developed themes lead to the following pedagogical implications.

PI 1: Enhancing Students' Agency in Selecting Section Type

Participants' section selection was influenced by academic advisors, friends, or prior knowledge. The research suggests that programs implementing both integrated and separated, should types should create an introductory video that briefly presents the two structures, highlights their differences, and features interview with students from both types of sections. Academic advisors can then recommend that their advisees watch this video before deciding which section to join. In doing so, student would be better informed and can regain their agency in selecting the course type that best suits them. This approach may serve as one way to restore students' decision-making agency.

PI 2: Rethinking Placement Tests

My findings indicate that placement tests can be ineffective for several reasons. One of the most significant is that students' linguistic proficiency should not be the sole determining factor. Other important considerations should include students' sense of belonging, cultural and educational backgrounds, individual needs, and diverse abilities or intelligences. Some students may perform more effectively when placed with L1 peers, while others may thrive in L2-only environments. For example, Malek shared that his experience in the integrated section was particularly meaningful – not for linguistic reasons, but because it allowed him to learn more about American culture and provided his American classmates the opportunity to learn about his culture and religion.

PI 3: Creating and Supporting a Bridge Between the MWL Sections and the Mainstream Sections

According to these findings, none of the participants mentioned the presence of bridging activities between the different sections. This suggests that, at the institution where the data were collected, the two section types of function in complete isolation from one another. To address this, there should be intentional efforts to develop bridging activities that connect students across separated and mainstream sections. For example, students in MWL sections could collaborate on joint projects with those in mainstream sections. While such initiatives may present logistical challenges – such as scheduling conflicts, assessment alignment, and coordination between instructors – considering these possibilities could lead to innovative approaches that foster connections between the two groups. Matsuda and Silva (1999) proposed an idea they referred to as "cross-cultural composition as an alternative placement option," which could serve as a valuable model for creating such bridges.

PI 4: Valorizing Critical Pedagogy Practices

Critical pedagogy involves encouraging students to critically analyze and question texts (Beck, 2005). According to the participants, such practices were notably absent from their curriculum. When asked whether they engaged with complex topics such as race, diversity, or religious plurality, Shahd responded, "Issues of diversity and race are important to me, so I try to integrate them into my writing," although she was not required to do so. Malek expressed a desire for more classroom discussions on religion and free speech in First-Year Composition (FYC) courses. Similarly, Khalaf reported initiating conversations about religion with his peers. Instructors can support critical pedagogy by incorporating narrative assignments, encouraging self-reflection on personal biases, and promoting research on unfamiliar or challenging topics.

CONCLUSION

This study explored the narrated experiences of four L2 students enrolled in required undergraduate composition courses, ENG 101 and ENG 202. By analyzing participants' narratives, the study aimed to develop pedagogical implications for composition programs, particularly in relation to their two primary structural models: integration and separation. I recommend that further studies be conducted to deepen and broaden our understanding of this multilingual student population. This study included only one female participant, highlighting the need for future research to amplify the voices of more women and explore their unique experiences. Additionally, as all participants were of Arab descent, future studies should aim to include students from diverse linguistic and cultural backgrounds. The question of whether integration or separation is more appropriate in First-Year Composition (FYC) courses cannot be resolved by the findings of a single study – or even several – because the issue is highly contextual. Factors such

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as institutional location, student demographics, and broader sociopolitical dynamics all influence how these programs function. Therefore, continued research is essential to further examine and understand this complex issue.

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Appendix I
Interview Questions

Demographic Questions:
1. Choose a nickname (or I can assign you one?)
2. Which country do you come from?
3. How do you describe your ethnicity/race?
4. What is your gender?
5. What is your first language?
6. What is your age?
7. How long have you been in the States?
8. How long have you been learning English?
9. Do you consider English to be your first or second language?
10. What is your major?
11. Are you employed?
12. what visa are you on?
13. What is your marital status?

Course-related Questions:
1. Which course did you take? ENG 101, ENG 202, or ENG 121?
2. Which section of ENG 101, 202m or 121 are you taking now or did you take, Multilingual or mainstream?
3. When did you take it?
4. What grade did you take or expect to take?

Core Questions
1. Why did you sign up for this class?
2. What are some of the things you learned in this class?
3. Did/do you always attend the class or do you miss some days? How many days have you missed, if any?
4. Why do you miss or attend the class?
5. Why did you sign up for the mainstream/multilingual section of this class?
6. Did you have an option or were you asked to sign up for it?
7. Do you think international students/ESL/multilingual students have needs different from the needs of native speakers of English?
8. Do you think it is better for international students and domestic/native students to take the same sections of the course or is it better if they take it in different sections? Why? How?
9. Do you think if you have native speakers as your classmates, that will help you do better or add to your anxiety? Can you share situations or examples?
10. Do you think Americans (native speakers of English) write better than non-natives? How? Why?
11. Do you remember how you felt in the first day of this course? What kinds of thoughts did you have?
12. Do you still have these thoughts or do you have different ones now?
13. How did you think about English writing at that time?
14. What do you think of writing now?
15. From 1 to 10, rate your thoughts and beliefs about your writing ability before signing up for this class?
16. From 1 to 10, rate your thoughts and beliefs about your writing abilities and skill of writing now after taking the class? Why?
17. How do you agree or disagree with the following statements?
    - I get good grades in writing
    - When I come across a tough writing assignment, I work on it until I complete it
    - Most of my classmates are good/poor writers
    - My teacher often tells me that I am a good writer
    - My classmates believe that I am a good writer
    - Just thinking about writing makes me nervous
    - Writing makes me feel uneasy and confused
    - I can think of many ideas for my writing
    - I can put my ideas into writing
18. How do you agree or disagree with the following statements?
    - I can spell my words correctly
    - I can write complete sentences
    - I can punctuate my sentences correctly
    - I can write grammatically correct sentences

  - I can begin my paragraphs in the right spots

19. Do you think being Muslim does not make you feel out of place or embarrassed?

20. Does your teacher make you read or write about topics that empower you or make you state your opinion with no worry? Can you share situations or examples?

21. Describe your feelings towards this composition class?

22. Are you engaged in the class? Do you always ask and answer questions? Have you ever visited your teacher in his/her office hours?

23. Do you think it is better to have a native speaker teacher or an international (non-native) teacher?

24. Do you prefer a teacher from the same gender, background, and religion? How? Why?

25. Do you engage in peer review activities? How do you feel about them? Do you choose your peer or does your teacher choose him/her for you? Do you prefer native or non-native?

26. In other classes of your major, you are with native speakers of English, in English, if you are not, how is this different?

27. How do you agree with the following statements?
  - I feel like a real part of my composition class.
  - My teacher in my composition class notice when I'm good at something.
  - It is hard for people like me to be accepted in my composition class.
  - Other students in my composition class take my opinions seriously.
  - My composition instructor is interested in me.
  - Sometimes I feel as if I don't belong in my composition class.
  - There's at least one classmate and/or my instructor I can talk to if I have a problem in my composition class.
  - People in my composition class are friendly to me.
  - My composition instructor is not interested in people like me.
  - I am included in lots of activities in my composition class.
  - I am treated with as much respect as other students in my composition class.
  - I feel very different from most other students in my composition class.
  - I can really be myself in the composition class.
  - The instructor in my composition class respects me.
  - People in my composition class know I can do good work.
  - I would not have taken this class if it was not required.
  - I feel proud of belonging to my composition class.
  - Other students here in my composition class like the way I am.

28. Describe your curriculum/syllabus. Such as how many major assignments are there? What are you required to do on a daily basis? Are you/were you required to read or only write?

29. Do you think the curriculum was designed in a certain way to meet the needs of your section as international students?

30. Do you think the course would be the same (goals, assignments, activities) if there were native students with you?

31. If you were the instructor, what changes would you do to the curriculum to meet your needs?

32. What do you think of the assignments?

33. What sources the program offer you and you use? (Writing center, Websites, Peers, Interaction with teachers, staff, Events, Others?)

34. What do you think of the feedback you received on your writing assignments?

35. To what extent do you agree or disagree with the following statements?
  - I think what I learn in composition class is important
  - The assignments I take, regardless of their difficulty level, are relevant and teach me something I may need one day
  - In this class, I learn something new frequently
  - The materials I study for this class are of good quality
  - What I learn in this composition class is relevant to me, my future plans, major, and career. I highly rate the curriculum of my composition class.
  - Syllabus, goals of the class, and guidelines are presented clearly
  - The teaching method of my writing teacher suits me and is interesting
  - The composition curriculum is worth my attention, time, and tuition

Finally:

  - Can you share with me your first and last assignments and the feedback from your teacher?

Note: The questions about the statements in which participants agree or disagree or rate their performance based on and the shared assignments are there to open opportunities for discussions.

Navigating the undergraduate thesis journey: A qualitative exploration of challenges, strategies, and skills among English department students

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This study investigates the complex challenges, strategies, and skills development of English as a Foreign Language (EFL) undergraduate students during their thesis writing journey. While the undergraduate thesis represents a crucial milestone in higher education, EFL students face significant linguistic, psychological, and technical barriers that impact their academic progress. Using a qualitative approach and semi-structured interviews with eight undergraduate students from various Indonesian universities, this study examined their experiences in thesis writing. The research employed reflexive thematic analysis, using NVivo 15 software to process and analyze the data. The findings reveal three primary dimensions of challenges: linguistic knowledge and writing competence, psychological and emotional barriers, and resource-related technical constraints. Students employed various adaptive strategies, including self-management techniques, technological assistance, and comprehensive support networks to overcome these challenges. The study also identified the development of essential competencies in research methodology, critical thinking, and time management. The results highlight the need for integrated institutional support systems that address both academic and psychological aspects of thesis writing, suggesting curriculum modifications and enhanced supervision frameworks to better support EFL students in their academic journey.

Keywords: undergraduate thesis, EFL students, academic writing, qualitative research

INTRODUCTION

Undergraduate theses represent a crucial milestone in academic achievement, particularly for English majors and students studying English as a Foreign Language (EFL). This process demands not only linguistic proficiency but also the integration of theoretical knowledge, critical thinking, and research methodologies to generate original work in accordance with academic conventions. The challenges faced by EFL students are often intensified by linguistic and cultural barriers, rendering thesis writing a complex and multifaceted task (Deiniatur & Cahyono, 2024; Lobo, 2023; Nurkamto et al., 2022).

Research has identified a range of challenges encountered by EFL students during the thesis writing process. Linguistic challenges – such as grammatical errors, limited academic vocabulary, and issues with textual coherence – are common, along with challenges in paraphrasing and summarizing source material to avoid plagiarism (Nurkamto et al., 2022; Prihandoko et al., 2024).

Psychological factors, including anxiety, stress, and fear of failure, often contribute to procrastination and writer's block. Additionally, sociocultural factors – such as academic isolation and power dynamics in student-supervisor relationships – further complicate the writing process (Ädel et al., 2024; Agricola et al., 2018). Despite these findings, a comprehensive understanding of the interplay among the various obstacles experienced by EFL students in thesis writing and the strategies they employ to address them remains limited. Previous studies have tended to focus on individual aspects of the thesis writing experience, often neglecting the broader context. This study aims to explore the multifaceted challenges – linguistic, psychological, and sociocultural – as well as the adaptive techniques used by students, thereby addressing gaps in the existing literature on EFL students' thesis writing experiences.

This study seeks to examine the thesis writing experiences of undergraduate English majors in EFL contexts through a qualitative exploration, thereby addressing existing gaps in the literature. Utilizing semi-structured interviews and thematic analysis (Braun & Clarke, 2006) the study investigates the interplay of linguistic, psychological, and sociocultural challenges, as well as the strategies students employ to navigate these issues. Adopting a holistic approach, this research seeks to identify the skills necessary for successful thesis completion and to inform targeted interventions that improve support systems for EFL students.

This study has three primary objectives: (1) to identify the key challenges encountered by English majors during thesis writing in a foreign language; (2) to explore the strategies employed to overcome these challenges; and (3) to investigate the specific skills required for producing high-quality theses. Through this approach, this study aims to offer insights that can help higher education institutions and curriculum developers in refining pedagogical practices, improving curriculum design, and formulating institutional policies that promote inclusive and supportive learning environments for diverse student populations.

METHODS

Design
This study employed Braun and Clarke's (2006) thematic analysis because of its flexibility and suitability for exploring complex, subjective experiences. This method enabled the identification of patterns and themes essential to understanding the challenges faced by EFL students during the thesis writing process. Eight participants were selected based on principles of practicality and data saturation to ensure diverse perspectives from various Indonesian universities, while maintaining a manageable sample size for in-depth qualitative inquiry. The development of interview questions was informed by prior research and focused on linguistic, psychological, and sociocultural dimensions. To enhance clarity and relevance, the questions were reviewed and refined based on feedback from academic mentors.

These methodological choices collectively ensured comprehensive insights, reliable data collection, and alignment with the study's objective of informing and strengthening support systems for EFL students.

Participants
The study purposefully sampled eight undergraduate English majors from various Indonesian universities to ensure diversity in gender, age, regional backgrounds, and thesis-writing timelines. The participants (Participants 1-8) comprised three males and five females, aged between 21 and 23, representing both Java (East Java and Central Java) and outer islands (North Sulawesi, North Sumatra, and East Kalimantan). This diverse sample facilitated the exploration of gender disparities, regional variations, and challenges during thesis-writing process.

Data collection
Data collection methods included (a) in-depth semi-structured interviews conducted via Zoom, each lasting between 60 and 90 minutes, and (b) triangulation of data sources, which involved focus group discussions, analysis of participants' thesis drafts, and input from their academic supervisors. These data collection strategies ensured a comprehensive understanding of the participants' thesis-writing journeys.

Data Analysis
The data analysis followed Braun & Clarke's (2006) six-phase thematic analysis framework:
1. Familiarization with Data. Researchers immersed themselves in the data by repeatedly reading interview transcripts, focus group notes, and related documents. This process facilitated the development of initial observations and the identification of potential patterns.
2. Generating Initial Codes. NVivo 15 software was employed to streamline the coding process. Its AI Assistant feature generated preliminary codes based on data content. Researchers reviewed these AI-generated codes to ensure accuracy and relevance, modifying or supplementing them as necessary.
3. Searching for Themes. The codes were organized into potential themes using NVivo 15's hierarchical node structure. Visualization tools, such as mind maps and cluster analysis, were utilized to identify relationships among codes and emerging themes.
4. Reviewing Themes. Themes underwent a two-level refinement process: At the first level, coded data within each theme were examined for internal coherence. At the second level, the themes were evaluated for their validity in relation to the entire dataset. NVivo 15's coding comparison query was used to assess inter-coder reliability.
5. Defining and Naming Themes. Themes were further refined and assigned descriptive names that encapsulated their core meaning. Detailed analyses were developed for each theme, explicitly linking them to the overarching research questions.
6. Producing the Report. The final analysis was synthesized into a coherent report that included illustrative data

extracts for each theme. NVivo 15's reporting features were utilized to generate summaries of coding patterns and theme distributions.

Trustworthiness and Ethical Considerations

To ensure the credibility and dependability of the findings, several strategies were employed: First, data triangulation was implemented through the use of multiple data sources – interviews, focus groups, thesis drafts, and supervisor input – to validate findings. Second, member checking was conducted, whereby participants reviewed preliminary findings to confirm their accuracy. Third, peer debriefing involved discussions with non-study colleagues to refine interpretations and minimize bias. Finally, an audit trail was maintained through detailed documentation of research procedures, ensuring transparency throughout the study. In addition to establishing trustworthiness, this study adhered to strict ethical guidelines. During data collection, informed consent was obtained from all participants, and pseudonyms were used to protect their identities. All data were securely stored on password-protected devices to maintain confidentiality. By employing Braun and Clarke's (2006) reflexive thematic analysis alongside rigorous ethical protocols and trustworthiness measures, this study systematically explored the challenges, strategies, and competencies involved in the thesis-writing experiences of undergraduate English majors.

RESULTS AND DISCUSSION

The research findings indicate that undergraduate EFL students encounter various challenges in writing their theses, which can be classified into three primary categories: linguistic and writing competence, psychological and emotional barriers, and resource-technical constraints. To navigate these challenges students, utilize various adaptive strategies such as self-management techniques, technological tools, and support networks. This adaptive process contributes to the development of key academic competencies such as research skills, critical thinking, and time management, which are instrumental not only for academic achievement but also for future scholarly and professional endeavors. These interrelated dimensions underscore the importance of institutional support systems that holistically address the academic, technical, and psychological needs of EFL students.

Challenges Faced by EFL Students
Linguistic and Writing Competence

Mastery of grammar, vocabulary, and discipline-specific linguistic structures is essential in academic writing, yet it presents considerable challenges for numerous English as a Foreign Language (EFL) students. Participant 1 stated, "Grammar, vocabulary, and linguistics present difficulties for me," underscoring a common struggle among students in adhering to formal writing conventions. These conventions, while critical for establishing an academic tone, are often difficult to master. Participant 4 noted, "Many formal words used in this class are new to me," indicating the challenges

associated with acquiring and using academic vocabulary (Nurkamto et al., 2022; Prihandoko et al., 2024). The difficulty lies not only in comprehending these terms but also in applying them appropriately within complex academic contexts.

In addition to vocabulary acquisition, students face difficulties in paraphrasing, summarizing, and ethically integrating sources. Participant 2 noted that maintaining coherence and adhering to attribution norms contributes significantly to the stress associated with academic writing. This underscores the importance of mastering appropriate citation styles, such as APA or MLA, which demand a nuanced understanding that many students find challenging (Prihandoko et al., 2024). Ethical source integration is crucial not only to avoid plagiarism but also to preserve the original author's intent, requiring both technical proficiency and critical engagement. Ulhaq et al. (2023) and Nunes et al. (2022) argue that an overreliance on verbatim citation may indicate limited analytical depth or a lack of understanding of academic integrity principles.

A major challenge for students lies in achieving coherence and cohesion in their writing. Many continue to struggle with structuring ideas logically and constructing coherent paragraphs. Participant 5 remarked, "I mainly have trouble building coherent paragraphs," highlighting difficulties in systematically organizing thoughts. Coherence involves ensuring a logical progression between sentences and paragraphs, while cohesion requires the effective use of transitions and appropriate syntactic structures. Participant 6 explained, "When writing essays, my main difficulties are consistency in every sentence, academic language, and grammar." emphasizing the multifaceted nature of writing challenges. The need to synthesize complex ideas within the conventions of academic discourse further intensifies the linguistic demands of thesis writing.

The hierarchical structuring of arguments is essential for addressing coherence-related challenges in academic writing. Prihandoko et al. (2024) proposed frameworks that systematically organize ideas to support the main thesis and improve the overall narrative structure. Transition words and phrases play a critical role in enhancing readers' understanding of complex arguments (Gunawan & Aziza, 2017). Participant 7 stated: "Creating thoughts, keeping coherence, and properly using syntax and vocabulary provide constant difficulties for me." illustrating the persistent struggle to achieve clarity and cohesion. To maintain logical flow and facilitate smooth argumentation, writers must understand and apply strategies for achieving textual coherence, including the effective use of transitions (Enriquez et al., 2023; Lobo, 2023).

Additionally, academic writing requires the ability to integrate various viewpoints while maintaining clarity. This involves the capacity to critically assess sources and incorporate them into well-supported arguments. Participant 3 indicated, "I struggled with language and concept articulation to generate significant writings." Creating systematic reference lists is crucial for maintaining academic integrity and complying with citation standards (Enriquez et

al., 2023; Lobo, 2023). These practices require meticulous documentation of sources in accordance with established academic communication conventions.

Linguistic competence is essential for promoting intellectual discourse in academia, despite the challenges faced by students. This allows them to articulate complex ideas effectively and engage meaningfully in academic discussions. Addressing these barriers requires the implementation of institutional support systems that offer targeted interventions – such as academic writing workshops – to equip EFL students with the essential skills needed for academic success (Agricola et al., 2020; Soto-Rodríguez et al., 2024).

Psychological and Emotional Barriers

The process of thesis preparation often presents substantial psychological and emotional challenges, including self-doubt, stress, and pressure to perform. Many students experience feelings of inadequacy, questioning their ability to meet academic expectations. Participant 1 articulated this emotional burden by questioning, "Am I really ready for such a significant college assignment?" – a statement that reflects the commonly experienced phenomenon of imposter syndrome. As Djatmika et al. (2022) highlight, imposter-syndrome undermines students' confidence, causing them to doubt their competence despite clear evidence of their academic potential. Moreover, stringent deadlines and high academic expectations exacerbate these psychological pressures. Participant 5 expressed a common challenge: "I worried about making deadlines, which sometimes made it impossible for me to write well." illustrating how the demand for timely, high-quality work can impede students' ability to focus and produce coherent academic writing.

The thesis-writing process often generates significant feelings of isolation, compounding the stress and self-doubt already experienced by many students. Prolonged periods of solitary study, often devoid of interaction with peers or access to supportive networks, can exacerbate these psychological challenges. Participant 4 noted that such isolation adversely affected her mental health and diminished her motivation to write. This sense of disconnection may further amplify other academic struggles, leading to a decline in motivation and productivity. The interaction between rigorous academic demands and social isolation creates a cyclical pattern that impairs students' ability to maintain sustained focus. As Lobo (2023) asserts, the isolation inherent in academic writing can undermine perseverance and emotional stability. This observation is consistent with Djatmika et al. (2022), who emphasize the role of emotional resilience in supporting students' productivity and addressing the specific psychological demands associated with thesis preparation.

Stress significantly impacts cognitive and emotional functioning and may also lead to various physical manifestations. Lobo (2023) and Ulhaq et al. (2023) indicate that stress resulting from academic pressure often presents as symptoms such as fatigue, headaches, and digestive issues, all of which further hinder students' ability to

concentrate. Participant 6 articulated the compounded nature of this stress, nothing, "The worry of writing is made worse by the fear of not meeting the standards set by my peers and advisors." If left unaddressed, such challenges may contribute to a decline in both mental well-being and academic performance.

Moreover, stress adversely affects decision-making and the capacity to maintain focus, thereby hindering productivity. Many students experience challenges in organizing their ideas and sustaining concentration on their research tasks. Participant 7 noted the emotional impact of setbacks, asserting, "Maintaining a good attitude in the face of research and writing setbacks is challenging." This perspective highlights that the iterative and often unpredictable nature of thesis writing, wherein repeated revisions and unforeseen obstacles can exacerbate.

Personalized support systems are critical in alleviating psychological and emotional barriers faced during the thesis-writing process. Mentorship, access to mental health services, and structured peer support networks play a pivotal role in strengthening students' emotional resilience and academic self-efficacy (Agricola et al., 2020). Participant 3 emphasized the significance of mentorship, remarking, "Support systems were quite crucial to me. Meetings with my supervisor clarified my thesis and provided motivation." Such structured guidance not only alleviates feelings of isolation but also equips students with the motivation and clarity needed to navigate complex academic demands effectively.

Institutional interventions are essential in addressing the psychological and emotional challenges inherent in the thesis-writing process, extending beyond what individual efforts alone can achieve. Djatmika et al. (2022) and Lobo (2023) advocate for the integration of mental health resources within academic institutions, emphasizing the importance of cultivating environments that prioritize student well-being. Regular workshops focused on stress management, resilience-building, and time management can equip students with vital strategies to cope with academic demands. In addition, the establishment of peer-based initiatives, such as thesis-writing groups, can alleviate feelings of isolation and foster a sense of academic community.

Recognizing the emotional impact of thesis preparation reinforces the need for balanced academic expectations and readily available support systems. Participant 8's reflection - "Juggling thesis work with personal life wears me out and makes me doubt my development" – highlights the strain students often face and underscores the necessity of institutional recognition of students' holistic well-being. By addressing both the emotional and psychological dimensions of thesis writing, institutions can cultivate supportive learning environments that empower students and enhance their academic performance.

Resource and Technical Constraints

Access to academic resources and technology presents a considerable challenge for English as a Foreign Language

(EFL) students in higher education. These constraints are multifaceted, encompassing limited access to both physical and digital materials, insufficient technical proficiency, and challenges in navigating institutional platforms. Participant 1 expressed concern over the volume of required English-language materials, stating, "The volume of English materials I needed to learn was overwhelming." This observation underscores a broader issue of resource accessibility, as many students rely on online databases that are often restricted by paywalls, limiting their ability to obtain essential academic references (Deiniatur et al., 2024). In addition, physical library collections are frequently inadequate, necessitating a heavy reliance on alternative digital sources. As Participant 4 noted, the library's limited reference holdings compel students to depend substantially on online resources.

In addition to resource limitations, technical barriers further complicate academic tasks for EFL students. Many students exhibit limited familiarity with essential digital tools, such as SPSS for statistical analysis and reference management software like Mendeley or Zotero. Participant 6 reported, "I used SPSS for data analysis, but it required tutorial support and help from colleagues in the Statistics department." This lack of proficiency hampers research efficiency and increases dependency on external assistance. Furthermore, inadequate training in the use of institutional learning management systems (LMS) exacerbates these difficulties. Participant 5 described these systems ass "confusing or minimal, featuring crossed-out sections or question marks that lack explanation," underscoring the need for clearer user instructions and improved technical support.

Digital uncertainty, characterized by challenges in adapting to new technological tools, adds a layer of complexity to students' academic progress. This uncertainty affects their ability to complete advanced research tasks efficiently. Deiniatur and Cahyono (2024) found that inadequate digital literacy in EFL students impedes their ability to synthesize information from diverse sources, organize research materials digitally, and navigate online platforms effectively. Participant 7 highlighted this issue, stating:

"*My biggest challenge is translating my ideas into academically coherent and understandable language for readers. Often, I compose and cut out text to achieve balance and clarity in my work. I frequently edit and refine text to attain balance and clarity in my work.*"

These challenges emphasize the importance of prioritizing digital literacy training within academic programs.

Additionally, time constraints related to technological adaptation impede the effective execution of research. Participant 8 noted that balancing thesis preparation with other responsibilities presented significant challenges, primarily due to limited time for mastering new tools. While technology has the potential to enhance teaching and learning processes, many EFL students are inadequately

prepared for its implementation (Miranty et al., 2023). Cloud-based storage systems, which promote collaboration and accessibility across devices, are often underutilized, as students face difficulties in seamlessly integrating these tools into their research workflows.

The combined effects of resource and technical limitations highlight the critical necessity for institutional interventions to enhance access to academic resources and improve technical literacy among EFL students. The implementation of open-access databases, the organization of workshops on digital tools such as SPSS and reference management software, and the optimization of institutional platforms can effectively address these challenges. Furthermore, fostering collaborative environments that encourage peer support – such as through study groups or mentorship programs – may help mitigate the impacts of resource scarcity and technical difficulties.

Strategies Employed: Adaptive Approaches to Success
Self-Management Techniques
Undergraduate students often face significant challenges in thesis writing, requiring the adoption of structured self-management strategies to ensure success. These techniques help students balance academic responsibilities, personal commitments, and mental well-being. Participant 1 emphasized the importance of time allocation, noting, "I set aside specific hours each day for thesis work to better manage my time." This organized approach allows students to maintain consistency and avoid procrastination. Tools such as progress trackers, achievement charts, and project management software further enhance productivity by breaking the thesis into manageable tasks (Lobo, 2023).

Time-blocking techniques and structured daily schedules have proven to be effective in enhancing focus and productivity. Participant 2 stated, "I use a daily calendar to better manage my time. I devote my mornings to TOEFL prep and my evenings to thesis research." This systematic approach enables students to meet academic objectives while simultaneously managing other responsibilities. Furthermore, the use of visualization tools, such as Gantt charts or digital applications, reinforces motivation by offering tangible evidence of progress (Nurkamto et al., 2022).

Mental health practices are essential for sustaining cognitive resilience alongside effective time management strategies. Participant 8 stated, "I wait until I'm emotionally ready to write and complete chapters in a focused manner." This underscores the significance of recognizing emotional readiness as a key factor influencing productivity. Proactive self-care strategies, including regular physical exercise, mindfulness practices, and relaxation techniques, are effective in mitigating stress and preventing burnout (Lobo, 2023). Integrating leisure activities with academic responsibilities promotes mental rejuvenation, allowing students to maintain sustained concentration over time.

Support systems also play a crucial role in facilitating thesis-writing success. Participant 3 emphasized the importance of such systems, noting, "I had a few meetings

with my supervisor. These infrequent face-to-face contacts facilitate better talks and clarify my thesis." Regular engagement with supervisors offers both academic guidance and emotional reassurance, thereby reducing feelings of isolation. Furthermore, peer support groups provide additional advantages by creating collaborative learning environments where students can share challenges and develop collective strategies (Djatmika et al., 2022).

A systematic approach to planning constitutes an essential self-management strategy. Developing a clear chapter structure and adhering to a comprehensive work plan enhances writing clarity and deepens students' understanding of academic standards (Prihandoko et al., 2024). Participant 5 emphasized the effectiveness of such approach: "I created a system in which I switch between 'executing' and 'waiting list' members. I use this approach to manage my workload." These techniques allow students to prioritize tasks effectively, supporting consistent progress toward thesis completion.

Furthermore, the implementation of self-reward systems can significantly enhance motivation during extended writing periods. Cahyono and Rahayu (2020) suggest that celebrating small achievements fosters perseverance and a sense of gratitude, both of which are critical for maintaining enthusiasm throughout the thesis-writing journey. By integrating adaptive strategies—including time management, mental health practices, support systems, and structured planning—students are better equipped to navigate the complexities of thesis writing with confidence and efficiency.

Technological Support

Technology offers essential solutions to multifaceted challenges of academic writing, particularly for EFL students engaged in thesis development. AI-driven tools such as Grammarly, ProWritingAid, and ChatGPT provide immediate feedback on grammar, style, and academic tone, thereby enhancing writing quality and fostering greater confidence in language production (Miranty et al., 2023). Participant 1 noted that "Conversational GPT helps me determine my study topic. I use AI to understand scientific journals."

Reference management systems also play a pivotal role in streamlining research organization and citation practices. According to Nunes et al. (2022), platforms like Mendeley and Zotero allow students to focus more on the substance of their research by automating citation formatting and bibliography creation. Participant 8 described a collaborative initiative: "I created a WhatsApp group chat with my supervisor and my fellow mentees. My supervisor asked us to install Mendeley."

Digital storage solutions and cloud-based platforms have significantly improved accessibility and collaboration in academic writing. Syaifudin et al. (2018) highlighted that cloud storage facilitates seamless access to research materials across multiple devices, thereby enhancing collaborative efficiency and flexibility. This adaptability proved crucial for Participant 2, who noted, "I utilize the cloud for online exams and communication with supervisors and examiners." Similarly, Participant 3 adjusted to remote consultation, stating, "My thesis consultation is mainly done remotely, with drafts sent via WhatsApp."

Moreover, online academic resources play a vital role in enhancing research capabilities and ensuring alignment with supervisory expertise. Deiniatur et al. (2024) emphasize that digital academic profiles assist students in identifying research topics that correspond with their supervisors' specializations. Participant 5 utilized this approach: "To gain insight into my supervisor's academic background, I check her Google Scholar profile, ResearchGate account."

Specialized software for data analysis also constitutes a critical component in thesis development. Participant 6 demonstrated adaptability and initiative: "I used SPSS for data analysis, accompanied by tutorials on YouTube and help from colleagues in the Statistics department." This example reflects the creative integration of digital learning tools and peer support in addressing technical challenges and enhancing research proficiency.

Enhancing focus and efficiency is essential in the academic writing process. Website blockers effectively reduce online distractions, enabling students to maintain concentration during writing sessions (Deiniatur et al., 2024). Similarly, note-taking applications with multimedia integration and advanced search functionalities have revolutionized how researchers organize and document their ideas. These digital productivity tools enhance workflow efficiency and support in the management of complex research tasks.

Text-to-speech software offers additional support for editing and revision by allowing students to detect grammatical errors and assess the appropriateness of academic language (Miranty et al., 2023). The integration of such technologies cultivates a dynamic and interactive learning environment, leading to measurable improvements in grammar, vocabulary, and fluency among EFL students (Cahyono et al., 2023). These technological strategies not only address immediate academic writing challenges but also equip students for sustained engagement with evolving digital practices in academic and professional contexts.

Seeking Support Networks

The thesis writing process for undergraduate EFL students relies heavily on robust support networks that help address challenges and enhance academic outcomes. These networks encompass supervisory relationships, peer collaborations, institutional resources, and emotional support systems, all of which collectively foster resilience and academic achievement.

Supervisory engagement is a critical determinant of thesis success. Effective supervisors provide timely feedback on student performance, offer targeted guidance on complex issues, and maintain consistent communication throughout the research process (Nurkamto et al., 2022; Rahayu et al., 2024; Sabarun et al., 2024). Participant 2 emphasized the value of such support: "My supervisor helped me stay focused on the study question and find relevant sources."

This mentorship enables EFL students to navigate intricate academic demands while cultivating a positive and supportive learning environment (Djatmika et al., 2022; Prihandoko et al., 2024). Moreover, the integration of technology into supervisory practices enhances communication and learning engagement (Cahyono et al., 2023; Rahayu et al., 2024), thereby improving students' self-efficacy and metacognitive awareness.

Peer support networks significantly enhance academic performance and research capabilities. Deiniatur et al. (2024) and Stappenbelt and Basu (2019) emphasize that thesis writing groups operate on principles of accountability and idea exchange, effectively fostering motivation among participants. Participant 1 reflected on this experience: "To combat my insecurity, I joined a group that helped others write their thesis. Talking about our problems and progress boosted our confidence and motivation." Collaborative environments facilitate constructive peer critique, promote the refinement of ideas, and help identify weaknesses in academic writing (Agricola et al., 2020; Djatmika et al., 2022). Moreover, peer dialogue often extends beyond formal group structures. Participant 3 noted that informal discussions with peers—particularly those who had already completed their theses—provided critical insights into structural expectations and academic standards. Similarly, Participant 6 engaged in "peer checking with friends and older people I trust to give me good feedback." These interactions not only improve students' academic and research competencies but also contribute to the expansion of their professional networks (Lobo, 2023; Prihandoko et al., 2024).

Institutional resources provide structured support that complements peer collaboration and supervisory guidance. Writing centers contribute to improving the clarity, coherence, and consistency of academic writing (Djatmika et al., 2022), while library-led workshops develop students' research strategies and database navigation skills—both essential for conducting comprehensive literature reviews (Nurkamto et al., 2022). Additionally, departmental advisors assist students in interpreting and adhering to institutional requirements (Agricola et al., 2020). Participant 5 shared their experience: "I discussed my concerns about writing my thesis with graduates. I received suggestions from other instructors." This proactive engagement with institutional resources enhances both research quality and overall academic performance.

Emotional also plays a critical role in the thesis-writing process. Support from family members, partners, and friends provides reassurance during periods of stress and self-doubt. Participant 8 stated, "My family, my girlfriend, and my friends helped me with money and gave me support when I felt down." Participant 7 similarly remarked: "I also talked about the difficulties I encountered while completing my thesis with friends and family." Such emotional support helps students maintain motivation, mental well-being, and perspective throughout the demanding process of thesis completion.

Cross-departmental consultation offers valuable access to specialized knowledge beyond the immediate academic discipline. Participant 6 noted that they sought assistance from outside their primary academic environment: "I used SPSS for data analysis, accompanied by tutorials on YouTube and help from colleagues in the Statistics department." This interdisciplinary approach not only enriches the research methodology but also strengthens the analytical frameworks.

Essential Skills Developed – Beyond Academic Writing
Research Skills

Thesis writing plays a crucial role in developing advanced research skills that extend beyond the mere collection of information. This process involves identifying relevant sources, synthesizing diverse perspectives, recognizing research gaps, and critically evaluating existing knowledge to construct a comprehensive theoretical framework. Participant 3 highlighted the importance of research skills acquired through reading scholarly journals, noting that they were vital for establishing a solid theoretical foundation for the thesis. This underscores the value of deep engagement with academic literature in promoting intellectual growth and enhancing students' ability to tackle complex academic issues.

Students must navigate an extensive body of literature to refine their chosen topics and generate novel ideas. Participant 2 remarked, "I read relevant material, which includes a lot of journals and articles." Participant 4 similarly emphasized the significance of extensive reading: "A lot of reading helped me understand the subject better and find answers to the questions I had." These insights illustrate that engaging with a broad range of academic sources not only strengthens the theoretical framework but also nurtures the critical thinking skills essential for thesis development.

Research skills are fundamental to academic writing, enabling the analysis of multiple perspectives, the integration of diverse sources, and the presentation of well-supported arguments. Participant 6 stated, "I spent a lot of time reading previous research, especially theses from the library, to get used to the study process and figure out the best way to approach my chosen topic." Participant 7 emphasized the significance of identifying research gaps: "I carefully looked into my problem by reading a lot of scientific papers. This method helped me find problems with my study." This approach facilitated the identification of challenges within the research. This analysis demonstrates that engaging in thorough research activities fosters critical thinking skills in students, enhancing their ability to pinpoint gaps in existing knowledge and enabling them to make meaningful contributions to their academic field.

Scholarly research demands precision and adherence to academic standards, particularly for EFL students who often face challenges related to language proficiency. Participant 7 explained, "I read carefully everything I could find on the subject I chose, focusing on national and foreign journals." The thorough examination of credible sources is crucial for

developing a coherent and effective thesis. Educators and institutions can enhance students' research skills by offering targeted workshops on citation styles, database navigation, and ethical considerations in academic writing (Agricola et al., 2018; Nurkamto et al., 2022).

Additionally, academic writing requires students to express their ideas clearly, integrating their research findings into a well-organized structure. Participant 1 described the initial experience as "confusing and stressful," but acknowledged that consistent interaction with research materials eventually improved her writing skills. Systematic documentation of research, adherence to citation standards, and organization of references using tools such as Zotero or Mendeley are essential for efficient knowledge synthesis and the promotion of academic integrity (Deiniatur et al., 2024; Syaifudin et al., 2018).

The research skills cultivated during the thesis-writing process extend beyond the academic domain, preparing students for lifelong learning and future professional challenges. Critical engagement with scholarly content fosters the intellectual capacity required to address complex issues, generate original ideas, and contribute meaningfully to disciplinary knowledge. These competencies not only support the successful completion of academic objectives but also serve as essential foundations for sustained academic and professional development.

Critical Thinking

Critical thinking is a vital skill for EFL undergraduate students engaged in thesis writing, encompassing a range of cognitive processes required for academic research. This skill involves the systematic evaluation of sources, the construction of logical arguments, and the integration of complex information across disciplines.

Instructors promote analytical reasoning through diverse pedagogical methods such as Socratic questioning, argument mapping, collaborative problem-solving, and inquiry-based learning (Deiniatur & Cahyono, 2024; Syaifudin et al., 2018). These approaches support the deconstruction of complex arguments, the identification of implicit assumptions, and the critical appraisal of evidence, while encouraging a stance of constructive skepticism.

The practical application of critical thinking is evident throughout the thesis development process. Participant 1 emphasized the multifaceted nature:

"*Strong analytical and critical thinking skills are required to synthesize knowledge from various sources and present clear arguments. In my research, I evaluate sources, formulate arguments, and reach conclusions.*"

This comprehensive approach allows students to navigate the complexities of academic discourse while maintaining intellectual rigor.

Source evaluation constitutes a fundamental component of critical analysis. Participant 2 highlighted this process by stating: "To successfully get useful information from research sources and make necessary changes, I need to be able to use critical thinking skills to look at research materials and revise my work." As emphasized by Ulhaq et al. (2023) and Nunes et al. (2022), this process fosters active engagement with scholarly texts, encourages students to question established viewpoints, and deepens their understanding of both linguistic structures and subject-specific content.

Identifying research gaps represents a critical application of higher-order thinking skills in academic writing. Participant 3 highlighted that critical thinking is essential for evaluating scholarly articles, discerning gaps in existing literature, and integrating diverse sources of information. The ability to identify such gaps enables students to position their research meaningfully within broader academic discourse. Reinforcing this perspective, Participant 5 stated: "To read journals, find research gaps, and process knowledge, you need to be able to think critically."

In addition to source evaluation, critical thinking significantly contributes to the structural coherence of thesis writing. Participant 4 emphasized the role of critical thinking in connecting ideas across various chapters to ensure clarity and organization within the thesis. This structural function supports logical progression and enhances argumentative coherence throughout the research document. Similarly, Participant 6 affirmed that critical thinking is essential for integrating ideas across sections and maintaining the clarity and logic of the thesis.

Moreover, the effective use of theoretical frameworks is greatly facilitated by analytical reasoning. Participant 7 stated: "Critical thinking helps me connect my problems to a wide range of examples and situations and use theories correctly in my study." This ability to apply theoretical constructs appropriately is particularly valuable in interdisciplinary contexts. Supporting this view, as Participant 8 noted: "I can connect my topic to different situations and cases and use theories well in my study because I can think critically."

Cahyono et al. (2023) and Prihandoko et al. (2024) illustrate that an integrative approach to critical thinking enhances creative problem-solving and deepens students' understanding of language, literature, and culture. This cognitive framework enables learners to examine language within complex cultural contexts, applying diverse evaluative strategies to enhance both feedback literacy and writing proficiency.

Time Management

Time management is an essential skill for EFL undergraduate students who must navigate the multifaceted demands of thesis writing. In today's academic landscape, where students often juggle multiple responsibilities both within and beyond the university setting, the implementation of structured time-allocation strategies is critical to ensuring successful thesis completion (Deiniatur et al., 2024; Lobo, 2023). Time management encompasses various competencies, including project planning, task prioritization, and the ability to adapt to unexpected challenges.

Students who demonstrate proficiency in time management often adopt specific organizational systems. Participant 1 described an effective approach:

"*Having a comprehensive timetable with specific periods each day for thesis-related tasks helped me better manage my time. This allowed me to maintain a balance between studying for classes and writing on my report.*"

This systematic scheduling exemplifies the practical application of research findings indicating that clearly defined temporal boundaries can enhance productivity and reduce cognitive load during complex academic tasks.

The implementation of evidence-based time management strategies provides students with structured approaches to improve their academic efficiency. Djatmika et al. (2022) highlight task prioritization techniques such as the Eisenhower Matrix (also referred to as the ABCDE method) and the Pomodoro Technique, which alternates concentrated work intervals with scheduled breaks to minimize fatigue and optimize focus. Participant 3 reflected this structured approach:

"*I used a disciplined daily calendar to deal with time management issues. I set aside evenings for thesis-related reading and research, and the mornings for TOEFL practice.*"

The capacity to manage various responsibilities is a fundamental component of effective time management. Participant 5 highlighted the importance of balance:

"*Good time management helped me balance my teaching duties, thesis writing, and other responsibilities. I devised procedures to deal with contradictory feedback from superiors and ensure ongoing progress.*"

The ability to manage competing demands corresponds with the findings of Prihandoko et al. (2024), which indicate that sustaining productivity amid complex academic challenges requires effective communication, strategic delegation, and continuous reassessment of priorities.

Time management plays a critical role for students, particularly during periods of emotional or physical fatigue. Participant 2 highlighted the importance of effective time management in overcoming frequent fatigue and low morale experienced while working on the thesis. This observation resonates with the findings of Deiniatur and Cahyono (2024), which suggest that identifying and prioritizing key tasks is essential for maintaining productivity during challenging periods.

The benefits of time management extend beyond the immediate demands of thesis writing. Participant 7 emphasized that effective time management was integral to the thesis development process, noting that the timely completion of the thesis was largely dependent on regular meetings with advisers, adherence to self-imposed deadlines, and the efficient management of research and writing tasks. These practices cultivate transferable skills that not only contribute to successful thesis completion but also enhance students' capabilities in subsequent academic and professional contexts.

Mastering time management entails specific challenges. Participant 8 acknowledged,

"*The primary problem I faced prior to preparing the thesis was time management. I encountered a series of overlapping duties and personal situations that severely hampered my ability to concentrate on thesis writing*."

This reflection aligns with the findings of Stappenbelt and Basu (2019), who assert that mastering the management of competing demands significantly enhances both the balance and productivity of the academic experience, despite the initial challenges faced during the process.

CONCLUSION

The study titled "Navigating Undergraduate Thesis Journey: Qualitative Exploration of Challenges, Strategies, and Skills in English Department Students" provides an in-depth analysis of the various challenges faced by English as a Foreign Language (EFL) undergraduate students during the thesis writing process. Linguistically, students encountered difficulties with grammar, vocabulary, academic tone, and source integration—elements essential for producing scholarly work. Psychologically, the process engendered stress, anxiety, and self-doubt, often resulting in procrastination and writer's block. Furthermore, limitations in resources, including access to digital materials, comprehension of academic conventions, and proficiency in utilizing technology for research and writing, were identified as significant obstacles.

To navigate these challenges, students implemented a range of strategies. Self-management techniques, including structured time management, mental health practices, and motivational approaches, were essential in maintaining progress. Technological tools, such as grammar checkers, reference management software, and productivity applications, played a pivotal role in enhancing writing quality and managing citations. Support systems, encompassing effective supervision, peer support, and institutional resources such as writing centers, were crucial for providing guidance, feedback, and emotional assistance. The thesis writing process also facilitated the development of several key skills. Research abilities were refined through the critical evaluation of sources, identification of research gaps, and application of research methodologies. Critical thinking and analytical skills were strengthened, allowing students to dissect complex arguments, assess evidence, and synthesize information. Additionally, time management and organizational skills were vital for balancing the long-term nature of the thesis project with other academic responsibilities.

The implications of this research suggest the need for integrated institutional support systems that address linguistic, psychological, and technical challenges. The incorporation of research and writing skills throughout the undergraduate curriculum could better equip students for the thesis process, thereby reducing anxiety and improving the overall quality of their theses. Additionally, training for supervisors in effective mentoring and communication practices could enhance the thesis supervision process,

making it more transparent, supportive, and productive. Future research would benefit from longitudinal studies to assess the long-term impact of thesis writing on students' academic and professional development.

Developing and evaluating intervention programs focused on improving specific skills such as academic writing, time management, and psychological resilience could provide practical solutions to the challenges identified in this study. Additionally, exploring the integration of technology into the thesis writing process, particularly in areas such as digital literacy and access to resources, would be valuable. This study emphasizes the importance of a holistic approach to supporting EFL students in their thesis writing journey, underscoring the need for comprehensive institutional strategies that address the diverse needs of students. Such strategies would contribute to creating an environment that fosters both academic success and personal growth.

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The use of result-linking adverbials in argumentative essays by Indonesian EFL students

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Understanding the use of result-linking adverbials in writing argumentative essays is crucial for both educators and EFL learners. However, EFL learners often struggle with the appropriate usage. Limited research has examined how Indonesian EFL learners employ these linking adverbials in argumentative writing. This study investigates the frequency, positional distribution, and functional usage of result-linking adverbials in argumentative essays written by Indonesian EFL Learners. It adopts a qualitative descriptive approach, analyzing 50 essays (each 200-300 words) from the ICNALE corpus, authored by Indonesian EFL students at the B1_1, B1_2, and B2 proficiency levels. The essays address two standardized topics: part-time job for college students and smoking bans in restaurants. The data were analyzed with respect to result-linking adverbial types (so, therefore, hence, thus, consequently, and as a result), frequency, syntactic position (initial, medial, and final), and functional roles (e.g., concluding and cause-and-effect relationships). The findings revealed a predominance of "so" primarily in sentence-initial position, indicating overreliance on the informal register. Most result-linking adverbials were placed in the sentence-initial position, whereas "thus" was predominantly found in the sentence-medial position. Indonesian EFL students tended to use result-linking adverbial to draw conclusions rather than to indicate consequences or express cause-and-effect relationships. Habit formation, first language interference, and instructional practices are identified as potential factors affecting their usage of result-linking adverbials in argumentative writing. The results underscore the need for targeted pedagogy that emphasizes register-appropriate use of linking adverbial and provides explicit instruction on their syntactic positioning.

Keywords: Result-Linking Adverbials, Argumentative Essays, Indonesian EFL Students

INTRODUCTION

Linking adverbials, also known as adverbial conjunctions, play a crucial role in connecting ideas and clauses within or between sentences (Biber et al., 1999). They establish logical relationship between these ideas – such as cause and effect, contrast, addition, and sequence – thereby enhancing coherence and cohesion in writing (Liu, 2008). According to Gao (2016) adverbials serve as cohesive devices that convey the structure of an argument and influence the reader's interpretation of a text. Halliday and Hasan (1976) also emphasized cohesion as a critical textual factor in effective writing. Linking adverbials are typically placed at the beginning or in the middle of a sentence and are separated by a comma or a semicolon, depending on the degree of separation required (Biber et al., 1999).

The term *linking adverbials* varies depending on the textbook reference consulted. Hůlková (2005) noted that terminology related to linking devices differs significantly across sources and that there is a lack of consistency. She also pointed out that grammar books use a variety of terms, including "*logical connectors,*" "*connective adverbs,*" "*discourse makers,*" "*conjunctive expressions,*" among others. Quirk et al. (1985) use the term: "*conjunctive adjuncts,*" whereas, Liu (2008) and Celce-Murcia and Larsen-Freeman (1999) refer to them as "conjunctive adverbials." Although these terms are similar in meaning to some extent, the present study adopts the term *linking adverbials* (LAs), following Biber et al. (1999), who define them as devices that "make the semantic connection between spans of discourse of varying length" (Biber et al., 1999).

The researchers have two main reasons for this choice: first, the word *linking* is more straightforward and generally more familiar to readers than the term *conjunct*, as observed by Biber et al. (1999) and Ha (2016); and second, the term *adverbials* is preferred over *adverb* because it is more inclusive, encompassing multi-word linking devices, such as, *on the other hand, in contrast, as a result, etc*. (Biber et al., 1999).

Biber et al. (1999), whose classification is adopted in the practical part of this study, distinguish several general semantic categories, as shown in Table 1: Linking Adverbials Categorization.

TABLE 1 | Linking Adverbials Categorization

No.	Categories	Definition	Examples
1.	Enumeration and addition	Enumeration refers to listing pieces of information.	First, second, for a start, and to conclude
		Addition involves linking themes of points to the discourse.	equally, likewise, furthermore, moreover, and in addition
2.	Summation	Summation shows that a unit of discourse concludes or summarizes the preceding information.	Altogether, in sum, in short, to sum up, in conclusion
3.	Apposition	Apposition presents the second unit of discourse as a restatement or example of the first.	Namely, e.g., for example, for instance, etc.
4.	Result/inference	Result-linking adverbials indicate that the second unit of discourse is a result or consequence (either logical or practical) of the preceding discourse.	Then, as a result, so, thereby, therefore, in other words, thus,
5.	Contrast/concession	This category signals either a contrast between different discourse units or a concessive relationship, showing a distancing from the preceding idea.	However, yet, in fact, instead, of course, in contrast, etc.
6.	Transition	Transition markers indicate an interruption or shift from the preceding discourse, often moving to a tangential topic.	incidentally, now, and subsequently.

Distinguish linking adverbials (Las) from other conjunctions or linking words is a critical initial step in this study, as the research focuses solely on LAs. This task can be challenging because, as previously discussed, different scholars offer varying terminologies and classifications. In this study, it is necessary to clarify the distinction between LAs and conjunctions (both coordinators and subordinators). According to Liu (2008), the primary feature that differentiates LAs from conjunctions is that LAs connect a broader range of discourse semantically, whereas conjunctions typically operate at a smaller syntactic level, namely below the clause level. Liu (2008) also noted that in certain limited cases, it can be difficult to distinguish between LAs and conjunctions, particularly with items such as so and yet. Biber et al. (1999) also address this issue, stating that coordinators can sometimes be closely associated with LAs.

The following examples illustrate this point:
(A) A bus strike was on, <u>so</u> we had to go by taxi.
(B) He wanted to avoid the rush hour, <u>so</u> he took the early train.
(C) The mill could be sold off, <u>so</u> providing much-needed capital.
(D) This may make the task seem more accessible <u>and so</u> increase self-confidence.

According to the examples above, in sentences (A) and (B), "*so*" function as a linking adverbial because it connects two sentences and conveys a semantic cause-and-effect relationship. In other words, "*so*" serves as an indicator that marks the following clause as the result of the preceding one. In examples (C) and (D), however, "*so*" functions differently; it guides readers to perceive a causal relationship between the two clauses, but in these cases, "*so*" acts as a

coordinating conjunction connecting two clauses to indicate the consequence or result of the action.

Nomerous corpus-based studies have examined the use of linking adverbials by non-native speakers (Aziz & Nuri, 2021; Hua, 2021; Kao & Chen, 2021; Nan, 2020; Sungran Koh, 2021; Wang, 2022; Yanti & Basthomi, 2019). The data for these studies were collected primarily in the form of essays. (Aziz & Nuri, 2021; Sungran Koh, 2021; Wang, 2022; Yanti & Basthomi, 2019). For instance, research conducted by Sungran Koh (2021) compared the use of linking adverbials among native speakers, non-native English experts, and non-native Korean speakers. The study found that the English proficiency level of L2 learners significantly influenced their use of linking adverbials in writing. Notably, the study revealed that non-native English experts and native English speakers did not differ substantially in their use of linking adverbials, despite some minor interlanguage differences.

The researchers identified a study narrowly focused on conjunctive adverbials conducted by Leedham and Cai (2013). Their research examined the influence of textbooks on the selection of conjunctive adverbials (Cas) in academic writing. Based on the data analyzed, the study revealed Chinese students' preference for using certain conjunctive adverbials (specifically, nine CAs that emerged as keywords) and found that three of these were categorized as informal when used in academic writing. The study also highlighted a tendency among students to use "*however*" and "*therefore*" at the beginning of the sentence. Additionally, the researchers identified previous studies that discussed the positioning of conjunctive adverbials within sentences (Janulienė & Dziedravičius, 2015; Leedham & Cai, 2013; Malichatun & Hardjanto, 2020; Sungran Koh, 2021; Yong-Yae Park, 2013). Regarding syntactic patterns, Phoocharoensil (2017) identified several patterns of the use of Las, particularly concerning "*so*" and "*therefore*." "*So*" typically functions as a coordinating conjunction placed after a comma, while "*therefore*" predominantly follow two patterns, i.e., "*therefore*, S + V" and "*therefore*, S+V." Similarly, "*thus*," follows the patterns: "*thus*, S+V" and "*thus*, S+V."

The syntactic forms of result-linking adverbials can be categorized into single-word adverbs and prepositional phrases (Phoocharoensil, 2017; Yin, 2016). Research by Malichatun and Hardjanto (2020) found that single-word forms dominate the use of conjunctive adverbials compared to phrase forms. According to Halliday and Hasan (1976), conjunctive adverbials can take three forms: adverbs, compound adverbs, and prepositional phrases. Similarly, Leláková and Šavelová (2020) noted that single adverbs are most commonly used in conversational and academic writing, whereas academic articles often favor the use of prepositional phrases as linking adverbials.

The results of the semantic classification of linking adverbials, based on the literature review, are varied. Some researchers have noted that the use of linking adverbials can be influenced by the type or genre of the text (Biber et al., 1999), whereas Kao and Chen (2021) argued that genre and

time do not significantly influence the distribution of CAs in texts. Research conducted by Pipatanusorn and Wijitsopon (2019) and Malichatun and Hardjanto (2020) found that the adversative category was the most frequently used, while the causal category was the least used in scientific articles. Converselt, Yanti and Basthomi (2019) found that causal categories often appeared in undergraduate students' articles. Based on their interview results, causal categories were preferred because they are perceived as simple and easy to use.

Similarly, other studies have revealed the result-linking adverbials are the most frequently employed in EFL students' academic essays, followed by additive and adversative categories (Oktavianti & Sarage 2022). Feng and Choe (2016) found that Chinese English as a Foreign Language (EFL) learners tended to overuse causal and sequential linking adverbials in argumentative essays, often relying on a limited range of prefabricated pattern. On the other hand, research by Aziz and Nuri (2021) found that the sequential and additive CAs appeared most frequently in the essays of Iraqi students. Furthermore, Hua (2021) and Kao and Chen (2021) found that listing linking adverbials were most frequently used by Chinese EFL learners. Research conducted by Nan (2020), which adopted the theoretical framework of Biber et al. (1999), and supported by Wang (2022), also found that enumeration and additive linking adverbials commonly appeared in Chinese L2 writing.

However, EFL learners often encounter difficulties in using linking adverbials. A common issue is the tendency to either overuse or underuse certain adverbials. The use of conjunctions has long been a source of difficulty for EFL learners, with the use of "*besides*" as a conjunction proving particularly troublesome (Chen, 2006; Yeung, 2009). Regarding Asian learners of English, Ha (2016) investigated the use of conjunctive adverbials in Korean EFL students' writing and found that Korean EFL students tended to overuse additive and sequential conjunctive adverbials (CAs). Similarly, Chen (2006) compared 23 final papers written by Taiwanese EFL students to published papers in TESOL-related journals and found that, at the word level, students' writing exhibited a slight overuse of connectors. Furthermore, qualitative findings revealed that some learners misused particular CAs, such as besides and hence (Yeung, 2009).

The researchers also identified studies specifically discussing result-linking adverbials, notably those conducted by Phoocharoensil (2017) and Dutra et al., (2019). Phoocharoensil (2017) found that "*thus*" was the most frequently used result-linking adverbial in textbooks, followed by "*therefore*" and "*hence*", respectively, while "*so*" was the least frequent. In addition, over 90% of result-linking adverbials in academic written English were found to occur in the medial position. Similarly, studies by Dutra et al. (2019), Nakayama (2021), Ryoo (2007), and Ahmad and Wey (2020) revealed that "*so*" was the most commonly used result-linking adverbial in Brazilian EFL students' essays, followed by "*therefore*", "*thus*", "*hence*", and "*as a result*". Ahmad and Wey (2020) did not discuss why so frequently

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appeared as a causal linking adverbial in Malaysian students' argumentative essays. Quantitative findings confirmed that EFL students tended to overuse "*so*" and underuse "*therefore*" compared to native corpora (Dutra et al., 2019; Ryoo, 2007). Brazilian students frequently used these linking adverbials in the initial position, whereas native speakers tended to use them in the medial position. Another notable finding revealed that Brazilian students employed result-linking adverbials to initiate topics, restate ideas, and mark conclusions, whereas in the native corpus, "*so*" was primarily used to express result and logical consequence (Dutra et al., 2019).

The proper use of linking adverbials is strongly associated with higher writing quality, especially in academic and professional contexts. When employed effectively, these adverbials contribute to the logical flow of ideas, enhance the persuasive of arguments, and enable readers to follow the writer's train of thought with ease. Conversely, the absence linking adverbials may result in fragmented, disjointed, or confusing writing, ultimately undermining communication effectiveness. Before undertaking the present study, the researchers conducted preliminary research and found that result-linking adverbials frequently appeared in the argumentative texts of Indonesian EFL students. According to Biber et al. (1999), result-linking adverbials such as "*so*," "*thus*," "*therefore*," "*hence*," "*consequently*," "*as a result*," "*accordingly*," "*as a consequence*," occur most frequently in academic writing and carry significant semantic value, particularly in cause-and-effect essays. These cohesive devices are essential for effectively connecting sentences or larger units of discourse. Thus, understanding the use of result-linking of adverbials in argumentative essays is crucial for both educators and EFL learners.

This observation motivated the researchers to investigate the use of result-linking adverbials in the argumentative texts produced by Indonesian EFL learners. Through a review of previous studies, the researchers identified a research gap: no specific study had yet examined the use of result-linking adverbials among Indonesian EFL learners using a corpus-based approach. To address this gap, the present study employed corpus data compiled by Ishikawa (2018). This corpus, developed initially by Ishikawa (2013), is part of the International Corpus Network of Asian Learners of English (ICNALE), which focuses on English learners from various Asian countries, including Indonesia. Importantly, ICNALE provides open access for researchers, facilitating comprehensive analyses.

Based on the background and the findings of prior research, the researchers formulated two research questions to guide the investigation.

1. What forms of result-linking adverbials are used by Indonesian EFL learners in writing argumentative texts?
2. How do Indonesian EFL learners use result-linking adverbials in argumentative texts?

METHODS

This study employed a qualitative descriptive analysis of students' argumentative essays, utilizing an Asian EFL learners' corpus that includes first- to fourth-year college students majoring in social sciences, humanities, sciences and technology, and life sciences. The corpus provides data from EFL students across various Asian countries, including Taiwan, China, Japan, Korea, Hong Kong, the Philippines, Thailand, Indonesia, Singapore, and Pakistan. This research specifically focused on analyzing the use of result-linking adverbials in argumentative texts written by Indonesian students. The ICNALE corpus provided 200 essays written by Indonesian students. For this study, 50 argumentative essays were selected for analysis. The sample consisted of essays written by students who had achieved B1_1 (Threshold; Lower), B1_2 (Threshold; Upper), or B2 (Vantage) levels based on the CEFR classification. According to the Council of Europe (2020), learners at the B level are capable of writing argumentative essays with logical connections. Each selected essay ranged from 200 to 300 words, focusing on two common topics ("part-time jobs for college students" and "smoking bans in restaurants"), contributing a total of 11,567 tokens. Learners were given 20 to 40 minutes to complete their essays using Microsoft Word. While the use of a spell checker was permitted, the use of external references was prohibited (Ishikawa, 2013).

Data Collection

The learners' written essays were digitized and provided in text (.txt) file format. The corpus was accessible to the researchers after registration via Google Forms, through which they obtained a password to access the data. The researchers then downloaded the files from the website, acquiring a complete set of raw data, Excel mapping data, and text files grouped by country, proficiency level, and topic, table 2.

TABLE 2 | Summary of Current Learner Corpora

Selected essays	50
Word count	8.145
Token count	11.567

Data Analysis

In this research, the researchers employed AntConc (Anthony, 2024), a free concordance software, as a tool to analyze the usage of result-linking adverbials in Indonesian EFL learners' argumentative texts. AntConc version 4.3.1 (Anthony, 2024) was selected for its user-friendly interface and its capabilities for keyword searches and collocation analysis, which are essential for identifying and quantifying the use of linking adverbials. Based on classifications by Biber et al. (1999); Celce-Murcia & Larsen-Freeman, (1999); Liu (2008); and Quirk et al. (1985) the linking adverbials "*so*," "*thus*," "*therefore*," "*consequently*," "*as a result*," and "*hence*" are categorized as causal/result/resultative linking adverbials. These lists assisted the researchers in creating specific keywords

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analysis using AntConc.

However, caution was necessary, as not all instances of "*so*" functioned as linking adverbials. Therefore, the Keywords in Context (KWIC) feature of AntConc was used to examine their usage closely. Instances such as "*so far*", "*so difficult*", "*so that*," which function to connect phrases or clauses or modify adjectives, were excluded from the analysis.

The researchers also utilized AntConc's collocation function to refine the analysis and examine the frequency and surrounding context of the linking adverbials. A collocation window of two words to the left and right of each keyword was set to observe adjacent words and better understand how result-linking adverbials were used. This method was particularly useful for assessing the contextual appropriateness of resultative adverbials within the texts.

The overall analysis was conducted qualitatively, focusing on the usage of result-linking adverbials. Examples from the texts were included to demonstrate their application, and the researchers assessed the appropriateness of their use in argumentative writing. The findings were

presented descriptively, supported by numerical data and selected sample texts to illustrate the effectiveness of cohesive devices. This approach aimed to provide a deeper understanding of how Indonesian EFL learners employ linking adverbials to enhance textual cohesion.

RESULTS AND DISCUSSION

Biber et al. (1999) identified several categories of linking adverbials in both written and spoken English. However, this study found only six of these categories in argumentative texts of Indonesian EFL learners. Transition linking adverbials were not observed in the data. This absence may be attributed to a limited understanding of linking adverbials or transitional expressions, which learners might perceive as non-essential in argumentative writing. Table 3 presents the overall frequency of linking adverbials in the students' argumentative texts for contextual comparison, while Table 4 details the frequency of result/inference linking adverbials used by Indonesian EFL learners.

TABLE 3 | Overall Hit of Linking Adverbials Across Categories

No.	Categories	Occurrence	%	Examples
1.	Result/inference	55	35.03	So, therefore, hence, thus, consequently, as a result
2.	Addition	51	32.48	Also, moreover, furthermore, in addition
3.	Enumeration	31	10.75	Firstly, first, second, secondly, third, first of all, the last, lastly
4.	Apposition	12	7.64	For example, foe instance, in other words
5.	Summation	4	2.55	All in all, in conclusion, finally, generally
6.	Contrast	4	2.55	However, on the other hand, instead of, nevertheless
7.	Transition	0	0	So, therefore, hence, thus, consequently, as a result
	Total	153	100	

Result/inference linking adverbials were found to be the most frequently used by Indonesian EFL learners in their argumentative writing, which was the primary focus of this study. Additionally, additive, enumeration, apposition, and summation linking adverbials were also identified in the learners' texts, in descending order of frequency. However, this study did not find any instances of transition linking adverbials in the argumentative texts.

TABLE 4 | The occurrence of result-linking adverbials in Indonesian EFL learners' argumentative texts

No.	Result-linking adverbials	Occurrence	%	Position
1.	So	45	82	Initial
2.	Therefore	4	7.2	Initial
3.	Thus	2	3.6	Medial
4.	Consequently	2	3.6	Initial
5.	Hence	1	1.8	Initial
6.	As a result	1	1.8	Initial
Total		55	100	

We found that "*so*" was a commonly used result-linking adverbial in the argumentative texts written by Indonesian EFL learners. In most cases, learners used a single adverb rather than a phrase, with only one instance of a result-linking adverbial in phrasal form. This result supports previous studies (Leláková & Šavelová, 2020; Malictaun & Hardjanto, 2020), which indicate that EFL students tend to prefer single adverbs. In addition, the sentence-initial position was the most frequently used placement of linking adverbials in these texts. Only the adverbial "*thus*" appeared in a sentence-medial position.

So

In this research, linking adverbials "*so*" were found to have the highest frequency among result/inference markers, with 45 occurrences. All instances of "*so*" appeared at the beginning of sentences. Below are examples illustrating its use in students' argumentative texts. According to Dutra et al. (2019), "*so*" serves multiple discourse functions: (1) expressing a result; (2) leading to a conclusion; (3) restating an idea or statement; and (4) introducing a topic.

(1) "Part time jobs can be helpful for college students. It can give additional income, experiences and build our skills. <u>So I think it is important to have part-time jobs.</u>" (PTJ_015_B1_2)

In Example (1), "*so*" is used to draw a conclusion based on the preceding ideas. It functions as a linking adverbial that connects the benefits of part-time jobs with the writer's assertion. As a discourse marker, "*so*" guides the reader through the flow of ideas and signals a transition to a conclusion or significant point.

(2) Because it is pretty difficult from me to manage my time, and actually I am easily tired. Despite, I didn't have any goals in my major (accounting) like getting a good Final Exam mark or etc. I just doing all of this as usual. Take a part job like this just spend my time and myself into risks. <u>So I absolutely refuse about this.</u> (PTJ_020_B1_2)

Data (2) illustrates the use of "*so*" as a linking adverbial following the writer's explanation of reasons for disagreeing with part-time employment. Both examples (1) and (2) demonstrate that Indonesian EFL learners tend to use "so" in the sentence-initial position to conclude or summarize the preceding statements. Notably, in this study, "*so*" was often written without appropriate punctuation such as a comma or semicolon. Specifically, we found 24 instances where "*so*" appeared at the beginning of a sentence without a following comma or semicolon.

(3) In the part time job, the workers may not be late to come to their job. (3a) **So**, it forces the students as the workers to be on time in their job. Not only that, it also can develop the student's knowledge skill. The students can develop their knowledge when they are having a part time job. (3b) <u>**So,** after getting lesson from the college, the students directly can apply it in their job.</u> Furthermore, the students can use their time well, they can avoid from wasting the time, such as playing, shopping, and many others. And their time just for useful activity. (3c) <u>**So,** having a part time job for the college students is very useful and important.</u> And all the students in the college should provide their time for having a part time job. (PTJ_002_B1_1)

Revealed that "*so*" appeared three times within a single text. This repetitive use rendered the text somewhat ineffective, as each sentence appeared to function as a conclusion, diminishing the overall coherence. In this context, "*so*" served a resultative function in each instance. In Data (3a), "*so*" introduces a statement that expresses a consequence of the preceding idea – namely, that because students have part-time jobs, they are compelled to be punctual – thereby establishing a clear cause-and-effect relationship. In Data (3b), "*so*" is used to summarize or conclude the previous points, suggesting that the arguments related to discipline, time management, and the application of knowledge collectively support the view that part-time jobs are beneficial for students. In Data (3c), "*so*" connects the idea of academic learning with the practical application of that knowledge in the workplace, reinforcing the argument in favor of part-time employment. While using "*so*" to conclude individual points may be appropriate in

isolation, its excessive repetition within a short span can negatively impact the overall cohesion and coherence of the text.

(4) Working part-time doesn't mean we have to work while we are studying. We can work part-time when it's holiday. (4a) <u>**So,** we don't waste our time with lazing around, not knowing what to do.</u> With working part-time, we can get some activity to do and also, we can get money to lessen the burden on parents. Working part-time also will give us experience. However, later we will be looking for job to fulfill our needs. We can write our part-time job in our CV. (4b) <u>**So,** it's important for us as a college student to have a part-time job. Although, we can't fulfill all of our need, we can learn to be independent.</u> (PTJ_034_B1_2)

Data (4) demonstrates the use of "*so*" to introduce statements that directly result from the preceding information. In Data (4a), "*so*" suggests that because part-time work provides structure and activity, it prevents individuals from wasting time idly. The implication is that engaging in part-time employment leads to a more productive use of time. In Data (4b), "*so*" emphasizes the importance of having a part-time job, based on the previously discussed benefits. Here, "*so*" contributes to maintaining a logical flow within the argument, linking points such as avoiding idleness, gaining experience, and easing the financial burden on parents, all of which support the concluding statement. In this data set, "*so*" functions effectively as a linking adverbial that conveys resultative relationships between ideas. It articulates the consequences of part-time work, emphasizes its importance, and contributes to the coherence of the overall argument.

This research also found that "*so*" frequently collocated with subjects, including pronouns and gerunds. In addition, we observed that it often co-occurred with modal verbs following the subject. The presence of modal verbs after "*so*" is commonly associated with the specific function and meaning "*so*" conveys in argumentative contexts. context.

(5) "College students need more money if they need it, because sometimes that the college student's money that given from their parent are not enough to solve it. <u>**So,** they will search a part-time job.</u> (PTJ_001_B1_1)

When the modal verb "*will*" follow "*so*" in a sentence, it typically conveys a sense of future intention, prediction, or inevitability based on the preceding context. Data (5) shows that the use of "*will*" after "*so*" often indicates a decision or intention to take action in the future, as a direct result of the information provided before "*so*".

(6) Why part-time job? Because their study time can't be compromised with the regular job and they will need a part-time job that has unusual work time. <u>**So** they can combine their studying with working in a part- time job.</u> (PTJ_001_B1_1).

The use of "*so*" can imply a condition that leads to a logical conclusion, while the modal verb that follows often expresses the outcome of that condition. In Data (6), for example, "*can*" conveys the ability to balance studying and working, based on the preceding statements about the advantages of part-time jobs.

(7) You just spending your life, your money, and the important thing is you will spend much money for medicine if it going worse. **So you should think twice for decide to stop smoking. Because we had dreams for our life.** (SMK_020_B1_2).

Data (7) illustrates the use of "*so*" followed by the modal verb "*should*," which indicates a recommendation or piece of advice grounded in the preceding discussion about the benefits of part-time employment.

The placement of "*so*" at the beginning of a sentence, functioning as a result-linking adverbial, serves several important rhetorical functions in academic writing. First, it emphasizes the forthcoming conclusion or result, signaling to the reader that what follows is a direct outcome of the previous information. Second, beginning a sentence with "*so*" contributes to the clarity of the logical flow, clearly indicating a consequential relationship between ideas. Third, it often functions to summarize or encapsulate prior points, thereby reinforcing the main argument or conclusion.

Therefore

In this study, "*therefore*" appeared only four times across 50 argumentative texts, with two occurrences found in texts written at the B2 proficiency level. One instance of "*therefore*" occurred at the beginning of a sentence without a following comma. In all cases, "*therefore*" was positioned either before the subject or at the very beginning of the sentence, preceding any obligatory syntactic elements. No instances of "*therefore*" were found in sentence-medial or sentence-final positions in this dataset.

(8) When teenagers were high school students, they have less responsibility, less self-dependency, and they are still living in their comfort zone. **Therefore, as soon as they step into college life, they have stepped into adulthood as well.** (PTJ_178_B2).

In Data (8), "*therefore*" functions to signal a logical conclusion derived from the preceding statements. The writer describes a scenario in which high school students experience limited responsibility and remain within their comfort zones. The transition to college is then presented as a significant shift, requiring increased maturity and independence. In this context, "*therefore*" effectively indicates that the challenges of adapting to college life result directly from the lack of responsibility and self-reliance developed during high school. As a formal linking adverbial, "*therefore*" is appropriately used in this context, aligning with the academic tone typical of argumentative or analytical writing. In this example, "*therefore*" is placed in the sentence-initial position, preceding the adverb and subject.

(9) In cigarette smoke can cause heart disease, stroke and so forth. **Therefore, we recommend active smokers to reduce smoking in their consumption.** because cigarettes are very harmful passive smokers who get swept up in the cigarette. (SMK_014_B1_1)

The linking adverbial "*therefore*" signals a logical conclusion drawn from the preceding statements. In this case, the writer outlines the negative health effects of cigarette smoke and recommends that active smokers reduce their consumption. In Data (9), "*therefore*" effectively indicates that the recommendation is a direct consequence of the health risks associated with smoking. While "*therefore*" is a formal linking adverbial appropriate for academic writing, its use in this instance is somewhat inconsistent with the more informal tone of the surrounding text. Expressions such as "*and so forth*" and "*be fined*" contribute to a casual tone that may not align with the conventions of formal argumentative writing. In terms of syntactic placement, "*therefore*" appears immediately before the subject, which is typical in formal writing. Its use here establishes a clear causal relationship between the health risks of cigarette smoke and the suggested course of action. From a pragmatic perspective, "*therefore*" not only conveys logical consequence but also implies a sense of obligation or necessity. The student is not merely offering a suggestion but rather asserting that reducing cigarette consumption is a necessary response to the identified health concerns.

Consequently

The adverbial "*consequently*" occurred only two times in this study, both times in sentence-initial positions, followed by comma and the structure Subject + modal Verb.

(10) The first reason is because it can break focus of students in studying. The second reason it is so difficult to balance both of them - studying and working. **Consequently, one of them will become victim.** (PTJ_004_B1_1)

In this example, the writer describes the challenges students face in balancing academic responsibilities and part-time employment, and then concludes that one of the two will inevitably be compromised. In Data (10), "*consequently*" effectively marks a causal relationship, indicating that the struggle to balance studying and working leads to a negative outcome. Its use enhances the logical flow and clarity of the argument by explicitly linking the causes and effects. Furthermore, "*consequently*" implies a sense of inevitability or necessity. The writer does not merely suggest a potential outcome but asserts that one of the two – studying or working – will be adversely affected. This modal certainty underscores the writer's conviction and strengthens the argumentative stance. Despite the minor grammatical issues in the surrounding sentences, the placement and function of "*consequently*" demonstrate an awareness of formal academic discourse markers.

(11) As a college student, I don't agree if college students have a part time job. Especially if the students who cannot manage their time well. because it only can break focus of their self in studying. Moreover, it is so difficult to balance both studying and working. **Consequently, one of their choices will become victim.** So, the students cannot study as well as usual. (PTJ_004_B1_1)

This idea builds upon the previous point, as the author continues to discuss students' difficulties in managing their time, which results in an imbalance between academic and work responsibilities. If this idea is presented only once in a text, the use of "*consequently*" is appropriate. However, in

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Data (11), "*consequently*" is used twice in reference to the same topic or as a repetition of the earlier point. This repetition may negatively impact the text's cohesion and coherence by creating redundancy and disrupting the logical flow of the argument.

Thus

In this research, "*thus*" was found in two sentences, both occurring mid-sentence.

(12) Unlike students who work while in college. many work part-time for the student if the student is fond of the job. <u>In working part-time, students also taught to work together within the existing work in the office,</u> **thus** <u>educating a student to become a good worker, because of course very different from the work.</u> (PTJ_014_B1_1)

In Data (12), the term "*thus*" signals a cause-and-effect relationship. It implies that engaging in part-time work contributes to students becoming competent workers. "*Thus*" functions as a logical connector between the activity of working part-time and the resulting personal and professional development. The implication is that through collaboration in a real work environment, students gain valuable experience that supports their growth as effective employees. Although the placement of "*thus*" is grammatically acceptable, the original sentence structure lacks clarity and requires revision. For example, the phrase "*students also taught*" is likely missing the auxiliary verb "*are*" (i.e., "*students are also taught*"). Additionally, the clause "*because, of course, very different from the work*" is incomplete and ambiguous. A clearer construction would be: "*thus educating them to become good workers, which is very different from other types of learning experiences.*"

(13) As is the case with a full-time job, when another position opens up in a company, current employees may be encouraged to apply, **thus** <u>moving up through the ranks.</u> (PTJ_198_B1_2).

In Data (13), the adverb "*thus*" indicates a causal or consequential relationship between two ideas. In this context, it suggests that encouraging current employees to apply for an open position leads to their upward career mobility. "*Thus*" creates a logical connection between the encouragement to apply and the resulting career progression. It signals to the reader that what follows is a consequence derived from the preceding statement, thereby enhancing the coherence of the argument. It implies that such encouragement directly contributes to employees' advancement within the organization. The placement of "*thus*" in the sentence is appropriate; it appears after the main clause ("*current employees may be encouraged to apply*") and before the resulting clause ("*moving up through the ranks*"), which emphasizes the cause-and-effect relationship.

Hence

In this research, "*hence*" appears only once in the data, and it occurs at the beginning of the sentence, followed by the structure Subject + Modal Verb.

(14) Part time job give the students a lot of benefits, for example they become aware that when they get graduated,

they will work like they work on part time job. **Hence,** <u>they will accustom with it and do not get shocked how hard the world of work is.</u> (PTJ_035_B1_2)

In this context, "*hence*" indicates a logical consequence of the preceding statement. It links the idea that part-time jobs provide students with relevant experience to the conclusion that this experience facilitates their adaptation to the workforce. "*Hence*" effectively signals that the ability to adjust to the demands of professional life is a direct result of the experience gained through part-time employment. The placement of "*hence*" is appropriate, as it follows a discussion of the benefits of part-time jobs and introduces a consequential statement. However, the original sentence structure could be revised for improved clarity and fluency. Furthermore, the use of "*hence*" emphasizes that the writer considers the outcome—adaptation to the workforce—not only likely but also a significant advantage of engaging in part-time work during one's studies.

As a result

In this study, the phrase "*as a result*" is identified as a result-linking adverbial, and it occurs once in the 50 argumentative texts analyzed. It is placed at the beginning of the sentence, preceding the subject.

(15) Many years ago, people were allowed to smoke everywhere. **As a result,** <u>an entire generation of elderly are experienced lung, throat, mouth, and stomach cancers that were never experienced in history before cigarettes became popular.</u> (SMK_004_B1_1)

The phrase "*as a result*" indicates a causal relationship between the two clauses. In this context, it connects the historical prevalence of smoking with the health consequences faced by an entire generation of elderly people who suffer from various cancers. "*As a result*" explicitly signals a cause-and-effect relationship, implying that the widespread acceptance of smoking directly led to the increase in cancer cases among the elderly. According to Pipatamusorn & Wijitsopon (2019), "*as a result*" often appears at the beginning of sentences in academic writing, where it marks the development of cause-and-effect information and serves as a sentence-theme marker to highlight results. This linking adverbial helps readers understand that the two ideas are not merely related, but causally linked.

Result-linking adverbials are instrumental in establishing cause-and-effect relationships between ideas. In argumentative writing, where the objective is to persuade the reader of a particular viewpoint, these adverbials effectively connect arguments and support claims, thus enhancing the clarity of the reasoning. In this research, result-linking adverbials were the most frequent in the argumentative texts written by Indonesian EFL learners. This finding aligns with previous studies, which also found that resultative or causal-linking adverbials are prevalent in EFL students' academic essays, followed by additive and adversative adverbials (Oktavianti & Sarage, 2022). Similarly, Feng & Choe (2016) observed that Chinese EFL learners tend to overuse causal and sequential linking adverbials in argumentative essays,

often relying on a limited number of prefabricated patterns.

In detail, the result-linking adverbial "*so*" is the most frequently used by Indonesian EFL learners in writing argumentative texts. This finding aligns with that of Japanese EFL learners, who also overuse linking adverbials like "*so*" in their writing at a statistically significant level compared to native speakers (Ahmad & Wey (2020); Nakayama, 2021). The overuse and inappropriate use of the connective "*so*" by Korean EFL students in essay writing may be attributed to their unawareness of stylistic differences between spoken and written English, as well as the influence of EFL teaching materials (Ryoo, 2007). However, according to Biber et al. (1999), linking adverbials such as "*so*" are commonly used in conversational contexts by native speakers. Regarding the data collection process, Ishikawa (2013) noted that participants were given only 20–40 minutes to write the argumentative text. This time constraint may have influenced the students' writing style, as they tended to write whatever ideas came to mind related to the topic. Additionally, students often ignored punctuation, likely because they were thinking in a manner similar to how they would speak. As a result, their writings had a more informal, speech-like quality. This finding supports Ryoo's (2007) conclusions.

In this research, the researchers also observed instances of linking adverbial structures following modal verbs. Modal verbs combined with linking adverbials convey recommendations or obligations arising from the situations they describe. This combination strengthens argumentative writing by presenting evidence or reasoning, which in turn creates suggestions, actions, or consequences, allowing students to construct more persuasive arguments. Dutra et al. (2019) mention that the result-linking adverbial "thus," when followed by a phrase, signals evidence in support of a previous statement. For example, "*Thus, it can reasonably explain why religion is losing its power to answer…*" (Dutra et al., 2019). Furthermore, the combination of "*so*" followed by "*will*" can express a logical consequence or lead to a conclusion, thereby restating an idea. However, there is no clear indication of a consistent use of modal verbs after linking adverbials, as this depends on the style and message the students intend to convey in their text.

"*So*" is a relatively simple and familiar term for students at the B1 and B2 levels. It is often one of the first linking words taught in English language courses due to its straightforward meaning and frequent use in everyday conversation. Students may find "*so*" easier to understand to use compared to more complex linking adverbials such as "*therefore*," "*thus*," and "*consequently*" (Ryoo, 2007). This helps explain why these more sophisticated linking adverbials are less frequent in argumentative texts written by Indonesian EFL learners. Indonesian EFL students may have a limited vocabulary, which can restrict their ability to use more advanced linking words like "*therefore*," "*consequently*," "*hence*," and "*as a result*." *Consequently*, they tend to rely on simpler terms, with "*so*" being more familiar to them. Although they may be acquainted with some linking adverbials, they might not have been exposed to a wide range of options or the nuances of their usage (Ryoo, 2007). This limited exposure may lead to a preference for simpler or more commonly used linking adverbials.

Regarding placement, result-linking adverbials were most frequently found at the beginning of sentences. These adverbials are commonly used to indicate a cause-and-effect relationship, which is a fundamental aspect of argumentative writing. In this research, Indonesian EFL students predominantly use them to introduce conclusions derived from previous statements or arguments, making them a natural choice for linking ideas in their texts. This pattern contrasts with native speakers' use of linking adverbials to express cause-and-effect in their arguments (Dutra et al., 2019). The initial position of these adverbials suggests that the writer directly introduces a result or conclusion in the text (Biber et al., 1999; Dutra et al., 2019). This finding is consistent with the observations of Nakayama (2021) and Ryoo (2007). Placing result-linking adverbials at the beginning of a sentence draws the reader's attention to the causal or resultative nature of the statement, thereby clarifying the connection between arguments. Beginning a sentence with a linking adverbial may also enhance the flow of the essay, providing a smooth transition from the previous sentence and helping maintain coherence in the argument, thus guiding the reader through the writer's thought process.

A specific analysis conducted by Dutra et al. (2019) found that Brazilian university students use linking adverbials differently from English and British university students, particularly in terms of syntactic position and meaning. Their findings revealed that linking adverbials such as "*so*", "*therefore*", and "*thus*" were primarily used in the sentence-initial position, which aligns with the findings of Malichatun and Hardjanto (2020). In contrast, native university students predominantly used to link adverbials like "*so*," "*therefore*," and "*thus*" in the sentence-medial position (Dutra et al., 2019). Dutra et al. (2019) suggested that this difference could be attributed to teaching instruction and first language interference. It may also be influenced by the formation of writing habits (Nakayama, 2021; Ryoo, 2007). Students may develop such habits based on their learning experiences as they practice writing. If they find that beginning sentences with linking adverbials is an effective way to express their ideas, they may continue to do so out of habit. This could be explained by the lexical priming theory proposed by Hoey (2005), which suggests that every word has tendencies toward certain linguistic features, and repeated exposure to these features in different contexts leads individuals to acquire such tendencies. Hoey (2005) further explains that lexical priming also applies to sentence positions: "*every word is primed to occur in, or avoid, certain positions within the discourse: these are its textual colligations.*" It is possible that Indonesian EFL learners were primed to use linking adverbials in the sentence-initial position and avoid other sentence positions. This sentence-initial phenomenon is commonly observed in non-native written in non-native written English (Ryoo, 2007).

CONCLUSION

This study investigated the use of result-linking adverbials in Indonesian EFL learners' argumentative texts. The findings support previous studies by Dutra et al. (2019) and Nakayama (2021), which suggest that the result-linking adverbial "*so*" is used most frequently, while adverbials such as "*hence*," "*consequently*," "*thus*," "*therefore*," and "*as a result*" are less common. The data indicate that single adverbs are most frequently used by Indonesian EFL learners, aligning with the results of Malichatun and Hardjanto (2020). The qualitative analysis revealed that many of the result-linking adverbials, particularly "*so*," "*therefore*," "*hence*," and "*consequently*," function to lead to a conclusion in Indonesian EFL learners' argumentative texts. Only "*thus*" and "*as a result*" were identified as conveying a sense of cause and effect. These findings are consistent with previous research, which found that result-linking adverbials predominantly serve to lead to a conclusion in academic writing by EFL students (Dutra et al., 2019). In native English corpora, the linking adverbial "*so*" is used to express result and logical consequence (Dutra et al., 2019). Indonesian EFL learners tend to place linking adverbials in the sentence-initial position. However, given the small sample size, these results should be interpreted with caution. According to Biber et al. (1999), starting a sentence with "*so*" or using it to restate an idea is more common in spoken grammar than in academic written registers. The frequent use of "*so*" by Indonesian EFL learners may suggest that these learners are unaware of the register restrictions associated with these linking adverbials. These findings directly address the research questions by highlighting the overall usage of result-linking adverbials by Indonesian EFL students. The study implies the need for pedagogical approaches that explicitly teach register-appropriate linking adverbials, possibly incorporating corpus-based examples into curriculum design. Further research is needed in specific language learning contexts to better inform classroom priorities, syllabus development, and the design of teaching materials.

ACKNOWLEDGEMENTS

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Exploring English language learning through online gaming: A case study of two children

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Online games are often considered as a disturbance for children, negatively affecting time management, encouraging undesirable habits, and contributing to poor academic performance. While several studies have examined the effects of online games on students, in-depth exploration at the individual level remains limited. Therefore, this study investigates the potential of online games in influencing children's English language acquisition. A case study was employed, with data collected through semi-structured interviews with children and parents. Observations of children while playing online games were conducted, along with an analysis of documents such as school assignments. The findings show that the child who played online games more frequently demonstrated a stronger grasp of English vocabulary, greater fluency in speaking, and a better ability to respond to questions about words meanings compared to child who played less frequently. Both children, however, met the minimum standard score of the English subject at school. Furthermore, several benefits of learning English through online games were identified, including increased motivation and confidence. The study also suggests that examining factors such as language aptitude, learning strategies, and environmental support in the context of online gaming may provide a more comprehensive understanding of how online games can be utilized to enhance children's English language learning.

Keywords: English Language Acquisition, EYL, online games, game-based learning

INTRODUCTION

English language proficiency is an essential skill for young generation to face the challenges of the modern era. Introducing English from an early age is believed to facilitate children's language and communication development, as well as enhance their capacity for self-assessment (Liu & Brantmeier, 2019). Parental support plays a crucial role in the development of children's language mastery (Anam et al., 2020; Pratiwi et al., 2020; Zhou et al., 2019). This support in not only important for preparing children for the future but also for shaping them into well-rounded individuals. Parents are encouraged to accompany their children in the learning process, as their presence can significantly motivate children to learn (Pratiwi et al., 2020; Zhou et al., 2019). Moreover, parental supervision is essential to help children manage their time effectively, especially as the younger generation – often referred to as "digital citizen" – spend a significant amount of time using gadgets and playing online (Zhong & Zheng, 2023).

Online games are often perceived by parents as a barrier to controlling their children's screen time, as many children and adolescents engage in prolonged gaming without time awareness (Doni, 2018). However, online games can also offer educational benefits.

They provide engaging and enjoyable learning experiences that children find appealing. Research shows that online games can support the development of English language skills, such as vocabulary, grammar and speaking (Achol & Akter, 2022). Various types of games, including computer based-games (Al-Jamili et al., 2024), have been shown to enhance speaking ability. Additionally, games can foster improvements in students' speaking skills (Putri et al., 2023; Sun et al., 2023) and emotional intelligent (Fauziddin & Mufarizuddin, 2018; Merayo et al., 2024; Vnucko et al., 2024). Digital games, therefore, hold significant potential for enhancing young learners' second/foreign language acquisition and motivation (Butler, Y.G;Garton, S; Copland, 2019).

Several scholars have investigated the relationship between online games and students' language mastery. Zheng et al., (2024) found that digital game-based learning (DGBL) enhances students' digital etiquette literacy. In addition, it is positively related to increased learning motivation and engagement. Achol & Akter (2022) examined the influence of popular online games played by children on their English language development. Their findings indicate that online games contribute positively to students' speaking abilities. By listening to dialogues and interactions within the games, students are able to imitate and comprehend spoken language, thereby improving their speaking fluency. However, the study also found that online games had no significant impact on students' writing performance. Moreover, Zuo et al., (2023) explored the use of augmented reality (AR) fantasy in game-based learning for improving knowledge retention in school settings. The results revealed that AR fantasy can enhance children's ability to recall declarative knowledge and improve overall learning effectiveness in classroom contexts.

The findings of previous studies (Achol & Akter, 2022; Zheng et al., 2024; Zuo et al., 2023) highlight the positive impact of online games on students' language learning. However, these studies did not provide an in-depth exploration of the individual experiences of learners. Therefore, this study seeks to address that gap by offering a more detailed understanding of how online games contribute to the English language development of individual children. While earlier research provided a general overview, this study aims to investigate the specific mechanisms through which online gameplay influences language acquisition at a personal level. By exploring how children benefit from engaging with online games, this study also aims to inform the development of more effective English language learning strategies that leverage the interactive and enjoyable nature of digital games. Such insights could help design learning experiences that make acquiring English more enjoyable and meaningful for young learners. Accordingly, this study focuses on understanding children's experiences of learning English through online games and the perceived advantages of such an approach. The research questions guiding this study are:

1. What are the experiences of two children in learning English through online games?

2. What are the perceived benefits of online gaming on children's English language development?

METHODS

A qualitative approach was used in this research. This approach was chosen because it allows researchers to explore children's learning experiences in detail. As noted by Fadli (2021), qualitative methods enable researchers to understand the phenomena being studied from the participant's perspective. The participants were primary school children aged 9- to 10-year-old. This case study involved two children who regularly play games for approximately 3-6 hours per day. In addition, one of children's parents was also interviewed to support the main data. The characteristics of the participants are presented in Table 1.

TABLE 1 | Characteristics of the participants

Characteristics	A	B	C
Age	9 years old	10 years old	40 years old
English skills Ability	Speaking, reading and writing	Speaking and writing	Reading, listening, speaking, writing
School	Elementary school student	Elementary school student	-
Grade	4	5	-
Time to play games	4 hours per day	2 hours per day	4 hours per day
Preference time to play	Afternoon to Evening	Afternoon	Afternoon and evening
Role	Children	Children	Parents

The instruments used in this study were observation and interviews. Observations were conducted in the children's daily lives, as the researcher lived with the participants, providing ample opportunity for close and continues observation. The researcher frequently played with the children and accompanied them in the afternoon and evening; thus, playtime was utilized to observe both children and their parents. The observation period lasted approximately six months, from the beginning of the end of the school semester (February to June 2024) and focused particularly on children' engagement with online games. The second instrument was interviews. These were not conducted in a separate, formal setting but were integrated into the observation sessions. The interviews were semi-structured, allowing the children to feel at ease and unaware they were being formally interviewed, which helped elicit natural and authentic responses. In addition, to track the development of the children's English learning, documents such as personal journals and school assignments were also collected.

The data were analyzed using the steps of data reduction, data presentation and conclusion verification. The first step, data reduction, involved organizing and condensing the collected data to identify key elements. Once the data was reduced, they were presented in a manner that highlighted the most significant findings. The second step, data presentation, involved coding the data by themes, categorizing responses, and summarizing key points, including narrative summaries of the participants' experiences. The final stage was data

validation, which included seeking feedback from others who reviewed the data and reflecting on potential biases in researchers' interpretation. After validation, the final step was drawing conclusions. At this stage, the analyzed data were synthesized and presented in the form of narrative descriptions.

RESULTS AND DISCUSSION

The Children Experience in Learning English through Online Games

Based on the observation, significance differences were found in English language skills of the two children. Child A, who is 9 years old, shows better mastery of English vocabulary than Child B, who is 10 years old. The difference was clearly observed when they played online games together. Child A was able to understand instructions and dialogues in the games more easily and used a wider range of English vocabulary compared to Child B. Child B often asked Child A about the rules in English-language games, and Child A was able to explain them effectively.

Besides, it was found that Child A had a higher interest in online games than Child B. Child A spent more time playing online games and consistently showed enthusiasm for learning new games. She preferred playing online games over engaging in outdoor activities with friends. In contrast, Child B did not enjoy spending extended periods playing online games and preferred outdoor play. This difference in interest is believed to be one of the factors contributing to Child A's greater mastery of English vocabulary.

Furthermore, their experiences of learning English through games differed. Child A reported feeling happy and excited while playing. When asked about her experience, she explained that online games made her feel entertained and helped her relax after daily routines. For her, online games served as a fun and enjoyable way to engage with the English language.

"*I like playing online games because they are fun and exciting, there are many things I can do in the game, such as exploring, completing challenges and competing with friends online. Playing online games also relieves fatigue after a day of studying at school*" (A)

Interestingly, Child A revealed that most of the online games she played used English as the language of instruction. She considered this a challenge, especially since she did not initially have strong English skills.

"*Many online games that I play are in English, such as Roblox, Mobile Legends, and many more. Most of them are in English in online games.*" (A)

At beginning of her experience with online games, Child A admitted that she had difficulty understanding the rules and instructions, which initially led to frustration and nearly caused her to give up. However, she demonstrated resilience and did not give up easily. Motivated to continue playing, she actively sought solutions to overcome her language barriers. Over time, her efforts paid off, and she discovered effective strategies for learning English through the context of online games.

In contrast, Child B showed a different attitude. She tended to play online games for shorter periods and found reading books more interesting than gaming. She expressed a sense of guilt if she did not study diligently by reading textbooks, indicating a stronger preference for traditional learning methods over digital games.

"*I like to read book than play online games. It is not good for me.*" (B)

Moreover, Child B did not feel as excited about playing online games and preferred outdoor play with her friends. While she did enjoy playing online games, her enthusiasm was not as strong as Child A's. For B, playing games was simply a fun activity without deeper engagement. In contrast, Child A viewed online games as a way to relax and unwind after school, stating that gaming helped her relieve stress and enjoy her free time.

"*I play online game is for joyful, not to learn English. That's why I don't play much. When I think I am not tired anymore, then I do my homework.*" (B)

The different purpose between Child A and B's engagement with online games reflect their distinct learning preferences and cognitive approaches. Child A tends to engage more with online games, while Child B prefers reading textbooks. These preferences suggest different learning styles – Child A learns through interactive, game-based experiences, whereas B is more inclined toward traditional, text-based learning.

From the parent's perspective, it was also noted that the two children have different interests. Child A enjoys playing games, particularly online games that use English as the language of instruction. In contrast, Child B prefers games that occasionally use Indonesian and does not enjoy playing online games with friends. While Child A frequently engages with English-language games, Child B is less comfortable with such games and chooses not to participate in online gaming environments with others.

"*A tends to do online games that using English as language instruction. Although she gets difficulties she tries as hard as possible to understand it. While B is on the other way round, she plays online game less than A.*" (C)

Based on Parent C's statement it can be seen that Child A and B have different preferences when it comes to playing games, as well as different durations of online gameplay. These differences contribute to their distinct way of learning English.

The Advantages of Learning English through Online Games

The benefits of learning English through online games are summarized in Table 2.

TABLE 2 | The benefits of learning English through online games

No.	The Advantages of Learning English Using Online Games
1	*Increase English Scores at School* 1. The score in English subjects at school increased.
2	*Raise Motivation* 1. Both children are motivated to learn English both at school and at home.

2. They are motivated to learn English through online games.

3. Both children are motivated to speak in English.

3   *Raise Confidence*
1. A and B are confident in conversing in English, even though they switch between English and Indonesian while talking.
2. A and B can easily provide the meanings of words/vocabulary when asked.

4   *Raise Self-Assessment*
1. A tends to assess herself when she loses a game.

From Table 2 it can be seen that there are several benefits to learning English through playing online games:

Increasing English score at school
The difference in English abilities between Child A and B is also reflected in their English subject scores at school. Child A consistently earns higher scores than Child B, which indicates a better understanding of English grammar and sentence structure. Although Child B's score has improved, the increase is not as significant as Child A's.

 "*My teacher said my English is better, I got 98 for my test today.*" (A)

Child A scored 98 on her English test at school, and her teacher was proud of her achievement. Similarly, Child B mentioned that she passed minimum standard score of English, achieving a score of 90. Both Child A and B scored above the standard criteria set by their schools.

Raising motivation
This finding shows that both children were motivated after playing online games. After approximately six months of playing online games, Child A and B become more motivated to learn English at school. This is evident from their eagerness to complete homework assignments, particularly in English. They shared their experience at school, mentioning that their English teachers appreciated their progress, as they had become better English learners. Additionally, their motivation to learn English was further fueled by their experience with online games. At the beginning, Child A struggled to understand the language used in the games. However, over time, she gradually improved and became confident enough to speak in English while playing game with her friend online.

Furthermore, Child A was particularly motivated to learn English because many of the online games she played, such as Roblox, used English as the language of instruction. In Roblox, there are many games, and most of them are conducted in English, providing A with ample exposure to the language.
"*In the roblox game, there are many games that I can play, and have different missions in each game room. Most of the rooms are in English, so I have to be able to understand the meaning of English.*" (A)

Child A's experience shows that playing online games can be an effective means of learning English informally. With the right strategy and strong motivation, the English language barrier can be overcome, opening opportunities to enjoy a variety of interesting online games.

Raising children's confidence
Child A and B were confident in conversing in English, even although they switched between English and Indonesian while talking. Their confidence was evident when they communicated with each other in English. They used the words and phrases they had learned from online games in their daily conversations. Moreover, Child A and B were able to provide answers quickly when asked about the meaning of words or vocabulary. When the researchers asked about English vocabulary from their lessons, Child A responded quickly, and her answers were often correct. In contrast, Child B was slower in answering the questions and often needed to refer to textbooks. Although B tended to learn more slowly, she still benefited from online games, as reflected in the following statement.

"*Now I understand a lot of English vocabulary, one of the reasons is because of playing online games. There are many words that I know from playing online games.*" (B)

Improving Self-assessment
An example of this benefit is when Child A stated that, upon facing difficulties in understanding the English instructions, she conducted a self-assessment to understand why she lost the game. She then made an effort to comprehend the instructions better so that she would not lose again in the future.

"*Usually when I first play a new game, I have difficulty understanding how to play it properly, often I don't know what I should do and lose the game.*" (A)

The self-assessment Child A conducted was like a strategy to seek out tutorials and guides for playing online games on YouTube. She watched videos made by other gamers and observed how they played the game. A also paid close attention to the explanations and instructions given by the gamers in English. She made an effort to understand the meaning and memorize important terms that were frequently used in the game.

"*I searched on YouTube about games that I felt were difficult, then I watched YouTubers play games and observed what they did to complete a mission, from there I learned how to play properly, including understanding the English instructions in the game.*" (A)

With persistence and the right strategy, Child A managed to overcome the English language barrier in online games. As a result, she played games more smoothly and enjoyed a more engaging gaming experience.

Based on the findings, it can be discussed in detail that children have different experience in learning English through online game. Child A tends to play more frequently than Child B. Regardless of the playing time, Child A demonstrates a distinct motivation for playing games, while Child B does not share the same enthusiasm for learning English through online games. Child A's motivation for playing online games is centered on learning English, whereas Child B's motivation is primarily for relaxation and enjoyment. Additionally, Child A exhibits a better command of English vocabulary compared to Child B. One factor believed to contribute to this difference is the level of interest and the habitual nature of playing online games. Child A, who plays online games more regularly, is exposed to a greater variety of English vocabulary and

phrases in a context that is both engaging and enjoyable. The fun nature of learning English through online games makes it easier for students to grasp the material. Furthermore, Child A's consistent gaming habits contribute to the development of a positive learning routine, which aligns with the findings of Stoller & Nguyen (2020) who suggested that learning habits play a crucial role in improving learners' academic performance. Moreover, online games typically incorporate various interactive and visual elements that attract children's attention, further motivating them to continue playing and learning English. Many online games also feature dictionaries or translation tools that assist children in understanding new words and phrases in English. As a result, children can improve their English vocabulary through online games. This finding is consistent with the research of Antons et al., (2023), who found that online games increase player engagement, encouraging continued play and learning.

Moreover, interest and online gaming habits can influence a child's English language skills, as evidenced by Child A's superior English performance compared to Child B. These differences may also be affected by a child's natural language aptitude, which plays a significant role in how easily they acquire new languages, such as English. In addition, effective learning methods that align with individual learning styles can significantly enhance language acquisition. These findings support those of Kade et al., (2019), who asserted that different learning styles affect learning achievement. Each student possesses a unique learning style, and their academic success can be influenced by their preferred way of learning (Nemeth et al., 2024).

In terms of the advantages of playing online games, this study found that children's English subject scores improved at school. This finding contradicts earlier claims by Doni (2018) and Vnucko et al., (2024), who argued that individuals who spent excessive time playing games tend to develop negative behavioral traits. In contrast, Zheng et al., (2024) found that digital game-based learning has a positive impact on students' learning motivation and engagement. That may explain why the children in this study was able to improve their academic performance in English despite spending considerable time playing online games. Engagement in gameplay also supports reinforcement learning, as highlighted by (Antons et al., 2023; Zheng et al., 2024; Zuo et al., 2023).

Another advantage identified in this study is the enhancement of children's motivation. Since learning English through online games, Child A has shown increased motivation to learn both at school and through the games themselves. This finding aligns with Butler et al. (2019), who found that digital game-based learning has a significant influence on young learners' motivation. Additionally, both Child A and B developed greater confidence, although their preferences in playing online games differ. Child A tends to respond immediately when asked questions in English, whereas Child B prefers to consult her textbook first. This difference may be attributed to the cognitive training embedded in online games, where players are required to think and respond quickly. This supports the findings of Schiele et al. (2025), who reported that game-based applications contribute to children's literacy skill acquisition.

Moreover, online gaming also facilitates vocabulary acquisition, which may explain why Child A can answer questions about English vocabulary more easily and speak more fluently. This is consistent with Achol and Akter (2022), who stated that online games positively impact speaking skills, enabling students to improve their performance with minimal effort. However, this finding contrasts with that of Daradkeh et al. (2024), who argued that experienced online gamers may resist the inclusion of newcomers due to differing language styles, which they believe could disrupt the gameplay experience.

In addition, self- assessment also increases as a result of playing online games. This was observed when Child A lost a game and then sought to understand why. She actively searched for information about the game instructions from YouTube gamers, which helped her identify the mistakes she had made. This form of self-assessment is valuable not only in gaming but also in broader learning contexts. From this finding, it can be concluded that by playing online games, Child A was able to learn new things. This aligns with the findings of Saastamoinen et al. (2024), who reported that computer-based games offer a novel and engaging way to learn. Furthermore, the design and visual appeal of games play a crucial role in maintaining player engagement. Children are more likely to enjoy playing when the game's design is interesting and visually stimulating. Conversely, they tend to lose interest when the game design is poor, as reflected in Child B's remark: "It is not good, I quit," during gameplay. Although Almusharraf et al. (2023) found no significant gender differences in learning through computer-based games in classroom settings, this study, which involved two female participants, revealed differences in their gaming habits and learning outcomes. This suggests that learning achievement is influenced more by individual learning styles than by gender. This finding supports the conclusion of Himmah and Nugraheni (2023), who argued that learning outcomes are shaped by learning styles rather than gender differences.

Child A and B demonstrate different preferences in learning English. Child A tends to utilize online game as a medium for learning English, while Child B prefers traditional methods such as reading textbooks. For Child B, playing games is primarily a form of relaxation rather than a learning strategy. Despite these differences in learning approaches, both children achieved similar academic results, obtaining high scores in English at the end of the semester. This finding contrasts with the study by Naderi and Moafian (2023), which reported that the non-digital learning group outperformed the digital group in academic achievement. This suggests that the effectiveness of learning strategies may depend on individual preferences and the purposeful use of technology in the learning process.

In summary, the findings indicate that Child A and B had different experiences in learning English through online games. Academic achievement is influenced not only by gaming habits but also by the children's awareness and intentions when engaging in online games – whether for relaxation or for acquiring new knowledge. The act of identifying obstacles and seeking solutions, as seen in self-reflective learning through gaming, also contributes to

academic development. Moreover, the benefits of playing online games are mediated by various factors such as learning styles and personal preferences. This highlights the importance of individualized approaches to technology-enhanced language learning.

CONCLUSION

This research shows that interest and habits in playing online games can significantly influence children's English language development. Children who engage in online gaming more frequently are exposed to a wider range of English vocabulary and phrases in an engaging and enjoyable context, which may enhance their language skills. However, it is essential to acknowledge that other factors – such as language aptitude, learning strategies, and environmental support – also play crucial roles in shaping children's English proficiency. Therefore, it is important for parents and educators to provide appropriate guidance and stimulation to help children optimize their English language development.

Future research could explore more deeply how online games can be optimally utilized to enhance children's English language development. This may include studies involving larger and more diverse participant groups to yield more generalizable results. Additionally, researchers could investigate the impact of specific online game genres on language acquisition and compare the effectiveness of online game-based learning with traditional instructional methods. Furthermore, examining the influence of other factors – such as language aptitude, learning strategies, and environmental support – within the context of online gaming and English language learning would offer a more comprehensive understanding of this educational approach.

Ultimately, this research aspires to provide valuable insights that can empower educators, parents, and game developers to create a more dynamic and effective learning environment for children exploring the English language. The findings are expected to offer practical guidance for parents and teachers on how online games can be meaningfully integrated into English language learning. This study is significant in that it highlights the potential of online games to make English learning more engaging, accessible, and enjoyable for children.

Finally, a supportive environment provided by parents, teachers, and peers plays a vital role in fostering motivation and building children's confidence in using English. It is essential for parents to recognize that each child possesses unique learning styles and abilities. Thus, offering appropriate stimulation and support is key to helping children reach their full potential in English language acquisition. Parents can facilitate this process by encouraging the use of educational online games, providing engaging English-language books and media, and creating a home environment that promotes regular exposure to English.

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Multimodal constructions of gender in EFL textbooks: A critical discourse analysis from global perspective

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Textbooks play a pivotal role in shaping learners' perceptions of gender norms and social identities. This study investigates how gendered identities are constructed through multimodal elements – such as text, images, and audio - in a widely used secondary-level English as a Foreign Language (EFL) textbook. Employing a qualitative methodology grounded in Critical Discourse Analysis and multimodal theory, the study reveals recurring patterns in gender representation. While some content challenges traditional stereotypes, subtle yet persistent biases remain, particularly in portrayals of occupational roles, personal agency, and gendered color schemes. Male figures are predominantly depicted as leaders or professionals, whereas female figures are more often shown in passive or domestic roles. These findings emphasize the need for critically informed revisions of educational materials to promote more inclusive, balanced, and equitable gender representations. The study contributes to global conversations on gender and education by emphasizing the importance of critical literacy in language classrooms and the role of pedagogical design in challenging entrenched gender ideologies.

Keywords: gender representation, multimodality, critical discourse analysis, EFL textbooks, critical literacy

INTRODUCTION

Textbooks serve as a cornerstone of formal education across diverse global contexts, offering a structured and accessible medium through which learners acquire both academic knowledge and social understanding. In language education, textbooks are especially critical, as they provide systematic exposure to vocabulary, grammar, and communication practices while supporting the development of essential key skills such as listening, speaking, reading, and writing. Carefully curated to align with curriculum standards and students' cognitive levels, textbooks function not only as instructional guides but also as cultural transmitters. Beyond their pedagogical role, they shape learners' worldviews by covering values, social norms, and identity constructs (Kempe & Grönlund, 2019). Given their widespread and sustained use, textbooks are among the most influential tools in shaping young learners' worldviews—particularly regarding gender.

Globally, research has shown that traditional gender stereotypes are frequently embedded in educational materials. These stereotypes typically associate men with leadership, agency, and professional success, while women are often depicted as nurturing, passive, and confined to domestic roles (Pawlicki, 2020).

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Such portrayals reflect deeply rooted cultural narratives that valorize masculine attributes in public and professional spheres, while relegating femininity to supportive and private domains (Salami & Ghajarieh, 2016). When learners – particularly at a young age – are exposed to these biased representations, they may internalize distorted perceptions of their potential and social roles (Kollmayer et al., 2018). Thus, textbooks do more than educate; they actively participate in the reproduction of societal norms, shaping learners' beliefs about what is natural or acceptable for men and women.

In this context, representation is not merely descriptive but constructive – it creates and circulates meaning through multiple semiotic modes, including language, images, layout, and narrative structures. These meaning-making resources are shaped by the cultural and ideological contexts in which they are produced and consumed. Consequently, educational materials do not simply mirror society – they help shape it. Representation in textbooks, as a signifying practice, can either reinforce dominant gender ideologies or challenge them, depending on how gender roles are portrayed.

In recent years, scholars and policymakers have increasingly called for a more equitable and gender-sensitive approach to curriculum design. Gender – understood as a socially and culturally constructed category – encompasses a range of identities, roles, and expectations that vary across contexts and over time (Gebregeorgis, 2016). Because educational content plays a powerful role in defining and legitimizing these constructs, inclusive and balanced representations are critical for promoting gender equality. Studies analyzing textbook content have consistently revealed imbalanced gender portrayals, with male characters frequently depicted in active and dominant roles, while female characters are often underrepresented or portrayed in secondary, supportive positions (Ruiz-Cecilia et al., 2020; Moya Guijarro & Martínez Mateo, 2022). Such imbalances contribute to a narrow and stereotypical understanding of gender, limiting learners' perceptions of what they can achieve or aspire to.

Although much existing research has examined textual and visual gender representations, a notable gap remains in the exploration of multimodal constructions of gender - that is, how various elements such as text, imagery, color schemes, and audio components interact to produce and convey gendered meanings. As educational materials increasingly adopt digital and multimedia formats, understanding these multimodal dynamics is essential for capturing the full scope of gender representation. There is a pressing need for empirical studies that address how these semiotic modes interact, what ideologies they reflect, and how they shape students' perceptions of gender – particularly in global language learning contexts such as English as a Foreign Language (EFL), where textbooks often serve as students' first structured encounter with global cultures and gender norms.

This study seeks to address this gap by examining how gender roles and identities are constructed through multimodal features in senior high school EFL textbooks. Specifically, it investigates how combinations of textual and non-textual elements contribute to shaping gender ideologies and how these may influence learners' perceptions of gender

roles and expectations. The aim is not only to identify patterns of representation but also to critically assess whether these representations reinforce or challenge traditional gender stereotypes.

The inquiry is guided by the following research questions:

1) How are gender roles and identities constructed through multimodal elements (text, images, color, and audio) in senior secondary EFL textbooks?
2) To what extent do these multimodal representations reinforce or challenge traditional gender stereotypes?
3) What underlying gender ideologies are embedded in the multimodal design of the EFL textbook, and how might these influence learners' perceptions of gender roles?

Gender Representation in Educational Textbooks

Scholars have long argued that textbooks reflect and reinforce dominant gender norms. In her seminal work Pawlicki (2020) noted that educational materials often perpetuate traditional gender roles, typically associating men with leadership, power, and professionalism, while portraying women in domestic and caregiving roles. Similarly, Moya Guijarro and Martínez Mateo (2022) found that textbooks tend to portray male characters in active and authoritative roles, whereas female characters are more frequently shown in passive or supportive capacities. This imbalance in representation has been shown to influence students' perceptions of appropriate gender roles, thereby reinforcing broader societal expectations surrounding masculinity and femininity (Salami & Ghajarieh, 2016).

The Role of Multimodal Elements

Multimodal elements – including text, images, audio, and color – play a crucial role in shaping how gender is represented in textbooks. These elements which serve as means of communication, refer to the use of multiple modes of expression – such as written language, visual imagery, and sound – to construct meaning (Adami, 2017; Álvarez Valencia, 2016; Hasyim & Arafah, 2023; Mills & Unsworth, 2017). Importantly, these modes do not operate in isolation; rather, they work in concert to convey comprehensive messages about gender. For example, images frequently reinforce gender roles by depicting men and women in conventional or stereotypical contexts. Similarly, audio components – such as voice characteristics, tone, and speech patterns – can also contribute to gender representation, as certain vocal styles are often culturally associated with either masculinity or femininity (Halliday, 2013).

In educational materials, gendered language and the visual depiction of characters in specific roles subtly shape students' perceptions of gender norms. The use of color schemes – such as blue for boys and pink for girls – further entrenches binary gender distinctions. Moreover, the overall visual design of textbooks often reinforces occupational stereotypes. For instance, Amerian and Esmaili (2014) who found that men were predominantly represented in high-status professions such as doctors, while women were more frequently portrayed in lower-status jobs or domestic roles.

Challenging Gender Stereotypes

While many textbooks continue to reinforce traditional gender roles, recent studies highlight growing efforts to

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challenge these stereotypes. For example, Ruiz-Cecilia et al. (2020) observe that some contemporary textbooks incorporate gender-neutral language and depict characters in non-traditional roles to foster more inclusive understandings of gender. These materials aim to present a more balanced perspective, in which both male and female characters are portrayed in leadership positions, caregiving roles, and activities that are not tied to specific gender expectations. Similarly, Suchana (2018) argues that textbooks featuring diverse representations of gender can help dismantle stereotypes and promote equality by offering students a wider array of role models across different contexts.

However, despite such progressive efforts, implicit gender biases often persist within educational texts. Kollmayer et al. (2018) emphasize that early exposure to biased narratives in textbooks can significantly shape children's perceptions of their abilities and appropriate societal roles. This ongoing presence of bias underscores the need for continuous revision of educational materials to ensure more equitable depictions of all genders and to expose students to a broader spectrum of identities and roles.

The Need for Gender Perspective in Textbooks

The integration of a gender perspective in educational materials is crucial for promoting equality and challenging entrenched stereotypes. As Gebregeorgis (2016) emphasizes, gender is not an inherent biological attribute but a socially constructed concept that influences individuals' roles and responsibilities within society. Given the influences role of textbook in shaping learners' worldviews, they should reflect an understanding of gender as a fluid and diverse spectrum rather than adhering to a rigid binary framework. Supporting this view, Halliday (2013) argues that textbooks must evolve to incorporate diverse voices and experiences, thereby confronting the limitations imposed by traditional gender roles and fostering a more inclusive educational environment.

METHODS

This study employs a qualitative methodology to examine how multimodal elements shape gender representation and perpetuate stereotypes in high school English textbooks. It focuses on how various modes of how various modes of communication – such as images, audio, and textual descriptions – contribute to the construction of gendered identities within the selected textbook, *English for Change*, the official English textbook issued by the Indonesian Ministry of Education and Culture (*Kementerian Pendidikan dan Kebudayaan Republik Indonesia*), was chosen as the documentary source. As a compulsory textbook, it is assumed to be widely used by millions of senior high school students across the country. The data analyzed in this study consist of three primary multimodal elements within the textbook, including: **Images**: Visual representations of male and female characters, including their roles, activities, and interactions in both academic and social contexts. **Textual Descriptions**: Written content describing male and female characters, with particular attention to language used in relation to gender roles, responsibilities, and stereotypes. **Audio**: Spoken elements such as monologues or dialogues that

feature gendered roles or interactions, including tone of voice, speech patterns, and the contexts in which male and female voices appear. According to Creswell (2014), qualitative research typically draws upon unstructured data sources such as text, images, and audio to explore complex social phenomena. These forms of data are particularly valuable for uncovering underlying cultural and ideological messages embedded in educational materials. Given that gender representation and stereotypes are often subtly conveyed through multiple modes of communication, a qualitative approach is well-suited to capture the nuanced ways in which these representations are constructed.

The analysis is guided by Multimodal Discourse Analysis (MDA), an approach designed to explore how different semiotic modes interact to produce meaning. This involves identifying recurring patterns in the use of visual, linguistic, and auditory features, and analyzing how these modes function together to construct particular gender representations. The study aims to uncover how the interplay of these elements contributes to the portrayal of gender roles, the reinforcement of stereotypes, and the perpetuation of societal norms related to masculinity and femininity. Ultimately, it seeks to offer a deeper understanding of how textbooks influence students' perceptions of gender.

Data collection involved a comprehensive review of the textbook, with particular attention to instances where gender roles, expectations, or stereotypes were conveyed through any combination of the identified multimodal elements. Each mode was analyzed based on the following criteria: **Representation of gender roles**: How were male and female characters depicted in terms of occupation, social roles, and behaviors? **Stereotypical portrayals**: Do the text, images, or audio perpetuate traditional gender stereotypes (e.g., men in leadership roles, women in domestic or supportive roles)? **Interrelationships between modes**: How do textual, visual, and auditory elements interact to reinforce or challenge gender representations?

To ensure a systematic and rigorous analysis, data were manually coded using thematic analysis to identify recurring patterns and themes. These themes were then interpreted within the broader socio-cultural context in which the textbook is situated. Special attention was given to the potential implications of these representations for students' understanding of gender roles, particularly how multimodal elements may shape learners' perceptions and internalization of gendered behaviors and expectations. To ensure the trustworthiness of the study, a triangulation strategy was employed through peer cross-checking of the data analysis process by a qualified colleague.

RESULTS AND DISCUSSION

The findings reveal significant patterns in gender representation within the analyzed textbook, especially through its multimodal elements – audio, text, and images. The analysis underscores the complex interplay of these modes in constructing and reinforcing gender roles and stereotypes.

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Audio Analysis

The audio components were examined across four key dimensions: verbal content, voice characteristics, context and theme, and implicit bias.

Verbal Content: The use of gender-specific language in the textbook frequently reinforces traditional gender roles. For instance, in Unit 1, Activities 6a and 6b, female characters are described using adjectives such as "gentle" and "beautiful," while male characters are associated with traits like "strong" and "brave." These descriptors perpetuate stereotypical representations of femininity and masculinity. Nonetheless, some instances suggest an effort to challenge these conventions. In Unit 4, Activities 3b and 3c, the character Nina is referred to as a "little hero," thereby disrupting the typical association of heroism with male figures and promoting more gender-neutral traits such as courage and independence. Moreover, the use of gendered pronouns further reflects these patterns. Female pronouns ("she," "her") are predominantly used in caregiving and emotionally driven contexts, as seen in Unit 3, Activity 3, whereas male pronouns ("he," "his") are more common in depictions of leadership, such as in Unit 1, Activity 8, where male characters are positioned as decision-makers.

Voice Characteristics: The voice characteristics of male and female characters display marked distinctions that reflect traditional gender dynamics. Female characters often speak in nurturing or tentative tones, as illustrated by Nina's dialogue in Unit 4, where she expresses concern and seeks approval. In contrast, male characters frequently adopt more assertive and directive tones, particularly in contexts involving problem-solving or leadership, such as in Unit 2, Activity 3. Additionally, female voices are predominantly featured in explanatory or supportive roles – for example, in Unit 3, Activity 5, where a female character provides clarification – while male voices are more commonly assigned authoritative or instructive functions. These patterns reinforce conventional power hierarchies, positioning male characters as leaders and decision-makers, and female characters as helpers or facilitators.

Context and Theme: A traditional gendered division is evident in the context and themes portrayed through the audio elements. Female characters are frequently situated in domestic, emotional, or aesthetically oriented settings, whereas male characters appear more often in adventurous, professional, or authoritative roles. For example, in Unit 1, male characters are engaged in decision-making scenarios, reinforcing their association with leadership and public authority, while female characters are primarily involved in caregiving and familial responsibilities. Nonetheless, there are instances of progressive representation. In Unit 4, Activities 3b and 3c, the character Nina is depicted in a leadership capacity, signaling a deliberate shift toward more inclusive and egalitarian portrayals that challenge traditional gender expectations.

Implicit Bias: Implicit biases are evident in the unequal distribution of roles between male and female characters. Female achievements are frequently framed through relational lenses - emphasizing actions like "helping others" rather than highlighting individual accomplishments - as

exemplified in Unit 3. In contrast, male characters are consistently portrayed as decision-makers and problem-solvers, reinforcing hierarchical gender dynamics. This recurrent assignment of passive or supportive roles to women, alongside active and authoritative roles to men, contributes to the normalization of traditional gender stereotypes and has the potential to shape students' perceptions of appropriate gender behaviors and societal roles.

Image Analysis

The analysis of the visual elements focuses on the frequency and representation of male and female characters, their roles, and the use of color.

Frequency of Representation: The visual representation of male and female characters appears to be approximately balanced in terms of frequency. For example, in Unit 1, page 3, two male and two female characters are depicted within a single image. Similarly, in Unit 3, page 102, both male and female characters are shown together. These instances indicate a relatively equal gender representation in the textbook's visual content.

FIGURE 1 | Frequency of gender "English for Change" (Grade XI, Unit 1, p. 3)

FIGURE 2 | Frequency of gender "English for Change" (Grade XI, Unit 3, p. 102)

Role Depictions: Although the gender frequency is balanced, the roles portrayed often reflect traditional gender norms. Male characters are predominantly shown in prestigious and professional occupations, such as doctors, while female characters are often depicted in less prestigious roles, such as traders or in domestic settings. The textbook tends to favor male characters in high-status professional roles, reinforcing the stereotype that men occupy leadership and professional positions, while women are confined to supportive or domestic roles.

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FIGURE 3 | A Doctor Representation by Male, "English for
Change" (Grade XI, Unit 3, p. 116)

FIGURE 4 | A Trader Representation by Female, "English for
Change" (Grade XI, Unit 5, p. 190)

Additionally, occupational images – such as that of an online motorcycle taxi driver – are predominantly associated with male characters. This representation underscores a notable gender disparity in the portrayal of the workforce, reinforcing societal expectations and norms surrounding male-dominated professions.

FIGURE 5 | An Online Driver Representation by Male, "English
for Change" (Grade XI, Unit 5, p. 222)

Color Representation: The use of color further reinforces gender stereotypes. Blue is consistently associated with male characters, while pink is used to represent female characters. The textbook adheres to this gendered color conventions, depicting male characters in blue clothing and female characters in pink, thereby reinforcing traditional associations between color and gender roles.

FIGURE 6 | Color Identification, "English for Change" (Grade XI,
Unit 1, p. 3)

FIGURE 7 | Color Identification, "English for Change" (Grade XI,
Unit 3, p. 109)

Textual Elements

Despite some gendered representations in the visual and audio elements, the textual content in the textbook demonstrates progress in promoting gender equality. In Unit 1: *Digital Skills and My Identities*, activities such as "Ask a classmate you trust based on their experience" are gender-neutral, intentionally avoiding the assignment of skills or traits based on gender. Additionally, prominent figures such as Maudy Ayunda and Joshua Irwandi are featured in significant roles in technology and art, offering a balanced representation of both genders in fields traditionally dominated by one gender.

In Unit 2: *Love Your Environment*, the descriptions and activities are largely gender-neutral. However, the phrase "A woman plants flowers in the garden" subtly perpetuates a stereotype by linking nurturing and caregiving roles with women. Then, in Unit 3: *Healthy Living for a Healthy Future*, gender-neutral dialogues and examples are employed, ensuring that all students can equally engage in discussions about health and wellness. Nevertheless, the depiction of a "doctor and a patient" subtly reinforces gendered stereotypes regarding healthcare professions.

Furthermore, Unit 4: *Indonesian Environmental Figures* highlights both male and female environmental activists, emphasizing the leadership potential of women in environmental protection. The portrayal of young male and female activists in leadership roles challenges traditional gender norms. Finally, Unit 5: b adopts a fully gender-neutral approach to financial literacy, promoting the idea that financial management is a skill applicable to all, regardless of gender.

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Gender Representation in Audio Elements

The analysis of gender representation in the audio elements reveals that traditional gender roles are reinforced across several domains, including verbal content, voice characteristics, context, and implicit bias. These elements not only reflect established societal gender norms but also possess the potential to shape and reinforce learners' perceptions of gender roles. The following discussion will explore these categories in greater depth, providing insight into how these patterns perpetuate gender stereotypes and how attempts to challenge these norms are manifested in the content.

Verbal Content Reinforcement of Traditional Gender Roles

The use of gender-specific terminology in the verbal content of the audio material serves to reinforce traditional gender stereotypes. Female characters are consistently described with adjectives such as "gentle" and "beautiful," which reinforce the cultural stereotype of women being delicate, caring, and aesthetically pleasing (Anjarwati, 2020; Lakoff, 1973). In contrast, male characters are described as "strong" and "brave," which aligns with the classic view of masculinity that emphasizes power, courage, and leadership (Kaplan, 2006; McKenzie & McNeill, 2022). These descriptions not only reflect but also reinforce, societal expectations of femininity and masculinity, thereby limiting the scope of acceptable behavior for both genders.

Despite this reinforcement of gender norms, there are attempts to subvert these stereotypes, as seen in Unit 4, Activities 3b and 3c, where Nina is referred to as a "little hero." This portrayal challenges the conventional association of heroism with male characters and promotes more gender-neutral attributes, such as courage and independence. By presenting Nina as a hero, the content introduces the possibility for a broader understanding of heroism that is not inherently tied to traditional masculine qualities. However, such attempts remain isolated, and the broader narrative continues to depict women as gentle and men as strong.

The use of gendered pronouns further accentuates these disparities. Female pronouns ("she," "her") are most frequently associated with caregiving, emotional intelligence, and nurturing roles, as seen in Unit 3, Activity 3, where female characters are depicted in supportive roles. In contrast, male pronouns ("he," "his") are predominantly used in leadership contexts, such as in Unit 1, Activity 8, where male characters are portrayed as decision-makers. This distinction in pronoun usage subtly reinforces the expectation that women are primarily responsible for emotional labor and caregiving, while men are positioned as leaders and decision-makers (Ridgeway & Correll, 2004)

Voice Characteristics: Power Dynamics and Gendered Speech

Voice characteristics represent another area where gender differences are clearly delineated. Female voices in the audio element are often portrayed as tentative, nurturing, or seeking approval, as demonstrated by Nina in Unit 4. This vocal portrayal aligns with the cultural expectation that women should exhibit more passive and emotionally expressive behaviors, roles traditionally viewed as supportive (Moya Guijarro & Martínez Mateo, 2022). For example, Nina's

dialogue in Unit 4, where she expresses concern, reflects the stereotype of women as caregivers who seek consensus and reassurance.

In contrast, male voices are typically depicted using more assertive and directive tones, particularly in contexts involving problem-solving or leadership, such as in Unit 2, Activity 3. The dominance of male voices in authoritative or instructive roles supports the traditional gender norm that positions men as strong, authoritative figures capable of making decisions and providing guidance. This distinction in vocal characteristics highlights the underlying power dynamics in gender representation, wherein men are positioned as leaders, and women are relegated to supportive roles.

This division in voice characteristics not only reflects societal norms but also reinforces them. By consistently assigning assertive and authoritative voices to male characters and tentative, supportive voices to female characters, the content reflects and reinforces traditional perceptions of gender and power (Hyde, 2005; Lakoff, 1973; Peters, 2020). These gendered distinctions in vocal expression can influence learners' perceptions of authority and leadership, subtly reinforcing the notion that men are more suited for leadership positions, while women are more suited for supportive roles.

Context and Theme: Gendered Divisions in Roles and Settings

The context and themes of the audio element further reinforce traditional gender roles by placing female characters in domestic, aesthetic, or caregiving contexts, while male characters are often depicted in more professional, adventurous, or authoritative settings. For example, in Unit 1, male characters are involved in decision-making scenarios, while female characters are assigned family-related responsibilities. This reinforces the stereotype that men belong in the public, professional sphere, while women are relegated to private, domestic roles (Simulja et al., 2014).

However, there are instances within the content that challenge these traditional gendered contexts. Specifically, in Unit 4, Activities 3b and 3c, Nina is portrayed in a leadership role, offering a contrast to the conventional gender division of labor. Nina's depiction as a leader helps subvert the expectation that only men can occupy such roles, promoting a more gender-neutral view of leadership. While this shift is positive, it remains an exception rather than the norm, with traditional gendered roles continuing to dominate the broader narrative.

This division of male and female roles across various contexts reinforce the societal expectation that men and women occupy different spheres of influence. The content's tendency to place men in leadership, professional, and adventurous roles, while positioning women in caregiving and family-oriented roles, shapes how learners internalize gendered expectations in their own lives. These portrayals contribute to the perpetuation of gender inequality, suggesting that certain roles – particularly leadership and authority – are inherently suited to men, while others, such as caregiving, are designated for women (Haupt & Gelbgiser, 2024).

Implicit Bias: Gender Hierarchies in Role Assignments

Implicit biases are evident in the disproportionate assignment

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of roles based on gender. Female characters' achievements are often framed in relational terms, such as "helping others," as seen in Unit 3, where female characters are depicted in supportive roles. These portrayals position women as nurturers or caregivers, linking their success to their ability to support others rather than to individual accomplishments (Ridgeway & Correll, 2004). In contrast, male characters are predominantly depicted as decision-makers and problem-solvers, reinforcing a gender hierarchy that places men in positions of authority and control.

This implicit bias in role assignment reflects a broader societal pattern, where women are often perceived as supporting figures, while men are regarded as leaders and decision-makers. Such portrayals contribute to the ongoing reinforcement of gender hierarchies, positioning men at the top of the social structure and relegating women to subordinate roles. Over time, these representations can influence learners' perceptions of their own potential, particularly when they internalize these gendered expectations (McKenzie & McNeill, 2022).

Gender Representation in Visual Elements and Its Implication

The visual elements in the textbook "English for Change" reveal significant patterns in the representation of gender through the frequency of male and female characters, their roles, and the use of color. These patterns reflect societal gender norms and expectations, which are subtly reinforced through the visual content. Despite a relatively balanced frequency of male and female representations, the roles assigned to these characters, as well as the color associations, align with traditional gender stereotypes. This discussion critically examines these aspects, drawing on relevant literature to explore how these visual cues influence learners' perceptions of gender roles.

Frequency of Representation: Gender Balance and Implicit Bias

The frequency of male and female characters in the textbook's images appears to be relatively balanced. For example, in Unit 1, page 3, and Unit 3, page 102, male and female characters are depicted together in equal numbers, suggesting visual parity between the genders. This might suggest a step towards gender equality in the textbook's visual content, which is often regarded as a positive aspect in educational materials (Esteves, 2020).

However, while the visual balance of representation appears balanced, this parity does not necessarily extend to the roles or contexts in which the characters are placed. As noted by Amerian & Amerian and Esmaili (2014), even when genders are represented equally in terms of frequency, the roles assigned to them often reflect traditional stereotypes. Thus, although male and female characters appear in equal numbers, the roles they occupy, and their professional positions remain unequal. This discrepancy becomes apparent upon closer examination of the specific roles assigned to the characters, which will be further discussed below.

Role Depictions: Reinforcement of Traditional Gender Norms

While the frequency of male and female representation may

be equal, the roles depicted in the textbook adhere to traditional gender norms, with male characters often placed in prestigious, professional contexts, and female characters in domestic or supportive roles. For example, in Unit 3, page 116, a male character is depicted as a doctor, a high-status profession that aligns with stereotypical representations of masculinity as powerful, authoritative, and capable (Amerian & Esmaili, 2014). In contrast, female characters, as seen in Unit 5, page 190, are frequently shown in lower-status or domestic roles, such as traders. These representations reinforce the societal expectation that men are suited for leadership and professional roles, while women are relegated to caregiving, supportive, or domestic functions (Gudjonsson et al., 2022).

This pattern is further exemplified in images such as the one in Unit 5, page 222, where a male character is depicted as an online motorcycle driver. This role is predominantly male-dominated, especially in countries like Indonesia, where men constitute the majority of motorcycle taxi drivers (Simulja & Wulandari & Wulansari, 2014). The assignment of male characters to these roles reinforces the notion of men occupying physically demanding, public-facing occupations, while women are largely excluded from such positions. This division reflects broader gendered patterns in the labor market, where men are more likely to be represented in high-status and physically demanding jobs, and women in lower-status or domestic roles (Charles, 2011).

Color Representation: Gendered Color Associations

The use of color in the visual content further reinforces traditional gender stereotypes, with blue predominantly associated with male characters and pink with female characters. This color-coding reflects a long-standing cultural convention that associates blue with boys and pink with girls, a practice that became firmly entrenched in the 20th century. In the textbook, male characters are often depicted in blue clothing (Unit 1, page 3), while female characters are shown in pink (Unit 3, page 109). This color association not only reflects but reinforces societal expectations of gendered behavior and appearance, contributing to the formation of rigid gender identities from an early age.

The cultural significance of color is well-documented, with studies showing that color preferences can be influenced by gender stereotypes (Davis et al., 2021). The persistent use of color to signify gender roles in educational materials subtly influences students' perceptions of what is deemed appropriate for each gender, promoting the idea that certain colors – and by extension, certain roles or behaviors – are inherently linked to masculinity or femininity. This reliance on color coding may inadvertently limit students' understanding of gender fluidity and the possibility of transcending traditional gender associations.

The visual content in "English for Change" (Grade XI) reflects broader societal norms and gender stereotypes, despite efforts to balance the frequency of male and female characters. By continuing to depict male characters in prestigious, professional roles and female characters in domestic or supportive positions, the textbook reinforces the traditional gender divide still prevalent in many cultures (Ridgeway & Correll, 2004). These images perpetuate implicit biases about gender and occupation, influencing

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learners' perceptions of what roles are considered "appropriate" for each gender.

Furthermore, the color-coded representation of gender roles through blue and pink clothing reinforces narrow conceptions of gender identity, especially in young learners who are still developing their understanding of gender. While color itself is neutral, its cultural connotations can shape attitudes toward gender expression and behavior. By adhering to these color conventions, textbooks may inadvertently limit students' conceptions of gender and restrict their potential to explore a broader range of roles and identities.

To promote a more inclusive and equitable representation of gender in educational materials, it is important to provide a more diverse portrayal of roles for both male and female characters. Depicting women in leadership roles, prestigious professions, and dynamic settings, alongside men in caregiving or domestic roles, can help challenge traditional gender norms and offer students a broader understanding of the range of possibilities for both genders (Esteves, 2020; Gudjonsson et al., 2022). Additionally, reconsidering the use of color to symbolize gender and adopting a more neutral color scheme could contribute to dismantling the rigid gender associations often reinforced through educational content.

Gender Representation in Textual Elements and Their Contribution to gender Equality

The textual content of the English for Change textbook, particularly in Units 1-5, demonstrates notable progress in promoting gender equality. While the visual and audio elements occasionally reinforce traditional gender stereotypes, the written content tends to be more inclusive and balanced, providing opportunities for both male and female students to engage with topics and activities without gender bias. This discussion examines how gender-neutral language, the representation of prominent figures, and the treatment of various subjects contribute to challenging conventional gender roles and fostering gender equality.

Gender-Neutral Language in Activities

In Unit 1, titled Digital Skills and My Identities, features activities that are notably gender-neutral, representing a significant move toward inclusivity. For example, the instruction "Ask a classmate you trust based on their experience" avoids the use of gendered language or assumptions about individuals' capabilities based on their gender. This is particularly important, as language not only reflects but also perpetuates societal norms, as argued by West and Zimmerman (1987). By eliminating gender-specific assignments, the textbook creates a learning environment in which students are encouraged to participate based on their personal skills and experiences, rather than being constrained by stereotypical notions of gendered competencies.

This approach reflects a conscious effort to ensure that all learners, regardless of gender, can engage equitably and feel empowered to share their perspectives. By dissociating traits and roles from gender, the textbook promotes a more inclusive pedagogical framework, consistent with contemporary educational values. Scholars such as Hyde (2005) emphasize that the use of non-gendered language fosters equality and helps to mitigate bias. As such, the textbook's reliance on gender-neutral phrasing represents a

critical strategy in challenging entrenched stereotypes and supporting more equitable learning experiences.

Prominent Figures in Technology and Art

The portrayal of prominent figures such as Maudy Ayunda and Joshua Irwandi in Unit 1 – where Maudy Ayunda is recognized for her contributions in the arts and Joshua Irwandi in the field of technology—represents a meaningful effort toward achieving gender balance in the depiction of professional roles and accomplishments. Historically, certain fields have been strongly gendered, with technology commonly viewed as a male-dominated domain and the arts stereotypically associated with women (Leslie & Cimpian & Meyer & Freeland, 2015). By including both male and female figures in these traditionally gendered spheres, the textbook challenges prevailing stereotypes and promotes the idea that professional success is not determined by gender.

Moreover, the acknowledgment of these individuals based on their achievements—rather than in relation to gendered expectations—reinforces the principle that leadership and excellence are attainable by all, regardless of gender. By presenting Maudy Ayunda and Joshua Irwandi as role models, the textbook encourages learners of all genders to pursue their aspirations without being constrained by traditional norms. This approach provides an important counter-narrative to gendered assumptions often introduced in early education (Salami & Ghajarieh, 2016).

Gender-Neutral Dialogue and Examples in Health

Unit 3, Healthy Living for a Healthy Future, provides a further example of progress in promoting gender inclusivity, featuring gender-neutral dialogues and examples that allow all students to engage equally with topics related to health and wellness. Notably, the activities and discussions surrounding health do not assign caregiving or healthcare roles based on gender—roles that are frequently and stereotypically associated with women. This approach marks a positive step toward dismantling traditional gender norms in educational materials.

Nevertheless, subtle reinforcement of stereotypes persists, as seen in the portrayal of a "doctor and a patient," which may implicitly suggest that authoritative roles in healthcare are more commonly associated with men (Ridgeway & Correll, 2004). Despite this, the overall gender-neutral presentation of health and wellness topics reflects a more inclusive educational strategy. By avoiding explicit gender assignments in relation to health behaviors or roles, the textbook supports recent educational initiatives aimed at challenging gendered assumptions. Enabling all students to envision themselves in diverse roles within the health sector is essential for fostering equity and inclusivity in classroom discourse.

Environmental Leadership and Gender Equality

Unit 4, Indonesian Environmental Figures, represents a meaningful step toward challenging gender stereotypes by showcasing both male and female environmental activists. The depiction of these individuals in leadership positions conveys a powerful message about women's leadership potential, particularly in domains traditionally dominated by men, such as environmental advocacy. This marks a positive departure from conventional gender norms, which have historically marginalized women in environmental leadership

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roles ([Meo, 2012](#)).

By highlighting both male and female leaders, the textbook underscores the value of gender equality in positions of influence. This representation is particularly significant as it provides students with a more accurate and inclusive portrayal of societal contributions, illustrating that both men and women play vital roles in addressing global challenges. Furthermore, it serves to inspire female students to aspire to leadership roles in fields where they have been historically underrepresented.

Financial Literacy: A Gender-Neutral Approach

Finally, in Unit 5, Personal Money Management, the textbook fully adopts a gender-neutral approach to financial literacy. By framing financial management as a skill relevant to all individuals, regardless of gender, the textbook challenges the persistent stereotype that financial responsibility is predominantly a male domain. This inclusive portrayal promotes the idea that women, like men, are equally competent in making financial decisions and managing resources.

The textbook's gender-neutral stance on financial literacy is particularly significant, as it addresses the societal bias that often portrays men as more financially adept ([Peters, 2020](#)). By presenting financial literacy as a universally applicable competency, the textbook empowers students of all genders to take active control of their financial futures.

CONCLUSION

This study examined the multimodal elements of the English for Change textbook for SMA/MA Grade XI to assess how gender representation and stereotypes are constructed and communicated through audio, textual, and visual components. The analysis revealed several significant patterns in the portrayal of gender roles, many of which reflect traditional societal stereotypes. Findings indicated that male characters were predominantly depicted in authoritative, professional, and leadership roles, whereas female characters were more often associated with caregiving, emotional labor, and supportive functions. These patterns were most evident in the verbal content, voice characteristics, and visual representations.

Although certain aspects of the textbook – such as the use of gender-neutral language and the inclusion of both male and female characters in varied roles – demonstrate an effort to challenge traditional gender norms, implicit biases remain. The consistent use of gendered colors (e.g., blue for males and pink for females) and the depiction of specific professions as male-dominated continue to reinforce stereotypes. Nevertheless, the representation of female environmental activists and the gender-neutral approach to financial literacy illustrate a conscious attempt to promote more balanced and inclusive gender representation.

Overall, the textbook shows commendable progress toward achieving gender balance; however, areas where gender stereotypes persist warrant further attention. Future editions could enhance their commitment to gender equality by addressing issues such as color associations, occupational portrayals, and ensuring equal representation of genders across all contexts. This study highlights the critical role of textbooks in shaping students' perceptions of gender roles and emphasizes the need for educational materials that foster a more equitable and inclusive understanding of gender.

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Technological advancements have transformed education, including the use of digital books as learning media. Despite their potential, many students still encounter obstacles in accessing and utilizing digital books effectively. This study investigates the barriers faced by students of the English Language Education Study Program at IAIN Palopo in reading digital books. Using a qualitative case study approach, data were collected through unstructured interviews with 12 students from the Faculty of Education and Teacher Training. The data were analyzed through three stages: data reduction, data display, and conclusion drawing. The results reveal seven primary barriers: (1) limited device storage and low battery life hinder access to digital books (Device Access); (2) unstable internet connections in students' local areas affect accessibility (Internet Connectivity); (3) prolonged screen time leads to eye strain (Eyestrain); (4) students experience dizziness and fatigue after extended reading sessions (Reading Fatigue); (5) distractions from social media notifications reduce focus (Concentration and Retention); (6) unattractive digital book formats discourage engagement (Format Issues); and (7) some students cannot access certain materials due to financial constraints (Socioeconomic Barriers). These findings highlight the need for more accessible and student-friendly digital reading solutions.

Keywords: digital books, qualitative research, reading barriers, student challenges

INTRODUCTION

The rapid evolution of Information and Communication Technology (ICT) has fundamentally transformed educational paradigms worldwide, with digital books emerging as one of the most significant innovations reshaping how students access and engage with knowledge. Despite offering numerous advantages – such as portability, accessibility, cost-effectiveness, and interactive features that can enhance the learning experience (Diarta et al., 2021; Ninghardjanti et al., 2020) – digital book also present certain challenges. In higher education institutions like the English Study Program at IAIN Palopo, while digital books present an opportunity to improve learning accessibility, they also pose challenges in ensuring their pedagogical effectiveness. Growing empirical evidence suggests that, despite their advantages, digital books may not always facilitate the same depth of comprehension and retention as traditional print materials, indicating the need for further exploration into the obstacles faced by students in utilizing these resources effectively.

This paradox forms the crux of the current investigation, which seeks to identify and analyze the specific barriers students encounter when using digital books. While existing literature has addressed aspects of digital literacy in developing educational contexts, there remains a gap in understanding the practical challenges students face in everyday academic settings. The urgency of this study is underscored by Indonesia's persistently low performance in international literacy assessments, particularly the 2022 PISA results, which ranked the country 11th from bottom among 81 nations in reading literacy. This points to systemic challenges in education that demand immediate scholarly attention and practical solutions.

The cognitive and academic benefits of reading are well-established in numerous studies, consistently demonstrating a positive correlation with vocabulary development, language proficiency, and critical thinking skills. Neuroscientific investigations have further illuminated how reading stimulates neural connectivity in brain regions associated with language processing and comprehension, suggesting that the act of reading fundamentally shapes cognitive architecture. However, the contemporary educational landscapes are witnessing a concerning decline in reading motivation and engagement, particularly among younger demographics who increasingly favor digital distractions over sustained textual engagement. This trend is especially pronounced in Indonesia, where educational disparities, infrastructural limitations, and cultural learning preferences create additional barriers to reading comprehension.

The transition to digital books, while theoretically promising in its potential to overcome some of these barriers through enhanced accessibility and interactive features, introduces new complexities that warrant careful examination. Emerging research indicates that students frequently experience lower comprehension levels when reading digitally compared to print, a phenomenon attributed to factors such as increased cognitive load, screen fatigue, and the absence of tactile engagement that characterizes traditional reading experiences.

Notable gaps persist in current scholarship regarding digital reading comprehension, especially in developing countries like Indonesia, where the integration of technology in education presents unique challenges. While extensive research in Western contexts has explored the cognitive aspects of digital reading, there is insufficient understanding of how affective factors, such as motivation, digital self-efficacy, and reading anxiety, influence engagement with e-books in Southeast Asia. Moreover, pedagogical interventions to mitigate these barriers, such as digital literacy training, adaptive e-book designs, or updated teaching methodologies are largely untested in Indonesian higher education. This study aims to address these gaps by employing a multidimensional analysis of digital reading barriers, focusing not only on cognitive and technical difficulties but also on motivational and environmental factors. Grounded in Mayer's cognitive theory of multimedia learning and self-determination theory, the investigation explores how intrinsic and extrinsic motivation influence digital reading behaviors and comprehension.

Indonesia's ongoing struggles with literacy attainment, as evidenced by its PISA rankings, highlight the critical importance of this research for both academic scholarship and practical pedagogy (Mustadi & Amri, 2020). Indonesia's education system faces numerous challenges in adapting to 21st-century learning demands, including outdated teaching methods, limited access to quality reading materials, and insufficient focus on developing critical literacy skills. As digital books become more common in Indonesian higher education, understanding how to implement them effectively is essential. This study seeks to identify barriers to digital reading while also proposing practical, culturally relevant solutions to improve digital literacy and reading efficacy. From an ethical standpoint, the research aligns with both contemporary educational goals and Islamic teachings on the value of knowledge acquisition, as emphasized in Surah Al-Alaq, which underscores reading as a core human endeavor.

By bridging theoretical insights with practical applications, this research aims to provide valuable insights for educators, policymakers, and digital content developers working to enhance literacy outcomes in Indonesia's evolving educational landscape. These findings are expected to have broader implications for digital pedagogy in other developing countries, where the balance between technological integration and pedagogical effectiveness must be carefully managed to improve learning outcomes.

This study also aims to examine the significant gaps in digital reading comprehension research. These gaps include: (1) insufficient examination of affective and motivational factors in digital reading persistence, (2) limited research on culturally adapted digital reading pedagogies, (3) the absence of longitudinal studies tracking digital reading skill development, (4) a scarcity of research on effective teacher training for digital literacy instruction, and (5) a lack of investigation into optimal multimedia integration in academic e-books. The present study aims to address these gaps by employing a mixed-methods approach that combines cognitive testing with motivational assessment and qualitative analysis of reading behaviors in an Indonesian higher education context.

METHODS

Research Design

This study employed a qualitative research approach using a case study design to investigate the barriers experienced by students in reading digital books. A qualitative case study design was chosen because it allows for an in-depth exploration of the participants' experiences within their real-life context. As Creswell (2014) explains, qualitative research is an approach to understanding social and cultural phenomena, focusing on the meaning given by individuals or groups to a specific problem.

This research used an inductive approach, where conclusions were drawn based on data collected directly from the field. The study was conducted at Institut Agama Islam Negeri (IAIN) Palopo and involved 12 participants from the 2020 cohort of the English Language Education Study Program. These participants were purposively selected to

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ensure a relevant and information-rich sample. Specifically, participants were chosen based on their consistent use of digital books from the first to the third semester, which provided them with sufficient exposure to digital reading and ensured that their experiences were relevant to the research focus.

Purposive sampling was used to select participants who could provide rich, detailed information about the barriers they faced in using digital books. This approach allowed for the inclusion of students who were actively engaged in the digital learning environment and were thus better positioned to discuss the challenges and obstacles encountered. The selection of participants was based on their academic background, experience with digital books, and their ability to reflect on the digital reading process.

Research Instruments

The instruments employed in this research were unstructured interviews and documentation. Interviews were selected as the primary data collection method to enable the researcher to explore participants' experiences and perceptions in depth. Through direct, face-to-face conversations, the researcher was able to probe deeper into participants' responses, clarifying and expanding on their answers where necessary. The interviews comprised 14 open-ended questions, designed to allow participants to express themselves freely and elaborate on the barriers they faced when reading digital books. To complement the interviews, documentation was used as a secondary data source to provide supporting evidence. This included audio recordings of the interview sessions and the collection of relevant artifacts, which served to reinforce and validate the information obtained during the interviews. The combined use of interviews and documentation enhanced the richness, depth, and credibility of the data collected.

Data Collection Techniques

Data collection was conducted through two main techniques: interviews and documentation. The interview process was carried out in several stages. First, the researcher arranged appointments with each participant to schedule the interviews. The researcher then conducted the interviews by posing 14 open-ended questions, which had been previously validated by subject matter experts to ensure relevance and clarity. Interviews were conducted in an informal and relaxed manner to create a comfortable environment for the participants, encouraging them to respond openly and honestly. Each interview session was audio-recorded, with the participants' informed consent, to ensure the accuracy of the data and to facilitate later transcription and analysis. In addition to interviews, documentation was employed as a supporting data collection technique. The researcher recorded the interview sessions and collected any relevant documents, such as students' reading materials or personal notes related to their digital reading experiences. These documents were used to triangulate the data, thereby enhancing the reliability and credibility of the research findings.

Data Analysis Techniques

The data analysis process followed several systematic steps to ensure a rigorous and credible interpretation of the findings. First, the recorded interview data were transcribed

verbatim, preserving the original words of the participants to maintain the authenticity of their responses. Once the transcription process was completed, the data were subjected to coding, which involved identifying key themes, categories, and recurring patterns within the participants' narratives.

The analysis was guided by the framework proposed by Miles, Huberman, and Saldana (2014), which includes three concurrent flows of activity: data reduction, data display, and conclusion drawing or verification. Data reduction involved selecting, simplifying, and transforming the raw data into a more manageable form. Data display entailed organizing and presenting the reduced data in visual formats such as matrices or thematic charts to facilitate interpretation. Finally, conclusions were drawn based on the patterns identified, and these conclusions were continually verified by cross-checking them with the raw data and supporting documentation. To enhance the validity of the findings, triangulation was employed by comparing the data obtained from interviews and documentation. This multi-source approach helped ensure that the results were both reliable and comprehensive.

RESULTS AND DISCUSSION

This study employed qualitative research methods to investigate the multifaceted barriers encountered by undergraduate students in the English Language Education Study Program at IAIN Palopo when engaging with digital books as part of their academic studies. Through in-depth semi-structured interviews conducted with 12 participants from the 2020 cohort between September 4 and September 20, 2024, supplemented by audio documentation for data verification, seven primary barriers to effective digital reading were identified from an initial framework of eleven potential obstacles. In figure 1, these barriers encompass technological limitations, physiological effects, cognitive challenges, and socioeconomic factors that collectively impact the students' digital reading experiences. The findings highlight a complex interplay between device characteristics, environmental conditions, individual reading behaviors, and institutional support systems – factors that collectively influence the effectiveness of digital book utilization in higher education contexts.
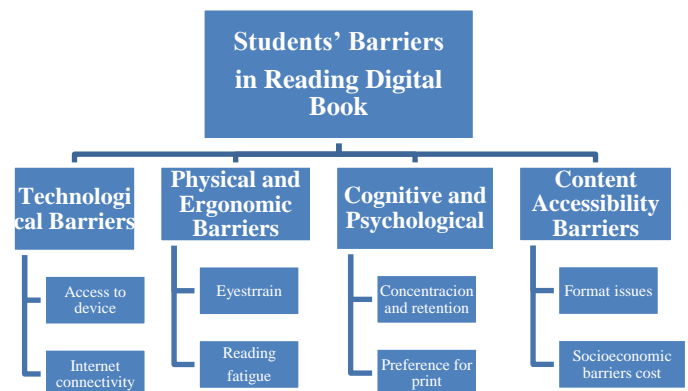
FIGURE 1 | Conceptual Framework After the Research Conducted

Technological barriers emerged as foundational challenges that significantly constrained students' access to and use of digital books. Most participants (83%) relied

primarily on smartphones for accessing digital reading materials due to their portability and constant availability, with only a minority having regular access to laptops (25%) or tablets (8%). However, this smartphone dependence introduced several limitations, including restricted screen size for comfortable reading, limited battery life that disrupted extended study sessions, and insufficient storage capacity for downloading multiple digital books. One participant's statement, "*If the phone's memory is full, we can't access digital books...so it's limited*" (Excerpt 3), exemplifies this widespread issue. Furthermore, 25% of respondents reported encountering digital rights management (DRM) restrictions that prevented them from downloading certain books for offline use, forcing continuous internet dependence. These technological constraints highlight a critical gap between the theoretical availability of digital resources and their practical accessibility for students in real-world learning scenarios.

Internet connectivity issues represented perhaps the most pervasive infrastructural barrier, affecting 67% of study participants. The quality and reliability of internet access varied dramatically based on geographic location and socioeconomic status, with students from rural areas or lower-income backgrounds experiencing particularly severe limitations. Multiple respondents emphasized how unstable networks disrupted their reading sessions, with one noting, "*To access it, of course, we have to have internet access...but not all places have good internet access...so that's the main barrier*" (Excerpt 7). This challenge was further exacerbated by the financial burden associated with mobile data usage, which 42% of participants identified as a major concern. Due to inconsistent access, students were often compelled to adopt inefficient coping strategies, such as taking screenshots of key pages or quickly copying text during brief periods of connectivity. These findings underscore the extent to which inadequate digital infrastructure can undermine the theoretical advantages of digital books, transforming them from convenient learning tools into sources of academic stress and reduced educational effectiveness.

Physiological impacts of digital reading manifested prominently in the form of visual discomfort and reading fatigue, affecting 75% and 58% of participants respectively. Extended screen exposure led to a range of ocular symptoms collectively referred to as digital eye strain, including dryness, irritation, blurred vision, and headaches. As one student described, "*If I read for a long time, the writing is a bit blurry, making my eyes hurt*" (Excerpt 15). The physiological strain was exacerbated by several factors: the small screen size of smartphones (used by 92% of participants), high levels of blue light emission, and suboptimal reading environments where students often contended with glare and poor lighting. Additionally, 42% of respondents reported experiencing cognitive fatigue characterized by dizziness, difficulty concentrating, and reduced comprehension after prolonged digital reading sessions. One participant's vivid description of seeing "fireflies" after extended reading (Excerpt 16) illustrates the severe physiological effects that can accompany digital text consumption. These findings align with existing ophthalmological research on computer vision syndrome while highlighting the vulnerabilities of student

populations who engage in intensive academic reading through digital mediums.

Cognitive and metacognitive challenges emerged as significant barriers to effective digital reading comprehension and retention. Approximately 62% of participants reported greater difficulty maintaining focus when reading digitally compared to print, with digital distractions being the primary culprit. The constant intrusion of notifications from social media and messaging apps fragmented attention, as captured in statements like "Incoming notifications disrupt reading activity" (Excerpt 21). Moreover, 58% of students described experiencing shallower engagement with digital texts, characterized by more frequent skimming, reduced annotation, and poorer long-term retention of material. This phenomenon corresponds with existing cognitive research on the "screen inferiority effect," where readers demonstrate poorer recall and comprehension when reading digitally versus in print. The spatial characteristics of digital reading - including the lack of tactile feedback, inconsistent pagination, and difficulty in forming spatial memories of text location - were cited by 33% of participants as factors impairing their ability to navigate and synthesize complex academic material effectively.

A strong preference for printed books emerged among 67% of participants, despite their general proficiency with digital technologies. This preference was motivated by several factors: better tactile engagement ("printed books are more engaging and aesthetically pleasing" - Excerpt 23), reduced eye strain, fewer distractions, and superior annotation capabilities. Interestingly, this preference was most pronounced for intensive reading tasks requiring deep comprehension, while digital formats were often preferred for quick reference or searching specific content. The persistence of print preference among digital natives' challenges assumptions about the inevitable dominance of e-books in academic settings and suggests that current digital reading technologies may not fully meet the needs of scholarly reading practices. This finding has important implications for educational institutions transitioning to digital resources, as it indicates that print materials may still play a vital role in supporting certain types of academic reading.

Socioeconomic barriers created significant inequities in digital book access and utilization. Approximately 33% of participants reported financial constraints that limited their ability to purchase necessary devices, access paid digital book platforms, or maintain consistent internet connectivity. Statements like "usually there are also paid ones" (Excerpt 27) and "problems in terms of payment" (Excerpt 28) reveal how commercialization of digital educational resources can exclude economically disadvantaged students. These barriers were compounded by the lack of institutional support systems - only 17% of participants reported having access to university-provided devices or subsidized digital book programs. The socioeconomic dimension of digital reading barriers highlights how technological transitions in education can inadvertently exacerbate existing inequalities unless accompanied by comprehensive support mechanisms.

The findings of this study paint a nuanced picture of digital book adoption in higher education, revealing multiple interdependent barriers that extend beyond simple

technological access. While digital books offer theoretical advantages in terms of availability and searchability, their practical implementation faces significant challenges related to device limitations, infrastructural deficiencies, physiological effects, cognitive impacts, and socioeconomic barriers. These challenges are particularly acute in developing educational contexts like Indonesia, where uneven technological development and resource constraints amplify existing digital divides.

Several important implications emerge from these findings. First, educational institutions must adopt a more holistic approach to digital resource implementation that addresses not just content availability but also the technological, physiological, and cognitive aspects of digital reading. This could include providing eye-friendly reading devices, offering training in effective digital reading strategies, and creating distraction-reduced reading environments. Second, the persistence of print preference suggests that complete transitions to digital formats may be premature, and hybrid print-digital solutions may better serve student needs. Third, the socioeconomic dimensions of digital reading barriers underscore the need for institutional support programs that ensure equitable access to necessary technologies and resources.

This research conducted on student barriers in reading digital books at the English Language Education Study Program aimed at identifying student barriers, and then researcher carried out an analysis of their findings. In this research, researcher collected data through student interviews, and observations during first semester until third semester.

The research results show that there were various barriers experienced by students, ranging from technological, physical, to psychological barriers. Even though digital books offer easy access, this research confirms that there were special challenges that influence the effectiveness of using digital books in learning. This section focused on how these barriers relate to existing theory and research, as well as explore potential solutions that can be implemented to improve the student's learning experience.

Access to Device
Students experience problems accessing devices to read digital books. These barriers include limited device memory capacity, batteries that drain quickly when outside the home, and some digital books that can only be accessed online without the option to download. This research supports the findings of Bafadhal (2021), which show that technical barriers such as access to digital devices and platforms are the main obstacles in technology-based learning. the importance of the availability of adequate devices to improve digital-based learning experiences.

Internet Connectivity
Internet connection stability was one of the main barriers for students. Several students reported difficulty accessing digital books due to slow internet networks and uneven internet access where they live. So, they have to looked for a place with a stable internet connection so they can download the digital book and then read it when it's downloaded.

These findings are consistent with research by Zilka et al., (2021), who stated that poor internet connectivity can hinder digital accessibility and learning. This is further supported by Raihana (2022), who highlights that unstable internet access is an obstacle in understanding digital material. Digital-based education in Indonesia was not yet supported by adequate facilities and infrastructure. One of them was that using digital books as a learning medium still has obstacles in terms of access to devices. Most students use cell phones to access it, but the smartphones they use still do not support digital-based learning. Some students complained that the storage was full, making it difficult to download the digital book. In a Related Study Review, research by Utami Aulia Bafadhal (2021) which discusses students' obstacles in understanding texts using Google Classroom shows that one of the main problems was access to technology and technical obstacles that arise during the use of digital platforms. This was in line with the findings in this research which also found that unstable access to devices and internet connections were the main barriers for IAIN Palopo students in reading digital books. The findings of this research corroborate the results of Utami's research, by showing that technological barriers remain a significant issue in the educational environment, especially among students who do not yet have adequate access or technical skills. This highlights the need for better technological support, as also discussed in previous studies.

Eyestrain
Reading for long periods on digital devices causes eyestrain. Some students said their eyes hurt after reading digital books, and the writing became blurry. This shows that reading on a digital screen causes eyestrain more quickly than reading a printed book. They emphasize strategies to reduce negative impacts, such as taking rest first and using anti-radiation glasses. This is similar to research that found that prolonged use of digital screens can cause digital eye strain, which includes symptoms such as eye pain, blurred vision, and headaches (Maulida et al., 2021).

Reading Fatigue
Apart from eyestrain, students also experience general fatigue when reading digital books. This was often caused by radiation from digital device screens. Or it could also be due to irregular study time management. This research supports research by Mustikasari (2021) in the Related Study Review shows that psychological barriers such as lack of attention, low motivation, and anxiety are the main obstacles to reading comprehension. In this research, findings related to eyestrain and reading fatigue when using digital devices also show that physical and psychological factors are very influential in technology-based learning. This two research indicate that physical and mental aspects are important factors that need to be considered in the context of digital learning. If Maysarah focuses on psychological aspects such as motivation, this research adds an important physical dimension, namely the reading fatigue that student's face when reading digital books. Thus, this discussion broadens the scope of Maysarah's research by emphasizing the physical effects of technology use in learning. The present study revealed that students frequently encounter challenges in maintaining focus and concentration while engaging with digital books, which

subsequently impedes their overall reading comprehension and retention (Xie, 2021). The proposed solutions include the use of ergonomic devices and limiting reading duration.

Concentration and Retention

Concentration problems are other barriers in reading digital books. Most students say they were distracted by social media notifications or other applications active on their devices. In the previous study, research by Alidin and Hartiningsih (2024) who examined barriers to reading comprehension using the Question-Answer Relationship (QAR) strategy found that barriers to grouping questions and finding main ideas often become challenges. In this research, it was found that distractions from social media notifications are also one of the main obstacles in digital reading comprehension. This interference has a negative impact on understanding the material contained in the digital book. The results of this research support the findings Rinaldy & Hartiningsih (2024), who stated that impaired concentration and lack of focus are the main obstacles in understanding text. This discussion may show that although the contexts and media used are different, both Rinaldy's research and this study highlight the need for strategies to overcome barriers related to comprehension and concentration. From the result interview, respondents suggest using methods such as turning off notifications during study sessions, which could be a strategy to reduce distractions, similar to using QAR as a strategy in improving reading comprehension. A second similar study pointed to the importance of specific intervention strategies to help students overcome their challenges.

Format Issue

Some students experience discomfort with the digital book format, citing issues such as unappealing design and incompatibility with certain devices. In some instances, the students found the interactive features of the digital books, intended to enhance engagement, to be confusing or difficult to navigate, thus hindering rather than helping their comprehension (Kesson, 2020). This barrier supports the findings of Raihana (2022), which shows that appropriate formatting and structure of digital texts was very important to improve the reading experience. Adapting the format to make it more user friendly is necessary to reduce these barriers.

Socioeconomic Barriers Cost

Cost was a barrier for some students, both in purchasing devices and digital books. Several students said they had difficulty accessing paid digital books, as well as economic limitations in purchasing adequate equipment. It was so important to provide affordable and inclusive educational resources so that digital-based teaching and learning activities can be realized well. Some students indicated that the cost of e-books and devices was a significant barrier to their access and use (Alsadoon, 2020). This research also supports the findings of Bafadhal (2021), who stated that cost constraints were a significant factor in technology-based learning. From interviews that have been conducted, respondents who have problems with the digital book payment process were looking for digital books that are not paid for or they even still buy them if the digital book was needed.

Practical Solutions and Immediate Action for IAIN Palopo

The findings of this study present a nuanced understanding of digital book adoption in higher education, revealing multiple interdependent barriers that extend beyond simple technological access. While digital books offer theoretical advantages in terms of availability and searchability, their practical implementation faces significant challenges related to device limitations, infrastructural deficiencies, physiological effects, cognitive impacts, and socioeconomic barriers. These challenges are particularly acute in developing educational contexts like Indonesia, where uneven technological development and resource constraints amplify existing digital divides.

Several important implications emerge from these findings. First, educational institutions such as IAIN Palopo must adopt a comprehensive approach to digital resource implementation that addresses not just content availability, but also the technological, physiological, and cognitive aspects of digital reading. Practical solutions could include offering subsidized devices and internet access to students, ensuring that all students, regardless of their economic background, have access to the necessary tools for digital learning. Immediate steps could also involve providing eye-friendly reading devices, offering training in effective digital reading strategies, and creating distraction-reduced reading environments. These initiatives would address the technological, physical, and cognitive barriers identified in this study.

Second, the persistence of print preference suggests that complete transitions to digital formats may be premature. Hybrid print-digital solutions could better serve student needs. For example, IAIN Palopo could integrate both digital and print materials, allowing students to choose the format that best supports their learning objectives. This approach could bridge the gap between traditional and digital learning methods, supporting students' academic reading requirements.

Third, the socioeconomic dimensions of digital reading barriers underscore the need for institutional support programs to ensure equitable access to necessary technologies and resources. IAIN Palopo could explore offering subsidies or scholarships to students for the purchase of digital books or devices, as well as providing free or discounted access to educational resources. These measures would help alleviate the financial burden and ensure that all students can engage fully with digital learning materials.

This study offers valuable insights into the multifaceted barriers students encounter in accessing and effectively utilizing digital books. These challenges extend beyond mere technical difficulties, encompassing cognitive, psychological, and socioeconomic dimensions. By implementing practical interventions – such as providing subsidized devices and internet access, developing hybrid learning environments, and delivering targeted support to disadvantaged students – institutions like IAIN Palopo can mitigate these obstacles and foster a more inclusive and effective digital learning experience.

The findings underscore the importance of adopting a comprehensive approach to digital education that considers

the technological, physical, and cognitive needs of students. By grounding these recommendations in actionable solutions, IAIN Palopo and similar institutions can foster more equitable access to digital resources, improve student engagement with digital boo

CONCLUSION

This study provides significant insights into the complex barriers that hinder effective digital book utilization in higher education, particularly within under-resourced institutional contexts. The identification of seven distinct yet interrelated barriers – spanning technological, physiological, cognitive, and socioeconomic dimensions – challenges the assumption that digital formats inherently enhance learning accessibility. The research highlights how seemingly accessible technologies, such as smartphones, paradoxically create new forms of exclusion due to device limitations. Additionally, the high prevalence of digital reading fatigue (58%) and concentration difficulties (62%) calls into question the pedagogical adequacy of current digital reading interfaces for sustained academic engagement. Furthermore, the strong preference for print (67%) among students – especially digital natives – raises important concerns about the effectiveness of digital learning tools in fostering long-term comprehension and academic success.

The study carries significant theoretical implications by advancing three key arguments in educational technology discourse. First, it demonstrates that the materiality of reading technologies mediates cognitive outcomes, supporting embodied cognition theories in digital literacy. Second, the findings complicate the digital native paradigm by revealing persistent comprehension gaps in digital environments. Third, the research validates a post-digital perspective, suggesting that technological integration should be situated within existing educational ecologies rather than viewed as a standalone solution.

From a practical standpoint, these insights emphasize the need for institutions to recognize that equitable digital education requires more than just infrastructure—holistic support systems addressing device adequacy, digital wellness, and multimodal resource availability are equally essential. In particular, the physiological impacts documented underscore the need for ergonomic considerations in educational technology design and policy.

Several methodological limitations qualify the study's contributions. The context-specific nature of the research, conducted at a single Indonesian institution, limits the generalizability of findings to other educational settings. While the modest sample size (N=12) provided qualitative depth, it prevents broad statistical claims. The three-semester observation period may not fully capture longitudinal adaptation effects, and potential self-reporting biases in interview data could influence barrier prevalence estimates. Additionally, the study's exclusive focus on English majors may overlook discipline-specific variations in digital reading challenges. These limitations highlight the need for future larger-scale, mixed-methods research to establish definitive patterns across diverse educational contexts.

To address the identified barriers, a multi-tiered implementation framework is proposed. At the policy level, institutions like IAIN Palopo should consider developing comprehensive digital equity plans that include device lending programs, connectivity subsidies, and hybrid resource policies. Hybrid learning models, combining digital and print resources, could be particularly useful in contexts where digital infrastructure is limited. These models would allow students to benefit from the interactive features of digital tools while still having access to the tactile engagement provided by print books.

Curriculum designers should integrate digital literacy training, with a specific focus on concentration strategies and ergonomic practices. Faculty development should emphasize multimodal pedagogy that strategically combines both print and digital formats, based on learning objectives and resource availability. Additionally, academic support services focusing on digital wellness and time management techniques should be created for students. These services should work in tandem with rigorous monitoring systems to assess their effectiveness in reducing digital reading barriers.

While this study touches on the need for enhanced infrastructure and digital literacy support, future research could explore the effectiveness of specific interventions aimed at mitigating digital reading barriers. For example, digital detox strategies, which help students reduce screen time and minimize distractions, could be assessed for their impact on student focus and comprehension. Additionally, the use of ergonomic devices designed to reduce physical strain during prolonged reading sessions may offer significant improvements in students' overall learning outcomes. Experimental studies on these interventions, alongside longitudinal investigations, could provide valuable evidence for designing more effective digital learning environments.

The study identifies several avenues for further investigation. Longitudinal studies tracking the relationship between digital reading practices and academic performance across disciplines should be prioritized. Comparative research across diverse institutional contexts would help clarify how socioeconomic factors mediate digital learning experiences. Experimental studies testing interventions like blue-light reduction technologies or distraction-minimizing interfaces would contribute valuable insights into effective technological development. Research examining the intersection of digital barriers with other forms of educational disadvantage could inform more targeted support strategies. Mixed-methods designs are recommended for these studies to capture both quantitative patterns and qualitative experiences of digital reading.

In conclusion, this research advocates for a paradigm shift in digital education from technology driven adoption to learning-centered integration. The findings demonstrate that unlocking the potential of digital books requires addressing the complex interplay of technological, physiological, and cognitive factors that shape reading experiences. Institutions must recognize that achieving educational equity in the digital age necessitates more than just providing devices and connectivity. It requires a thoughtful approach to how these technologies interact with human learning processes. By adopting this evidence-based, nuanced approach, educators

and policymakers can develop digital learning ecosystems that genuinely enhance, rather than inadvertently hinder, learning outcomes.

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Indonesian pre-service teachers' changing beliefs about cognitive strategies during online English practice

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Technological competence remains a highly recommended skill for teachers, their beliefs about cognitive strategies can significantly influence the integration of technology in online teaching practices. This study aims to investigate the beliefs of pre-service teachers (PSTs) regarding cognitive strategies during online English teaching practices. Specifically, it explores the beliefs held by PSTs prior to their teaching practicum in schools and the subsequent changes in these beliefs during the practicum. To gain deeper insight into the nature of these beliefs, a qualitative research methodology was employed. Data were collected through semi-structured interviews, online classroom video observations, and questionnaires. The study involved 36 fourth-year PSTs from the Language Education Study Program at a public university in Indonesia, with 8 of them participating in the interviews and classroom observations. The findings reveal that PSTs' beliefs about cognitive strategies changed notably in relation to promoting communicative, problem-solving, and student-centered activities. Partial changes were observed in beliefs related to the use of learning videos, the use of the target language in class, and speech pacing. In addition, the findings indicate that changes in beliefs were largely influenced by IT infrastructure, which affected time allocation for teaching and the selection of teaching platforms dictated by school policy. Moreover, PSTs' limited IT competencies and the lack of effective monitoring of students' activities, conditions, and behaviors were identified as key constraints shaping their beliefs during online teaching. Therefore, it is recommended that school mentors and teacher education programs support PSTs in reshaping their beliefs, particularly in relation to online teaching practices. Moreover, teachers and students require comprehensive support from parents, schools, the government, and the broader community to achieve learning objectives and foster effective online classrooms.

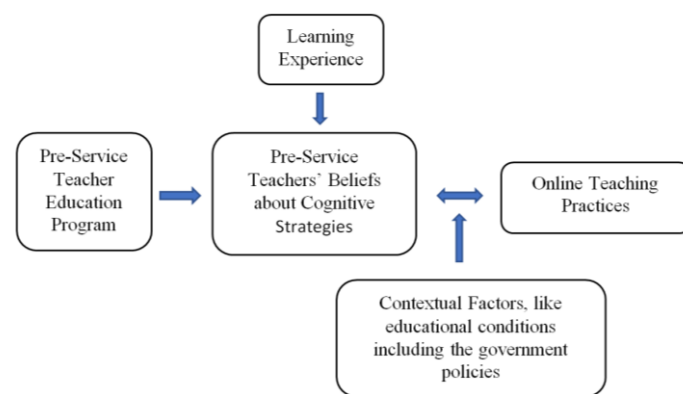Keywords: pre-service teachers, belief, cognitive strategies, online practicum

INTRODUCTION

Research on teacher beliefs supports the notion that such beliefs have a positive influence on classroom practices (Saputra et al., 2020; Farrell & Guz, 2019). Previous studies consistently suggest that teachers' underlying beliefs shape classroom interactions and patterns, decision-making processes, the roles of both student and teacher, the selection of materials, instructional goals, and teaching procedures. However, these beliefs are not static; they may change or become misaligned with actual practices due to various influencing factors. One significant factor is the socio-educational context, which encompasses aspects such as class size and

composition, as well as broad educational conditions, including exam-related pressures and national educational policies (Nishino, 2012).

Issues related to distance, remote, or online learning are not new, as numerous studies have reported how documented how online learning or instruction has been implemented alongside technological advancements in the 21st century (Hockly, 2015; Badia et al., 2017; Gonzalez & St.Louis, 2018; Shin & Kang, 2018; Blaine, 2019; Xu & Zhou, 2020). This development highlights the significant role of the Technological Pedagogical Content Knowledge (TPACK) in teaching and learning, as its framework illustrates the dynamic interplay among three essential knowledge domains; pedagogy, content, and technology (Mishra & Koehler, 2006). Thus, the current educational landscape presents substantial challenges for teachers in terms of developing technological competence and effectively integrating technology with pedagogy. Even after the Covid-19 pandemic, teachers are still strongly encouraged to utilize emerging information and communication technologies (ICT) in their instructional practices. In other words, teachers are expected to enhance teaching and learning by integrating ICT to complement traditional classroom practices in language education (Arrosagaray et al., 2019; Saboowala & Manghirmalani Mishra, 2021). Some scholars have referred to these approaches as the new traditional model or the new normal in education (Dziuban et al., 2018; Rasheed et al., 2020). Accordingly, schools have the authority to implement various forms of online teaching environments, such as hybrid, blended, or fully online learning. Essentially, these types of learning offer comparable online learning experiences, as Badia et al. (2017) note that approaches to online teaching are also applicable to both blended and hybrid learning formats.

Meanwhile, inadequate IT infrastructure, limited knowledge of online teaching, and lack of access to electronic devices have become significant challenges for both teachers and students in remote education (Yi & Jang, 2020). Consequently, as agents of change, teachers are expected to address these challenges to ensure and maintain the teaching quality (Pu, 2020). Furthermore, teachers' beliefs about cognitive strategies play an important role in supporting the integration of technology into teaching practices, particularly in online learning environments.

As future teachers, PSTs are also expected to develop the ability to identify and apply suitable instructional strategies within learning environments that are fully or partially web based. If teacher education programs fail to adequately prepare them for online instruction, this could present a major obstacle. Various constraints may prevent them from translating their beliefs into actual classroom practices (Farrell & Bennis, 2013). Furthermore, scholars have noted that mismatches often occur when teachers' beliefs do not align with their practices. Figure 1 illustrates how contextual factors—such as the educational setting - can influence the cognitive beliefs of teacher candidates during teaching practicums. At the same time, these beliefs are shaped by the teacher education program and the candidates' prior learning experiences before entering the practicum phase.

FIGURE 1 | A Conceptual Model of Pre-Service Teachers' Beliefs and Teaching Practices (Adapted from Borg, 2015)

As a type of instructional strategy, cognitive strategies involve the mental processes employed by PSTs to manage classroom interactions. These include monitoring students, analyzing both teacher and student actions, setting new instructional plans, and adjusting learning goals (Heikonen et al., 2017). PSTs observe what occurs in the classroom, interpret these events, and modify their instruction accordingly. Meanwhile, Wolff et al. (2015) found that PSTs tend to offer more superficial interpretations of classroom events compared to experienced teachers and often struggle to process information efficiently or adapt lessons appropriately. Thus, Saariaho et al. (2015) suggest that cognitive strategies can be particularly beneficial for PSTs in addressing the classroom challenges and in supporting students' learning strategies. These challenges become even more complex in online contexts, where technology is not only a medium for delivering content but also a crucial tool for facilitating teacher-student interaction (Richmond et al., 2020).

Several studies have investigated the implementation of cognitive strategies in classroom settings. For example, Pu (2020), Mahmood (2020), and Bao (2020) proposed various cognitive strategies in context of online teaching practices. However, these studies did not delve into the mental processes teachers engage in when managing unplanned events during online classroom interactions. In other words, they did not provide a comprehensive understanding of how teachers interpret unexpected occurrences in online teaching, the strategies they employ in response, or how they modify their instruction accordingly. In contrast, Heikonen et al. (2017) conducted a study to better understand the strategies, including cognitive ones, that PSTs use during classroom interactions in the context of teaching practicums. Their research focused on PSTs' use of cognitive strategies by having them observe and reflect on teaching videos situated in face-to-face classroom environments. Therefore, the exploration of PSTs' beliefs about cognitive strategies and their application during online teaching practices remains relatively under-researched.

As demonstrated by preliminary study results, teacher education programs in Indonesia have made efforts to prepare PSTs for teaching in online learning environments. This preparation is essential, as PSTs are expected to meet the demands of 21st-century education by integrating technology

and pedagogy effectively in classroom settings. This aligns with the assertion of Kennedy and Archambault (2012), who emphasize that PSTs must possess the competencies required to teach in online environments, and that teacher education programs should be designed to support this goal. Consequently, prior to their placement in actual teaching contexts, PSTs are trained to acquire relevant knowledge and engage in teaching simulations that involve the use of educational technology. Such training aims to equip them with the necessary skills to navigate the complexities of online classroom interactions, particularly given their limited practical experience.

Meanwhile, the challenge becomes increasingly complex when IT infrastructure poses a significant problem, especially in developing countries such as Indonesia. However, teacher beliefs can play a pivotal role in enabling them to apply strategies that integrate technology with pedagogy, as these beliefs influence teachers' awareness, attitudes, methods, techniques, and instructional policies (Doğruer et al., 2010). Previous studies have emphasized that greater attention should be given to teachers' beliefs about cognitive strategies rather than solely focusing on their implementation in online learning contexts. This is because beliefs guide the actual use of strategies as reflected in teachers' classroom behavior. For instance, if pre-service teachers (PSTs) do not believe in the value of cognitive strategies associated with the use of specific online platforms, they are likely to be reluctant to use them in practice. When they are required to do so due to institutional demands or contextual constraints, they may experience demotivation, frustration, and uncertainty. These conditions underscore the importance of investigating PSTs' beliefs about cognitive strategies, as well as how these beliefs evolve, in order to support the creation of optimal online learning environments. Such an understanding is essential for enabling PSTs to manage, regulate, adapt to, and respond effectively to diverse online classroom scenarios during their teacher education.

The importance of cognitive strategies for successful online learning sessions has inspired the present study to examine PSTs' beliefs about these strategies. This study explores the beliefs demonstrated during online teaching practices and the processes that lead to changes in these beliefs. Accordingly, the study poses the following research question:

- Do the beliefs of PSTs about cognitive strategies change during online teaching practices? If so, how do these changes occur?

METHODS

Research Design
This study aimed to investigate the evolving beliefs of pre-service EFL teachers regarding cognitive strategies during online teaching practices. To achieve this objective, a qualitative research methodology was employed to gain deeper insights into the nature of PSTs' beliefs before and during their teaching experiences. Qualitative methods are particularly suitable for capturing the complexity of phenomena such as emotions and belief systems (Creswell, 2016).

An explanatory design was applied in this study. Initially, survey data were collected before and during the teaching practices. This was followed by a multiple or collective case study, serving as a qualitative approach to explore the survey responses in greater depth (Creswell, 2016). Moreover, online classroom observations and interviews were conducted to trace moment-by-moment changes in the cognitive strategies employed by PSTs.

Participants
The study recruited 38 pre-service teachers from the English department of a public university in Indonesia. The participants were in the fourth year of their bachelor's degree program and had completed several university courses related to English Language Teaching (ELT). They engaged in a four-week teaching practicum at various schools in Surabaya. To obtain rich and meaningful data, eight potential participants were invited for interviews and classroom observations. These participants were selected based on three criteria. First, they were conducting their English teaching practicum at the secondary school level (junior high schools, senior high schools, or vocational schools). Second, they were involved in teaching activities either individually or in groups, allowing for an examination of how their beliefs influenced their teaching practices. The third criterion was their willingness to fully participate in the study, which was essential for collecting in-depth and comprehensive data.

Prior to the practicum, all participants underwent a teaching simulation that emphasized the use of technology in an online teaching environment. The school-based teaching practices were conducted in online settings, employing hybrid or blended learning models due to the post-pandemic context. It was assumed that the participants would apply their beliefs about ELT and utilize cognitive strategies during the implementation of their teaching practices.

Instruments
This study employed three instruments for data collection: questionnaire forms via Google Forms, observation sheets, and interview protocols. The questionnaire was used to address research questions, which focused on the beliefs of PSTs about cognitive strategies before and during their online EFL teaching practicum. The study developed a Teacher Beliefs Questionnaire, primarily based on the work of Woodcock and Reupert (2013). Specifically, all ten cognitive strategies proposed by Woodcock and Reupert were adopted, as they were deemed relevant to the context of the present study.

The questionnaire consisted of 10 statements reflecting students' beliefs about cognitive strategies, rated using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). It was administered twice to capture changes in beliefs over time: first, before the participants began their teaching practice in the cooperating schools, and again after they completed the four-week practicum.

Observation sheets were also used to analyze videos of the online teaching sessions. A total of sixteen teaching videos were collected and analyzed to help answer the research questions. Additionally, eight students (4 male and 4 female) participated in semi-structured interviews.

Data Collection

The study was conducted from September to December 2023. Data were collected through the distribution of questionnaire, the recording of online teaching practicum sessions, and the conduction of interviews. Before and after the teaching practicum, the PSTs were asked to complete a questionnaire, which required approximately 3-5 minutes to complete.

Meanwhile, the study recorded the online-teaching practicum sessions. During the observations, the researchers took notes on the PSTs' beliefs about cognitive strategies as reflected in their teaching practices. Based on eight selected recordings and the accompanying notes, the researchers then compiled observation accounts. Furthermore, a 20-minute online semi-structured interview was conducted with each of the eight PSTs following the practicum. Although the interviews were conducted in English, participants were encouraged to use Indonesian when necessary to express their beliefs about cognitive strategies and the processes underlying any changes in those beliefs more clearly. Additionally, they were prompted to describe the challenges they encountered and the types of support they required. All interviews were audio-recorded and transcribed for analysis.

Data Analysis

After the data collection phase, several systematic procedures were undertaken to analyze the data gathered from the three instruments: questionnaires, classroom observations, and interviews. First, the data from the pre- and post-practicum questionnaires were analyzed to determine whether any changes had occurred in the PSTs' beliefs about cognitive strategies during their online teaching experiences. These questionnaires served as the basis for identifying shifts in beliefs before and after the practicum and provided a comparative framework for understanding the impact of the teaching experience. Second, the classroom observation data were thoroughly examined. The researchers repeatedly read the observation accounts, re-watched the recorded teaching videos, and focused on the activities and interactions between teachers and students. All observational data were transcribed and organized according to the participants' names, rather than being categorized as pre- or post-practicum. This method facilitated the identification of specific cognitive strategies used by the PSTs throughout the online teaching practicum.

Third, the interview data were analyzed through an iterative process. The research team repeatedly listened to the recorded interviews and reviewed the transcripts carefully. The participants' teaching and learning experiences were then documented in the form of concise narratives. These narratives were classified by participant names and shared with the respective participants for verification. Revisions were made based on their feedback to ensure the accuracy and clarity of the interpreted beliefs and experiences. This step was essential for exploring both the beliefs held by the PSTs and the processes that contributed to changes in those beliefs. Finally, after all the data from the three instruments were coded, the results were compared and synthesized to produce a set of qualitative findings. These findings were interpreted through the lens of the researchers' perspectives, contextual analysis, and comparisons with previous studies. The integrated analysis provided nuanced insights into the PSTs' cognitive strategies and addressed the research questions comprehensively.

RESULTS AND DISCUSSION

This section elucidates the beliefs of PSTs regarding cognitive strategies and their online teaching practicum. A total of ten cognitive strategies emerged from the analysis of questionnaires, teaching practicum videos, and interviews. The comparison of participants' beliefs, as reported in the pre- and post-practicum questionnaires and analyzed through an independent-sample t-test, revealed an interesting finding: no statistically significant differences ($p \geq .05$) were found between the pre- and post-practicum responses across most subsections of the PSTs' beliefs (see Table 1). Therefore, qualitative data drawn from interviews and field notes based on video observations were employed to further explore whether changes in the PSTs' beliefs about cognitive strategies occurred during the online EFL teaching practicum and, if so, how these changes took place.

TABLE 1 | Beliefs of Pre-Service Teachers about Cognitive Strategies Before and During the Online EFL Teaching Practices

The Result of the Questionnaire

No.	Beliefs of Pre-service Teachers about Cognitive Strategies	Pre (mean)	Post (mean)	Significance Difference N=36
1.	I use video or audio materials to help me deliver the content and support student learning.	4.1	3.9	.20
2.	I provide online class recordings to benefit students who missed or did not understand parts of the lecture.	3.7	3.7	.86
3.	I emphasize real-life communicative contexts and problem-solving activities.	3.9	3.5	.04
4.	I modify the materials to meet students' learning needs.	4.1	4.1	1.0
5.	I make emergency preparedness plans for unexpected problems.	3.8	3.7	.66
6.	I combine online learning with offline self-learning.	3.7	3.8	.36

7.	I slow down my speech to help students to grasp key knowledge points.	4.3	4.2	.59
8.	I use the target language to explain the materials in class.	3.5	3.1	.02
9.	I ask challenging questions during online classes.	3.4	3.6	.45
10.	I show flexibility and give extra time to students for submitting assignments.	4.1	4.1	.72

The results explicitly demonstrate that, out of the ten cognitive strategies believed in by the participants, only two exhibited statistically significant differences (see Table 1). Although these strategies were introduced during teacher education, the actual teaching experience evidently provided the participants with a clearer understanding of the importance of applying them in practice. This finding aligns with Busch's (2010) assertion that teaching experience during practicum helps pre-service teachers (PSTs) connect their theoretical learning in teacher education to real classroom setting.

Moreover, the study observed a significant change in the belief related to emphasizing authentic communicative context and problem-solving activities (Table 1, No. 3). This result is supported by the initial interviews, in which many participants reported that this strategy was motivating and actively engaged students in classroom interaction. PST3 explained her support for the strategy: "*Students have to practice their English; hence, I will apply the strategy to give time for them to use the language*".

However, the majority of the PSTs were found to be strong advocates of providing extensive explanations of teaching materials during their practicum. As PST8 stated: "*The strategy took much time while I had only not more than 70 minutes to teach the class, then it was sufficient only for explaining the materials and small discussion*".

The result also revealed that most participants appeared to experience difficulties in engaging students in classroom discussions. Many students remained silent, often turning off their microphones and cameras. Consequently, the participants' roles became dominant, resulting in a teacher-centered rather than student-centered learning environment.

"*It was difficult to monitor and involve students in an online class because most of them turned off the microphone and camera. I even did not know they stayed with me or not during the meeting hours.*" (PST2, interview).

The inconsistency between the reported beliefs and actual practices of the PSTs highlights that, while they theoretically supported the use of actual communicative contexts and problem-solving activities, in practice, they tended to adopt more traditional teaching methods by allocating significant time to explaining the materials. One major constraint was the limited duration of each class session - PSTs effectively had only 70–75 minutes of teaching time instead of the scheduled 90 minutes, as they needed to wait for all students to join the online class. In some cases, more than 15 minutes were required before all students were actively involved. This situation led to a teacher-centered approach, where the PSTs dominated the class interaction. This pattern aligns with the findings of Saputra et al. (2020) and Çapan (2014), who observed that tight schedules and the pressure to cover a wide range of topics within the curriculum often influenced teachers to believe that student-centered strategies were too time-consuming. As a result, PSTs tended to perform more as transmitters of knowledge rather than facilitators of learning (Chaaban et al., 2019).

In terms of asking challenging questions to students, the result of the questionnaire, which indicated only a slight difference between pre- and post-practicum responses, were inconsistent with the participants' responses during the interviews. While they claimed to have employed the strategy to stimulate student motivation and engagement with the material, only a few actually applied it in practice. Several participants admitted that the classroom conditions often compelled them to focus more on delivering the material rather than facilitating interactive activities. Some participants reported that even when they encouraged students to ask questions – regardless of whether the questions were challenging – the students often remained silent. As PST4 clarified,

"*After explaining the materials, I always asked students if they had questions. However, I was always disappointed because they always said "no" and even gave me no response. As a result, I was the one who gave the question.*" (PST4, interview)

Additionally, PST1 emphasized the following:

"*Because there was no question from students, the class mentor gave me a question. It was done to encourage students to involve actively in a class or to give an example of how the question should be delivered.*" (PST1, interview)

A number of studies (Chin & Osborne, 2008; Wu et al., 2023; Mcqueen, 2024) assert that students' questions play a crucial role in promoting meaningful learning and fostering scientific inquiry. However, the findings reveal that students' reluctance to respond was a significant factor that discouraged the PSTs from implementing the strategy of asking challenging questions. As Blaine (2019), notes, there is often an implicit demarcation of space between teachers and students in online classrooms, which makes it difficult for teachers to monitor students' engagement and participation. Consequently, while the PSTs initially believed they would be able to assess students' understanding through the questions students asked, in practice, they came to rely more on students' responses to the questions posed by the teachers themselves.

The results also reveal that certain strategies underwent only partial change, as not all participants altered their beliefs between the pre- and post-online teaching practices. For instance, the belief regarding the use of the target language in the classroom demonstrated inconsistency between the pre- and post-practicum stages. The interview data indicate that

the participants generally believed that teachers should use English for approximately 70% to 80% of classroom instruction. PST3 described her teaching experience as follows, "*I taught foreign language, and to make students familiar with the language, I had to use it frequently in class*."

Meanwhile, after completing their teaching practicum, the PSTs reported that they used only 40%-50% of English during instruction. This reduction was primarily due to their concerns regarding students' difficulties in comprehending the instructional content. In practice, the classroom teaching videos revealed that surprisingly, fewer than half of the participants used English at a level approaching 50%. The remaining participants employed English minimally – no more than 25% - while predominantly relying on the students' first language (L1). PST8 explained, "*students asked me to use L1 rather than the target language, especially when I explained the materials*". In addition, PST4 emphasized the comprehension challenges faced by students, stating, "*when I used the target language in explaining the materials, I always asked students whether they understood or not, and they always said no.*"

The study highlights that students' rejection and reluctance to use the target language may account for the partial changes in the participants' beliefs. The participants appeared hesitant to fully implement English as the medium of instruction, as they perceived that students would struggle to comprehend their explanations. This finding aligns with Kandilla et al. (2019), who reported that while PSTs initially believed that using English would facilitate students' understanding, in practice, students often remained silent when English was used as the primary medium. Similarly, Turnbull (2017) emphasized the necessity of incorporating the first language (L1) for clarification and explanation purposes. Consequently, code-switching emerges as a practical strategy to address students' misunderstandings related to teachers' instructions and learning materials (Kandilla et al., 2011; Seymen, 2012).

Regarding the belief in slowing down speech during online teaching practices, nearly all participants responded positively during the interviews. This was further supported by the questionnaire results, which showed consistent responses between the pre- and post-practice phases (Table 1, No. 7). The participants emphasized that this belief was particularly influenced by the online teaching context. Representing the group's view, PST4 explained:

"*It was online teaching, and bad internet connection happened frequently. Besides, we only used our voice and limited expressions instead of gestures to explain the materials. Thus, we could make students understand our explanations by slowing down our speech.*" (PST4, interview)

However, a few participants stated that they would slow down their speech only when they perceived that students were having difficulty understanding the material. Meanwhile, the classroom observation videos revealed that only a few participants slowed their speech during teaching, while the majority maintained a normal pace. They explained that although they had intended to slow down their speech, time constraints compelled them to speak at a regular speed.

As cited by PST6:

"*I need to spend more time explaining all the materials. Although I said before that I would slow down my speech, I changed it for I would slow down my speech if students did not get the points of my instructions.*" (PST6, interview)

In this regard, time constraints again posed a significant obstacle for participants in implementing the strategy of slowing down their speech during classroom interaction. Addressing the role of teachers' voices in online teaching, Mahmood (2020) emphasizes that teachers should prioritize vocal clarity and modulation over non-verbal cues such as body language, eye contact, and physical gestures. Speaking clearly and gently can facilitate students in noting essential lecture points (Bao, 2020). Therefore, it is crucial for teachers to develop skills in controlling their speech rate and voice quality to ensure effective learning in the online environment.

Similarly, some PSTs expressed a shared belief in the effectiveness of using video or audio materials as teaching media. The majority agreed that these media are more engaging than teachers' voices alone and help capture students' attention during lessons. For instance, PST2 and PST5 noted, "*Sometimes videos can explain the materials better than teachers.*" However, in practice, some participants did not use video materials during their teaching sessions due to technical incompatibilities between the videos and their teaching platforms. Consequently, they relied primarily on PowerPoint presentations and images. This suggests that the use of video and audio materials in online teaching can be hindered if the platforms do not adequately support such media.

Several studies suggest that during online teaching practices, teachers should prioritize engaging students in tasks and providing access to content rather than focusing excessively on how well the content is designed and delivered (Debreli, 2012; Egbert, 2020). Another challenge that emerged was students' refusal or reluctance to utilize internet access due to concerns over data quota expenses. This issue became apparent when some participants sent video materials prior to scheduled class sessions, yet only a few students were able to access the videos. To address this problem, it is recommended that the Indonesian government and educational institutions improve infrastructure and provide sufficient facilities to support both students and teachers in establishing effective online classes.

Among the five previously mentioned strategies, the results reveal that the beliefs of some participants regarding certain cognitive strategies remained unchanged throughout the online practicum. Notably, two beliefs yielded particularly interesting findings: providing online class recordings and making emergency preparedness plans. Regarding the provision of online recordings, participants believed that these recordings benefit students who miss class for any reason, ensuring that they do not fall behind. As PST5 explains:

"*It was an online classroom, and not all students could join the class due to the electronic devices problem, the unstable connection, and even no internet quota. Then, classroom recording could be very useful for them.*" (PST5, interview)

Regarding the teaching videos, the participants consistently recorded each meeting during classroom hours. PST7 stated, "*I recorded the teaching practicum and gave the link to Google Drive to the school teacher.*" This belief aligns with findings by Carmichael et al. (2018) and Trail and Caukin (2022), who emphasize that video recordings of lessons provide realistic views of teaching practices by capturing the authentic nature of classroom instruction.

Similarly, the participants expressed positive beliefs about the necessity of preparing emergency plans, given that internet connection problems pose significant obstacles to effective online classroom interaction. As PST6 explained:

"*At the first meeting, I had trouble with my computer; thus, for the following meetings, I also prepared my cellphone and tablet for teaching practices. I was aware that I could not depend on only one tool in online teaching.*" (PST6, interview)

Moreover, some participants argued that they supported students by providing summaries of the materials. Meanwhile, PST3 explained, "*to anticipate the unexpected condition, I have prepared my PowerPoint slides and assignments for students, and also activated a WhatsApp Group.*" This approach aligns with Mahmood's (2020) recommendation that teachers should develop backup plans, such as plan B or C, to address potential problems without causing delays in student learning.

The participants also expressed a strong belief in modifying learning materials. They argued that compiling materials from various sources, including PowerPoint slides, would be more beneficial. PST4 and PST5 explained, "*We modified the materials for the students' needs.*" This statement corresponds with their use of teaching videos and slides, which demonstrated their ability to compile and adapt materials effectively. Such teaching practices illustrate how teachers' approaches to modifying and utilizing materials significantly impact teaching quality and, consequently, students' learning (Mozetič, 2019; Li & Li, 2021).

In line with the belief of combining online and offline self-learning (Table 1, No. 6), the participants explained that

online classrooms offered greater opportunities for students to engage in independent learning. Consequently, teachers needed to facilitate both online and offline self-learning through appropriate materials. Moreover, the majority of participants agreed that online and offline assignments were suitable for supporting students' self-learning. These beliefs align closely with findings from several studies (Cahyani et al., 2021; Xingjia et al., 2021; Tian, 2023; Rafiee & Gilakjani, 2024), which highlight that online learning – characterized by increased accessibility, relatively low cost, time efficiency, and integration with offline learning – can provide self-paced instruction allowing learners to manage their own progress conveniently. Practically, all PSTs assigned homework through Google Forms or email submissions. Regarding the strategy of giving students extra time for assignment submission (Table 1, No. 10), the participants noted that technical issues frequently arose in the online mode. This belief remained unchanged throughout the teaching practicum, although the outcome was less than ideal. Students appeared to lack seriousness in completing assignments, as reflected in PST2's comment: "*students submitted their work a week late, and only 5 out of 35 submitted their work.*"

The findings indicated that changes in the beliefs of PSTs are significantly influenced by the condition of IT infrastructure, which remains a major challenge in conducting online learning sessions. Therefore, it is essential that the government and schools provide adequate IT facilities. Additionally, PSTs need to effectively manage their time both as transmitters of knowledge and as facilitators to establish effective online classrooms. This situation compels PSTs to change their beliefs fully or partially by adopting certain cognitive strategies during online teaching practices, such as using learning videos to encourage students' self-learning. Furthermore, communicative activities, including asking students challenging questions, can promote a student-centered rather than a teacher-centered classroom. Meanwhile, strategies like code-switching and slowing down speech can enhance students' understanding of the materials. The beliefs of PSTs evolved in response to these challenges, which are illustrated in the following figure 2.
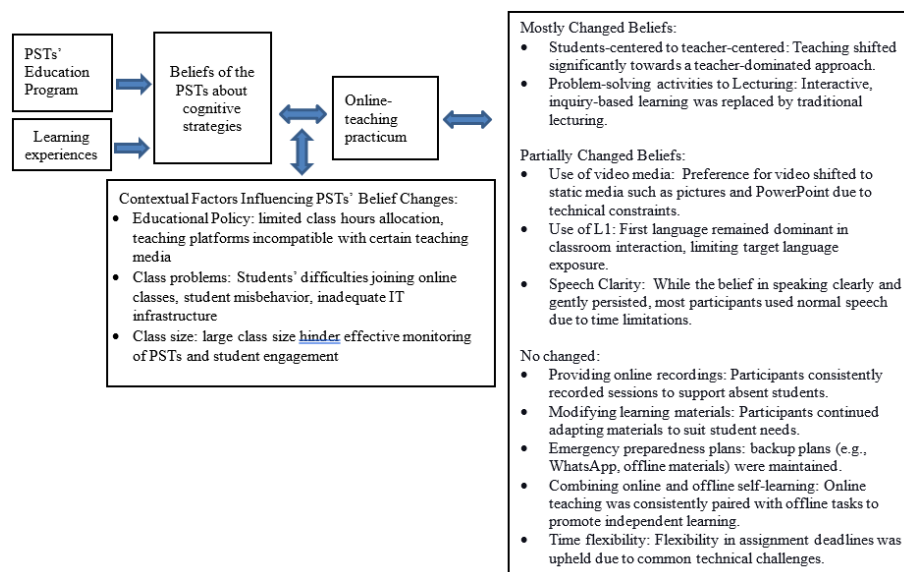
FIGURE 2 | Beliefs of the PSTs about Cognitive Strategies in the Online-Teaching Practicum

CONCLUSION

The present study provides a comprehensive overview of Indonesian pre-service teachers' (PSTs) beliefs regarding cognitive strategies and the extent to which these beliefs changed - or remained unchanged - during online teaching practices. Specifically, the findings reveal that PSTs' beliefs in two cognitive strategies underwent significant change during the practicum. First, their belief in student-centered instruction shifted toward a teacher-centered approach. Second, their belief in problem-solving activities as effective strategies was replaced by a reliance on teacher lecturing. Meanwhile, three other strategies - namely, the use of learning videos, the use of the target language in the classroom, and slowing down speech - experienced partial change. These shifts were primarily attributed to inadequate IT infrastructure, which hindered the effectiveness of online learning environments. In addition to technological limitations, several other factors contributed to the change in PSTs' beliefs, including limited IT competencies, insufficient monitoring during teaching practice, and student-related issues such as misbehavior and lack of engagement. These contextual and experiential elements align with Borg's (2003) teacher cognition framework, as illustrated in Figure 2, underscoring the complex interplay between external conditions and teachers' internal belief systems during the enactment of online teaching.

To achieve successful online teaching practices, PSTs must be able to confront various challenges by becoming thoroughly familiar with technology, monitoring student learning, and fostering both students self-learning and active participation in class activities. Therefore, school mentors and teacher education programs should support PSTs in reshaping their ideas and beliefs, particularly through hands-on experience in online teaching. Furthermore, the government and schools must ensure that IT infrastructure is readily available to both teachers and students to facilitate effective online learning environments. In this regard, teachers and students require full support from parents, schools, the government, and the wider society to attain their educational goals.

Nevertheless, the interpretations drawn from this study should be considered in light of three key limitations. First, the online classroom observations were limited, as each participant was observed in only two sessions lasting 70–75 minutes. More frequent observations could provide richer and more reliable insights into PSTs' classroom practices. Second, the relatively small number of participants may limit the generalizability of the findings, whereas a larger-scale study could offer broader and more nuanced perspectives. Lastly, the specific school context in which the PSTs conducted their online teaching and the characteristics of the learners involved may have influenced the development of the PSTs' beliefs and practices. Future research should consider conducting similar studies across diverse school contexts, with varied learner groups, instruments, and procedures, to gain more comprehensive insights into the evolution of PSTs' beliefs.

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