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Interactive Media in English Vocabulary Instruction: Types and Pedagogical Challenges

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Abstract

The integration of interactive media into language instruction has become increasingly important in enhancing vocabulary learning and student engagement. Lecturers are therefore expected to employ innovative and engaging tools to support effective learning. This study aimed to (1) identify the types of interactive media applied in English vocabulary instruction and (2) examine the challenges faced in their implementation. The research was conducted with first-semester students of the English Education Study Program at STAIN Majene using a qualitative design. Data were collected through classroom observations and lecturers' interviews, and analyzed in four stages: data collection, condensation, display, and conclusion drawing. The findings revealed that four types of interactive media were employed: interactive quizzes (Hot Potatoes software), educational videos (Sparkol Videoscribe), augmented reality (AR) books, and AR flashcards. These media promoted enthusiasm, active participation, and higher levels of engagement compared to traditional textbook-based learning. However, challenges emerged, including limited technological devices, time-consuming preparation, student resistance, limited contextual relevance of some materials, and distractions from digital devices. The study contributes to vocabulary pedagogy by highlighting the dual impact of interactive media—its potential to foster learner motivation and autonomy, alongside the practical barriers to implementation. These findings provide useful insights for lecturers, material designers, and future researchers seeking to optimize interactive media in EFL contexts.

Keywords: Interactive Media; Technology-based learning; Vocabulary Instruction.

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1. Introduction

Vocabulary mastery is a cornerstone of successful language acquisition, forming the basis for the development of essential skills such as listening, speaking, reading, and writing. As stated by Carter & McCarthy (2014) the study, vocabulary lies at the core of effective language instruction and acquisition. For first-semester students, especially those enrolled in English language education programs, vocabulary is key to mastering linguistic abilities. Without sufficient vocabulary, students often struggle to understand course material, express ideas clearly, and communicate meaningfully. At this stage, vocabulary learning is not just about memorizing words, but rather emphasizes understanding and usage in real-world contexts.

However, in practice, vocabulary instruction is frequently perceived as monotonous and disengaging, especially when educators rely on conventional, textbook-based instruction that lacks student interaction. This challenge is particularly prevalent among first-year students who are still adjusting to the demands of higher education and may lack intrinsic motivation or confidence in using a foreign language. Zeng et al., (2025) Highlight that traditional vocabulary instruction often fails to connect theory with practice, resulting in limited engagement and ineffective learning outcomes for English learners. Similarly, Rahmi et al. (2025) found that students struggle with vocabulary retention and motivation when exposed to rigid, non-contextual teaching strategies, emphasizing the need for more interactive and culturally relevant approaches.

The integration of digital technology into language education has opened up new opportunities for more engaging and effective vocabulary teaching in response to these challenges. Interactive learning media featuring visual, auditory, and gamified elements have been shown to enhance student participation and create a more dynamic classroom environment (Rahayu & Bhaskoro, 2022). These tools not only stimulate interest but also support memory retention and motivation (Puspitarini & Hanif, 2019), which are crucial for beginners who require repeated exposure and contextualized practice to internalize new vocabulary.

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Educators are expected to adopt innovative strategies that are in line with students' evolving learning needs as they become more familiar with digital tools. Indriani (2020) found that students were more enthusiastic when presenting ideas through media-enhanced instruction, noting that technology empowers learners to become more autonomous, both inside and outside the classroom. The widespread availability of internet access has further accelerated the shift toward blended and interactive teaching models, particularly in language education (Zheng, 2022)

Despite developments in the use of digital media, many educators, especially in higher education, still use textbook-based instruction methods. The result of the interview with the lecturers shows that students often lose interest when they encounter a monotonous and non-interactive learning environment. Nursabra et al., (2023) report that students respond positively to interactive media, showing greater enthusiasm and engagement. In an effort to overcome this problem, some lecturers have begun to integrate interactive tools into vocabulary instruction to improve student learning outcomes and motivation (Rulismi et al., 2022).

Some previous studies have been conducted related to the use of interactive media in vocabulary instruction and its pedagogical value. Some of them show that the use of interactive multimedia-based instruction significantly increased students' vocabulary (Mawarni et al., 2021; Fathoni & Sumaryati, 2024). Muabidah & Setiawan (2024), in a comprehensive meta-analysis of Indonesian studies, also highlight that interactive learning media (ILM) have generally produced positive effects on students' vocabulary mastery. Their review synthesizes findings from diverse interventions, including game-based platforms, multimedia applications, and mobile-assisted tools. While they report that ILM tends to enhance learner motivation and recall, the authors also note considerable variation in outcomes depending on the type of media, the duration of exposure, and the learners' educational stage. The study underscores that research in this area remains fragmented, with most investigations focusing on individual tools and short-term classroom experiments. This suggests the need for more comprehensive inquiries into how multiple forms of interactive media function in real instructional contexts.

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Belvin et al., (2024) investigated the application of Wordwall, an interactive multimedia platform designed to gamify vocabulary learning. The study revealed that Wordwall activities significantly improved students' vocabulary outcomes and sustained their interest throughout the lesson. Belvin's findings suggest that when learning is embedded in a gamified, visually dynamic environment, students are more willing to participate actively and retain new lexical items. However, the study was conducted with senior high school students, whose learning contexts and motivational factors differ from those of university students, particularly those just beginning their academic journey in English education programs. While Belvin's work affirms the promise of interactive media, it raises questions about whether similar tools can be equally effective with older learners who face different cognitive and motivational challenges.

More recently, Kurniawati et al., (2024) examined how university students engaged with vocabulary learning through self-made video projects. The qualitative analysis showed that students were not only more motivated but also more reflective and collaborative when producing media-based vocabulary tasks. Importantly, the study illustrates that technology-enabled projects can shift learners from passive recipients of vocabulary lists to active creators of meaning. Although this research was situated in a university context, it primarily involved upper-level students who already possessed a degree of confidence in their language skills. As such, the findings may not fully represent the experiences of early-semester learners, who often struggle with both vocabulary foundations and adjustment to academic demands.

Taken together, these studies indicate that interactive media are effective in enhancing vocabulary acquisition and engagement across different contexts in Indonesia. Nevertheless, the existing literature remains limited in its exploration of early-semester university students, who represent a crucial stage in language development, especially for English Education Department students.

Addressing this gap is essential for providing insights to guide lecturers and future researchers in integrating interactive media more effectively into English vocabulary instruction. Therefore, the research aims to investigate the types of

interactive media used in vocabulary instruction and the challenges encountered during their implementation. The research was conducted at STAIN Majene, a higher education institution offering an English education program, where the integration of technology into language teaching is still evolving.

2. Method

This study employed a qualitative research approach to explore the types and challenges of using interactive media in teaching English vocabulary. Qualitative research is the collection, analysis, and interpretation of comprehensive narrative and visual data in order to gain insights into a particular phenomenon of interest (Mills & Gay, 2018).

The research was conducted at STAIN Majene, specifically within the English Education Study Program. The subjects involved in this research were the lecturers and students in the Vocabulary and Corpus class. Both lecturers used interactive media in vocabulary instruction.

The researchers utilized two primary instruments, namely classroom observation and semi-structured interviews. The researcher conducted observations over 4 (four) sessions, focusing on how interactive media were integrated into vocabulary instruction. Observational data included lecturers' activities, student engagement, and the types of media used. While the Lecturers' Interview was used to gain deeper insights into the rationale behind media selection and the challenges faced during implementation, the students' interview was used to explore the students' impressions and the challenges they faced in operating the interactive media

In analyzing data from classroom observation and interview, the researchers applied qualitative data analysis based on Miles et al., (2014), which consists of four stages: data collection, data display, data condensation and conclusion drawing/ verification. This analytical process enabled the researcher to identify recurring themes related to the types of interactive media used and the practical challenges encountered in vocabulary instruction.

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3. Results and Discussions

3.1.Result

3.1.1. Types of Interactive Media

The use of interactive media in teaching vocabulary was conducted in four meetings. The lecturers used 4 kinds of media in the form of interactive quizzes, video, books, and flashcards. The lecturers have made an interactive quiz by using Hot Potatoes software, created a video by using Sparkol Videoscribe application, and learnt how to use the application of augmented reality books and flashcards before teaching. Based on the interview, the lecturers emphasized that in the process of designing the lesson plan, they chose the media carefully for each material based on their discussion by considering the features of each interactive media.

Interactive Quiz (Hot Potatoes Software) – Theme: Parts of the Body

In the first session, vocabulary related to body parts was introduced using an interactive quiz created with Hot Potatoes software. In this session, there was a part where students competed to get the highest score by answering the quizzes related to the given theme. The quizzes featured multiple exercise formats, including multiple choice, gap filling, matching, crossword puzzles, and jumbled letters. Students accessed the quiz via smartphones through a browser-based application. In addition to its excellent features that provide a variety of question formats, Hot Potatoes software allows both in-class and at-home practice without requiring an internet connection. making it easy for students to practice repeatedly, anywhere and anytime. As mentioned by lecturers:

> *"I chose Hot Potatoes because it allows me to create varied types of exercises, not just multiple-choice. This helps me check students' understanding from different angles."*
>
> *"The software works offline, so students don't need a strong internet connection, which is practical in our context."*
>
> *"It is simple but effective. The exercises are interactive, and students can practice repeatedly, which is important for vocabulary retention."*

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Besides that, the use of varied exercise types maintained student interest and reduced boredom. Students actively engaged with the media, practicing repeatedly to improve their scores and correct errors. The competitive nature of the activity encouraged students to strive for excellence, fostering motivation and self-directed learning. As stated by some students:

"I liked the quiz because it was not boring. There were many types of exercises, like crossword and jumbled letters, that made it fun."

"It feels like playing a game, so I wanted to keep trying until I got a better score."

"I could practice at home without internet, so it was very helpful."

"The competition made me motivated to do better than my friends."

Educational Video (Sparkol Videoscribe) – Theme: Family Vocabulary

The second session focused on family-related vocabulary, delivered through a video developed using Sparkol Videoscribe. The video illustrated a family tree and introduced vocabulary items associated with family members. Students viewed the video on their personal devices and were able to replay it multiple times to support memorization. The lecturers stated:

"I used Sparkol Videoscribe because it allows me to explain vocabulary in a visual and sequential way, which is easier for beginners to follow."

"The video can be replayed. Students can watch the video again until they understand the vocabulary."

"Video is more attractive compared to just explaining from the textbook, so I wanted to try this media to keep students engaged."

Although the video successfully attracted students' attention and helped reinforce vocabulary mastery, from the students' perspectives, the design (video and materials) had several limitations, such as the illustrations lacked colour, and the names used in the family tree were not contextual. The students answered:

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"I liked the video because I could watch it again at home when I forgot some vocabulary."

"The animation made learning more interesting compared to just reading or listening."

"Sometimes the pictures were not very clear or colorful, and the name of each family member (in material), like George, Jack, and others, is not contextual, but the explanation from the lecturer helped me remember the words."

"I think it's easier to memorize family vocabulary when I see it in a family tree like in the video."

Augmented Reality Book (Hippo Magic) – Theme: Household Vocabulary

In the third session, students explored vocabulary related to household items using an AR book supported by the Hippo Magic application. The book featured interactive elements such as games, hidden object activities, and animated visuals that transformed static images into dynamic 4D experiences. Students interacted with the book using their smartphones, which allowed them to learn and play simultaneously. The lecturers highlighted:

"I chose the AR book because it combines text, sound, and animation, which can help students learn vocabulary in a more complete way."

"This media makes abstract words more concrete. Students can see and hear the objects directly, so it's easier to remember."

"I wanted to try something new that could increase students' curiosity. AR is an innovative media that gives them a different experience compared to conventional books."

"Even though the number of books is limited and they had to take turns to use them, the interactive features like games and audio make it worth using for vocabulary teaching."

According to the students, the AR book significantly enhanced their enthusiasm and engagement. Students demonstrated improved vocabulary retention due to the vivid imagery and multisensory experience. Additionally, the book supported

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pronunciation practice through audio features. However, the book's imported nature limited accessibility, requiring students to take turns and install the application in advance to avoid connectivity issues. Here are the students' statements:

"I was excited because the book came alive when I used my phone. It felt like playing and learning at the same time."

"The animation helped me understand and remember the vocabulary more easily."

"I liked that the book also had sound, so I could practice pronunciation."

"Sometimes it was difficult to use because we had to share the book and install the app first, but it was still very interesting."

Augmented Reality Flash Card – Theme: Occupation Vocabulary

The final session introduced vocabulary related to professions through AR flashcards. Students worked in groups, downloaded the supporting application from the Play Store or App Store, and interacted with animated flashcards using their smartphones. The lecturers argued:

"I selected AR flashcards because they are simple to use and give students a chance to learn vocabulary through visuals and animation."

"Ordinary flashcards are already familiar to students, so adding AR technology makes them more interactive and engaging."

"The realistic visuals make the occupations easier to recognize, which helps students connect words with real-life contexts."

While the students stated:

"The animations made the jobs look real, so it was easier for me to remember the vocabulary."

"It was more fun than just reading from a book. The cards moved, and that made me curious."

"Sometimes it took time to download the app, but after that, using the flashcards was enjoyable and helpful."

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The statements indicated that the students were impressed by the 4D flashcards. The cards displayed realistic visuals that brought objects to life, making the vocabulary easy to remember. The animated content supports vocabulary mastery through visual reinforcement.

3.1.2 Challenges in implementing the media

This study was conducted to identify the challenges faced by lecturers and students in using interactive media as a learning tool. Data was collected through observation and interviews. Based on the analysis of the data obtained, there are several main challenges as follows:

1. Limitations of a technological device

Most students who are the subject of the research still experience limitations in terms of technological devices, such as smartphone capacity. Their smartphone capacity is limited, making it difficult to install new applications or store additional documents. In addition, a slow or unstable internet connection is a major obstacle in accessing online-based interactive media. Several students stated:

"My phone memory was already full, so I couldn't install the AR application without deleting some important apps."

"Sometimes my phone became slow when I opened the AR application, so it was hard to use smoothly."

"I often lost connection during class because the internet was sometimes unstable."

"The AR book and flashcards were very interesting, but my phone couldn't handle the app because the storage was too small."

2. Time Constraints in Preparation

The preparation of materials using interactive media requires more time than conventional methods. The lecturers need extra time to design the teaching materials for the lesson through the application or the website, especially for the Hot Potatoes software and Sparkol Videoscribe. The lecturer also had to master

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the use of AR applications for 4D books and Flashcards before bringing them to the class. Besides that, students are expected to download documents or install the applications at the beginning of the class, which is also time-consuming. As the lecturers argued:

> *"Yes, I had to admit that I spent extra time designing the video in Sparkol and designing the quiz in Hot Potatoes, compared to preparing traditional worksheets."*
>
> *"I had to spend some time to learn how to use the AR book and flashcards myself before introducing them to the students, but I think it is worth it."*
>
> *"Sometimes, the technical preparation took away class time because students needed to install apps or download files at the beginning of the class."*
>
> *"Compared to conventional teaching, preparing interactive media is more time-consuming, especially when I have to ensure compatibility with students' devices."*

3. Resistance from students

At first, a few students show resistance to changes in learning methods. They are more comfortable with the traditional approach because they are used to it. Adaptation to technology takes time and is not an instant process. This is not because students refuse to learn, but because they feel familiar with existing methods. The research found that some first-semester students were quite unfamiliar with the technology-based media. Their High School experiences in learning English still used paper-based media. Some students stated:

> *"Yes, at first, it takes me longer to adapt to technology-based learning because I'm not used to it."*
>
> *"I still feel awkward using my phone for studying in the classroom because in high school, we were not allowed to bring phones. We used books and handouts."*
>
> *"When the lecturer first used AR media in our class, I felt a bit lost because it was the first time I experienced this kind of learning. However, now I am really excited."*

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"I don't refuse to learn with technology, but I need more time to adjust because in high school we only used textbooks."

4. Relevance of Instructional materials and media

Not all learning materials match the media used. Some media have limited vocabulary and are not contextualized, so that lecturers need additional material for learning. Particularly for the use of augmented reality media, the lecturers need to provide additional material because the available vocabulary in the media is limited and not contextualized. It's because the lecturer only learnt the use of the available AR application, books, and flashcards, without learning to create the AR-based media from scratch. It was admitted by the lecturers:

"The AR book only contained particular vocabulary with limited themes, and some of the examples are not relevant to the students' daily life, so I had to provide additional explanations."

"I couldn't customize the AR flashcards because the flashcard was bought from the internet, and I haven't learnt to create the AR-based flashcard, so I couldn't use the media with various materials."

Meanwhile, the students stated:

"The AR book is fun, but some items are not things we often see around us."

"I really like the visuals, but sometimes we still need the lecturer to give extra explanation so we really understand."

5. Distraction

The use of interactive media, especially internet-based ones, is prone to distraction. Students can easily access content outside of learning, such as social media or online games, when using digital devices. The lecturers should monitor the students' activities while using the media. It will be more challenging when the class has a large number of students. The lecturers stated:

"It's very difficult to monitor every student in a big class, especially when everyone is using their own device."

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"The interactive media is effective, but at the same time, it opens opportunities for distraction if students are not disciplined."

"Sometimes I have to remind students to stay on task, because some are tempted to check messages."

Meanwhile, the students highlighted:

"I enjoy the interactive media, but I also get distracted by notifications popping up on my phone."

"There is my friend who opens other apps while the lecturer is explaining, so He misses the instructions."

3.2. Discussions

Optimizing the use of technology in learning becomes crucial to develop. An educator must have the ability to organize and design learning in order for students to have 21st-century skills. Therefore, the use of interactive media is highly recommended to support student learning. It is in line with Saputri et al., (2018), who state that the students gave a good response to the use of interactive multimedia; thus, it is recommended that educators develop interactive multimedia as learning media. Similar to Hadijah et al., (2020) found that the use of learning media to support the learning process should be improved because the media used needs to be adapted to the current learning trend, namely, technology-based learning media.

This study explored the implementation of interactive media in vocabulary instruction across four thematic sessions: body parts, family members, household items, and occupations. The qualitative data gathered through classroom observations, students, and lecturer interviews revealed consistent patterns of increased learner engagement, motivation, and vocabulary retention. These outcomes were shaped by the nature of the interactive media used and their alignment with established learning theories.

The lecturer has implemented various interactive media in teaching vocabulary. The lecturer used several interactive media as presentation and evaluation media in learning. The media used are Hot Potatoes Software, Sparkol Videoscribe,

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Augmented Reality flashcards, and Augmented Reality books. These media are interactive media used by the lecturers in teaching vocabulary.

The first media is Hot Potatoes Authoring Software. Hot Potatoes is a tool or application to create a collection of interactive web-based questions. The Hot Potatoes suite includes six applications, enabling you to create interactive multiple-choice, short-answer, jumbled-sentence, crossword, matching/ordering and gap-fill exercises for the World Wide Web. Syamsinar & Sarif (2017) argue that we can create interactive activities by using Hot Potatoes to make the students interesting in learning. It is in line with Indrian (2022) states that Hot Potatoes was successful in allowing students to access the tasks more easily and therefore, the use of Hot Potatoes exercises made learning fun and interesting for students.

The use of Hot Potatoes software to deliver an interactive quiz on Parts of the Body demonstrated strong pedagogical value. Students responded positively to the variety of exercise formats. Students were observed practicing repeatedly to improve their scores, indicating a shift toward self-directed learning. These behaviors align with Cognitivist theory, which emphasizes active mental engagement and structured practice (Bruner, 2009)), an are further supported by Self-Determination Theory (Deci & Ryan, 2013), as learners were intrinsically motivated to master the content.

The second media is Sparkol Videoscribe. Sparkol Videoscribe is a web-based application that allows users to create animated presentations. Sparkol Videoscribe is a software application that produces videos that can be combined with concept maps, images, sounds, and music. The combination of Audio Visual and Computer technology in Sparkol Videoscribe is able to increase students' interest in learning (Al Munawarah, 2019).

The lecturers employed Sparkol Videoscribe to introduce Family Vocabulary through an animated video. Students can replay the video, which supports memorization and reinforced exposure to the target vocabulary. It aligns with Mayer's Cognitive Theory of Multimedia Learning (Mayer et al., 2001), which posits that learners process information more effectively when it is presented through both visual and auditory channels. However, limitations in the video's design, such

as the lack of color and culturally unfamiliar names, were noted by both students and observers. These findings highlight the importance of Situated Learning Theory (Lave & Wenger, 1991), which emphasizes the role of context and cultural relevance in meaningful learning. Without familiar references, learners may struggle to connect personally with the material, potentially reducing its impact.

The Third and fourth media are Augmented Reality Media. The third media is in the form of flash cards, while the fourth media is in the form of books. Augmented reality (AR) is the combination of a real-time environment and content in the form of multimedia-based computer technology. Augmented Reality is an immersive experience that connects the real world and the digital world by placing 3D virtual objects so that users can experience an atmosphere similar to the real world (Azuma, 2017). Augmented media can increase students' interest in learning. Augmented Reality (AR) technology that has an attractive visual design can attract children's interest (Santoso et al., 2022).

The use of the Hippo Magic AR book to teach Household Vocabulary elicited strong enthusiasm and engagement. Students interacted with animated visuals, games, and audio features, creating a multisensory experience that supported vocabulary retention and pronunciation practice. These outcomes are consistent with Dual Coding Theory (Paivio, 1990), which suggests that combining verbal and visual representations enhances memory. The collaborative nature of the activity also reflects Social Constructivist learning (Vygotsky & Cole, 1978), as students worked together to explore content and solve challenges. However, logistical challenges such as limited device access and the need for pre-installed applications were observed, indicating the need for more scalable and locally adaptable AR resources.

The final session introduced Occupation Vocabulary through AR flashcards, which students accessed via mobile applications in small groups. The realistic animations and interactive features made abstract vocabulary more concrete and memorable. Students were observed discussing the content and assisting one another, suggesting that the activity fostered peer interaction and collaborative learning. These findings align with Collaborative Learning Theory and Social

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Development Theory (Vygotsky & Cole, 1978), which emphasize the role of social interaction in cognitive development. The visual reinforcement also supports Cognitive Load Theory (Sweller, 1988), as it reduces extraneous processing and aids retention.

Students look interested because the media are full colour and contain interesting pictures. According to Rosaline et al., (2023), the use of various colour variations in learning media can attract the attention and interest of users. Students become more active and enthusiastic in learning by using learning media. Liando et al., (2022) found that the use of pictures makes students more enthusiastic in learning because the pictures used can attract students' attention.

Tolv (2020) argues that teaching media are often designed for efficiency and ease of use above other considerations. Time is usually considered in terms of duration and speed. The lecturer needs more time to organize the material by using the media. She has to spend more time preparing the material before entering the class, especially the use of Hot Potatoes software and Sparkol Videoscribe. These media are different from augmented reality media where augmented books and flash cards can be found in bookstores or purchased online. It makes it easier to use the media without having to be designed specifically.

The use of interactive media in teaching vocabulary has been optimally applied. It is indicated by students' activeness in learning. When a lecturer uses interactive media, learning becomes more meaningful and attractive, and the students are actively involved in learning. Primamukti & Farozin (2018) found that in the teaching and learning process, teachers can use learning media that lead students to be actively involved in learning.

The lecturers said that almost all the interactive media were used optimally. However, the lecturer gave a reflection, especially in learning using the Sparkol Videoscribe application, where the lecturer used pictures that were less interesting and the use of material that was not contextualized. This statement is in line with students' perspectives, where the material should be more colorful and adapted to their environment. Wulandari et al., (2021) state that teaching materials should

be contextualized with students' experiences to help them understand the material more easily. Thus, educators need to develop learning materials for students based on Contextual Teaching and Learning. Diachenko et al. (2022) argue that the use of color in educational activity is a great way for teachers to support their students' self-expression. It is supported by Dzulkifli & Mustafar (2013), Colors assist students in memorizing specific information by increasing their level of attention.

In addition, the lecturers faced some challenges in implementing the media. There are limitations of technological devices, time constraints in preparation, resistance of users, distraction of students' focus, and irrelevance of Instructional materials and media. It is in line with Latif et al. (2019), They found that the use of smartphones in teaching and learning offers several advantages, such as collaboration, feedback, and engagement, but it also presents drawbacks like addiction, distraction, and challenges in maintaining privacy. It is also supported by Sari & Abrar (2024), who highlight significant challenges in their findings, they are limitations in accessing the technology, a lack of digital literacy, and pedagogical issues.

4. Conclusion

This study investigated the application of interactive media in English vocabulary instruction for first-semester students at STAIN Majene, focusing on the types of media used and the challenges encountered in their implementation. Four interactive media were employed: Hot Potatoes software, Sparkol Videoscribe, Augmented Reality (AR) books, and AR flashcards. The findings revealed that these tools could enhance student engagement, motivation, and vocabulary retention by providing multisensory, interactive, and gamified learning experiences. Students became more active and self-directed, showing enthusiasm to explore new forms of technology-based learning compared to conventional textbook-centered instruction.

Despite these benefits, several challenges were identified. Limitations in technological devices, particularly smartphone capacity and internet stability, restricted equal access for all learners. The preparation of interactive materials demanded substantial time and technical mastery on the part of lecturers.

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Additionally, some students initially resisted the shift from traditional methods, and issues of contextual relevance and potential distraction through digital devices were also observed.

Overall, the study demonstrates that interactive media can transform vocabulary instruction into a more meaningful and student-centered process, provided that technical, contextual, and pedagogical challenges are addressed. For practice, lecturers are encouraged to integrate interactive media selectively, adapting materials to students' cultural and linguistic contexts and balancing engagement with classroom management strategies. For future research, experimental or longitudinal designs are suggested to examine the measurable impact of different media on vocabulary achievement and to explore scalable approaches for integrating AR and other innovative technologies in local higher education settings.

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