RESEARCH ARTICLE

Exploring the Psychological Dimensions of Mobile-Assisted Language Learning (MALL) in English Language Education

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Abstract

This research investigates the psychological aspects influencing student engagement with Mobile-Assisted Language Learning (MALL) in English language education. The study contributes to a deeper understanding of the role that students' attitudes, personalities, expectations, and motivations play in shaping their learning experiences. The research employs a narrative inquiry approach coupled with semi-structured focus group interviews. A purposive sampling method based on individual factors such as gender, age, and culture was used to select participants from Universitas Borneo Tarakan. The qualitative analysis identified key themes and patterns from the students' narratives about their MALL experiences. The findings reveal that positive attitudes towards MALL, genuine interest in language learning, and high expectations significantly enhance student motivation and active participation in MALL activities. Furthermore, robust institutional support emerged as crucial for the successful implementation of MALL programs. These insights suggest that by understanding these psychological dimensions and ensuring adequate institutional support, educators can improve students' experiences with MALL. It has implications for fostering enhanced engagement and success in language learning.

Keywords: Mobile-Assisted Language Learning (MALL), Psychological Dimensions, English Language Education, Language learning outcomes

INTRODUCTION

Learning English as a second language presents several challenges, particularly in areas with limited access to traditional educational resources. These challenges may include a lack of exposure to native English speakers, insufficient teaching materials, and limited practice opportunities (De Vega, N. & Rahayu, 2023; Nugroho & Mutiaraningrum, 2020). An innovative strategy has emerged to address these issues and improve language learning experiences: Mobile-Assisted Language Learning (MALL). MALL has drawn considerable attention in the field of English language education due to its potential benefits (Mohammadi & Shirkamar, 2018; Pettersson, 2018; Yang, 2020). Mobile device and application integration foster learner autonomy and flexibility by giving learners excellent chances to engage with language content whenever and wherever they choose (Kukulska-Hulme & Viberg, 2018). Although the educational advantages of MALL have been the subject of multiple studies, further research is needed to determine how its psychological components affect learners' experiences and results. In particular, comprehending the psychological components of MALL use is essential for creating successful language learning curricula, considering students' varied requirements and preferences (Hoi, 2020; Jeon, 2022). This study focuses on students' attitudes, personalities, expectations, motivations, and interests in MALL adoption to better understand the psychological elements that affect learners' experiences with MALL in English language instruction.

In the Indonesian border regions, such as Borneo, MALL can significantly impact some circumstances (Vega et al., 2023). Due to the restricted availability of educational resources, including possibilities for language acquisition, these isolated areas frequently need help. According to Sutiah et al. (2020), traditional classroom-based language learning programs could be hard to find or lack the necessary infrastructure in these places. As a result,

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incorporating MALL into English language instruction in border regions can offer a workable way to close the gap and provide fair opportunities for language learning. Prior studies have emphasized the significance of considering students' attitudes and personalities when implementing MALL. Higher motivation levels, active involvement, and improved language ability have all been linked to positive sentiments regarding MALL (Krasulia & Saks, 2020; Mortazavi et al., 2021; Tanrıkulu, 2021). By giving students portable and convenient access to language resources, MALL can create favorable attitudes toward language study in border regions with limited access. The opportunity to participate actively and improve one's language abilities is now available to learners who may have felt excluded from earlier language learning programs (Onyema et al., 2019; Osifo, 2019).

Additionally, expectations have a significant impact on how students use MALL. Due to prior exposure to educational gaps, learners may have low starting expectations in rural border regions with limited facilities and resources. By giving learners a chance to engage in dynamic, multimedia-based language learning experiences, MALL can defy these low expectations. MALL can surpass learners' expectations and improve their language learning outcomes by providing exciting activities, adaptable technology, and sufficient assistance. The reasons behind learners' involvement and dedication to using MALL for language learning are also important (Zhang & Pérez-Paredes, 2021). Borneo is an example of a border region with few amenities and access points. Therefore, MALL can encourage students to overcome distance hurdles and follow their language learning objectives. Mobile devices make it convenient and portable for users to carry out language learning activities even in far-off places. The convenience of MALL and the availability of portable and easily accessible learning tools have become important reasons for its use (Ahmadi, 2018). These learners may view MALL as a chance to extend their horizons and develop their language skills.

Even though there is increased interest in MALL, there needs to be more knowledge of its psychological aspects in English language instruction, especially in border regions like Borneo with few facilities and access (Vega et al., 2023). Students' attitudes, personalities, expectations, motivations, and interests concerning adopting MALL in various situations have rarely been the subject of studies. Filling in these gaps will help us understand how psychological factors affect learners' engagement, contentment, and academic success in MALL settings, especially in areas with limited access to traditional language learning. The hypothesis guiding this research is that understanding students' attitudes towards MALL adoption alongside their personalities, expectations, motivations, and interests can significantly enhance the effectiveness of English language instruction, particularly within the context of remote areas like Borneo.

By investigating the psychological aspects of MALL in English language instruction, with an emphasis on the border regions of Indonesia, such as Borneo, this research intends to close this gap. It aims to offer a thorough knowledge of the elements that affect students' involvement and satisfaction by looking at their attitudes, personalities, expectations, reasons, and interests in adopting MALL in these remote areas. The results will help educators, curriculum designers, and policymakers understand how crucial it is to consider each student's unique psychological profile while creating MALL programs for border regions with few facilities and access points. Ultimately, this research aims to encourage learner-centered strategies that meet students' particular difficulties in these remote areas, thus advancing MALL practices in English language instruction.

The psychological dimensions of Mobile-Assisted Language Learning (MALL) in learning English encompass various aspects of learners' cognitive and affective processes. These dimensions are crucial in facilitating practical language learning experiences and outcomes. Intrinsic motivation is a significant psychological aspect of MALL for learning English (Ryan, 2023; Ryan & Deci, 2020). By incorporating engaging and relevant content, MALL applications can enhance learners' internal drive to engage with English language materials. Personalized learning experiences, such as adaptive exercises tailored to individual proficiency levels, can further boost learners' motivation. Additionally, incorporating gamification elements, such as rewards or progress tracking, can create a sense of achievement and enjoyment, encouraging learners to persist in their English language learning endeavors.

Self-regulation is another critical psychological dimension in MALL for English language learning (Lowenthal et al., 2015). Learners need to monitor and manage their learning progress actively. Mobile devices provide tools for learners to set goals, track their performance, and reflect on their language development. This self-regulatory process empowers learners to take ownership of their English language learning journey by identifying areas that require improvement and adjusting their learning strategies accordingly. Cognitive load management is essential in MALL for optimal language learning outcomes (Hsu, 2017). Cognitive Load Theory (CLT) suggests that instructional design should consider learners' working memory capacity limitations. In the context of learning English, MALL can present language content in manageable chunks, utilize multimedia elements to support comprehension and retention and offer scaffolding or adaptive features to assist learners in acquiring vocabulary, grammar, and pronunciation skills effectively.

Social interaction is a significant psychological dimension of MALL for English language learning (Vygotsky, 1978). Mobile apps and online platforms facilitate communication and collaboration with other learners or native English speakers. Language exchange apps, discussion forums, or virtual communities enable learners to practice their English speaking and writing skills in authentic conversations, receive feedback, and gain insights into the cultural aspects of English-speaking communities. This social interaction fosters language fluency, builds confidence, and develops intercultural competence. Educators and designers can create immersive and engaging environments that promote learners' intrinsic motivation, self-regulation, effective cognitive load management, and meaningful social interaction by considering these psychological dimensions in MALL for learning English.

MATERIALS AND METHODS

Research Design

This study employed a narrative inquiry approach due to its suitability for exploring personal experiences and perceptions. It aligns with our research objectives of understanding students' attitudes, personalities, expectations, motivations, and interests toward MALL (Clandinin, 2023). The narrative inquiry approach allows us to capture rich and detailed accounts of participants' experiences with MALL in their English language learning journey.

Participants

The participants were selected using purposive sampling based on the Technology Acceptance Model (TAM) moderator variables such as gender, age, and culture. This model was chosen as it provides a framework for understanding the acceptance of technology like MALL by users. Students from various regions were chosen to ensure diversity in cultural backgrounds and experiences, which can influence their attitudes towards and use of MALL. This diversity allows us to explore a broader range of experiences and perspectives towards MALL usage in English language learning. The number of participants was limited to 20 to ensure manageability in data collection and analysis while still maintaining a sufficient sample size for qualitative research. According to Sarfo et al. (2021), saturation often occurs within the first 12 interviews in qualitative studies with high homogeneity; thus, 20 is an adequate number that also allows for some variation within our participant group. We selected students specifically from Classes A1 and A2 at Universitas Borneo Tarakan because these classes were identified as having diverse student demographics that would provide a wide variety of experiences and perceptions related to MALL usage. Additionally, students from these classes had been exposed to MALL in their English language instruction, making them suitable participants for this study. Further criteria used for selecting participants included their willingness to participate in the study, their experience with using MALL in English language instruction, and their ability to articulate their experiences effectively during the interview process.

Tools and Instruments

The primary instrument for data collection in this study was semi-structured focus group interviews. These interviews were guided by a set of predetermined questions, which were derived from existing literature (Fishbein & Ajzen, 1975; Johns & Saks, 2011; Lateef & Alaba, 2013; Theng, 2009; Venkatesh & Davis, 2000). The questions were designed to explore participants' perceptions and experiences with MALL. The interview guide was organized into sections addressing different aspects of students' interaction with MALL. These aspects included Perceptions, Experiences, Attitudes, Personalities, Expectations, Motives, and Interests. To provide a clear understanding of the interview process and its structure, below is a table that categorizes each section along with its associated question indicators:

Table 1. Interview Categories and Indicators

Category	Question Indicators
Experiences	1. Prior mobile technology experience 2. Positive and negative experiences with MALL 3. Challenges encountered during mobile learning
Attitudes	1. Attitudes toward using technology in the classroom 2. Influence of MALL on Attitudes
Personalities	1. Impact of personality on the learning process 2. Role of personality in learning 3. Influence of personality on the use of mobile learning
Expectations	1. Institutional support for using mobile phones in the classroom 2. Impacts after learning using MALL in the classroom 3. Effects of MALL on teaching and learning processes 4. Expectations from using MALL
Motives	1. Reasons for using mobile learning 2. Advisability to a friend to use their mobile phones for academic purposes
Interests	1. Methods to create interest in learning by lecturers 2. Maintenance of interest in mobile learning 3. Types of media sources used on phones 4. Influence mobile media applications have to motivate English language learning.

Procedures

Before conducting the interviews, each was designed to last approximately one hour, a duration often chosen in research to allow for comprehensive discussion while respecting the participants' time constraints. The decision to use an online platform for conducting these interviews was necessitated by geographical limitations between the researcher and participants, which could be due to various reasons such as different locations or inability to meet in person due to restrictions. Prior to initiating each interview, explicit permission was sought from every participant for audio-recording their sessions. This step is crucial in ensuring ethical compliance in research, as it makes certain that participants are fully aware of how their data will be collected and used.

In addition, all interviewees were made aware of their rights and obligations pertaining to this study before participating. It typically includes informing them about their voluntary participation, their right to withdraw at any point without facing any repercussions, and that they can choose not to answer questions they are uncomfortable with.

Lastly, robust measures were implemented to protect the confidentiality of participants during this research process. It typically involves anonymizing participant responses so individual identities cannot be discerned from them, securely storing data (both physically and digitally), using it strictly for purposes agreed upon by participants (which should have been explained beforehand), etc. Finally, these procedures reflect a commitment towards upholding ethical standards in conducting human subject research, respect for participant autonomy through informed consent processes (permission seeking & explaining rights/obligations), ensuring beneficence by protecting participant confidentiality and minimizing potential harm (confidentiality measures), and using an appropriate method for collecting data given geographical constraints (online platform).

Data Analysis

The data collected from these interviews were subjected to a rigorous and systematic qualitative analysis process using the method of thematic analysis. This process, as outlined by Braun & Clarke (2019), involved several well-defined stages. Initially, all interview recordings were transcribed verbatim to ensure the accuracy and authenticity of the data. This transcription stage was followed by a phase of familiarization where the research team immersed themselves in the data, reading and re-reading the transcripts to gain an in-depth understanding of the content. After familiarization, we embarked on initial coding. During this stage, we systematically assigned labels or codes to segments of data that appeared significant or exciting. These codes were designed to capture both explicit and implicit meanings within the data. Following initial coding, we began searching for themes among these codes. It involved grouping similar or related codes into potential themes that represented patterns in the dataset.

Once potential themes were identified, they underwent a review phase where each theme was examined for internal coherence (do all coded extracts within a theme share a common thread?) and distinctiveness (is each theme different from others?). Some themes might have been refined or combined during this process based on their interrelations and overlap. Finally, defining and naming stages involved further refining each theme's specifics so it encapsulates its essence accurately while also being distinct from other themes.

To assist with this intricate analytical process and enhance its reliability and efficiency, we utilized NVivo software, a powerful tool designed specifically for managing qualitative data analysis. In terms of ethical considerations during our data analysis procedure, all collected interview transcripts were securely stored with access restricted solely to members of our research team. To protect participants' identities during the publication of findings, pseudonyms replaced any identifiable information within our dataset.

By adopting this meticulous approach towards thematic analysis, involving transcription, familiarization, initial coding, searching for themes, reviewing, and naming themes, we aim to provide a comprehensive understanding of psychological dimensions influencing MALL usage in the English language instruction context at Universitas Borneo Tarakan. Our findings could offer valuable insights for educators and policymakers striving to improve education quality in Indonesia's regions facing resource limitations.

RESULTS OF STUDY

Our study's findings provide valuable insights into the psychological aspects related to the use of Mobile-Assisted Language Learning (MALL) in English language learning. The findings indicated that students' attitudes, personalities, expectations, motives, and interests were key factors that affected their experiences with MALL. Learners with positive attitudes and preferred collaborative learning environments enjoyed using MALL. High expectations, integrative motivations, and personal interests in language learning also impacted learners' engagement and satisfaction with MALL. Therefore, considering these psychological factors is essential when designing effective MALL programs that cater to learners' diverse needs and preferences.

The psychological aspects of MALL can be divided into external and internal factors. External factors, such as expectations and motives, are influenced by external conditions like institutional facilities, the purpose of using MALL, and its academic relevance. On the other hand, internal factors like attitudes, personalities, and interests are individualistic. Attitudes refer to personal beliefs and how MALL affects them; personalities impact preferences and roles in learning, while interests relate to MALL pedagogy and goals. The figure presented in the study provided insights into students' perceptions of MALL from a psychological perspective.

External Factors

The data presented in Figure 1 can be categorized into two groups of expectations: institutions' facilities and expectations of using MALL for English language learning. Concerning institutions' facilities, the most critical factor was "Free Wi-Fi Campus," which received the highest rating of 13. Adequate technology-enhanced facilities were also essential, with eight respondents highlighting their significance. In contrast, "Interactive Tools" and "Facility Standard" were each rated once. This finding aligns with a participant's perception, which emphasizes the importance of providing sufficient network facilities for students:

"If we talk about UBT, it is now very supportive, starting from every faculty having LCDs, and now there are Smart TVs in the ISBN buildings. Hotspots are also provided in every faculty, so there is no longer an excuse for not having a network. Although sometimes it is slow due to many users, I believe UBT has been very helpful and fulfilling in facilitating." (Network Facilities, Interview, 25th May 2023, in Tarakan)

"Regarding the facilities at UBT, I think they are at an adequate standard. However, when we compare them to the references from other campuses outside our region, we are still lagging in terms of modernity, quantity, and quality. But as for the basic standards, they are sufficient." (Comparative Analysis of Facilities, 25th May 2023, in Tarakan)

The analysis above highlights the significance of institutional support, such as free Wi-Fi access and adequate technology-enhanced facilities, for successfully implementing MALL in English language learning. Ensuring students can easily access and utilize these resources may contribute to a more engaging and practical language learning experience. The feedback from the students reveals key insights into the perceived benefits of using Mobile Assisted Language Learning (MALL). First and foremost, the most frequently cited benefit, as indicated by five respondents, is its potential to "Contribute to More Effective Learning." One student expressed that

"It's the same, it is from this mobile phone it can be very easy and simple, what's more, learning English really needs interesting things to make it more enthusiastic and easier to understand." (Effective Learning, Interview, 25th May 2023, in Tarakan)

This statement emphasizes the effectiveness and simplicity of using MALL and highlights the need for engaging content in English learning. In addition to effective learning, three respondents voiced the importance of "Facility Improvement" in their learning experience. A student stated that
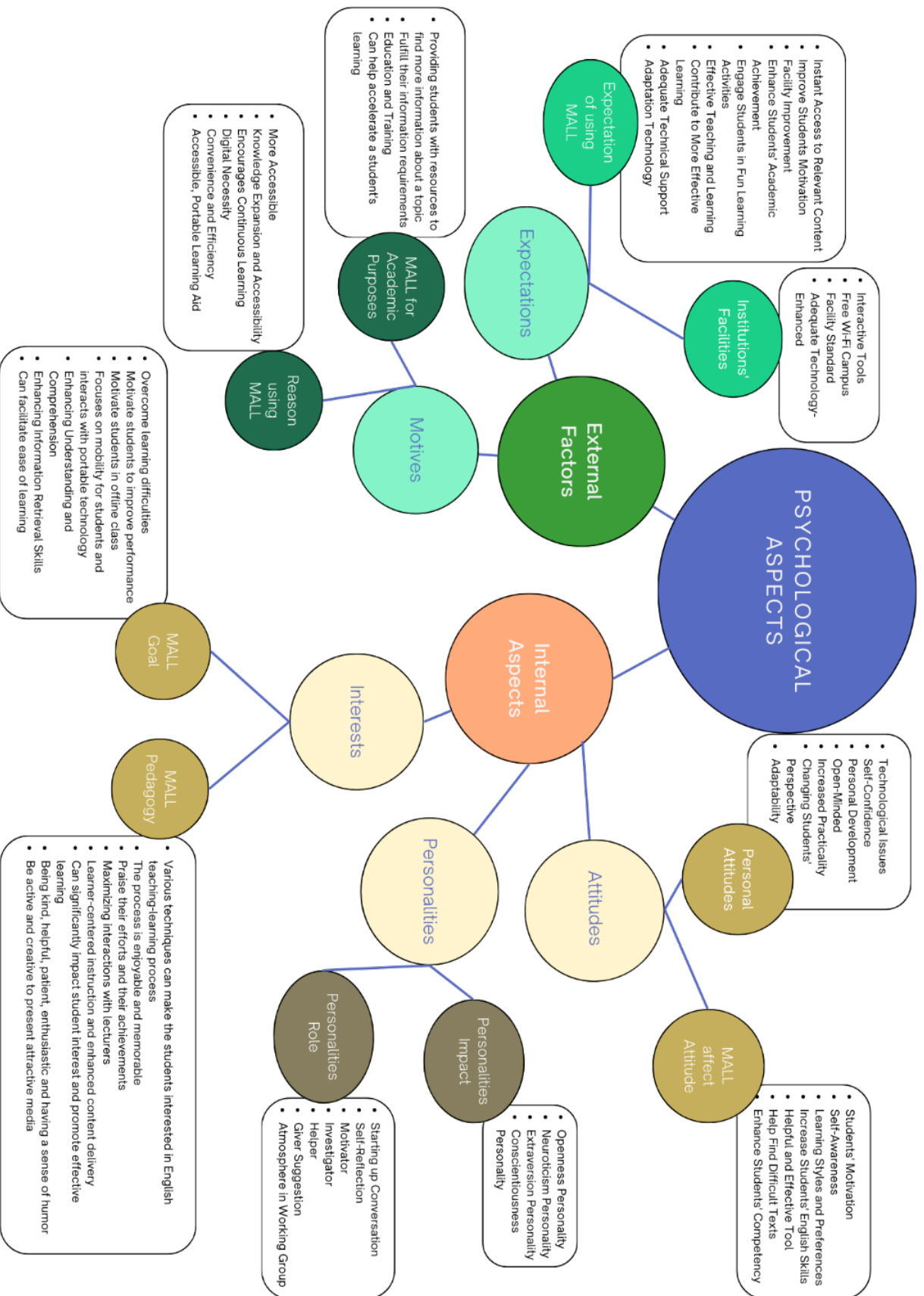
Figure 1 Psychological Aspects of Using MALL

"As for our hopes, with technology, we expect further developments to make our lives easier. This could be through improved facilities in terms of both quality and quantity. Currently, there is still a lack in areas such as buildings and computer-equipped rooms, while the number of students at UBT is very high. The capacity is not sufficient to accommodate everyone. We need more resources in this regard." (Facility Improvement, Interview, 25th May 2023, in Tarakan)

It reflects the hope that technology can address the current deficiencies in facilities, such as buildings and computer-equipped rooms, especially given the high number of students at UBT. Three respondents also pointed out the potential of MALL to "Engage Students in Fun Learning Activities.

"According to my experience, using a mobile phone is fun, and it doesn't feel the time is over. So hopefully, it can be adjusted according to the availability of time later." (Engaging Learning Activities, Interview, 25th May 2023, in Tarakan)

MALL can make learning more enjoyable and time-flexible. Finally, "Adaptation Technology" was noted by three respondents as a significant advantage of MALL.

"As for the impacts, the presence of technology at UBT, particularly in Kalimantan, has certainly been felt. Many students who live on the outskirts of the city and study at UBT have experienced the benefits of technology. They have been exposed to technology since they come from remote areas. With UBT adhering to standard technological practices, they can experience and appreciate its effects." (Adaption Technology, Interview, 25th May 2023, in Tarakan)

The students, particularly those from remote areas, appreciated the presence of technology at UBT in Kalimantan. This exposure to standard technological practices allows them to experience and appreciate the benefits of technology.

At the same time, "Instant Access to Relevant Content," "Enhance Students' Academic Achievement," "Effective Teaching and Learning," and "Adequate Technical Support" were mentioned by one or two respondents. This perspective is consistent with a participant's perception, which highlights the expectation that MALL will make learning more accessible for both students and lecturers:

"Even though I might be learning new things, I hope lecturers can also use this MALL to make it easier for us, especially for assistance in translating." (Accessible Learning, Interview, 25th May 2023, in Tarakan)

The data and feedback reveal that both institutional support and the efficacy of Mobile Assisted Language Learning (MALL) are essential elements in facilitating effective English language learning. In terms of institutional facilities, the importance of a strong technological infrastructure, including free Wi-Fi and other technology-enhanced facilities, was emphasized. Despite relative deficiencies in modernity, quantity, and quality when compared with other campuses, the students deemed the basic standards sufficient, indicating a generally positive perception of institutional support. Regarding MALL's role in English language learning, the students perceived it as an effective tool, highlighting its potential to make learning more engaging and enjoyable. Particularly for students from

remote areas, the presence of technology and the opportunity to adapt to it were appreciated. These findings underscore the need for continued institutional support and the effective implementation of MALL to enhance the English language learning experience. It not only involves maintaining a strong technological infrastructure but also ensuring that MALL's potential is fully utilized to make learning more engaging, enjoyable, and effective.

Internal Factors

Internal factors significantly shape students' experiences with Mobile Assisted Language Learning, including attitudes, personalities, interests, and expectations. The data presented in Figure 1 and the accompanying student responses provide valuable insights into the motivations behind using MALL for academic purposes. The primary motivation cited by the respondents was the accessibility and portability of the MALL, with nine ratings supporting this perspective. One student's comment reflects that the convenience of not needing to carry a bulky dictionary is a significant advantage of MALL. The student stated,

"Using a mobile phone is quite effective because, as I mentioned earlier, there is no need to carry a bulky dictionary, which can be cumbersome. We always have our phones with us, so if an app is available, we can open it. It is more convenient and does not cause any inconvenience." (Accessibility and Portability, Interview, 25th May 2023, in Tarakan)

This statement underscores the value of MALL as a readily accessible, portable learning aid. Furthermore, MALL's efficiency and convenience were highlighted as key motivations for its use, receiving four ratings. Two respondents noted MALL's potential to encourage continuous learning and expand knowledge accessibility. One student's perception echoes this sentiment, sharing that.

"Using a mobile phone for the learning process is very helpful, as it allows us to broaden our knowledge in a wider scope." (Continuous Learning and Knowledge Expansion, Interview, 25th May 2023, in Tarakan)

These points suggest that MALL is perceived not only as a tool for learning but also as a means to broaden one's knowledge base. The primary motivations for using MALL are its accessibility, portability, and capability to facilitate continuous learning and knowledge expansion. These findings underscore that the convenience and efficiency of MALL make it a valuable tool in academic settings, particularly for English language learning.

Concerning MALL's academic purposes, the most commonly cited benefit was "Providing students with resources to find more information about a topic," with ten respondents indicating its importance. Additionally, eight respondents mentioned that MALL could help accelerate a student's learning, while two noted its value for education and training. Only one respondent identified fulfilling their information requirements as an academic purpose of MALL. This understanding corresponds with a participant's perception, which asserts the crucial role of mobile phones in expediting the process of acquiring information related to their studies:

"The use of mobile phones in learning is significant. It makes it very easy for us to find information related to

our studies. Mobile phones are far superior to books as we can quickly type in what we are looking for and get instant results. With books, we would have to search through each word to find the meanings." (Information Acquisition, Interview, 25th May 2023, in Tarakan)

Internal factors, including personality traits, significantly shape students' experiences with Mobile Assisted Language Learning (MALL). Personality traits such as openness to experience, conscientiousness, introversion, and extraversion can play a pivotal role in determining how students interact with and perceive MALL. As Student A expressed,

"For me, because I'm sometimes shy, I don't like the circle, it's not easy to have discussions with friends, I'm an introvert person, I like to feel insecure, this might also affect my scores because I don't socialize with friends." (Introverted Personality and MALL Use, Interview, 25th May 2023, in Tarakan)

This introverted personality trait may influence their use of MALL. As an introvert, Student A might prefer the individualized and self-paced learning environment that MALL provides, allowing them to learn without the social pressures of a traditional classroom setting. On the other hand, Student B exhibits both introverted and extroverted tendencies, stating,

"As for myself, I would say that my personality is a mix of introverted and extroverted tendencies. It depends on the situation and the people around me. If I am with fun and engaging friends, I tend to be more extroverted. But if I am with less interesting people, I prefer to be alone, and only interact when they approach me." (Mixed Personality and MALL Use, Interview, 25th May 2023, in Tarakan)

Their use of MALL could, therefore, vary. In situations where they feel more extroverted, they might engage more with the interactive and collaborative features of MALL. Conversely, when they feel more introverted, they prefer using features that allow for independent study. The primary motivations for using MALL, such as its accessibility, portability, and capability to facilitate continuous learning, can be tied back to various personality traits. For instance, conscientious students might value the efficiency of MALL, while those open to experiences appreciate its potential for knowledge expansion. In terms of MALL's academic purposes, the most commonly cited benefit was "providing students with resources to find more information about a topic." It aligns well with the trait of intellectual curiosity, a sub-trait of openness to experience. Students who exhibit this trait are likely to use MALL as a tool to delve deeper into their studies.

The internal factors play a crucial role in shaping the students' interaction and perception of MALL. The study revealed that students' attitudes, personalities, and interests significantly influence their motivations and purposes for using MALL. MALL's accessibility, portability, and ability to facilitate continuous learning and knowledge expansion are the key motivators for its use. Moreover, MALL's role in providing resources for information acquisition aligns well with the intellectual curiosity trait, underscoring its importance as a tool for in-depth study. The student's personality traits also affect how they use MALL, indicating the need for a personalized approach in MALL implementation to cater to the diverse learning preferences of students.

DISCUSSION

The psychological aspects related to the use of Mobile-Assisted Language Learning (MALL) are crucial to understanding how students interact with and perceive this technology. Examining these aspects provides valuable insights into the factors that motivate students to use MALL and how it can be effectively implemented to cater to their diverse needs and preferences. This examination is particularly relevant to our research context, which focuses on English language learning, a field where MALL has been increasingly utilized. Attitudes towards MALL emerged as a significant internal factor influencing its use. Our findings showed that students with positive attitudes towards MALL enjoyed using it, particularly those who preferred collaborative learning environments. It aligns with the study by Alkhudair (2020), which also found a positive correlation between students' attitudes towards MALL and their satisfaction with it. The similarity in these findings underscores the importance of fostering positive attitudes towards MALL to enhance students' learning experiences. Expectations, another crucial external factor, were also examined. Our study revealed that students' expectations of MALL were influenced by external conditions such as institutional facilities and the purpose of using MALL. High expectations, particularly related to institutional support such as free Wi-Fi access and adequate technology-enhanced facilities, were found to impact students' engagement and satisfaction with MALL. This finding is consistent with previous research by Tayan (2017), suggesting that meeting students' expectations can significantly improve their MALL experiences.

Regarding the internal factor of personality traits, our findings provide an exciting insight. We found that students' personalities significantly influenced their MALL use. For instance, introverted students preferred the individualized and self-paced learning environment that MALL provides. This finding diverges from Mohammadi & Masoumi (2021) and Prasetyo et al. (2021), which did not examine the influence of personality traits on MALL use. Our research thus contributes to the existing literature by highlighting the role of personality traits in shaping students' MALL experiences. When discussing both internal and external factors, our study reveals an intertwined relationship. For instance, the external factor of institutional support can facilitate the satisfaction of introverted students (an internal factor) who prefer individualized learning environments. As such, our discussion offers a holistic view of how both internal and external factors jointly influence students' MALL experiences.

Based on our findings, we recommend that practitioners, such as teachers and curriculum makers, consider these psychological aspects when implementing MALL. For example, efforts can be made to foster positive attitudes towards MALL and ensure that institutional facilities meet students' expectations. Additionally, MALL programs could be designed to cater to diverse personality traits, thus enhancing students' learning experiences. Despite the valuable insights, our study has some limitations. The data were collected from a specific context, limiting the generalizability of the findings.

Further, the number of participants could have been more significant, which may not represent the broader student population. Finally, our discussion highlights the importance of psychological aspects in influencing students' MALL experiences. The findings underscore the need to consider both internal and external factors when implementing MALL, providing crucial implications for

practitioners and future research in the field of MALL and English language education.

CONCLUSION

Our study provides valuable insights into the psychological aspects related to the use of Mobile-Assisted Language Learning (MALL) in English language learning. The findings underscore that attitudes, personalities, expectations, motives, and interests significantly shape students' experiences with MALL. Notably, learners with positive attitudes and a preference for collaborative learning environments enjoyed using MALL, emphasizing the role of personal attitudes in shaping learning experiences. Additionally, high expectations, integrative motivations, and personal interests also impacted learners' engagement and satisfaction with MALL, highlighting the importance of external factors in shaping MALL experiences. From a practical standpoint, our findings imply that educators and curriculum developers need to consider these psychological factors when implementing MALL programs. It includes fostering positive attitudes towards MALL, ensuring institutional facilities meet students' expectations, and designing MALL programs that cater to diverse personality traits. As such, our study provides critical implications for practitioners aiming to enhance students' learning experiences through MALL. On a theoretical level, our study contributes to the existing literature by highlighting the role of psychological factors in shaping students' MALL experiences. While previous studies have examined the influence of attitudes and expectations on MALL use, our findings shed light on how personality traits can significantly influence students' experiences with MALL. This finding underscores the need for future research to consider both external and internal factors when examining the effectiveness of MALL. In a broader context, our findings have significant implications for the field of English language education. With the increasing use of technology in language learning, understanding the psychological factors that influence students' experiences with MALL can help educators develop more effective and engaging learning programs. In the era of Artificial Intelligence (AI) and Natural Language Processing (NLP), it is important to understand how these technologies can impact the psychological aspects of learning through MALL. While AI and NLP have the potential to support language learning, their impact on students' attitudes, expectations, and motivations needs to be considered to ensure their effective implementation. Thus, our study underlines the critical role of psychological factors in shaping students' experiences with MALL. It provides crucial implications for practitioners and future research in the field of MALL and English language education.

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DECLARATIONS

Ethics approval and consent to participate

This study was conducted by the ethical guidelines and received approval from the Institutional Review Board of Universitas Borneo Tarakan (approval number: 020/UN51/TU/2023). All participants were fully informed about the purpose of this study, their rights to withdraw at any time without penalty, and assured of their anonymity and confidentiality. Written informed consent was obtained from all participants prior to data collection.

Consent for publication

Written informed consent for the publication of research findings was obtained from all participants. They were assured that all data would be anonymized to maintain privacy.

Availability of Data and Material (ADM)

The datasets generated during this study are not publicly available due to privacy considerations but are available from the corresponding author on reasonable request. The questionnaires, interview guides, and other materials used in this study can be made available upon request.

Competing interests

The authors declare that they have no competing interests related to this research.

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Authors' contributions

The research was a collaborative effort among three researchers. The researcher is from Universitas Borneo Tarakan, the first author of this article, conducted data collection, performed analysis, drafted the initial manuscript, and incorporated revisions. Professor 1 and 2 from Universitas Negeri Makassar, the second and third authors, provided the conceptual framework and guided the overall research design. They also played a critical role in interpreting results and revising the manuscript for intellectual content. All authors reviewed and approved the final version for submission.

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