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Exploring Student Learning Behavior to Increase Digital Language Learning Apps Usability: A Case Study

Marisca Revani Putri¹, Chandra Kurniawan Wiharja², Joice Yulinda Luke³, Wishnoebroto³

¹Digital Language Learning Center, Hotel Management Department, Faculty of Humanities, Bina Nusantara University, Jakarta, 11480, Indonesia

²Digital Language Learning Center, Computer Science Department, Faculty of Humanities, Bina Nusantara University, Jakarta, 11480, Indonesia

³English Department, Faculty of Humanities, Faculty of Humanities, Bina Nusantara University, Jakarta, 11480, Indonesia

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ABSTRACT

The advancement of technology and the impact of Covid 19 had led to student's learning behavior shift from conventional to digital learning approaches. The utilization of technology in English language teaching played important roles in facilitating learning to suit the current student's learning behavior. The study aimed to find out the features in language learning apps that might be suitable with the student's learning behavior. A case study approach was employed to collect the data and reach the conclusion. Data was collected through e-surveys to 75 university students who experienced in using language learning apps to find out their learning behavior after pandemic and to investigate the features that should be developed to facilitate student's learning. Result found eleven (11) expected features that should be available on English language learning apps. Yet, the result also revealed that the students still need the teachers and interaction to facilitate their learning activities.



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Corresponding Author:

Marisca Revani Putri,

Digital Language Learning Center, Hotel Management Department, Faculty of Humanities, Bina Nusantara University, Jakarta, Indonesia

Email: mrputri@binus.edu

Introduction

The utilization of technology in language learning is not a new thing, especially in industry 4.0 era. Yet, technology utilization is not only limited to the 'device' utilization, but also the rapid development of Artificial Intelligence (AI), Virtual Reality (VR), machine learning, and many other emerging technologies have triggered the shifting usage of technology in teaching and learning activities (Yang, Wen, & Song, 2023; and Li & Lan, 2022). Research conducted in 2023 conducted an analysis on 516 papers that were published in 2000 to 2019, AI had been utilized to facilitate students learning experiences in learning English skills and components, such as reading, listening, writing, speaking, grammar, as well as vocabulary (Huang, Zou, Cheng, & Chen, 2023). Nowadays, there were various language learning apps have been developed to facilitate students learning English, one of the famous apps was Duolingo. Yet, research in 2020 found an interesting contradictory fact in the utilization of Duolingo in English Learning (Inayah, Yusuf, & Fibula, 2020). As the result of the research implied that Duolingo might improve their learning motivation, yet the students rarely used Duolingo during their learning time.

Karasimos also studied 5 (five) mobile apps that might help the students in learning language, namely Duolingo, Rosetta Stone, Memrise, LingQ, and Busuu (Karasimos, 2022). This study found that learners preferred Duolingo and Rosetta Stone to help them learn language autonomously, especially increasing vocabulary. On the other hand, Karasimos conclusion aligned with Inayah et.al findings on the contradictory result in the effective usage of the learning apps in the classroom. The research indicated that the students might be motivated in using the apps, yet they rarely utilized the apps to learn English effectively (Inayah, Yusuf, & Fibula, 2020; and Karasimos, 2022). Further, research exploring the advantages and disadvantages of mobile apps in English learning found that language learning apps might help the students in learning English since it was easy to use, provided various learning material types, improved student's motivation, and could help conventional teaching approach in the classroom (Fan, Liu, Wang, & Yu, 2023). Yet, this research also found that the language learning apps were lacking in certain points such as the heavy internet connection and insufficient utilization.

From previous research studies, the language learning features were examined based on its usages and impacts toward language learning process. The studies also had not investigated what features matched the student's learning behavior. Whereas, to effectively implement technology in language learning, the teachers should consider some aspects such as learner characteristics, instructional design, and technology advancements (Ortikov, 2024). Thus, this study aimed to investigate what features that should be developed and enhanced according to the student's learning behavior to increase the usability of the language apps in English teaching and learning in higher education context. To provide comprehensive research findings, in this digital era, the apps developer also should consider the learner's dimensional skills of digital literacy skills in developing the language learning applications.

To accommodate this purpose of study and gain conclusion, followings were the research questions of this study To what extent does the student's learning behavior in learning English may improve the usability of language apps at higher education context? And What features should be developed or enhanced to match the student's learning behavior and dimensional skills of digital literacy in a higher education context?

Factor affecting student's learning behavior in digital era

Covid-19 has been a game changer in many industries, including the language learning sector (Rahmatullah, Mulyasa, Syahrani, Pongpalilu, & Putri, 2022). Students were pushed to adapt new learning behavior both learning in synchronous and asynchronous settings (Noor, Younas, Aldayel, Menhas, & Qingyu, 2022). Noor et.al found three characteristics that may influence the success of learning in digital era, namely student's motivation, digital pedagogy, and student's autonomy. In addition, student's learning behavior was also affected by social media, learning experience, and opportunity to creativity (Noor, Younas, Aldayel, Menhas, & Qingyu, 2022; and Matzavela & Alepis, 2021). On another research, Wei highlighted that student's behavior in digital era was also affected by how feedback was distributed so that the learner could learn from their peers as well in the digital setting (Wei, 2023). The rapid development of social media usage played important role in the shift of the student's learning behavior from traditional to digital learning (Rahmatullah, Mulyasa, Syahrani, Pongpalilu, & Putri, 2022; Qureshi, Khaskheli, Qureshi, Raza, & Yousufi, 2021; and Werang & Leba, 2022). The students utilized social media not only to build relationships but also to seek information and data. Further, Rahmatullah et.al found that in the digital learning era, combining teaching materials with technology could increase students' motivation. Thus, the utilization of digital technology in teaching and learning was unavoidable since it already impacts the student's learning behavior.

Another language learning behavior that impacted was the implementation of digital communication competency (Joglekar, Purdy, Brock, Tandon, & Dong, 2022). Research by Butler highlighted language learning in digital era aimed to develop learner's communication skills and competencies (Butler, 2022). There were three main abilities so that the learner can be defined communicatively competent, namely the ability to use language autonomously, the ability to use language creatively, and the ability to use language socially. First, the students could use language autonomously when they could use their language to provide suitable information as well as analyzing the information critically. For example, the students could select the important and accurate information they got from the internet since there was a lot of false information available. The students could use the technology wisely and purposefully to get information. Second, after getting the information from various digital sources, the students were expected to be able to reconstruct the information in a new communicative context. Third, the students were said to be able to use language socially when they could utilize language both in time-free and distance-free. Nowadays, mobile device had become one of learning media since student's not only use mobile device as the tools for communication, the students also could easily access information and social media through mobile devices (Joglekar, Purdy, Brock, Tandon, & Dong, 2022). Besides, in this digital era, mobile devices also have enabled the students to communicate, collaborate, and support their self-learning activity (Khasawneh & Khasawneh, 2023). This situation made the teachers and educators adjust their teaching and learning approach and techniques. The teacher should consider what tools could help them facilitate learning effectively. As well as in language learning, nowadays, there are many language learning apps that had been developed, such as Duolingo, Rosetta Stone, Memrise, LingQ, and Busuu (Karasimos, 2022). The students mentioned those apps might help them learn easily, personalized, and practical.

Technology and digital literacy in 21st century

Along with the digital era 4.0 transformation in education, online learning has rapidly developed since Covid-19 pandemic. Teachers were demanded to improve the teaching approaches (Rahmatullah, Mulyasa, Syahrani, Pongpalilu, & Putri, 2022). Since technology has become a part of a student's learning, teachers should be able to integrate their teaching approach with technology. Thus, the students also should have digital literacy in utilizing the digital technology for their learning.

Digital Literacy is the ability of students to use digital technology and facilities effectively by accessing, identifying information, evaluating, analyzing, applying, and synthesizing information, digital resources, data, or knowledge in digital era that enable them to make decision critically in social context (Khan, Sarwar, Chen, & Khan, 2022). In digital literacy, Sharma shared that there is no one dimensional skill. A person should have up to five dimensional skills to be said digital literate, namely technological skills, digital citizenship, digital communication, digital content creation, and critical evaluation (Sharma, 2023). For example, in technological skills, the students were expected to be able to know the way in operating technological device, utilize software, and navigate internet and information. In digital citizenship, the students should comprehend the ethical issues in using technology, especially related to cybersecurity, and social media usage. In digital communication, the students were expected to be able to collaborate and communicate well utilizing digital devices and various platforms. While in digital content creation, the students were expected to be able to create meaningful digital content, such as video, presentation, graphic, etc. And in critical evaluation, the students were expected to have ability in assessing digital content critically and determine the trustworthy of the information.

Language learning application in English language teaching

Karasimo studied Duolingo, Rosetta Stone, Memrise, LingQ, and Busuu and Tommerdahl found that Duolingo is the most famous one (Karasimos, 2022; and Tommerdahl, Dragonflame, & Olsen, 2024). Research by Ajisoko (2020) found that Duolingo might increase student's learning result in vocabulary as well as improve student's motivation. In Bina Nusantara University, currently a language learning platform named Beelingua was developed and utilized by the students. Now, there are three languages that can be learnt in Beelingua, namely English, Japanese, and Chinese. In Beelingua, there are progressive lessons that cover various language skills. The platform can be accessed through mobile as well as desktop. In its implementation, Beelingua still need some improvements (Agnnes & Jureynolds, 2024). This finding also aligned with Shortt et.al. research that the development of language apps nowadays more focused on creation of the tools rather than how the tools may help the learners in studying language (Shortt, Tilak, Kuznetcova, Martens, & Akinkuolie, 2023). As suggested by Ortinkov that further research should focus on finding digital technology that may effectively facilitate language learning as well as teaching-learning process in the classroom (Ortikov, 2024).

Method

Research Design and Methodology

This study focused to find out the features that need to be developed and enhanced to accommodate the student's learning behavior to increase the usability of the language apps in English teaching and learning in higher education context. Thus, this study implemented the Case Study method to gain the result and achieved conclusion. The case study method which belongs to qualitative methodology determined more suitable to study the people's life history or behavior (Silverman, 2017). So that, this study limited to the use of language apps for English language teaching in higher education context. This study took place from May to June 2024.

To answer the research questions, online survey via Microsoft Forms that was constructed based on the theories in literature review (Noor, Younas, Aldayel, Menhas, & Qingyu, 2022; Wei, 2023; Butler, 2022; and Sharma, 2023) was implemented in this study, yet tailored with the characteristics of students in BINUS University as well as the characteristics of Beelingua apps. The survey contained 11 questions. 10 questions were multiple choice questions and 1 open follow-up question to find out student's learning experience in utilizing Beelingua during their English learning.

Subject of the Study

The subject of this study was 75 university students from various departments to fill in an electronic questionnaire. To be qualified being the subject of this study, the students should had used Beelingua at least for one semester. Thus, the students in 5th to 6th semester of their study were chosen. The students were born in between 2002-2003. This study implemented random sampling to choose the subject of study. The random sampling students were from various majors in BINUS University, such as DKV & New Media Department, International Business Management Department, Computer Science Department, Global Business Marketing Department, Cyber Security Department, Marketing Communication Department, Business Creation Department, Information System Accounting and Auditing Department, Business Analytics Department, Architecture Department, Data Science Department, Film

Department, Management Department, Business Information Department, and Game Application Technology Department.

Data Collection and Analysis

When the answers were collected, the data were tabulated and coded to classify the information to gain conclusion. The theories in literature review were utilized as the basis for data analysis (Noor, Younas, Aldayel, Menhas, & Qingyu, 2022; Wei, 2023; Butler, 2022; and Sharma, 2023). Microsoft Excel was utilized in data analysis for calculating the result of data tabulation and coding. The calculation was to find out the percentage of data parameters set based on the theories.

Results and Discussions

Student's Learning Behavior in Learning English

The result in figure 1 below showed how the students learn English nowadays. The students might choose all the options, yet they must rank their preferences in learning.

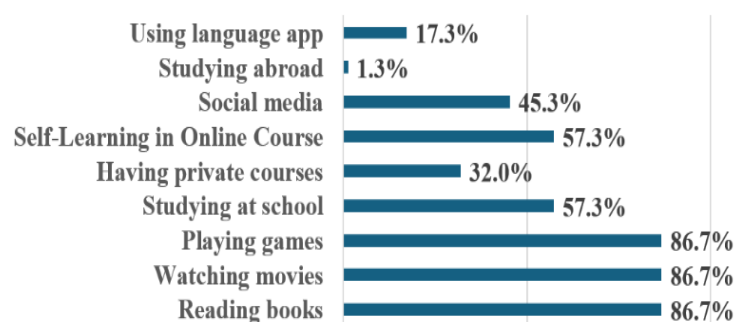


Figure 1. Student's English Learning Preferences

The chart in figure 1 showed that 86,7% participants preferred to learn English by playing games, watching movies, and reading books. While 57,3% participants preferred to study English at school or learning by themselves. While only 17,3% of the participants preferred to learn English through language apps like Duolingo or Grammarly.

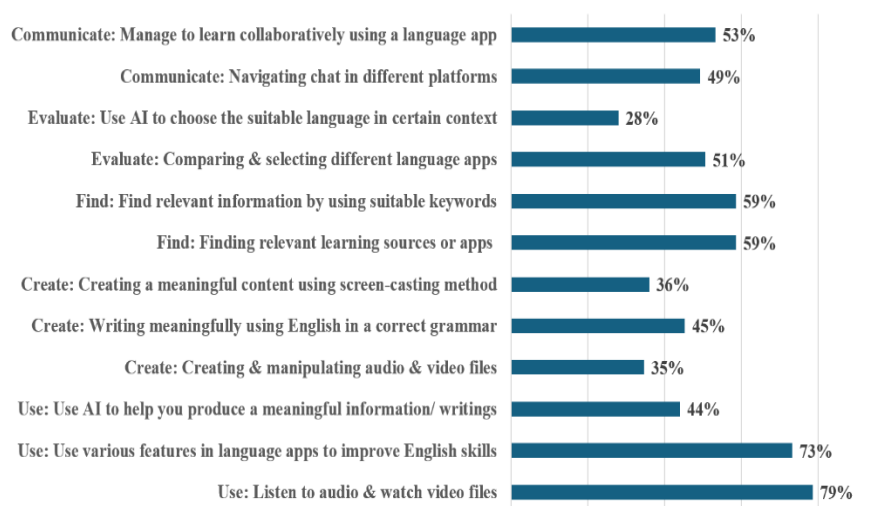


Figure 2. Dimensional Skills Learners Must Have in Utilizing Digital Technology

As mentioned, in developing language learning apps, the developer or the educator also should consider the students dimensional skills of digital literacy in choosing the suitable language learning apps. The chart in figure 2 above showed the current participants' dimensional skills in utilizing technology while learning English.

Based on figure 2, the participants of this study have been able to use the technological device for the purpose of learning English. 79% of participants were able to utilize various features in language apps well. Further, 59% of participants also had been able to utilize the digital tools to find relevant information and 53% of participants could communicate meaningfully while using language apps. Nevertheless, the result showed that the language apps needed to add more features that enable the students to explore more their ability in evaluation. Only 28% of the participants

claimed that they had been able to compare and select the correct language expression that should be used while studying English using language apps.

Expected Features in Language Learning Applications

The findings in figure 2 could be an opportunity for the language apps developer. To make the content more meaningful and the activity more fun, the language apps developer could consider implementing current advanced technology to increase the usability of the features.

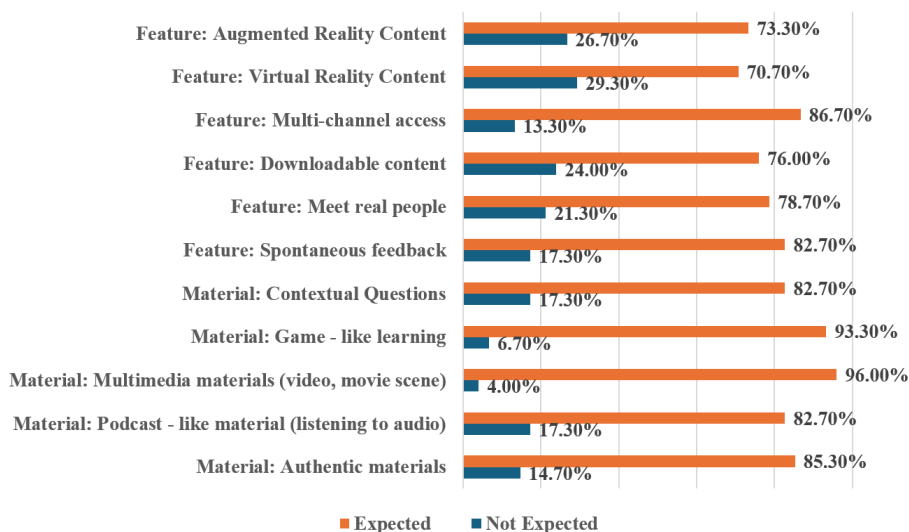


Figure 3. Expected Features in English Language App

As figure 3 showed below, the participants of this study also listed and ranked their expected features to be available on a language apps that may help them in study English language better. Figure 3 showed the subject of this study expected 11 features to be available in an English language application, such as augmented reality content, virtual reality content, downloadable content, spontaneous feedback, contextual questions, game-like learning, and authentic materials. Besides, the result also showed that the students preferred to have various multimedia materials, such as video from movie clips. The result also showed that the 78,70% participants still highlighted the needs to meet with real people or instructor while they learn English language through application.

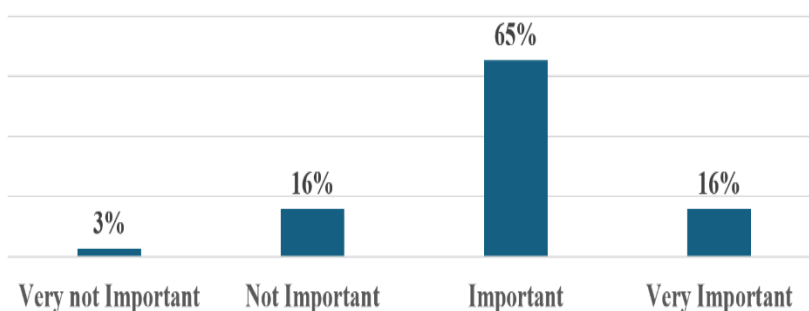


Figure 4. The Needs of Instructor in Accompanying Students Learning through Language App

This result was also strengthened by the next item in the questionnaire that asked the participants on how important for them to learn English with the instructor as shown in figure 4 above. The result showed that 65% of the participants considered that they need instructor while learning English, nevertheless the setting was in language apps. They considered that spontaneous feedback from the instructor might help them in learning English though a language application.

Discussion

This result showed interesting feedback for language apps developer as well as teachers to develop or choose suitable language learning apps. Since the major of the participants loved to learn English by playing games, watching movies, and reading books, the features in language apps may also adapt this habit. For example, since gamification has been implemented in Duolingo (Shortt, Tilak, Kuznetcova, Martens, & Akinkuolie, 2023), the apps also may add more features and various interesting texts that related to current trends, movies, popular books. So that the learner may feel

less burden in learning English, and they can have more fun activities while studying. As the sample of this research were the students who were born in between 2002-2003, they were categorized as Generation Z. The language apps developer also may consider their characteristics in learning English and utilizing technological device at the same time. This finding supported the result of study in Ortikov research that stated in choosing suitable digital technology for students, the teachers should consider the student's characteristics (Ortikov, 2024). Further, from the finding of the study, the teachers as well as the language app developer could add real time feedback from live instructor or utilize advanced technology as the additional feature in the language apps, such as the utilization of AI in providing actual feedback to user learning activities.

Limitation of the Study

This study limited the subjects of the study to students in higher education contexts. Thus, the learner's behavior might be different if the context changed into other education level, such as primary education or secondary education. Further, the subject of the study was from various major backgrounds. Thus, it couldn't be generalized.

Conclusions

To accommodate student's learning behavior in digital era, educators and language developers might use the findings of this research that found 11 features which expected to be available in language apps, namely augmented reality content, virtual reality content, multi-channel access, downloadable content, spontaneous feedback, collaboration and interaction feature, contextual questions, game-like learning, multi-media materials, podcast-like material, and authentic materials. Though the students like to learn with language apps and technology has developed rapidly, the students still wish to have interaction and guidance from instructor. This showed that human touch was still necessary in the learning process, though the development of digital technology has evolved rapidly in various ways. As many languages learning apps nowadays have been equipped with AI, like in chatbot feature, the participants still thought it was important to have direct feedback from the real teacher.

In addition, this study also provided suggestion on further research opportunities. It was suggested in the future research to find out the impact of the student's generation with English learning behavior and learning preferences in using technology. For example, how Generation Z or Generation Alpha, who are the digital native, prefer to study English? What kind of digital technology they prefer to use? How the 11 suggested features found in this study could accommodate their English learning in language learning apps? Besides, from the finding about the learner's digital literacy, it would be worth to investigate which dimensional skills could be gained the most by using the 11 suggested features found in this study? For example, which dimensional skills of the learner's digital literacy could be developed well by using augmented reality content, virtual reality content, collaboration and interaction feature?

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