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From Scepticism to Acceptance: A Transformation in Rural Attitudes Towards Mobile-Assisted Vocabulary Learning

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Abstract

Vocabulary knowledge is essential for effective language learning, yet rural learners in English as a Foreign Language (EFL) contexts often face challenges in acquiring sufficient vocabulary due to limited access to quality resources. This study explores the perceptions of rural parents and primary school teachers regarding the use of mobile applications as a potential solution for vocabulary development in these settings. Grounded in the Technology Acceptance Model (TAM), data collection involved 283 parents and 32 teachers through questionnaires and focus group discussions conducted before and after they observed children using a vocabulary learning app. Initially, both groups expressed scepticism about the use of mobile devices in education. However, following hands-on experience, perceptions shifted positively, with participants noting improved vocabulary retention and increased student engagement. Notably, there were no significant differences in attitudes between parents and teachers, indicating a shared need for informed exposure to mobile learning strategies. These findings reveal that while mobile-assisted language learning may face initial resistance in resource-constrained rural settings, it can be effectively adopted when stakeholders experience its benefits firsthand. This research not only provides valuable insights for integrating mobile learning in rural EFL classrooms but also contributes to the broader discourse on enhancing educational equity through technology, as access to mobile devices becomes increasingly available to rural communities.

Keywords: mobile application, mobile learning, educational technology, vocabulary learning, teachers and parents' perception

1. Introduction

Vocabulary learning has received considerable attention from researchers who are working on learning English as a Foreign Language (henceforth EFL). This attention is attracted by the fact that a large body of literature affirm that vocabulary knowledge is a fundamental aspect of language learning. Among others, Nation (2001) proclaims that EFL learners are supposed to acquire many words for their successful language learning. Lewis (2008) argues that the most significant task facing language learners is acquiring sufficient vocabulary of the target language. Schmitt (2008) presents that successful vocabulary learning is essential part for mastering a target language. Other scholars have tried to equate vocabulary knowledge with a foundation stone of a building (Kaya & Charkova, 2014; Arnon et al., 2017; Karakoça & Köse, 2017; Bai, 2018) while others consider vocabulary as the heart of language learning (Lewis, 1993; Aravind &

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Rajasekaran, 2020). Generally, vocabulary knowledge is a key to language learning as it provides inputs for syntactic, morphological and other grammatical processes. Thus, the once quoted words of an American religious leader that, "you must have a solid foundation if you're going to have a strong superstructure (Hinckley, n.d.) can best describe the relationship between vocabulary knowledge and language learning.

The importance of vocabulary knowledge is not only limited to language learning but also is a key element to promoting learners' communicative ability. McCarthy (1990) observes that no matter how well students are good at grammar or phonology, without words to express meanings, communication in the second language cannot happen. The idea is supported by Beglar and Hunt (2005) who argue that "the heart of language comprehension and use is the lexicon" (p. 2). Arguing on the same view, Nation (2011) puts that vocabulary items play significant function in all language skills, and Rohmatillah (2017) is of the view that acquisition of adequate vocabulary is essential for successful second/foreign language use. The arguments above are complemented by the words once said by Wilkins (1972) that, ''while without grammar very little can be conveyed, without vocabulary nothing can be conveyed" (pp. 111-112).

Despite the reported significance of vocabulary knowledge, the literature discusses several challenges related to vocabulary learning and acquisition facing EFL learners. These challenges include: lack of one-to-one relationship between written and spoken forms, large number of words that students need to learn, complexity of word knowledge, and mispronunciation of words caused by similarity of English sounds (Alqahtani, 2015). Besides the challenges caused by the nature of English vocabulary, some studies proclaim that the challenge of learning English vocabulary is partly a result of the weaknesses of curriculum materials, including English language syllabi and textbooks which give less attention to vocabulary learning (Rezaei ET AL., 2014). Further, other studies report that some teachers are not aware of the best practices in vocabulary teaching and some admit that they face challenges to teach vocabulary (Berne & Blachowicz, 2008; Mfaume, 2020). Consequently, vocabulary topic is partially covered in English language classrooms (Mfaume, 2020).

Regardless of the challenges, EFL learners are obliged to learn enough vocabulary for successful language performance. Researchers advocate several approaches for successful vocabulary learning. Mobile learning is among the approaches (Başal, et al., 2016; Ma & Yodkamlue, 2019; and Govindasamy, et al., 2019). Scholars describe the term mobile learning, also, known as m-learning in different ways. However, in simple explanations, mobile learning refers to a kind of learning that is supported by the use of a mobile device (Arvanitis & Krystalli, 2021). Myriads of studies on mobile learning and EFL vocabulary development have shown that mobile learning promotes learners' vocabulary acquisition, memory, and are good for promoting learners' interest in learning foreign languages (Cho et al., 2017; Ma & Yodkamlue, 2019; and Kohnke, et al., 2019). Despite such findings, the available literature in Tanzania report that some educational stakeholders have negative attitude towards mobile learning (Gibbons et al., 2018; Kafyulilo, 2014; Kiwhele & Bali, 2013). Nevertheless, there has been no study that is interventional in nature. This study therefore was designed to examine the perceptions of parents and teachers before and after observing their children using a mobile application prototype. This was important to determine whether experiential learning with mobile technology could influence the attitudes of parents and teachers toward its use in children's vocabulary development, potentially fostering greater acceptance in rural educational contexts.

2. Literature Review

2.1 Mobile learning and vocabulary development

The field of English as a second or foreign language learning has undergone several paradigm shifts. In this technological era, mobile learning has emerged as one of the new learning approaches that learners use to learn target languages. As a results, in second or foreign language learning, the term Mobile Assisted Language (MALL) has been coined to refer to this approach. Several scholars report various mobile platforms that are currently used strategically to facilitate language learning (Govindasamy, et al., 2019).

Some of these platforms are Short Message Services (SMS), WhatsApp, Multimedia Messaging Service (MMS), WeChat, iMessages and mobile applications.

Researches in this area have focused on three key issues: the impact of mobile learning on vocabulary development, the impact of mobile learning on memory retention, and the role of mobile learning on learners' motivation to learn a new language. Studies on the impact of mobile learning on vocabulary development have reported impressive findings that mobile learning contribute positively on learners' vocabulary learning. For instance, the study by Montaner-Villalba (2019) among EFL learners in Spain showed that the participants' vocabulary knowledge improved significantly after using the vocabulary application for a year. The study by Ma and Yodkamlue (2019) among EFL learners in China is another example. In this study, the researchers used a self-developed mobile application to compare the impact of the application versus paper-based word lists on vocabulary learning. The results of this study showed that students who used the mobile application in the experimental group performed better than their fellows in a control group who used a paper-based word list. In another study, Govindasamy et al. (2019) investigated the impact of using a mobile application to search meanings of vocabulary compared to the traditional way of using a paper dictionary. Participants were fifty EFL Form 5 arts pupils from a public school in Malaysia. The results showed that the use of the mobile application promoted pupil's knowledge in learning and understanding the meaning of targeted vocabulary compared to printed dictionary.

With regard to the impact of mobile leaning on memory retention, studies by Kohnke, et al. (2019) in Hong Kong, Ma and Yodkamlue (2019) in China and Zakian (2022) in Iran have revealed that mobile learning has remarkable effect on the long-term memory of second or foreign language learners. Yafei and Osman (2016) support this argument by putting that unlike books, mobile learning evokes learners' interest to repeatedly use the devices; consequently, learners are exposed to spaced review of the same words. Such repetition strengthens learners' knowledge of the target words and enhances long-term memory. In relation to learners' attitude towards learning, studies have shown that mobile learning have impact on developing learners' positive attitude and motivation towards learning. Such learners' perception of the approach is reported in several studies. For example, the study by Ma and Yodkamlue (2019) reported that learners found the use of mobile learning both interesting and enjoyable. In the study by Cheng and Kim (2019), college students in Korea and China developed positive attitude towards the approach. In Iran, the study by Ebadi and Bashiri (2018) reported that the EFL learners were strongly motivated by the use of flashcards application they used to learn new words. In another study, Al-Said (2015) reported that students' feeling of Edmodo app was at a high level, and most of the participants had positive feelings towards Edmodo as an approach for vocabulary acquisition.

Despite the positive perceptions of learners' use of mobile phone for vocabulary learning, available studies report several challenges associated with the use of mobile phone. Makoe and Shandu (2018) inform that in their assessment of the VocUp application, learners reported phone problems, network and connectivity, and a lack of familiarity with phone use as the challenges. In her study, Klimova (2019) identifies some pitfalls of using mobile phone; one of them is irrelevancy of most of the mobile applications available in the market as some do not reflect specific learners' needs. Therefore, Çelik and Yavuz (2018) warn that the use of mobile learning and mobile applications in particular should reflect the needs of learners and contribute to meet the objectives of their learning.

2.2 Mobile learning in Tanzania

Tanzania is one of the sub-Saharan African countries, the region mentioned as the poorest area in the world as 28 out of the 30 most underdeveloped countries come from this region (Bleher, 2017). According to the sixth Tanzania's population and housing national census, Tanzania has a total of 61.7 million people with 30.3 million children below 18 years old (United Republic of Tanzania, 2022). While the group of children which is a beneficiary of basic education is almost half of the total population, the pupil–teacher ratio (PTR) is said to be 55:1 in public primary schools and 23:1 in public secondary schools (Manyengo, 2021).

However, this PTR is not evenly distributed in all localities in the country as urban areas tend to have many teachers compared to rural areas.

Like other sub-Saharan countries, Tanzania is described as one of the fast-growing countries in mobile phone penetration in Africa (Mtebe et al., 2015). Hisali (2007) observes that Tanzania was the second largest mobile communication market in East Africa, with 11% penetration rate behind Kenya, which had 15% penetration rate. According to Swarts and Wachira (2010) as cited in Mtebe et al. (2015), in 2010, Tanzania was ranked at the 4th position by the International Telecommunication Union (ITU) for mobile phone penetration in Africa behind Nigeria, South Africa, and Kenya. Moreover, the Global System for Mobile Communications Association (GSMA) shows that the country experienced a steady expansion rate as the number of subscribers increased from 12 million in 2010 to 25 million in 2020 (GSMA, 2021). Also, GSMA projected that Tanzania will be at the 4th rank in total subscribers in the sub-Saharan Africa behind Nigeria, Ethiopia, and DRC by 2025 (GSMA, 2022). In addition to that, the report by the Tanzania Communications Regulatory Authority (TCRA) covering April to June 2023 shows that there is a total of 64.1 million active SIM cards and 34.1 million active internet subscribers (TCRA, 2023). Above all, the government has implemented the National ICT Broadband Backbone Project (NICTBB) and launched the National ICT Policy in 2016 as part of its commitment to promote telecommunication sector for transformation of social-economic development (Government of Tanzania, 2021).

The noted development in telecommunication and ICT in general has witnessed some transformations in provision of services in the country. For instance, in the health sector, the National Digital Health Strategy 2019-2024 was launched in 2019 to facilitate among others provision of health care services through mobile health (Government of Tanzania, 2019). The digital financial services on the other hand have evolved considerably as more people use mobile phone in accessing financial services than ever before. Consequently, 80.8% of adult population were using mobile phone to access financial services by March 2022 (Government of Tanzania, 2022). In education sector, the government has developed several policy frameworks to facilitate technology use in teaching and learning. Among others is the ICT policy for Basic Education of 2007. The policy is committed to guide integration of ICT in primary, secondary, and teacher education (Government of Tanzania, 2007). Further, the 2014 Education and Training Policy provides emphasis on promoting the ICT in education for the sake of improving the quality of education (Government of Tanzania, 2014).

Despite the reported development in ICT and mobile phone sector in particular, studies available show that the use of mobile learning either in classrooms or outside the classrooms is hardly in place (Kafyulilo, 2014; Mfaume, 2019; Mfaume, 2022; Msuya, 2015). This is a case because there is considerable opposition to m-learning from different stakeholders of education. A plethora of studies (Biseko, 2023; Gibbons et al., 2018; Kafyulilo, 2014; Kihwele & Bali, 2013; Mayega, 2019) have reported that some teachers and parents have negative attitude towards m-learning as they worry that the multitasking nature of mobile phone may lead learners to misuse the device. Other researchers inform that there is little knowledge on the side of teachers regarding the use of mobile phones as a teaching and learning tool (Biseko, 2023; Manyengo, 2021; Mfaume, 2019; Msuya, 2015). Further, it is also reported that factors like teachers' age and lack of motivation have been a barrier towards teachers' adoption of the approach (Mfaume, 2019). In contrast, same studies report that most of learners are optimistic that mobile learning may help them in accessing knowledge from different sources (Gibbons et al., 2018; Kafyulilo, 2014; Mayega, 2019). Thus, Mayega (2019) calls the government to establish rules and policy to deal with faults regarding mobile learning. Outside Tanzania, however, studies by Khlaisang, et al. (2021) in Thailand, Marcial (2015) in Philipines, Miglani and Awadhiya (2017) in five commonwealth Asian countries, and Yusria, et al. (2015) in Indonesia report that teachers had a positive perception towards exposing learners to use mobile technology for learning while studies by Manaakkarakul (2019) in Thailand and that of Özdamili and Yıldız (2014) in Cyprus reported that parents had positive views towards the use of the technology in education. Thus, the findings in these studies are in conflict with what was reported by studies in Tanzania. This shows that

elsewhere teachers and parents have recognised the value that mobile phone as approach of learning may contribute to learning.

2.3 Technology Acceptance Model (TAM)

Technological Acceptance Model (hereafter TAM) by Davis (1989) is one of the early models that answers the question why new technology can/cannot be accepted by members of targeted groups. According to the model, there are two external factors that influence individuals' readiness to adopt the new technology. These are Perceived Easiness of Use (PEU) and Perceived Usefulness (PU). According to the model, individuals who consider the technology simple and advantageous in accomplishing the tasks at hand are always ready to adopt it while whoever considers the technology as useless, difficult to use, and wastes time is expected to be reluctant from using it (Venkatesh & Davis, 2000; Chuttur, 2009). Therefore, Davis, et al. (1989) consider that the role of the two external factors PEU and PU is to affect the Attitude of the User (ATU) whether negatively or positively. In turn, user's attitude towards the technology determines the user's Behavioural Intention (BI), also known as user's readiness to adopt the technology. The TAM model was useful for guiding this study because it identifies variables for analysis. This study attempts to understand perceptions of rural parents and teachers on the aptness of mobile application use for EFL vocabulary learning. Figure 1 below clearly shows the relationship of the TAM variables.

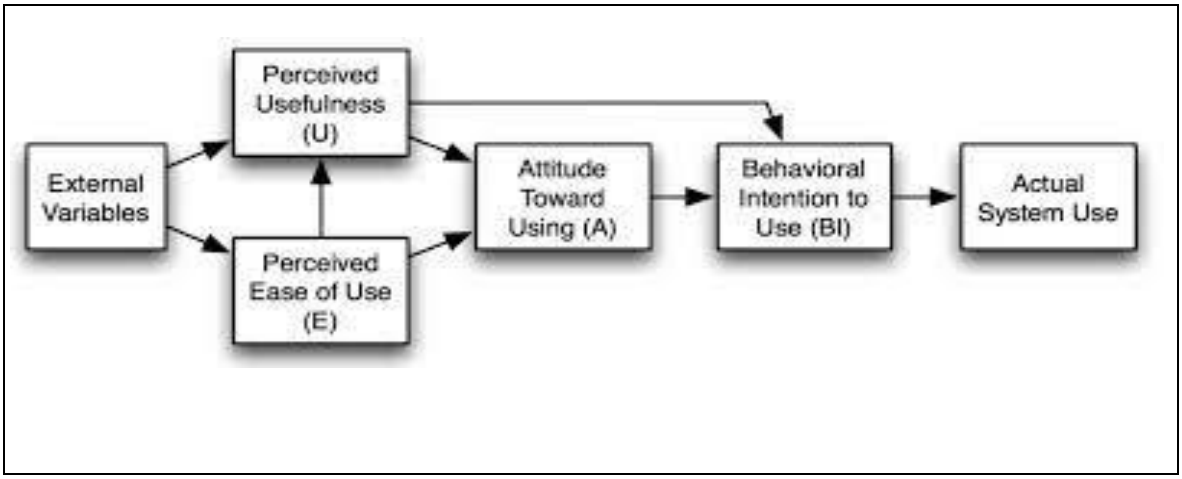

Figure 1. Technology Acceptance Model (Source: Davis, et al., 1989)

2.4 The present study

Reviewed studies have reported valuable information about mobile phone use in education. Among these, the literature highlights a negative perception of mobile phone use among parents (Kihwele and Bali, 2013) and teachers (Gibbons et al., 2018; Kafyulilo, 2014; Kihwele & Bali, 2013; Mayega, 2019). Nevertheless, none of the previous studies were interventional in nature. Such studies could reveal whether these stakeholders would find value in mobile learning after being exposed to the intervention. This is important in light of Davis's (1989) assertion that positive attitudes and the adoption of new technology are possible when users recognise its usefulness and ease of use. Furthermore, most of the reviewed studies were conducted in urban settings, indicating a need for similar research in rural areas. Appropriate use of mobile phones in education could address many challenges faced in these localities, including high student-teacher ratios, shortages of learning materials, high dropout rates, and poor performance in examinations. Additionally, previous studies did not focus on Mobile-Assisted Language Learning (MALL). These gaps merit immediate attention. Therefore, this interventional study was designed to examine rural parents' and primary school teachers' perceptions regarding their children's use of a mobile application for learning English vocabulary. To this end, the present study aimed to answer two research questions:

1. What is the perception of rural parents and teachers regarding their children's use of mobile phones for EFL vocabulary learning before the intervention?
2. What is the perception of rural parents and teachers regarding their children's use of mobile phones for EFL vocabulary learning after the intervention?

3. Methodology

3.1. Research Design

This study employed a mixed-methods approach, combining quantitative surveys and qualitative focus group discussions to comprehensively examine parents' and primary school teachers' perceptions regarding their children's use of mobile applications for learning English vocabulary. This design facilitated triangulation of data, enhancing the validity of the findings by capturing both measurable attitudes and nuanced insights. As Creswell (2014) noted, mixed methods were particularly valuable in educational research, as they allowed for a deeper understanding of the complex factors influencing technology adoption. By integrating these methodologies, the study not only quantified perceptions but also explored the underlying reasons for these attitudes, providing a holistic view of the acceptance of mobile-assisted language learning in rural contexts.

3.2. Participants/Sampling

A total of three hundred and fifteen (315) respondents were sampled for this study, consisting of parents (N = 283) and teachers (N = 32). Four villages were randomly selected: two from Bahi District and two from Chemba District. A multistage sampling method was employed, as it was difficult to obtain a complete population count for each of the sampled villages. The population was first divided based on occupation, identifying teachers and parents (who were not teachers) as the primary sampling units. Following Mfaume (2019), who noted that age influences attitudes towards the use of mobile learning, the researcher used age as a dividing variable in the second stage, further categorising the primary sampling units into four secondary sampling units based on age: 21–30 years, 31–40 years, 41–50 years, and 51–60 years. These were then divided into two groups: (1) those who had children aged 8–10 years with smartphones and who would volunteer to install a vocabulary learning application for their children; and (2) those who had no children aged 8–10 years or who had smartphones but could not allow their children to use them for learning. The age of the children was significant, as explained in section 3.3. Thus, the sampled 315 respondents included parents and teachers who installed the mobile application and allowed their children aged 8–10 years to use the mobile phone for a predetermined period.

3.3. Materials

The present study used a questionnaire and interviews for data collection. The questionnaire comprised a total of seventeen (17) items, which were adopted from Davis (1989). These items elicited participants' responses regarding the four variables of the Technology Acceptance Model (TAM). Specifically, five items focused on the perceived usefulness of mobile phones in learning, five items addressed perceived ease of use, four items assessed perceived attitudes towards mobile application use, and the final three items related to behavioural intention to adopt technology. However, three slight modifications were made to the original questionnaire: reshaping the questions to reflect the present study, changing the Likert scales from seven to five levels to reduce confusion when selecting responses, and translating the questionnaire into Kiswahili, the language that all participants could read and understand. After these modifications, the items in the questionnaire were evaluated by three experienced researchers for validity testing before being subjected to a group of five teachers and ten parents in a village on the outskirts of Dodoma city for internal reliability testing, which yielded a Cronbach alpha of 0.877.

In addition to the questionnaires, the researcher conducted focus group discussions to complement the questionnaire responses. Group discussions also served as a means to verify the validity of responses

gathered from the Likert scale questionnaire, which can be prone to bias or fatigue (Phakiti, 2020). One open-ended item from each TAM variable was developed to help the researcher capture the participants' voices on the matter. Focus group discussions were important as they provided participants with the opportunity to clarify their perceptions, thus yielding more information than what was captured by the questionnaires. These discussions were conducted in Kiswahili, as this was the language all respondents could speak.

Besides the questionnaires and focus group discussions, the study also utilised a vocabulary learning mobile application prototype, which was installed on participants' mobile phones for their children's use. This locally developed mobile application, known as Zawadi (a Swahili word for "gift"), was designed for children aged 8 to 10 years, who were expected to be in Standard 3, where English was introduced as a subject. The application employs a drill-practice technique to help children learn vocabulary independently. It exposes children to three types of vocabulary knowledge: vocabulary meaning, vocabulary spelling, and pronunciation. In this drill-practice application, children's task is to read the word on the screen or listen to a pronounced word and select the relevant picture. Feedback is provided if the matching is correct or incorrect.

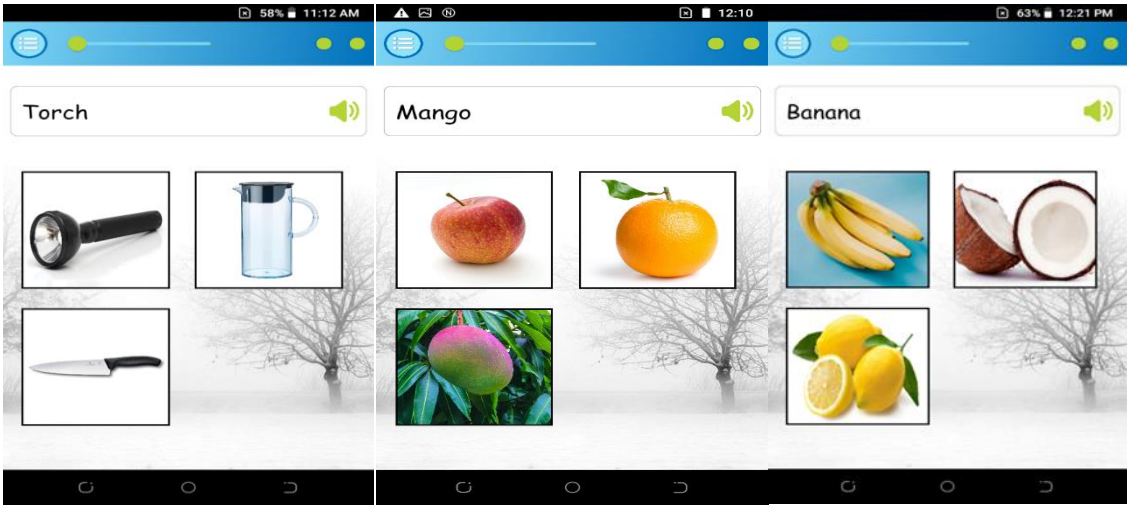

Figure 2. Some faces of the App prototype

3.4. Procedure

Respondents in this study (parents and teachers) were asked to complete the questionnaire and participate in focus group discussion sessions as part of the data collection process. The focus group discussions were recorded for later transcription to ensure accurate analysis. After these exercises, the researcher installed the vocabulary application prototype on their mobile phones. Subsequently, respondents were asked to allow their children to interact with the prototype for at least one hour each day. Participants were instructed to follow up on their learners' interactions with the mobile app to note the advantages and disadvantages of its use in learning the target vocabulary. It was emphasised that this follow-up should involve observing learners while they interacted with the prototype or discussing the prototype with them. After four weeks, participants completed the questionnaire and participated in group discussion sessions for the second time. The questionnaire administered during the second round and the questions asked in the group discussion sessions were the same as those presented to participants before the intervention.

3.5. Data Analysis

The data were analysed both qualitatively and quantitatively. While qualitative data from the focus group discussions were thematically analysed, the quantitative data from the questionnaires were analysed using

statistical methods. A deductive approach and codebook thematic analysis were employed for the qualitative data. This approach was preferred because coding was informed by the variables of the Technology Acceptance Model (TAM), with each variable regarded as an independent theme. After transcribing the audio recordings, the task of identifying patterns that aligned with the pre-determined themes was carried out manually. Throughout this process, a reflexivity journal was used as an analytical tool to facilitate critical reflection. Additionally, the analysis of quantitative Likert scale data was conducted using SPSS version 25. The ordinal Likert scale data were transformed into interval data, and descriptive statistics (mean and standard deviation) were computed to depict respondents' perceptions of mobile application use in learning vocabulary. Subsequently, an independent samples T-test was conducted to determine whether there was a significant difference in perceptions between the sampled parents and teachers before and after the intervention.

4. Results and Discussion

4.1 parents' and teachers' perception before intervention

The first objective examined in this study was the perception of participants before the intervention. Table 1 presents descriptive statistics regarding the participants' responses to questionnaire items prior to the intervention. The results are organised according to the four variables of the Technology Acceptance Model (TAM) that guided the analysis. The data showed that the Likert scale value for perceived usefulness (PU) was Mean = 1.87, SD = .46; for perceived ease of use (PEU), Mean = 3.09, SD = .43; for attitude towards use (ATU), Mean = 1.64, SD = .35; and for behavioural intention (BI), Mean = 2.03, SD = .42. Since the criterion mean was 3, these results imply that respondents had a negative perception of the perceived usefulness of the mobile phone application, a negative attitude towards using the application for learning, and a low readiness to adopt this technology. However, the results indicated that participants were uncertain about their children's ability to use mobile applications if exposed to them.

Table 1. Participants' perception before intervention
(1=strongly disagree; 2=disagree: 3=undecided; 4=agree: 5=strongly agree)

TAM variables	N	Maximum	Minimum	Mean	SD
PU	315	1.20	3.00	1.8711	.45654
PEU	315	2.00	4.00	3.0876	.43179
ATU	315	1.00	2.25	1.6437	.34702
BI	315	1.00	2.67	2.0328	.42229

To complement the quantitative data, participants' responses to focus group discussion questions revealed that the participants believed their children might be able to use the mobile phone application, but also that children could not learn in the absence of teachers. Some viewed the use of a mobile phone application as a waste of time, as learners might access irrelevant information instead of educational content. The quotations below illustrate these views:

> *"...watoto wetu wanajua vitu vingi sana kwenye simu, wakati mwingine wanajua vitu ambavyo hata sisi hatuvijui. Nadhani wanaweza kutumia wakiruhusiwa" (Mzazi)*
> "Our children know many things on mobile phones. Sometimes, they know things that we (parents) do not know. I think they may use the mobile phone application if allowed." (Parent)

> *"wanafunzi wetu hupenda michezo muda wote. Ukiniambia watajifunza wenyewe kwa kutumia simu bila kusimamiwa na mwalimu ni kitu ninachoweza kusema hakiwezekani" (Mwalimu)*
> "Our pupils prefer playing all the time. Telling me they can learn independently using a mobile phone without guidance from a teacher is something I can say is impossible." (Teacher)
>
> *"Nina uhakika mwanangu hataweza kujifunza. Atapoteza muda tu maana najua ataikolokocha tu, na atakuwa bize kutafuta mambo yake mengine badala ya hayo aliyoambiwa" (Mzazi)*
> "I am sure my child won't be able to learn. He will waste time as he will focus on irrelevant information instead of what he was instructed to do." (Parent)

It was also important to examine whether there was a difference in perception between parents and teachers. To achieve this, an independent samples t-test was computed after confirming that the data were approximately normally distributed, as the Kolmogorov-Smirnov test had p-values greater than .05 for all four TAM variables. The independent samples t-test results indicated no significant difference in perception between parents and teachers: for PU, parents had M = 1.87, SD = .46, while teachers had M = 1.89, SD = .46 ($t(313) = .30$, $p = .768 > .05$); for PEU, parents had M = 3.09, SD = .43, while teachers had M = 3.04, SD = .45 ($t(313) = .61$, $p = .545 > .05$); for ATU, parents had M = 1.65, SD = .35, while teachers had M = 1.62, SD = .34 ($t(313) = .46$, $p = .650 > .05$); and for BI, parents had M = 2.03, SD = .42, while teachers had M = 2.02, SD = .41 ($t(313) = .17$, $p = .866 > .05$). Therefore, equal variance was assumed, and the null hypothesis was retained.

The findings suggest that participants' perception of mobile phone application use in EFL vocabulary learning was negative. This conclusion is supported by both the quantitative and qualitative data presented. Descriptive statistics in Table 1, for instance, indicate that, on average, three TAM variables (PU, ATU, and BI) were rated below 3, the criterion mean. This rating implies that participants disagreed with the notion that a mobile phone application would facilitate their children's learning, held a negative attitude towards this educational approach, and were not prepared to adopt it for EFL vocabulary learning. Qualitative data from focus group discussions further corroborates the quantitative findings regarding participants' negative perception of mobile phone application use in EFL vocabulary learning.

These findings are consistent with results reported by other researchers in Tanzania, including Biseko (2023), Gibbons et al. (2018), Kiwhele and Bali (2013), and Kafyulilo (2014), who found that most educational stakeholders do not support learners' use of mobile phones due to concerns regarding potential misuse of the devices.

4.2 Teachers' and Parents' Perception After Intervention

Examining participants' perception after the intervention was the second objective of the present study. Table 2 presents descriptive statistics of the participants' responses to questionnaire items. The results showed that that the perceived usefulness (PU) had a Mean = 4.03, SD = .35; perceived ease of use (PEU), Mean = 4.16, SD = .29; attitude towards use (ATU), Mean = 4.25, SD = .36; and behavioural intention (BI), Mean = 4.31, SD = .40. In comparison to the criterion mean of 3, these results indicate that respondents had a positive perception of mobile application use for learning English vocabulary. Furthermore, the results demonstrate that respondents were satisfied with the mobile application across all four variables of the TAM.

Table 2. Participants' perception after intervention
(1=strongly disagree; 2=disagree: 3=undecided; 4=agree: 5=strongly agree)

TAM variables	N	Minimum	Maximum	Mean	SD
PU	315	3.00	4.60	4.0254	.35349
PEU	315	3.60	4.80	4.1562	.29125
ATU	315	3.75	5.00	4.2492	.36608
BI	315	3.67	5.00	4.3132	.40075

The qualitative data similarly suggest that participants expressed satisfaction with the mobile application, highlighting its perceived usefulness and ease of use. Many participants noted that their children demonstrated improved vocabulary acquisition, reinforcing their positive attitudes towards the technology. Comments from both parents and teachers indicated a newfound appreciation for how mobile applications can facilitate learning, particularly in an EFL context. The following quotes illustrate this phenomenon:

> *"Inashangaza, wanafunzi wangu wanafahamu maneno mengi yaliyo kwenye App hii. Mwanzoni sikuamini kama wanaweza ku-concentrate." (Mwalimu)*
> "It is wonderful, my pupils understand many words in this App. Initially, I did not believe they could concentrate." (Teacher)

> *"Nilijua watoto wa mjini tu ndio wanafaidi haya mambo. Asanteni sana, mumemsaidia mwanangu. Nawaomba mnisaide kupata App zingine za aina hii ili baada ya shule niwe nampatia anachezea badala ya kuchezea vumbi…" (Mzazi)*
> "I thought these things were enjoyed by urban children only. Thank you very much; you have helped my child. Kindly assist me in finding other Applications of this kind so that she can play with them after school instead of playing in the dust." (Parent)

While both quantitative and qualitative data demonstrate participants' positive perceptions of mobile applications in learning English vocabulary, it was also important to examine any differences in perceptions between parents and teachers in the sample. Therefore, an independent t-test was computed after verifying that the Kolmogorov-Smirnov test yielded p-values greater than .05 for all four TAM variables.

The findings revealed no significant difference between parents and teachers in their perceptions of each TAM variable. Specifically, for the Perceived Usefulness (PU) variable, parents had a mean (M) of 4.02 with a standard deviation (SD) of .35, while teachers had M = 4.03, SD = .36 ($t(313) = .09$, $p = .921 > .05$). For Perceived Ease of Use (PEU), parents had M = 4.15, SD = .29, while teachers had M = 4.17, SD = .28 ($t(313) = .26$, $p = .797 > .05$). For Attitude Towards Use (ATU), parents had M = 4.24, SD = .35, while teachers had M = 4.31, SD = .38 ($t(313) = 1.06$, $p = .289 > .05$). Lastly, for Behavioural Intention (BI), parents had M = 4.31, SD = .40, while teachers had M = 4.32, SD = .39 ($t(313) = .144$, $p = .886 > .05$). Based on these results, equal variance was assumed, and the null hypothesis—that there is no difference between parents and teachers in their perceptions of mobile application use in learning EFL vocabulary—was retained.

The perception of participants after the intervention revealed a significant change relative to the criterion mean. Descriptive statistics presented in Table 2 indicate that participants developed a positive view of mobile phone application use after their children engaged with this approach for vocabulary learning. On average, all variables of the Technology Acceptance Model (TAM) were rated at 4 points, exceeding the criterion mean, suggesting that participants altered their perceptions of the mobile application's effectiveness for vocabulary acquisition after observing their children's experiences. Qualitative data

supported the quantitative findings, showing that participants were satisfied with the mobile application, deeming it useful for helping learners acquire EFL vocabulary. Consequently, they developed a positive attitude and were prepared to leverage the technology to benefit their children. These results imply that further interventions are necessary to expose more parents and teachers to mobile learning and to positively shift their perceptions regarding this approach.

Participants' perceptions after the intervention are consistent with the results reported by Manyengo (2021), Mfaume (2019), and Msuya (2015) from Tanzania, which indicate that there is little knowledge among teachers regarding the use of mobile phones as teaching and learning tools. This is evidenced by the differences in perception that teachers exhibited before and after the intervention. This suggests that teachers had limited knowledge about the approach prior to the intervention, and after observing children using it, their understanding of the matter changed. The present findings also support those of Khlaisang et al. (2021) in Thailand, Marcial (2015) in the Philippines, Miglani and Awadhiya (2017) in five Commonwealth Asian countries, and Yusria et al. (2015) in Indonesia, all of which reported positive perceptions among teachers towards exposing learners to mobile technology for learning. Similarly, these results align with the studies by Manaakkarakul (2019) in Thailand and Özdamili and Yıldız (2014) in Cyprus, which reported that parents had positive views towards the use of technology in education. Interestingly, participants in the studies cited from outside Tanzania seem to have had a positive perception regarding the approach, likely because they possessed informed knowledge about the technology.

This finding can partly explain why various studies have reported mixed feelings about stakeholders' perceptions of mobile phone use for educational purposes. For example, studies by Khlaisang et al. (2021) in Thailand, Marcial (2015) in the Philippines, Miglani and Awadhiya (2017) in five Commonwealth Asian countries, and Yusria et al. (2015) in Indonesia report that teachers had a positive perception of exposing learners to mobile technology for learning. In contrast, studies by Biseko (2023), Gibbons et al. (2018), Kafyulilo (2014), and Kihwele and Bali (2013) in Tanzania reported that teachers were suspicious of the use of this technology. Thus, it can be argued that an individual's informed knowledge could be the reason behind their support or opposition to the technology, as revealed by the present study. Therefore, this study supports the key arguments of the Technology Acceptance Model (TAM), which posits that an individual's intention to use technology is influenced by perceived usefulness and ease of use, which in turn affect users' attitudes and readiness to adopt the technology.

In considering the comparison of parents' and teachers' perceptions, the present study showed that there was no significant difference in perception between the two groups of stakeholders in the sample, both before and after the intervention. Although several studies have reported findings regarding the perceptions of parents (Manaakkarakul, 2019; Özdamili & Yıldız, 2014) and teachers (Khlaisang et al., 2021; Marcial, 2015; Miglani & Awadhiya, 2017), this finding is unique as it compares the perceptions of both groups within the same study. The fact that members of these two groups exhibited almost the same perceptions before and after the intervention implies that social differences among community members may not influence perceptions of mobile application use in education, particularly in EFL learning.

5. Conclusion

The present study examined rural primary school teachers' and parents' perceptions of mobile application use in EFL vocabulary learning in two districts of the Dodoma region in Tanzania. Participants were required to share their perceptions on the matter before and after their children were exposed to and allowed to use the mobile application for vocabulary learning over a period of four weeks. Thus, the focus of the study was to determine whether the participants would maintain or change their perceptions after the intervention.

The results show that participants had a negative perception before the intervention, but their views on mobile phone application use changed to a positive one after observing their children using the application prototype and noting improvements in some children's vocabulary knowledge. These findings suggest to Tanzanian educational stakeholders that parents and primary school teachers need informed knowledge about educational technology, particularly regarding mobile phone application use in education and EFL learning. The results indicate that, if well informed, parents and primary school teachers are ready to leverage technology for their children's EFL learning. However, it appears that currently, parents and teachers do not fully utilise this technology, as they are unaware of its benefits. Therefore, a call is made to educational authorities and NGOs to promote awareness of this technology among all educational stakeholders, including parents and teachers.

6. Limitations and Suggestions for Further Research

Furthermore, it is important to acknowledge that the present study has certain limitations, primarily due to its focus on a small geographical area within the Dodoma region. This limited scope may affect the generalisability of the findings, as perceptions of mobile application use in EFL vocabulary learning could vary significantly across different cultural and socio-economic contexts. To enhance the robustness of future research, it is recommended that subsequent studies encompass a broader range of villages and regions, ideally including diverse populations that reflect various educational backgrounds and experiences with technology. Such an approach would enable researchers to examine whether a multicultural sample yields different findings, thereby providing a more comprehensive understanding of stakeholders' perceptions. Additionally, incorporating a larger and more varied sample size could facilitate deeper insights into the specific factors that influence attitudes towards mobile technology in education. By addressing these limitations, future research could contribute significantly to the development of effective strategies for integrating mobile applications into EFL learning, ultimately benefiting a wider array of educational stakeholders.

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