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Kid-Dose: Mobile Application for Learning English and Basic Mathematics for Kids

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Abstract **- Kid-Dose is a mobile solution designed to increase knowledge in the English language and Mathematics for kids. The app is designed to be engaging and interactive, with a range of learning activities that reinforce the learning objectives. [1] The methodology for Kid-Dose involves a structured approach that includes a needs assessment, content development, user interface design, learning activities, assessment and evaluation, and continuous improvement. The app has the potential to be an effective tool for improving knowledge in the English language and Mathematics for kids, and further research can be conducted to assess its effectiveness.**

Keywords: e-learning system, face recognition, emotion map, Voice Recognition, Voice Comparison, Image Processing, Machine Learning.

I. INTRODUCTION

Fundamental abilities like math and Language are necessary for both school performance and future professional chances. Regrettably, a lot of kids have difficulty comprehending these concepts, which could have unfavorable long-term effects. Several mobile applications have been created to improve learning in these areas as a solution to this issue.

One such app is Kid-Dose, a mobile solution created to increase children's proficiency in the English language and mathematics.

The purpose of this study report is to assess Kid performance Dose as a mobile tool for enhancing English language and math literacy.[1]

A mixed-methods study approach will be used to accomplish this goal, integrating qualitative and quantitative data collection techniques.

A sample of elementary school students will participate in the study and utilize Kid-Dose for a predetermined amount of time. To determine the effect of Kid-Dose on the kids' English and math abilities, data will be gathered through questionnaires, tests, and interviews.

The structure of the essay is as follows. A review of recent research on the advantages of mobile learning for enhancing English and arithmetic skills is presented in Part II, along with a summary of current mobile applications made for learning language and math. The research methodology is described in Section III, along with the study design, participants, data collection tools, and data analysis techniques. The study's findings are presented in Section IV, together with an analysis of the data gathered and a discussion of the results. Part V summarizes the paper's main conclusions, implications for education, study limitations, and opportunities for future research.

II. BACKGROUND STUDY

A) Talk with Voice Assistant to Ask Questions and Play Game to Learn New English Words with Images

Rapid technological advancement has increased the popularity of mobile e-learning apps. Given the present environment, there is also a sizable demand for these applications, but most of them only concentrate on a small number of ineffective areas. As an illustration, most Voice assistant-based applications concentrate on chit-chatting with students rather than on using talk able voice assistants to provide accurate answers.[3]

There are a lot of Voice assistants available today, but most of the times we can't locate any that are specifically made for young pupils. Many students in our nation are literate in English but they are hesitant to speak it. Because of that, we have the crucial chance to create this kind of virtual assistant. Students who feel uncomfortable conversing in English with others may believe that the language is particularly challenging. We were inspired to create these features by this idea as well.

Students occasionally have to give speeches. They lack the required preparation for a brief speech while speaking in front of an audience because they are averse to speaking in

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English. They must determine the meaning of the words before they may generate English discourse. If not, they must use the internet; otherwise, they must use large dictionaries. They occasionally struggle with pronouncing those words. We took note of that point when developing this system.

This proposed mobile application will provide an interactive learning environment while teaching with spoken English. There are some previously done studies regarding this area. As people are very much familiar with using mobile application this study is also develop a mobile application which is different from the existing applications. Because to talk with student using Voice Assistant and give response for the student in funny way. If the student is not like to do the traditional learning student can use this virtual assistant to learn and learn spoken English. Most of the existing apps only covers specific areas in educational side but there no such mobile applications which Providing Real time response with Voice Assistant.

B) Implementing a component to practice Number writing and Basic mathematical Operations

Numerous studies have demonstrated how technology can improve students' math learning outcomes. But using technology in the classroom can be difficult at times. The lack of appropriate technology and resources to support student learning is one of the key issues. It is possible that schools lack the funds to buy devices for every student, and some instructors lack the expertise to effectively integrate technology into the classroom.

The challenge of making sure the technology is developmentally suitable for the grade level and learning objectives is another. For instance, to accomplish the same learning goals, grade 1 students may need a different kind of technology than grade 5 students. For each grade level and learning objective, it is crucial to determine which technology is best.

Designing efficient assessment tools can be difficult, in addition to the difficulties with technology implementation. Traditional paper and pencil tests might not be a reliable indicator of a student's proficiency with number writing and fundamental mathematical operations. Nevertheless, there are difficulties involved in using mobile applications for assessment, such as making sure that all students can use them regardless of their access to technology outside of school.

C) Implementing a component to practice writing English letters upto Learn English word and grammer

It is crucial to have a thorough understanding of the research background when conducting research on how writing practice can be efficiently incorporated into language learning software for students in grades 1 to 5 to improve their English writing skills. [2] A source on research methodology states that the research background should contain a summary of the most significant studies that have been conducted thus far and be presented in chronological order, as well as a brief discussion of major theories and models connected to the research problem.

Examining the research on effective writing instruction may be helpful in determining the best strategies for teaching English writing skills and grammar to students in grades 1 to 5 through technology-based writing practice activities. Effective writing instruction, according to research, calls for explicit instruction in the writing process, modeling, and opportunities for guided and independent practice. Technology can also be used to give immediate feedback, boost student motivation, and offer chances for collaboration and peer review.

It might be helpful to take into account research on the use of personalized learning in education when developing a mobile application that uses image processing to cater to the unique learning needs and learning styles of students in grades 1 to 5 learning English. It has been demonstrated that personalized learning, which involves modifying instruction and learning experiences to meet the unique needs and interests of students, is effective in enhancing student learning outcomes. The use of visual aids, such as pictures and videos, has also been proven to improve learning and memory. [17]

In conclusion, reviewing the research background on effective writing instruction, technology-based writing practice, personalized learning, and the use of visual aids can provide a strong foundation for conducting research on how writing practice can be effectively integrated into a language learning software, the best methods for teaching English writing skills and grammar to grade 1 to 5 students through technology-based writing practice activities, and how a mobile app can help.

D) Implementing a Component to Detect Emotions of Children

Students in Sri Lanka are becoming increasingly acclimated to the online environment today. Children between the ages of 5 and 10 struggle the most in the subjects of arithmetic and English in school. We compared current mobile applications for English and math while we conducted our research. All students do not have the same level of competency, and children prefer more attractive and colorful things, as mentioned above, making it extremely important to capture children's attention to the lesson. However, most current applications do not focus on having a user-friendly interface for children and level of teaching, which is the most important component when teaching. All these components

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combine to make these applications ineffective. These programs lack the essential elements for an efficient e-learning environment, such as face recognition, augmented reality technologies, etc.

Using the mobile app to learn subjects is a bit difficult with ordinary learning platform because it's easy to distract. And sometimes student is not in good mood to study and in the middle of the studies student do various activities and not paying attention to the studies.

E-learning platform is improving every day so many education organizations use modern technology in case of that the E-learning is rapidly developed and built in the recent years. Websites and apps are available for students to use for independent study. Commonly the E-learning platform uses the HTML and Video to deliver the content.

The engaging learning environment provided by this suggested mobile application will keep student attention levels high using face recognition. There have been some past investigations in this area.

Due to Descartes' dualist view of the mind and body, old Western society utilized dichotomy to distinguish between reason and emotion. The contribution of affectivity to cognition and learning received little attention in the 20th century. The actual learning environment appears to focus on the students' cognitive abilities and help them develop a fitness knowledge system.[25]

III. METHODOLOGY

Kid-Dose is a mobile app made to help kids learn more English and math. This research methodology outlines the procedures to be followed when investigating to see how well Kid-Dose performs in terms of enhancing knowledge in these areas among a sample of young subjects.

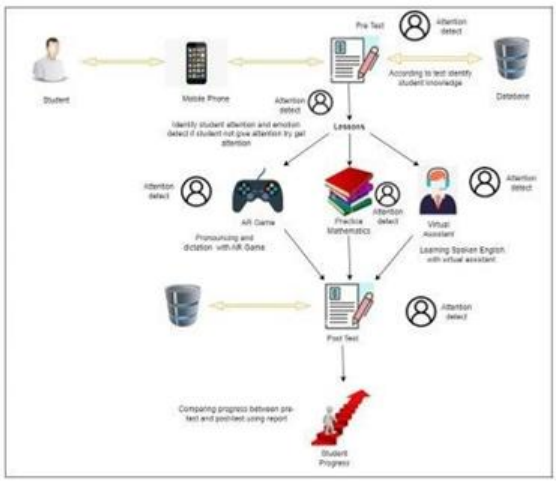

Figure 1: System Overview Diagram

1) Research Design: This study will use a quasi-experimental design with pre- and post-test measurements. With the help of this design, it is possible to compare the English language and math skills of the experimental group—those using KidDose—and the control group—those not using the mobile solution. The gold standard for research designs, the randomized controlled trial (RCT), has practical constraints that must be considered in the design. When subject randomization is neither feasible nor ethical, the quasi experimental design is a study type that is frequently used in educational research. To ensure that the groups being compared are comparable in every way except for the treatment being tested, the study is designed to provide some level of control. Due to the ability to compare KidDose's effects on English language and math knowledge while accounting for the effects of other variables, this design is a good fit for the current study.

2) Sampling: 100 children between the ages of 5 and 10 will comprise the study's sample. To ensure a diverse group of participants, the sample will be selected from various local schools. Those who are interested in enhancing their English and math skills will be chosen as participants. This study will employ convenience sampling, which is a limitation to take into account.

Convenience sampling is a non-probability sampling technique that involves choosing participants based on their availability and willingness to participate in the study. This approach has drawbacks because a representative sample of the population under study might not be provided. Convenience sampling is a good option for this research, though, given the practical limitations of the study.

3) Data collection: To assess students' English language and math proficiency, data will be gathered using a pre- and post-test. The post-test will be given after eight weeks of mobile solution use, while the pre-test will be given before the experimental group begins using the mobile solution. To evaluate knowledge at various levels of comprehension, the tests will include both multiple-choice questions and short-answer questions.

To evaluate the efficacy of an intervention, pre- and posttests are frequently used in educational research. The pretest enables the assessment of the subjects' prior knowledge, while the post-test gauges their knowledge following the intervention. A thorough evaluation of the participants' knowledge of the English language and mathematics will be possible with the help of multiple-choice and short-answer questions.

4) Data analysis will make use of inferential statistics like the independent t-test and ANOVA as well as descriptive statistics

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like mean and standard deviation, such as mean and standard deviation. The characteristics of the sample will be described using descriptive statistics, and the hypothesis will be tested using inferential statistics. After using Kid-Dose, it is anticipated that there will be a noticeable difference between the experimental and control groups' levels of knowledge in both English and mathematics.

An appropriate method for analyzing the data gathered for this study is to use descriptive and inferential statistics. While inferential statistics will test the hypothesis that there is a significant difference in the knowledge of the English language and mathematics between the experimental and control groups, descriptive statistics will give a summary of the characteristics of the sample. Since they enable the comparison of means between two or more groups, t-tests and ANOVA are appropriate methods to use.

5) Ethical Considerations: When conducting this study, ethical issues will be taken into account. Participation will be voluntary, and parental approval will be obtained before the study. Participants will be made aware of the study's objectives, and their information will be kept private. The study will abide by the institutional review board's (IRB) ethical standards as well.

6) Limitations: When conducting this study, there are a number of limitations to take into account. First, the use of convenience sampling may restrict the applicability of the results to a larger population. Second, the study only examines Kid-Dose's immediate effects; whether these effects last for a longer time is unknown. Third, the study ignores other elements that may influence academic performance, such as motivation and self-esteem, and only concentrates on the knowledge of the English language and mathematics.

7) Conclusion: In conclusion, the research methodology described above offers an all-inclusive strategy for carrying out a study on the efficiency of KidDose in enhancing children's English language and mathematics knowledge. A comprehensive analysis of the data will be possible through the use of a quasi-experimental design, pre- and post-tests, and descriptive and inferential statistics. Future educational interventions will be developed with the help of the study, which will offer insightful information about how well mobile solutions can improve academic performance.

IV. RESULT AND DISCUSSION

The goal of the study was to evaluate Kid-Dose, mobile software that promotes math and English learning in children. A quasi-experimental design and pre- and post-test measurements were used. 100 children, ages 5 to 10, were chosen for the sample from a variety of nearby schools.

The experimental group's performance in both English and mathematics significantly improved after eight weeks of utilizing Kid-Dose, according to the findings. Higher mean scores on the post-test showed that the experimental group had outperformed the control group. Both the independent test and the ANOVA indicated that there was a statistically significant difference between the two groups.

The results of this study indicate that Kid-Dose is a useful mobile tool for improving children's English language and math skills. The findings are in line with earlier studies on the application of technology in education, which have demonstrated that mobile applications can raise academic achievement.

There are several reasons for the increase in knowledge. Secondly, Kid-Dose employs an interactive and interesting method of instruction that has the potential to be more successful than conventional classroom instruction. Second, the mobile solution gives kids the freedom to study when and how they choose, which is good for individuals who have trouble learning in a typical classroom setting. Finally, Kid-Dose offers real-time feedbacks that may be used to assist kids assess their learning gaps and strengthen their areas of strength.

Yet, there are several restrictions to take into account when analyzing the findings of this investigation. First off, the results might not be as generalizable as they could be because of the sample size's modest size and geographic focus. Second, the long-term impacts of taking Kid-Dose on academic achievement were not taken into account; only short-term effects were examined. Finally, other courses that might possibly benefit from mobile solutions were not taken into consideration and the study solely paid attention to the English language and mathematics.

Notwithstanding these drawbacks, the results of this study offer important insights into how well Kid-Dose works to improve children's English language and math skills. The findings imply that mobile solutions can be an effective educational tool and may also have the ability to raise academic achievement in other subject areas. The long-term impact of employing mobile solutions on academic achievement and their potential application in other areas of education must be investigated further.

V. CONCLUSION AND FUTURE WORKS

In summary, the study sought to determine the efficacy of Kid-Dose, a mobile app that aims to improve children's knowledge of the English language and mathematics. After using Kid-Dose for eight weeks, pre- and post-test measurements and the quasi-experimental design

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demonstrated a considerable improvement in the experimental group's knowledge of English and mathematics. The results imply that mobile learning programs like Kid-Dose have the potential to enhance academic achievement and be useful teaching tools.

The report also emphasized how crucial it is for educators to use technology to improve teaching and learning. Kids may learn more effectively and enjoy it more because to Kid interactive Dose's and engaging style, flexibility in learning, and fast feedback. There are still some restrictions, though, like the limited sample size and transient effects that need to be taken into consideration.

This study offers insightful information about how well Kid-Dose works to improve children's English language and math skills. To further understand the long-term effects of using mobile tools like Kid-Dose on academic performance, more research is still required.

Future research may also consider increasing the sample size to enhance the generalizability of the results. Future studies can look at Kid-effectiveness Dose's in other areas and investigate the possible applications of mobile learning tools for schooling across age ranges.

Future studies can also look into Kid-effects Dose's on outcomes than academic performance, like motivation, self esteem, and interest in learning. The effectiveness of various mobile solutions, such as game-based learning, can also be explored in the future, as well as the effects of various aspects, such as social learning, on academic achievement.

The results of this study point to Kid-Dose as a mobile solution that can help children improve their knowledge of the English language and mathematics. On the basis of this study, future research can examine the potential of technology in education and look at the long-term impact of adopting mobile solutions on academic achievement.

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