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EFFECTIVENESS OF MOBILE LEARNING IN ENGLISH AMONG MIDDLE SCHOOL VISUALLY CHALLENGED STUDENTS IN PUDUKKOTTAI DISTRICT

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ABSTRACT: *Mobile learning has become accessible to nearly everyone, as most individuals possess at least one mobile phone regardless of social status or income level. It enables learners to access educational content anytime and anywhere. In recent years, learning English through mobile applications has gained popularity, particularly for vocabulary development and pronunciation practice, where digital tools can provide repetitive and consistent input. The objective of this study was to examine the effectiveness of mobile learning in English among visually challenged middle school students in Pudukkottai district. The research adopted a single-group experimental design consisting of a pre-test, post-test-1, and post-test-2. The sample comprised 10 visually challenged students from a middle school in Pudukkottai. The InstaReader mobile application was used as the intervention tool, and academic achievement tests were administered to measure learning outcomes. For data analysis, ANOVA with a post hoc test (Bonferroni test) was employed to interpret the results. The findings revealed that: (i) There was no significant difference between the pre-test and post-test-1 ($p = 0.783 > 0.01$). (ii) There was a significant difference between the pre-test and post-test-2 ($p = 0.000 < 0.01$). (iii) There was a significant difference between post-test-1 and post-test-2 ($p = 0.000 < 0.01$). The study concludes that repeated exposure and frequent practice through mobile learning significantly enhance English learning among visually challenged students..*

KEYWORDS: *Effectiveness, Mobile Learning, English, Middle Schools, Visually Challenged Students and Pudukkottai District*

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1. INTRODUCTION

English is regarded as a global language because it plays a dominant role in almost every field in today's globalized world. In the twenty-first century, the world has become more connected, accessible, and interconnected, largely due to the widespread use of English as a common language. Many countries have accepted English as an international medium of communication. This article emphasizes the significance of English as a global language. It explains how fields such as travel, tourism, and entertainment benefit from adopting English as their primary language of communication. Language is the main tool for communication, allowing people to share their ideas and thoughts clearly and effectively. Although thousands of languages are spoken worldwide, and each country has its own national and regional languages, the importance of English in the global context cannot be overlooked.

English functions as a link language that supports international relationships in science, technology, business, education, travel, and tourism. It is widely used by scientists, multinational companies, higher educational institutions, and on the internet. It has become the preferred language in many professional and academic environments.

Mobile learning has further enhanced the spread of English. Today, almost everyone owns a mobile phone, regardless of social status or income level. As a result, learning has become more accessible to people from all backgrounds. Individuals can learn anytime and anywhere by accessing different types of content through their mobile devices. Learning English through mobile applications and digital platforms has become convenient and flexible, sometimes complementing traditional classroom teaching. According to the author, mobile learning is a form of modern e-learning. Through mobile devices, learners can receive text, images, videos, and other types of digital content for educational development. This enables them to understand new concepts, strengthen cognitive abilities, improve skills, and develop positive attitudes. Moreover, mobile learning promotes environmentally friendly and paperless education, which helps reduce paper usage and supports efforts to prevent deforestation.

2. SIGNIFICANCE OF THE STUDY

Chee et al. (2016) provided an in-depth understanding of mobile learning (M-learning) and offered a concise yet comprehensive overview for scholars interested in research publications on this topic. Recent studies on the use of mobile devices in various learning environments have demonstrated their effectiveness in enhancing students' knowledge and overall learning outcomes.

Sighted students and visually challenged students have different learning needs and abilities. Visually challenged students are unable to read and understand standard printed text. Instead, they rely on Braille or audio-based learning methods. In this context, Android mobile phones can serve as effective tools for learning English, particularly for understanding and practicing the correct syllable patterns and pronunciation of English words, sometimes more effectively than traditional teaching methods.

Therefore, this study is significant as it focuses on visually challenged middle school students and aims to enhance their understanding of English syllables through mobile-assisted learning.

3. OBJECTIVES OF THE STUDY

The objectives of the study are:

1. To determine the effectiveness of mobile learning in improving English language skills among visually challenged middle school students in Pudukkottai District.
2. To develop and construct appropriate research tools, such as achievement tests, to measure the effectiveness of mobile learning in English.
3. To implement and evaluate the use of mobile learning applications through mobile phones for English language learning.

4. HYPOTHESES OF THE STUDY

The hypotheses of the study are as follows:

1. There is no significant difference in the variances among pre-test, post-test-1 and post-test-2 scores of English achievement through mobile learning in overall samples.
2. There is no significant difference among the pre-test, post-test 1, and post-test 2 scores of English achievement through mobile learning for the overall sample.

5. OPERATIONALIZATION VARIABLES

- (i) **Effectiveness:** Effectiveness represents a match between the results achieved and those needed or desired. Performance is understood as the achievement of measurable results, often stated as performance outcomes. In the present study, *effectiveness* refers to the achievement of students from Standards V to VIII in learning syllables of English words through a mobile application. It is measured by comparing the differences among the pre-test, post-test-1, and post-test-2 scores related to syllable learning in English words.
- (ii) **Mobile Learning:** A mobile device consists of a software bundle that includes the operating system, middleware, and key applications. In this study, lists of syllables of English words were converted into PDF format and uploaded into the InstaReader mobile application. The application converts the text format into voice format and sequentially delivers the words one by one to the students. The researcher encouraged students to listen to the syllables of the corresponding words directly using an Android mobile device in the classroom. A face-to-face experimental method was followed in delivering English words through mobile voice to the students. This mobile application helped students enhance their exposure to and understanding of syllables in English words.
- (iii) **English:** In this study, English refers to the learning of syllables of English words by students through the mobile application.
- (iv) **Middle Schools:** It refers to students studying in the 6th, 7th, and 8th standards in a Government Visually Challenged Middle School located in Pudukkottai Corporation.
- (v) **Visually Challenged Students:** It refers to students with visual impairments who are unable to perceive visual instructional materials but understand subject concepts through their sense of hearing.
- (vi) **Pudukkottai District:** Pudukkottai District belongs to the state of Tamil Nadu. It is considered one of the socially and economically backward districts. Therefore, education is an important investment for the people living in this region. Educational improvement is essential for students' future life and development.

6. RESEARCH DESIGN

An experimental design is a structured plan or blueprint that enables the researcher to test the hypotheses and draw valid conclusions about the relationship between the independent and dependent variables. The selection of a particular design depends on the purpose of the experiment, the type of variables to be manipulated, and the specific conditions or limitations under which the study is conducted.

The research design also addresses practical issues, such as how participants are assigned to groups. In an experimental study, the investigator must carefully follow an appropriate experimental design to ensure the validity and reliability of the findings.

The present study adopts a single-group design consisting of a pre-test, post-test 1, and post-test 2 to measure the effectiveness of the intervention.

Table 1: Blueprint Procedure of Design

Group	Test	Treatment	Test	Treatment	Test
Single Group	Pre-test	Mobile Learning	Post-test-1	Repetition of Mobile Learning	Post-test-2

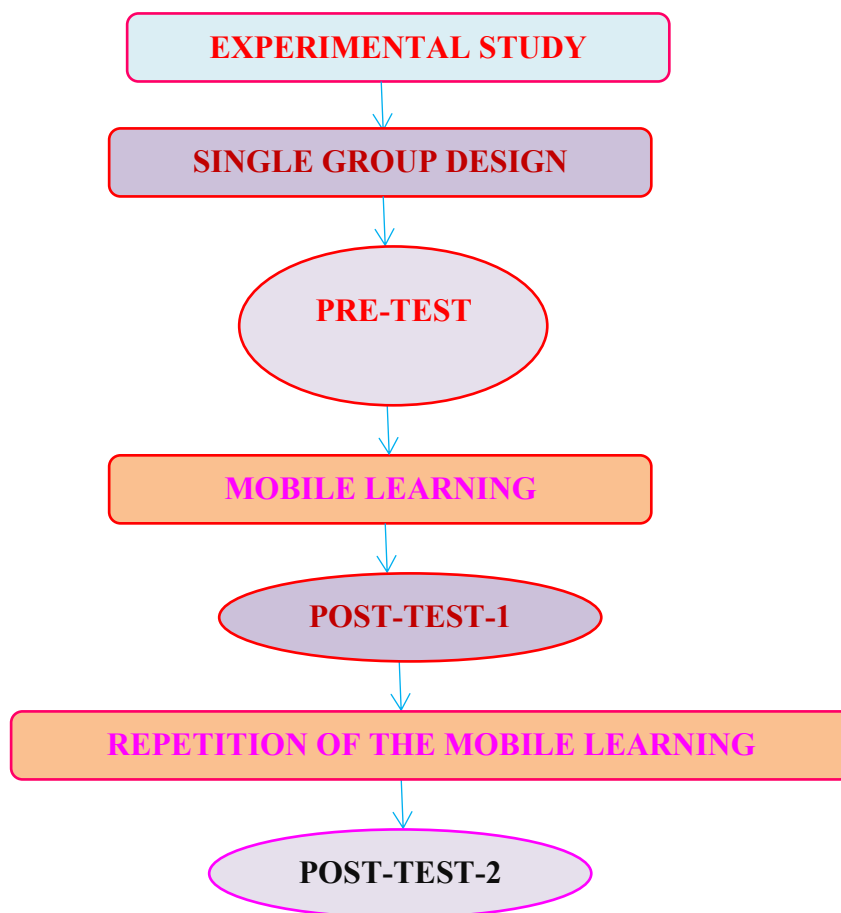


Figure 1: Experimental Design

- (i) **Teaching–Learning Methods:** Mobile learning for teaching the syllables of English words was adopted as the instructional method in this experimental study. A mobile application, such as InstaReader, was used to help students learn and practice the syllable patterns of English words.
- (ii) **Tools used in the study:** Three achievement tests on the syllables of English words were developed for middle school students, particularly those in classes VI to VIII. These tests were constructed and standardized by the researcher with the guidance and assistance of the research supervisor. The achievement tests were used to measure the effectiveness of mobile learning in English.
- (iii) **Scoring Procedures:** Each correct answer in the achievement test is awarded one mark, and each incorrect answer is given zero marks. Therefore, the total score for each achievement test ranges from 0 to 25. The median score of the achievement test is 12.5.
- (iv) **Answer Key:** An answer key was prepared by the researcher under the guidance of the supervisor to ensure objective evaluation of the test and to minimize subjectivity in scoring.
- (v) **Population of the study:** The population of the study consists of middle school students studying under the Tamil Nadu State Board.

- (vi) **Target population:** The target population includes Tamil-medium middle school students studying under the Tamil Nadu State Board.
- (vii) **Accessible population:** The accessible population comprises Tamil-medium middle school students studying under the Tamil Nadu State Board in Pudukkottai District.
- (viii) **Sample:** The sample consists of 10 visually challenged students studying in a Government Blind Middle School in Pudukkottai District. These students form a single group for conducting the experimental study.
- (ix) **Justification of sample size:** The sample size consists of only 10 visually impaired students because there are only 10 students studying in classes VI to VIII at the Government Blind Middle School in Pudukkottai District. Therefore, all available students were included in the study.
- (x) **Sampling Technique:** A purposive sampling technique was adopted to achieve the objectives of the research. This technique was chosen because the study specifically focuses on visually impaired middle school students.

7. DATA COLLECTION PROCEDURES

Achievement tests were administered before and after the experimental intervention. Each achievement test consisted of 25 items, with one mark awarded for each correct answer. The tests were conducted offline, meaning that the researcher personally administered them to the students. A face-to-face method of data collection was adopted both before and after the experimental intervention.

Pre-Test

The pre-test was conducted before the implementation of mobile learning for teaching the syllables of English words. The test consisted of 25 one-mark fill-in-the-blank items designed to assess the students' prior knowledge.

Post-Test 1

Post-test 1 was conducted after the completion of the mobile learning intervention on the syllables of English words. This test also consisted of 25 one-mark fill-in-the-blank items. The experimental intervention was carried out over a period of five days following the administration of the pre-test.

Post-Test 2

Post-test 2 was conducted after a repetition of the mobile learning intervention on the syllables of English words. This test consisted of 25 one-mark fill-in-the-blank items. The second phase of the experiment was conducted over five days following the administration of Post-test 1.

8. DATA ANALYSIS & INTERPRETATION

8.1 Hypotheses Testing

Hypothesis-1

There is no significant difference in the variances among pre-test, post-test-1 and post-test-2 scores of English achievement through mobile learning in overall samples.

Table 2: Homogeneous Test In Over All Samples (N=10)

Test	Variance	F _{max}	Sig. Value	3.3195 < 5.34
Pre-test	2.677778	3.3195	5.34	Homogeneous
Post-test-1	8.888889			
Post-test-2	7.655556			

Table 2 shows that the variances of the test scores are homogeneous. This indicates that all three tests have equal levels of variance. Therefore, ANOVA, followed by an appropriate post hoc test, can be used for further analysis and interpretation.

8.2 Anova Test

Hypothesis-2

There is no significant difference among the pre-test, post-test 1, and post-test 2 scores of English achievement through mobile learning for the overall sample.

Table 3: Anova Test In Over All Samples (N=10)

Group	Sum of squares	df	Mean Squares	F	Sig.
Between Group	228.867	2	114.433	17.860	0.000
Within Group	173.000	27	6.407		
Total	401.867	29			

Table 3 shows that the significance value ($p = 0.000$) is less than the 0.01 level ($0.01 > 0.000$). Therefore, the null hypothesis is rejected at the 0.01 level of significance. This indicates that there is a significant difference among the pre-test, post-test 1, and post-test 2 scores of English achievement through mobile learning. In other words, the three test scores differ significantly from one another. Hence, a post hoc test, such as the Bonferroni test, was conducted for further analysis.

Table 3: Bonferroni Test in Overall Samples (N=10)

S.No.	Test	Mean	between	Mean Difference	Sig.
1	Pre-test	11.700	1 and 2	1.300	0.783
2	Post-test-1	13.000	1 and 3	6.400	0.000
3	Post-test-2	18.100	2 and 3	5.100	0.000

Table-4 shows that

- There is no significant difference between the pre-test and post-test 1 scores ($p = 0.783 > 0.01$).
- There is a significant difference between the pre-test and post-test 2 scores ($p = 0.000 < 0.01$).
- There is a significant difference between the post-test 1 and post-test 2 scores ($p = 0.000 < 0.01$).

These results indicate that mobile learning did not produce a significant improvement at the initial stage (post-test 1). However, it significantly improved the achievement of visually challenged students after repeated practice, as reflected in post-test 2. This suggests that repeated exposure and practice through mobile learning enhanced students' learning of English.

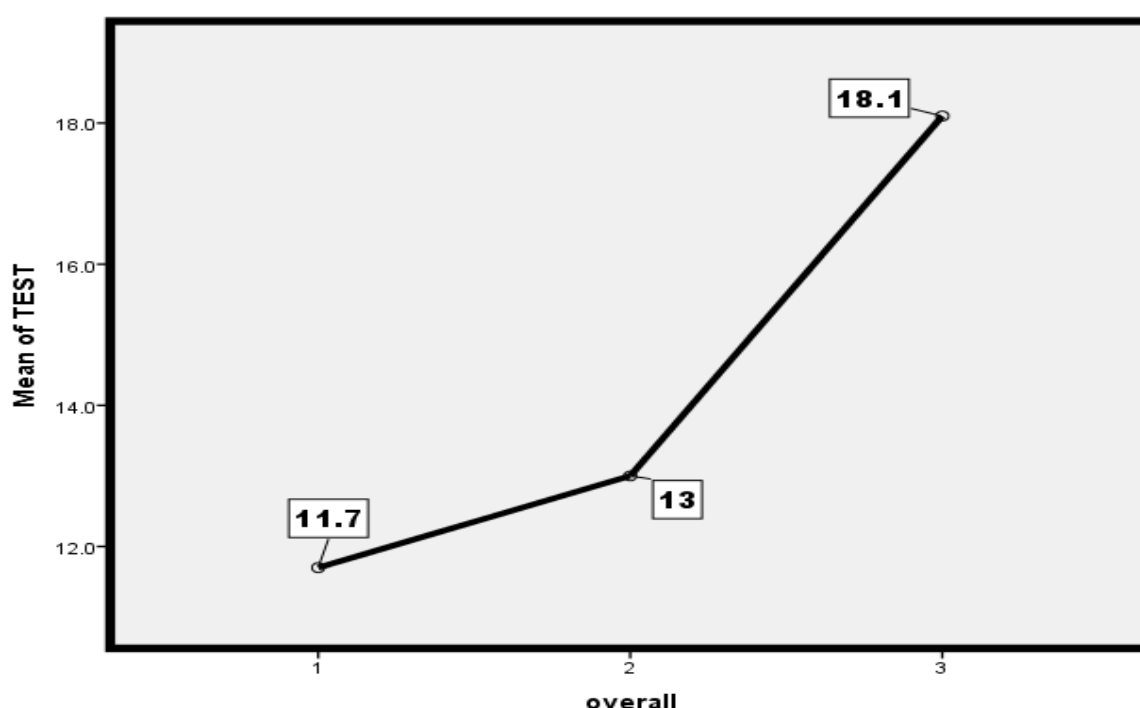


Figure 2: Means of Pre-Test, Post-Test-1 and Post-Test-2 Level in Overall Samples (N=10)

8.3 Finding of the study

Mobile learning does not significantly influence visually challenged students at the initial learning stage (Post-test 1 level). However, it significantly influences students' achievement in English after repeated practice (Post-test 2 level).

9. DISCUSSION OF THE RESULTS

The findings of the present study are supported by earlier research. **Zou and Li (2015)** reported that mobile learning can be effectively adopted in English lessons and for students' self-study. **Woon Tian Wen et al. (2019)** found a significant difference in students' achievement levels in the post-test ($t = 11.833$, $df = 29$, $p < 0.05$). **A.N.A. Kamal et al. (2021)** reported that instructors perceived guided mobile learning positively. Meng-Lin Chen (2022) found that mobile learning has a highly positive effect on English learning outcomes, with a weighted effect size of 0.893. **Ponraj P. (2022)** showed that the experimental group differed significantly between pre-test and post-test scores in learning English grammar. **Denis Dyvee Errabo and Areeya Amor Ongoco (2024)** reported that interactive mobile learning models have a positive effect on student engagement. **Huda Falah Jawad (2024)** found that mobile learning significantly improves listening and speaking skills. **Liliana Pedraja-Rejas et al. (2024)** concluded that integrating mobile learning tools can improve students' learning outcomes and critical thinking skills.

These studies support the present finding that mobile learning enhances English achievement, particularly after repeated exposure and practice.

10. IMPLICATIONS OF THE STUDY

- (i) Providing extended time for repetitive mobile learning tasks has a significant positive impact on the academic achievement and consistency of performance among visually challenged middle school students.
- (ii) Schools should adopt mobile learning as a complementary approach to classroom teaching, ensuring proper supervision and guidance.
- (iii) Schools should regularly update mobile learning software applications to incorporate improvements and necessary modifications.
- (iv) The government should provide ongoing training and awareness programs for teachers on the effective use of mobile learning, including updates and technological advancements.
- (v) Mobile learning should be implemented across all levels of education, including primary, secondary, and higher education.
- (vi) Students should be trained to engage in self-directed learning through the effective and responsible use of Android phones.
- (vii) The government should provide free Android phones equipped with appropriate learning software to visually challenged students.

11. LIMITATIONS OF THE STUDY

The present study has the following limitations:

- (i) The study was limited to only 10 visually challenged students studying in classes VI to VIII in a Government Visually Challenged Middle School in Pudukkottai District. Therefore, the findings cannot be generalized to a larger population.
- (ii) The study adopted a single-group experimental design without a control group, which may limit the strength of causal conclusions.
- (iii) The duration of the experimental intervention was short; hence, the long-term impact of mobile learning on English achievement was not examined.
- (iv) The study focused only on learning the syllables of English words and did not cover other language skills such as reading, writing, listening, and speaking.

- (v) The research was confined to Tamil-medium students under the Tamil Nadu State Board; therefore, the results may not be applicable to students from other boards or language backgrounds.
- (vi) The study considered only achievement scores and did not measure other factors such as motivation, attitude, or technological proficiency.

12. CONCLUSION OF THE STUDY

The study concludes that mobile learning positively influences achievement in English among visually challenged middle school students. However, it does not produce a significant improvement at the initial stage of learning (Post-test 1). Repeated exposure and continued practice through mobile learning significantly enhance students' achievement and improve consistency in their English performance. The experimental study was conducted among visually challenged students studying in classes VI to VIII at a Government Visually Challenged Middle School in Pudukkottai District.

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