

Use of Artificial Intelligence in Practicing and Learning Prepositions of English Language at Diploma Level

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Abstract

This research is an attempt to explore the use of Artificial Intelligence (AI) in practicing and learning the preposition of English language at diploma level. Prepositions are the parts of speech which act as vital markers to the structure of a sentence. They mark special relationships between persons, objects, and locations. For practicing prepositions there are some rules which are not helpful as far as their correct use is concerned. In this quasi experimental research the researcher has focused on practicing prepositions of English language by using artificial intelligence. It is a hypothesis of researcher that as AI has brought revolution in other fields of knowledge and science, it will also bring effectiveness in different aspects of second language learning. This study explored the use of AI as there has been found a significant difference between the results of controlled and experimental groups. At the end of this study, researcher recommends that integration of innovative and multifarious methods are necessary in case of second language teaching and learning.

Keywords: AI; Artificial Intelligence; CALL; L2 learning; Preposition learning

1. Introduction

1.1 Background of Research

Artificial Intelligence (AI) is a technique for making computer, a robot, or a thing to think like an intelligent human being thinks. AI is a study of how human brain that how it thinks, works, learns and decides when it tries to solve the problems. AI has brought great revolution in analyzing human intelligence such as ability of decision making, voice recognition, visual, perception, and translation from one language to other languages. The present research concentrates on use of Artificial Intelligence in practicing preposition of English Language.

For decades, researchers have tried to make inanimate things as animate intelligent beings. The initials of AI can be traced to classical philosophers' attempts to describe human thinking as a symbolic system. But the field of Artificial Intelligence was not properly founded until 1956, at a conference at Dartmouth College, in Hanover, New Hampshire, where the term "Artificial Intelligence" was used. The application of this research to is also explored. The "ICICLE" (Interactive Computer Identification and Correction of Language Errors) project, for instance, for deaf and hard of hearing students to make a system to analyze their errors, so that lessons and recommendations could be made for them.

Students of the English language usually face problems while using prepositions. They mix some prepositions while using in sentences like through and with, to and of, on and in, and so on. This research will expose that how ESL learners can practice preposition while playing games by using Artificial Intelligence. Usually, the students who learn English as a second language in diploma classes don't have basic information about using prepositions in sentences. They try to cram or memorize but fail while speaking. It is the nature of human being that he learns fast where he finds interesting goals and tasks even he doesn't get tired in still working of three to five hours. If teachers arrange some games by including some easy and difficult tasks students will feel comfortable as compared to learn rules from book or any traditional way. This is a hypothesis which came in researcher's mind after playing game of prepositions in android phone and it has been seen that many other applications (apps) having Artificial Intelligence that will prove beneficial for learners of English as a second language. The pattern of most Intelligent Computer Assisted Language Learning keeps Intelligent Tutoring Systems. Students mostly use these systems for practicing exercises or work through problems. They input answers and the system gives error correction and feedback. The system can give clues to help the students come to the correct answer.

There are various types of language learning software apps. One kind of software that is less often used possesses high potential is Intelligent Computer Assisted Language Learning (ICALL) software. This software combines language practice with Artificial Intelligence. The recent researches in AI have unlocked the doors for the students who wish to use computer system as a teacher. To teach variety of subjects, we may find a number of experimental systems that are provided with AI techniques.

1.2 Statement of the Problem

Prepositions are the parts of speech which work as direction markers to convey the meaning of a sentence. Relationships between people, things, and locations are marked by these vital markers. For practicing prepositions there are some rules which are not helpful as far as their correct use. This research is focused on practicing prepositions of English language by using artificial intelligence.

1.3 Objective of the Study

Objective of the study is to explore the use of Artificial Intelligence to practice and to learn prepositions of English language at diploma level in NUML Lahore.

1.4 Research Question

How Artificial Intelligence is useful for practicing prepositions of English Language at diploma level?

1.5 Significance of the Study

ESL teachers and trainers can use the findings of this study to promote the new approaches of Artificial Intelligence for learning and practicing foreign languages. The main focus of this research is to get easy way of practicing prepositions of English language. This study will lead students to conduct further researches in other areas of language. Android has multiple AI based applications which can help students of English as a second language.

2. Literature Review

Prepositions, prepositional phrases and various sorts of markers have been understudied in computational linguistics (CL) and also in connected disciplines such as artificial intelligence (AI) informational retrieval (IR). AI covers various fields like computer science, mathematics, linguistics, psychology, neuroscience and philosophy.

Researchers became successful in creating general artificial intelligence which has an ability to solve many issues in same time instead of concentrating on mere 1. Researchers are also seeking about creative and emotional artificial intelligence which can sympathize or produce art. In this regard, researchers are doing many efforts.

“With the increasing inclusion of technology in our classrooms and homes, it has become unrealistic to believe that students do not know about or have access to online translation” (O'Neill, E. M. 2014). Without any doubt, this is a vital truth. The era in which we are breathing is termed as global village. Everyone has mobile phone. Most of the activities are performed on-line and through mobile phones. Even children are familiar with the use of smart phone. Gone are the days when just to comprehend a single word students had to search lots of dictionary pages in hard form for hours. Now one can check meanings, definitions and all that with a single click on touch mobile. Language learning is on finger tips. This research focuses that how an arduous task like practicing prepositions of English language can be easy than the cramming prepositions through hectic traditional ways.

Study conducted by Soule, M. V., & salomipapadima (2019) is closely related to this research. This research worked on the better understanding of complications of Higher Education L2 teachers' usage of modern technology into the classroom and its linkage with CALL education and professional innovation. The objective of this study was based on three steps: firstly, to know the level of CALL education Higher Education L2 teachers' in the Republic of Cyprus have got. Secondly, to judge Higher Education L2 teachers' opinion about the CALL training received. Last thing was to explore that how much Higher Education L2 teachers' CALL education and professional development influence their CALL practices.

Generically, the participants of the research viewed that their CALL preparation played better role in achieving pedagogical integration of modern technology. Yet, considerable distinctions were identified on the use of mobile devices and specific software between teachers who had formal and informal CALL preparation and those with only informal CALL practices. These explorations tell that the knowledge and knacks delivered by MA or PhD programmers give contribution in teaching with technologies at a higher level than informal CALL training. Nonetheless, this contribution was not up to the mark of researcher's expectations. Since considerable differences in technology utilization for teaching purpose were only found in five items whereas twenty-one items were listed by researcher.

“Relying on free online platforms may be a risk factor to consider when incorporating CALL in ISLA research” (Cerezo, L., Leow, R., & C, R. 2019). According to Cerezo and many other researchers, various free language learning apps may have some technical glitches which may affect the learning of non-native learners. Another aspect to be considered is that the learners do not have knowledge of the basic rules and regulations of the second language and most of the free language learning apps on internet have no authenticity. Most of the free on-line versions of different applications come with restrictions and

limitations for the users. In fact, the paid versions have all the features that one may require to master a foreign language online. So, this can be a hindrance for those who only wish to rely on free online language learning apps.

Students face many problems, and get confused on certain part in prepositions like – at / on / in which sometimes refer place and time, and confusion between on time in time, at the end, in the end. “Prepositions can be perceived as one of the difficult topics to be mastered by the second language learners. However, they still need to be taught because of the high level of importance in the grammatical system and eventually in the learning of the language” (Asmeza Arjan^{1, 2}, Noor Hayati Abdullah^{1, 2}&Norwati Roslim³). Use of appropriate preposition makes understanding better regarding the grammar of sentence. Since, functional words like prepositions give multiple meanings.

“A Quick English Reference” is a book written by Hooper (1980). This book explains several prepositions, they are: 1) preposition of time – (a) one point in time (at), (b) period of time (on, in), and (c) extended time/duration (since, for, by); 2) preposition of place – (a) the point itself (in, inside, on, at), (b) toward the point (to, into), (c) neighboring the point (by, beside, next, between, near), and (d) away from the point (away, off, across, out of) and some others. (Linguadaktika Volume 11 No 1, July 2017)

The incorrect use of prepositions will influence the quality of the message from the speaker to the listener. (Linguadaktika Volume 11 No 1, July 2017). Although, message can be conveyed to little extent, clear location or direction cannot be told exactly without appropriate preposition.

According to (Eric, 2013) usually teachers teach about where to / at / in / into is used as well as the other uses where on/ in / at / is to be used, then “by” is taught in various styles and expressions. But in this research these things have been taught by using artificial intelligence (AI).

Research by (Lam, 2009) explains that prepositions are considered as polysemous words. Polysemy is a semantic characteristic of words which can have various meanings. Mostly prepositions give different meanings in the regard of different context. Most of the prepositions contain one syllable. It can be difficult for the students to recognize such prepositions in oral speech. By translating preposition from one language to another can change the meaning and can have different context. For example, a native speaker of Spanish language will face problem while translating *Por* into English, since the said preposition can be described in English by the prepositions *for*, *though*, and *during*.

According to research, (Lam 2009) explicit grammar teaching is one of the old methods of teaching prepositions. In this method students are trained to learn prepositions individually within context. The second traditional way of teaching preposition is the collocation method in this approach, prepositions are not taught individually rather in “Chunks”, that mostly used together. Mostly chunks are taken as phrasal verbs. For instance, students can learn phrasal verbs *to rely on*, *to keep on* or *to get in*. More over prepositional phrases may also be learned in formulaic sequences, such as *at time*, *on screen* or *on schedule*.

3. Methodology

3.1 Research Design and Method

Paradigm of this research is quantitative. This is an experimental study where the selected population is divided into two groups. For testing the hypothesis of research, researcher conducted experimental design research. Researcher took Diploma students of NUML University as a sample. A pre-test was held for twenty students of English language diploma class. After checking the result of pre-test, participants of the research were non-randomly divided into two identical groups which were named as experimental group

and controlled group. For practicing and learning prepositions, a variable “Artificial Intelligence” was used for experimental group whereas students of controlled group were taught by using traditional method of teaching prepositions.

3.2 Sample

Twenty students of NUML diploma class of English were selected as sample.

3.3 Delimitation

This research is delimited on the use of artificial intelligence in practicing prepositions of English language at diploma level student of NUML University Lahore Campus.

3.4 Instruments

In the instruments of this research a general test of prepositions was administrated as a pre-test to divide participants into two identical groups. The post-test was conducted to explore the effectiveness of AI and to measure its variations with traditional method of teaching prepositions. Both post-test and pre-test were comprised of thirty multiple choice questions. The total marks of each test were thirty.

In order to practice and learn prepositions through AI, five different android apps and games were practiced for experimental groups. The description and snapshots of these apps and games are given below.

3.4.1 “English Prepositions Quiz”

<https://play.google.com/store/apps/details?id=air.com.littlebigplay.games.free.prepositionstest>

App information is given below:

| | |
|-------------|-------------|
| Version | 7.0 |
| Updated on | Jan 4,2019 |
| Offered by | Quiz Corner |
| Released on | Dec 21,2015 |



3.4.2 “English Prepositions”

<https://play.google.com/store/apps/details?id=com.praveenj.prep>

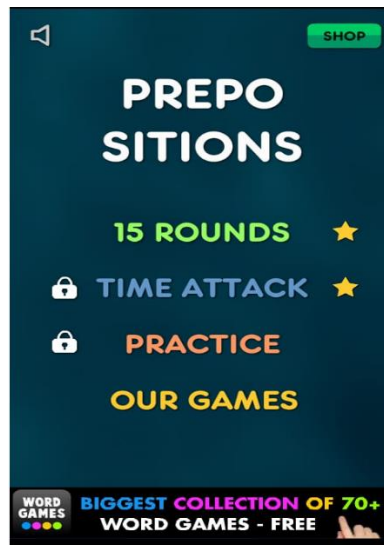
App information is given below:

Version 2.0

Updated on Feb 22, 2019

Offered by Praveen Yuva

Released on Sep 22, 2016



3.4.3 English Preposition Quiz

<https://play.google.com/store/apps/details?id=com.slothworks.slothquiz>

App information is given below:

Version 1.0.1

Updated on Mar 30, 2016

Offered by Slothworks

Released on Mar 21, 2016



3.4.4 Prepositions Test Free

<https://play.google.com/store/apps/details?id=air.com.littlebigplay.games.free.prepositionstest>

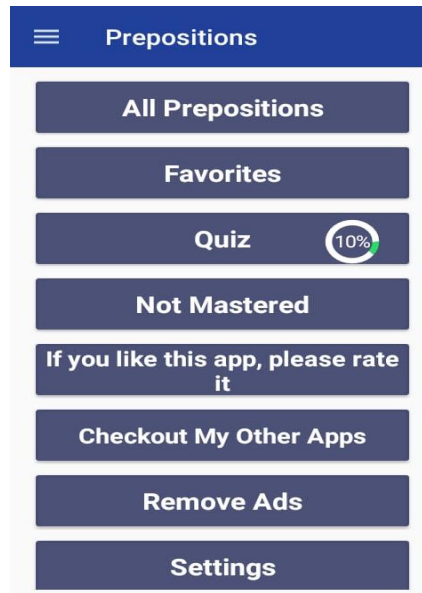
App information is given below:

Version 1.3

Updated on Apr 29, 2019

Offered by LittleBigPlay-Word, Educational & Puzzle Games

Released on Nov 9,2018



3.4.5 English Preposition Quiz

<https://play.google.com/store/apps/details?id=com.learzing.prepositionquiz>

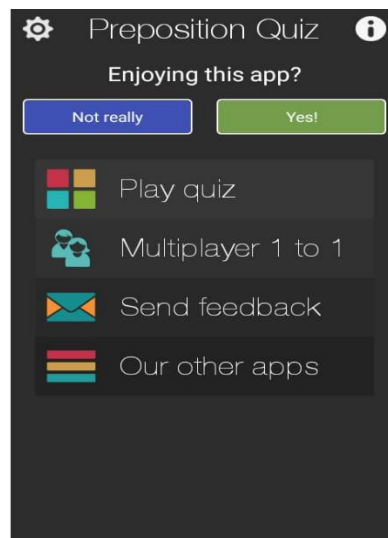
App information is given below:

Version 1.09

Updated on Jan 17, 2019

Offered by Learzing Company

Released on Jul 12, 2018



3.5 Procedure

After administering the pre-test and according to the result of test, participants of the research were non-randomly assigned between two groups namely controlled and experimental. The pre-test was conducted at the start of the study and post-test was conducted at the end of research. Each study practice lasted for ten days. Participants of the experimental group were taught by using AI based android apps and games whereas the participants of the controlled group were taught through traditional method of teaching prepositions. Different classrooms were used for both groups. At the end of practice, a same post-test was conducted for both groups in order to assess the learning of participants via using different tools. Researcher checked and saved the results of both groups and the data taken from them was measured through statistical analysis.

4. DATA ANALYSIS

The data collected through pre-test and post-test were analyzed to check the hypothesis of research. The results of both tests were analyzed using software MS Excel. First, the data of the pre-test and post-test for each group was inserted and analyzed to find the mean and standard deviation of the scores of each group.

4.1 Analysis of Collected Data

Table 1: Data of Controlled Group and its Results

| Sr# | Roll Number | Marks in Pre-Test | Percentage of Individual Student in Pre-Test | Marks in Post-Test | Percentage of Individual Student in Post-Test |
|-----|--------------------|-------------------|--|--------------------|---|
| 1 | 204 | 20 | 66.7% | 22 | 73.3% |
| 2 | 208 | 17 | 56.7% | 19 | 63.3% |
| 3 | 209 | 24 | 80.0% | 25 | 83.3% |
| 4 | 210 | 23 | 76.7% | 22 | 73.3% |
| 6 | 211 | 23 | 76.7% | 25 | 83.3% |
| 18 | 214 | 7 | 23.3% | 10 | 33.3% |
| 11 | 217 | 16 | 53.3% | 23 | 76.7% |
| 14 | 218 | 11 | 36.7% | 13 | 43.3% |
| 10 | 219 | 14 | 46.7% | 18 | 60.0% |
| 15 | 220 | 8 | 26.7% | 10 | 33.3% |
| | Average | 16.3 | | 18.7 | |
| | Percentage | 54.3% | | 62.3% | |
| | Standard Deviation | 6.25 | | 5.81 | |

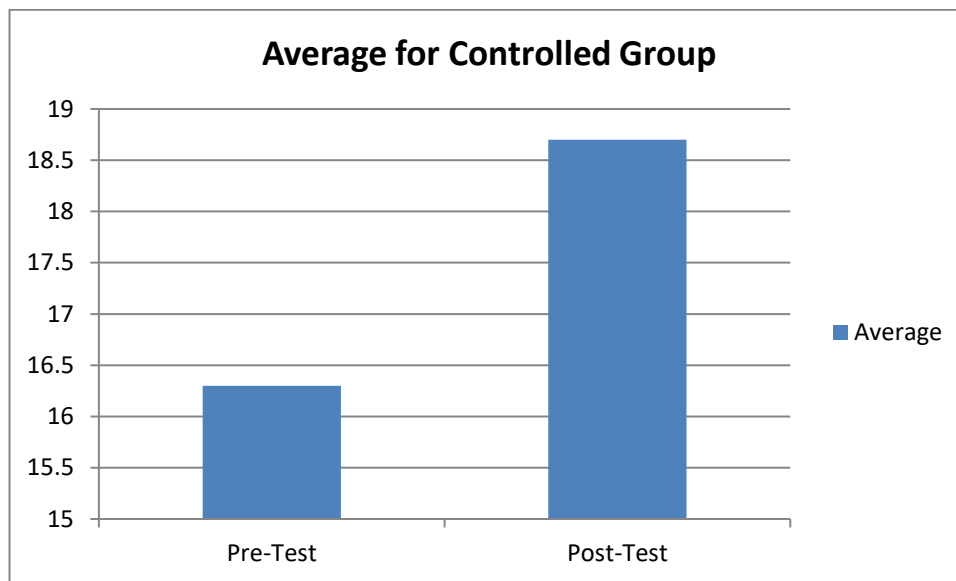


Figure 1: The participants of controlled group got 16.3 average score in pre-test whereas in post-test this group reached up to 18.7 average marks.

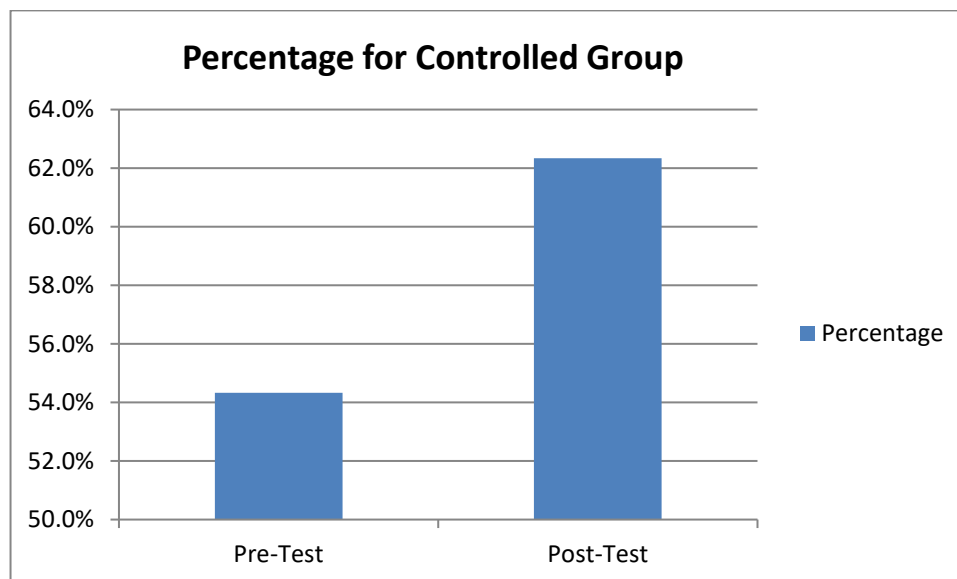


Figure 2: The percentage of controlled group was 54.3 in pre-test whereas in post-test the percentage of same group was 62.3.

Table 2: Data of Experimental Group and its Results

| Sr# | Roll Number | Marks in Pre-Test | Percentage of Individual Student in Pre-Test | Marks in Post-Test | Percentage of Individual Student in Post-Test |
|-----|--------------------|-------------------|--|--------------------|---|
| 1 | 201 | 14 | 46.7% | 20 | 66.7% |
| 2 | 202 | 10 | 33.3% | 19 | 63.3% |
| 3 | 203 | 16 | 53.3% | 27 | 90.0% |
| 4 | 205 | 9 | 30.0% | 23 | 76.7% |
| 5 | 206 | 23 | 76.7% | 28 | 93.3% |
| 6 | 207 | 18 | 60.0% | 23 | 76.7% |
| 7 | 212 | 23 | 76.7% | 20 | 66.7% |
| 8 | 213 | 12 | 40.0% | 17 | 56.7% |
| 9 | 215 | 17 | 56.7% | 23 | 76.7% |
| 10 | 216 | 13 | 43.3% | 20 | 66.7% |
| | Average | | 15.3 | 22 | |
| | Percentage | | 51.7 | 73.3% | |
| | Standard Deviation | 4.9 | | 3.50 | |

The participants of experimental group performed well on account of variable AI. This group obtained 15.3 average score in pre-test while performing better in post-test the said group clinched 22 average score.

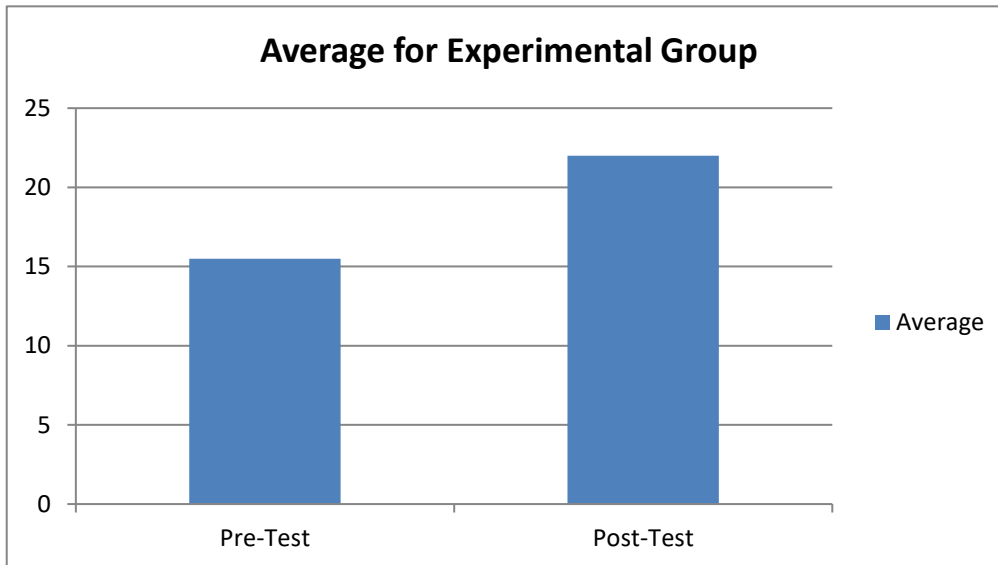


Figure 3: Graphical presentation of Average for Experimental Group

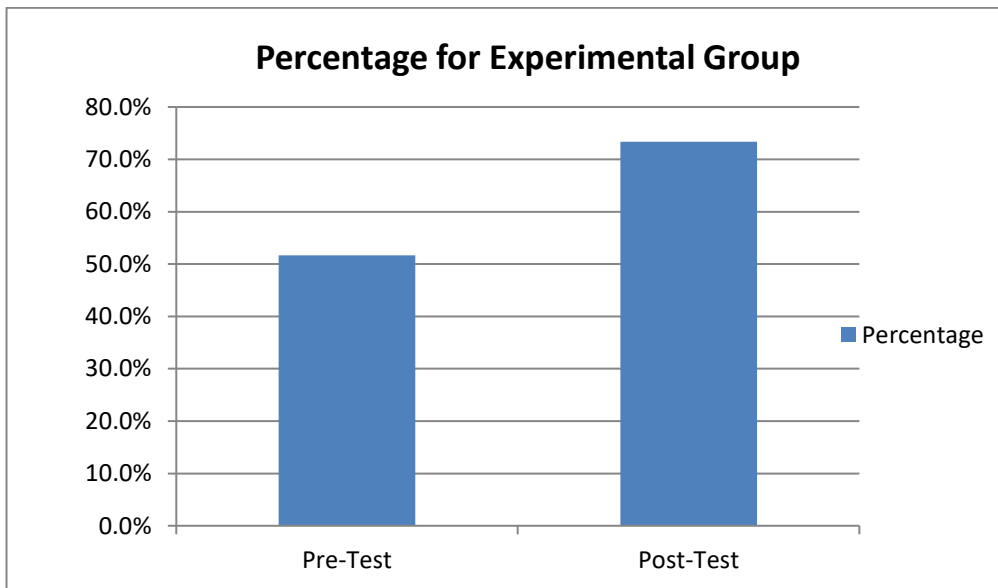


Figure 4: Graphical presentation of Percentage for Experimental Group

A significant difference can be seen between experimental groups and controlled in the obtained percentage of post-test. In pre-test, the percentage of controlled group was 54.3% and in post-test after teaching with traditional method it got improved little bit up to 62.3%. On the other side, percentage of experimental group in pre-test was 51.7% whereas teaching via AI android apps put significant difference in the percentage of post-test and it reached up to the high figure of 73.3.

4.2 Discussion

The objective of this research was to explore the use of Artificial Intelligence in practicing and learning of preposition at diploma level students of NUML Lahore Campus. Precising the results of present study, the researcher explored that there is a significant difference in post-tests' results of experimental and controlled groups by dint of applying the variable AI on experimental group. In the light of above result, it would be convenient for other researchers who want to conduct researches regarding multifarious dimensions of language. Applying the same AI approach for teaching the other aspect of language may be end with different results but the present study justifies the encouraging result regarding the integration of innovative methods in teaching field.

Miftahudin (2011), conducted a research to explore the use of song for improving students' mastery of preposition. Findings of his study exposed that teaching through entertaining ways is more effective than traditional methods of teaching. If amusement is provided in the curriculum, obviously, students take interest in their studies that directly affects the results.

5. Conclusion

5.1 Findings

This research has been conducted to explore and to raise awareness in the respect of using modern technology especially AI in language classroom. Further, this study was narrowed down on aspect of practicing and learning prepositions of English language as a second language learner. For second language learners, use of appropriate preposition is contemplated as a one of the toughest portion of English grammar because of language variations.

Conclusively, it can be said that use of AI plays a significant role in teaching prepositions. Students practice and learn prepositions as well as amuse themselves while accomplishing different challenging tasks. On the other hand, conventional method of teaching preposition is very slow learning method as well as creates boring and difficulties in mastering prepositions.

In the light of the findings of present research, it is found out that there is a comprehensible relationship between the uses of AI based android apps and development of preposition.

- Students pay less attention on learning prepositions of English language on account of conventional method of teaching prepositions.
- Language classrooms are not equipped with innovative materials regarding language learning instruments.
- Second language learners make irrelevant associations with prepositions due to excessive use of grammar translation method (GTM) in their classes.
- Students feel determined and amused in accomplishing different and complex tasks while practicing with AI based applications.
- Weak and non-focal students are a hindrance in the way of using homo-genius techniques in classroom.

5.2 Recommendations

- Traditional way of teaching prepositions is not up to the mark. Teachers should continuously change their strategies for teaching different grammar portions, like they can play an English song in which prepositions have been used appropriately.
- Language classrooms should be equipped with modern technology, so that students may be facilitated with AI based appliances in the respect of learning English as a second language.
- While teaching preposition, excessive use of GTM should be minimized. Direct method should be encouraged to clear the concepts.

- AI based preposition learning apps have interesting and challenging tasks which create a sense of self achievement in students. This is how they amuse themselves as well as learn better than the other students who are taught by conventional method.
- The issue of not paying attention, can be resolved through bringing innovations in classroom's environment as most of the time, it has been seen that weaker and non-focal students also participate effectively by dint of some new emerging techniques.

Remarks

Findings of this research lead the researcher to conclude that appropriate use of prepositions is not an easy job for second language learners. To get mastery in use of appropriate preposition multiple method of learning should be practiced. This study proves the hypothesis of researcher that use of AI in practicing and learning prepositions of English language plays an effective role. At the end of this study, researcher suggests that innovations and integration of multiple methods is necessary for better learning of prepositions.

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