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# Effect of Using Computer Assisted Instructions in the Form of Tutorial Mode (CAITM) on the Academic Achievements of Students at Elementary Level in the Subject of Pakistan Studies

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Computer assisted instructions in the form of tutorial mode play revolutionary role in education sector. By application of CAITM based learning tutorials students cannot only enhance their learning but also retain their learning for long time. The objective of study was to find out the effects of computer assisted instructions in the form of tutorial mode (CAITM) on the academic achievements of the eighth-grade students in the subject of Pakistan Studies. All the male and female students of FGEI C/G Schools of Khyber Pakhtoonkhwa constituted as the population of the study. Forty students of both genders of 8$^{th}$ grade were taken from FG Public School No.1 Risalpur Cantt as the sample of the study. The sample was then bifurcated into two equivalent groups through pair random technique by using bi-monthly test scores for this purpose. The Post-test Only Equivalent Group Design was used. Post-test was used as the tool for data collection. The collected data were then analysed and interpreted by independent sample t-test. The findings of study revealed that the participants of the experimental group performed better than that of the control group, which leads to the conclusion that computer assisted instructions in the form of tutorial mode (CAITM) played a significant role in academic achievements. Therefore, it was suggested that CAITM based learning program may be incorporated in schools with teaching methods and techniques at elementary level, especially for the subject of Pakistan Studies and Social Studies. The current study is conducted at elementary level in the subject of Pakistan Studies which revealed significant results. To explore in-depth understanding of the CAITM program, it is recommended that further studies may be conducted at divers' samples at different levels .

***Keywords*:** CAITM, academic achievements, Pakistan Studies, elementary level

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At present, most of educational institutions have been connected to computer technology (Odili, Adetona & Eneh, 2020). The development of computer technology in the field of education leads to the modern approaches of instruction which helps in reduction of teaching-learning issues (Sarker, et al., 2019). The problems related to the instruction in the field of education have become addressable due to the modern Computer technology (Misra, et al., 2016). The process of manipulation helps to integrate the computer technology with teaching learning process to accommodate the issues of educational sector (Amer, 2007).

The explorative studies have revealed that integration of computer technology in the field of education boosts up the teaching-learning program (Lawrence, & Tar, 2018; Aktaruzzaman, Shamim, & Clement, 2011; Ahmad & Nisa, 2016). The student-centred approach, cooperative learning skills and high order thinking skills of students can be enhanced by using computer technology (Haddad, 2003). Almost all developed countries of the globe, realizing the significance of CAI, have promoted the computer assisted instructional technology (Afrin, 2014; Ramani & Patadia, 2012). CAI based teacher training programs have been conducted to equip the teachers and instructors with modern computer technology (Uko & Ebute, 2013). According to Ibrahim (2012) computer assisted instruction in the form of tutorial mode (CAITM) helps in motivation of students. It also enables the students to convert the virtual approaches into practical forms. Due to this, they can be well motivated. Their comprehension level can also be enhanced with respect to subject matter (kabigting, 2020). Moreover, it improves the comprehension level of the students with respect to subject matter and facts. It makes the students relax and calm and do not force them. In addition to above mentioned facts, it is expected that, CAITM aided tutorials may improve success rate of the students, improve top order thinking skills of students as claimed by Fontana, (1993).

In Pakistan, Pakistan studies and social studies are being taught as core compulsory subjects from class one to tertiary level (Government of Pakistan, 2010). Pakistan studies help the students to learn about their history, economic system and socio-political condition of the country. It also makes them realize about the struggle, sufferings and sacrifices made by their ancestors and leaders to achieve the country. The subject material has been constituted on the basis of Quran and Sunnah and saying of the Quaid-e-Azam. The subject matter of Pakistan studies also familiarises them with the religion, ideology, norms, tradition and culture of the country (Tabassum, 2004).

To build up the conduct of the students, CAITM has been integrated with the subject of Pakistan studies. B.F Skinner had the opinion that individuals` participation and motivation levels might be strengthened by inculcating positive reinforcement (CAITM) (Dowling, Godfrey & Gyles, 2013).

Incorporation of computer assisted instruction in form of tutorial mode (CAITM) in teaching Pakistan Studies and other social disciplines have a significant impact on the performance of students and learners. Hard and complex issues and concepts can be comprehended easily by adopting computer assisted instructions in the form of tutorial mode (CAITM). In integration of audio-visual aids with CAITM program

helps the students to understand different concepts related to history and ideology of Pakistan, land and resources, political condition and geo-importance of Pakistan (Watson, Gemin, Ryan & Wicks. 2009).

The above-mentioned discussion has instigated the researcher to investigate "the effect of using computer assisted instruction in the form of tutorial mode (CAITM) on the academic achievements and retention level of students at elementary level in the subject of Pakistan Studies".

**Literature review**

Since the development of modern exploration and innovation, human social and political life is being influenced day by day. Learning process is also influenced by these novel technological developments (Salmon, 2004).

It has been seen that speedy development in the field of instructional technologies in late 1990s, not only changed the learning content but also changed the traditions related to teaching-learning processes to a greater extent (Pishva, Nishantha & Dang, 2010; Aliasgari, Riahinia & Mojdehavar, 2010). Instructional technology encompasses all legitimate and dependable applied educational sciences which lead to the development of educational systems and procedures gained from scientific study and in a given context (Ishtaiwa, 2006; Bakaç, Tasoglu & Akbay, 2011). Danjuma (2015) explains that modern instructional tools may be inducted to endorse more drives of learning environment in order to integrate technology in educational sector. Students and teachers can take assistance for the educational tasks and assignments.

Computer assisted instruction (CAI) has performed a pivotal role in educational development procedures that results in exclusive alteration in the traditional teaching practices (Kara & Yakar, 2009; Rouse, 2007). Technological use in different institutions for instruction by incorporation of CAI tools has dominated the whole learning process (Hall, Hughes & Filbert, 2000; Romeo, 2008).That is the reason Gambari (2003) explains that the potential paybacks of Computer Assisted Instruction (CAI) may not be taken as too trivially in the advanced globe. Noticeable reality has been observed that CAI increases the students` learning capacities with respect to comprehension level; therefore, the use of computer assisted program should be built-in in academic settings of educational institutions.

Gambari (2003) has perception that modern research endeavours explicit that modern computer technology has the capacity to revolutionize the educational sector. The student-based learning perception could be boosted up by utilizing the CAITM tools which can improve the creative thinking skills of the students very easily (Vandewaetere, Vandercruysse & Clarebout, 2012; Hendikawati, Zahid & Arifudin, 2019). To develop the CAITM approach, it is needed to integrate these programs with teachers` training sessions so that they can equip themselves to counter the modern challenges (Haddad, 2003). Various developed countries of the world take the initiative to educate their teachers and mentors, so that they can be able to utilize CAITM based tutorials and make their pupils convenient while teaching them (Uko & Ebute, 2013; Cheng, 2021).

The tutorials mode of Computer assisted instructions performs a very crucial role from KG level to tertiary level (Van Daal & Reitsma, 2000). These not only educate and demonstrate concepts but also remediate mistakes of the learners (Kara & Yakar, 2009). Creswell (2003) revealed "some program enabled the students in learning fundamental spectacle words and skill of phonics". Similarly, some additional program such as increased fluency, word-prediction, and story-prediction may also be improved (Gunadi, 2012). The effectiveness of CAITM based tutorial might be used for academic projects, community projects and other educational projects.

While working with CAITM tutorials, students feel no restriction. They carry on with complete freedom. They never feel bored and upset. This is because of their involvement in the learning process (Tabassum, 2004). Usually, students learn the things by themselves with entire liberty and feel happy (Watson et al., 2009). The tutorials of CAITM have been designed in such a way that students do not need a teacher. They become teachers of their own (Pagram & Pagram, 2006). In the same way, computer assisted instructional tutorials have been designed in such a way that students keep themselves connected to the program. These tutorial-based activity always keep the students well motivated and to be on right path. If students commit a mistake, the tutorials help them to re-correct themselves by their own (Frederickson, Reed & Clifford, 2005).

The CAITM based program get the learners actively involved in instructional activities. They also help them to be interactive with their fellow students. Students may be able to solve their issues related to the subject material (Morris, 2001). The CAITM assisted learning tutorials encourage the pupils to develop critical thinking minds with analytical approach (Eom, 2012).

According to Akour, (2009) Watson was the founder of behaviourist school of thought. He believed that behaviour could be measured and can be changed. According to Dowling et al., (2013) the positive reinforcement plays a pivotal role to keep the students in touch voluntarily. The CAITM program may do the same. Computer based tutorials, ppt presentations, Educational videos, live examples and internet provisions are all positive reinforces which help in strengthening the desired behavior of students.

Classical Conditioning is a behavioural theory which focuses that how an individual learns, that how to move a response from one stimulus to a previously neutral stimulus (Kareem, 2003). According to Boud and Middleton (2003) Pavlov disregarded the cognitivists` sight of learning and said that fundamental learning principles are same for the animals and human beings. Computer assisted instruction in the form of tutorial mode (CAITM) is a learning technique that can provide assistance to the teachers to condition the learning tools for effective learning.

From the above discussion it has been revealed that CAITM tutorials have strong theoretical and empirical basis that can help students to save their study time and help to prepare their assignments and examinations (Selim, 2007). Hence the current study was entitled to investigate the effect of using computer assisted instructions in the

form of tutorial mode (CAITM) on the academic achievements of students in the subject of Pakistan Studies at elementary level.

**Objective of the study**

The objective of the study was;

i. To find out the effect of CAITM on the academic achievements of the eighth-grade students in the subject of Pakistan Studies.

**Hypothesis of the study**

H0 1: There might be no substantial variation between the mean scores of both the (CAITM based) experimental group and control group on academic achievements.

**Significance of the study**

The study may be very substantial for the teachers, educators and students. Teachers may be inspired by the study findings to engage their students throughout the teaching sessions and also enhance their motivational level. It might be very helpful in shifting the workload of teachers to Computer assisted tutorials and make their job convenient. Students may also own whatever they learn through CAITM based tutorials. The learning through CAITM based tutorials may have a long-lasting effect. The study might be helpful for the future researchers and explorers who are interested in this field. Educational policy makers may also take assistance from the research findings.

## Method

This section consists of method and procedural part of the research study which was adopted by the researcher. Additionally, it elaborates the population and sample of the study, collection of data, analysis of data and the adopted procedure for the research study.

**Population**

The population of the study consisted of all the male and female students studying Pakistan Studies at elementary level in FGEI C/G Schools of Khyber Pakhtoonkhwa.

**Sample**

From FG Public School No.1 Risalpur Cantt, researcher selected forty male and female students of $8^{th}$grade as the sample of the study. The researcher further divided the proposed sample into two equivalent groups (experimental group and control group) on the bases of first bi-monthly test by using pair random sampling technique.

**Design**

The nature of the research study was experimental which involved two groups, experimental and control group. Farooq (2001) considered that post-test only equivalent group design would be appropriate to appraise the significance of the treatment which involved two equivalent groups such as experimental and control group. Therefore, the researcher adopted the post-test only equivalent group design for the treatment of data to measure the effectiveness of CAITM.

**Research instrument**

With proper consultation of supervisor and subject expert, the researcher developed post-test as a research tool. Before going through the research experiment, the research tool was pilot tested. The teacher made post-test research tool was developed by the researcher with the consultation of subject experts and supervisor. The research instrument was pilot-tested before conducting research experiment.

**Procedure of the study**

Two teachers were selected to teach both the sample groups of students to conduct the research activity. One experienced subject specialist teacher was selected for control group. The experimental group was treated by the researcher himself. The students of experimental group were taught through CAITM based method whereas, the students of control group were taught through conventional lecture demonstration method.

CAITM based learning activities were based on thirty power point presentations lessons. Each ppt lesson consisted of text selected from the Pakistan Studies text book of $8^{th}$ grade. All ppt lessons were installed in lab computers before start of activity session. The students were exposed to each lesson per day. They had to follow the given instructions regarding the CAITM programme. They had to open the programme and read the text. At the end of reading they had to solve MCQs section. Each MCQ had four possible options. Despite of one correct option, other options were hyperlinked with some extra information. If a student marked the incorrect option the CAITM programme would keep him on right path with some extra information about the marked option. In the entire activity, teacher kept himself in background as a supervisor.

The treatment of the study continued for six weeks. Experimental and control groups were exposed to same course of content at the same time in separate classrooms. Post-test activity was conducted after the completion of projected course. Data was gathered from both the groups for further treatment.

## Results

After organizing the collected data, the researcher used statistical tools such as mean, standard deviation and independent sample t-test for data analysis. To measure the overall performances of the respondent groups, mean scores were calculated. For the measurement of difference between the experimental and control group, independent t-test was administered. The value of probability (p) was 0.05 for testing the hypotheses.

**Table 1**

*Significant difference between the mean scores of post-tests of Experimental and Control group*

| Group | N | M | S.D | S.ED | t-test | D-Value |
|---|---|---|---|---|---|---|
| Control Group | 20 | 53.55 | 3.05 | 1.06 | 9.05 | 3.26 |
| Exp Group. | 20 | 63.50 | 3.53 | | | |

The inferential analysis of table 1 depicts that the elevated calculated values at 0.05 level of significance fall in favour of experimental group. Further the effect size of the treatment, 3.26 was also very high which shows a very high variation between the two means. Therefore, null hypothesis is rejected. It is revealed on the bases of appraised facts that there is a significant difference between the mean scores of experimental and control groups. The computer assisted instruction in the form of tutorial mode had a substantial effect on the academic achievements of the students as compare to the control group.

## Discussion

$H_0$1: The elevated t-value, 9.05 than table value, 2.042 at 0.05 level of significance, confirms the rejection of null hypothesis and favors the acceptance of the differences among the two groups caused by the application of computer assisted instruction in the form of tutorial mode to experimental group. Likewise, the elevated mean score (63.50) in academic performance of the experimental group supports the application of computer assisted instruction in the form of tutorial mode. This result of the study falls in favours of other studies like the findings of Van Daal & Reitsma (2000), that the tutorials mode of computer assisted instructions performs a very crucial role from KG level to tertiary level in academic performance. Further, good academic performance caused by the less mistakes in the tutorial mode of computer like the findings explored by the Frederickson, Reed & Clifford, (2005) that if students commit a mistake, the tutorials help them to re-correct themselves by their own. Their good performance may also be caused by critical thinking as explored by Eom, (2012) that The CAITM assisted learning tutorials encourage the pupils to develop critical thinking mind with analytical approach.

### Conclusions

The post-test scores revealed that the participants of the experimental group performed better than that of the control group, and support of empirical studies is an indication of the effectiveness of computer assisted instruction in the form of tutorial mode (CAITM) in the subject of Pakistan Studies at elementary. Both male and female participants of the experimental group performed well as compared to the control group on the post-test scores which was a noticeable sign that CAITM had a significant effect on students` performance in the subject of Pakistan Studies.

### Recommendations

The following recommendations were made on the basis of findings and conclusion of the study:

1. The study showed that the computer assisted instruction in the form of tutorial mode had a significant effect on the academic achievements at elementary level. So, it is suggested that computer assisted instructions in the form of tutorial mode may be in incorporated in teaching learning process at elementary level schools.
2. Application of CAITM based program had confirmed considerable results in the subject of Pakistan Studies. To explore more credibility of CAITM, it is therefore, recommended that this technique may be applied for teaching of other subjects.

3. The CAITM based teaching program was executed in well-equipped computer lab which made the students well motivated and involved. Their performance revealed the fact that well equipped computer lab is essential for every school. It is therefore, suggested that well equipped computer laboratories would be installed in every elementary level school.
4. The study was carried out at elementary level students. The results were significant. Thus, to explore in depth understanding of the CAITM, it is suggested that this teaching learning program may be launched at secondary and tertiary-level.

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