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Effect of ICT Equipment and Teaching Resources on the Academic Performance of Grade IX Public Secondary Schools in Karachi

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ABSTRACT

Secondary public schools in Karachi were facing the problem that they did not have resources of teaching in their computer labs due to which student suffered and their academic performance was affected. Teaching effectiveness depends upon the resources of teaching or ICT equipment such as lack of computers in computer laboratories. Internationally, research proved that the importance of ICT equipment and used of ICT can enhance the academic performance of public school students. MS Word, MS Excel, PowerPoint and computing practices are some of the tasks in computer laboratories. It is also believed that public school student's achievement rate could be increased to improve the results. The purpose of this study was to augment the importance of computer usage in public schools and integrate it in teaching. Effective teaching could be done by the ICT. Teachers of public schools in Karachi somehow are not aware how to integrate teaching through ICT training session for effective academic performance. The method of collecting sample in this research was qualitative in nature. During the survey of the study, participants were asked questions. The study was carried out in Major Ziauddin Din Abbasi Secondary Public School. Data was collected and used for analyzing. Sample size for students was 20, while teacher's sample size was 40. Out of 40 teachers, 19 teachers were from Public schools and 21 teacher from private school. There were two variables in this research; one was independent variable which was equipment of ICT and rest results and performance of students dependent variable. The study focused on the fact that If ICT equipment were available in computer school computer laboratories, effective teaching would be done as it would enhance the student's academic performance. In case of unavailability of ICT equipment, neither effective teaching would be done nor the student's performance would be increased. If one thing increased, the other thing would increase or if one thing decreased, the other thing would decrease too. In this study, the researchers found out the relationship between the ICT equipment or teaching resources in computer laboratories and how they affected the student's academic performance and effective teaching. This study revealed that there was significant relationship between ICT and students' academic performance. Both students of secondary public school and teacher of both public and private sector confirmed that ICT has a direct effect o students' learning skills. Training sessions regarding ICT could also be done for both students and teacher for integration of ICT in education.

Introduction

Oseghale & Ojogho (2014) researched on computer literacy rate and the impact of the literacy rate on student academic performance in senior secondary school. They concluded after the comparison between computer literate students and non-computer literate students. Those students who were computer literate were far better than non-computer literate students were. There were several reasons behind that finding. They suggested used of computer facilities for valid educational purpose. There were some cases of misuse of computer, for student's academic performance and students should be aware how to use ICT for their better academic performance. Teacher should guide the students about the utilization of computer. Oviawe, Oshio (2011) say that effect of ICT on both teaching and learning performance of students in universities is significant. Use of computer not only affects the student's learning performance, but also affects the teacher effective teaching. They concluded that ICT plays important role for effective teaching. Maximum utilization of ICT in universities is the ultimate choice. Effective teaching would only be done when the teachers were-well trained and know how to integrate ICT in their subject.

Olusesan Adelabu , Emmanuel Adu (2016) concluded that if you want to improve teaching facilities, you must enhance the ICT equipment provided teacher and students know the use of ICT facilities and lack of these facilities can affect the learning. They accepted the importance of ICT in teaching and the focus on the facilities of computers in computer laboratories. Ambrose & Oshio (2011) state ICT has greater importance in effective teaching. We need to train our teacher through ICT training program for effective teaching. Without ICT facilities, effective teaching and learning could not be done. Tella (2011) said use of ICT affects education.

Statement of the Problem

In public schools, lack of ICT equipment can influence the student's academic performance. Teacher are generally not trained how to use ICT equipment. Because of lack of equipment, students suffer badly. They do not perform well. I the 21st century, school students and teacher should be aware of the importance of ICT and its use for improving learning skills so they could earn through freelancing. ICT can open many remote job options for students to generate their income. They can even perform any part-time typing job in any office as data entry job. Not being able to implement ICT in schools affects the student's performance. Previous researcher proved that ICT has great influence in effective teaching and impact on students' achievement. It develops skills, searching their topics and demonstrates and drafts.

Research Question

- How teaching resources/ ICT equipment of computer laboratories affects the academic performance of Grade IX public secondary public school?
- What are the performances of public secondary public school Grade IX students that have poor ICT equipment in their computer laboratories?
- What factors affect student's academic performance of Grade IX public secondary school students if ICT-based facilities lacked?

Justification of the Study

The teaching resources in computer laboratories improved the academic performance of Grade IX students. Grade IX students select the subject of computer science in the ninth year of their academic studies. This is their academic specialization with major in computer science. The study focused on the act that if all Grade IX students were given proper attention, resources and facilities, they could resolve the academic challenges.

Scope of the Study

Teachers of public secondary school in Grade IX teaching computer science are the direct beneficiaries of the study as they integrate their subject by the help of ICT equipment and make the student's foundation strong by performing and guiding them about the use of computer applications. Students of the same class are also direct beneficiaries as they can learn and improve their skills and know the use of the application. Similarly**,** parents ware also able to benefit from the study as they would get the first-hand knowledge of the ICT and can guide their children. Public schools publishers publishing reading materials for Grade IX can also benefit from the study.

Delimitation of the Study

Research revolved around one district only in the cosmopolitan city of Karachi. It did not include private schools for research questionnaire. Not all public schools were included in this study. Karachi was divided into these districts: Korangi, East, West, South, Central, and Malir. The study focused on District Central. District central has a very large population of public secondary schools. Public schools were divided into three categories including public primary school, public secondary school and public higher secondary schools. This research was only for public secondary school. Some schools were not equipped with ICT facilities of computers in their school's computer laboratories. They all belonged to Grade IX public schools.

Significance of the Study

This study would enhance the academic performance of students. Students from Grade IX could earn from substantial amount of money. Computer Science was the part of curriculum. The main purpose of content maker was to develop ICT skills in the learner.

Review of Literature

Computer literacy rate affect the student's performance. Computer literacy can impact student’s performance. They prove that computer literate students perform better than computer non-literate students do. (Aitokhuehi, Oseghale, Ojogho & John (2014). ICT can play significant role in the effective learning and teaching. If teacher were not trained, they would not be able to enhance their teaching methodology so we could say that ICT affects both teaching and learning performance and ICT facilities should be provided (Oviawe, Oshio, 2011). Lack of ICT facilities in the universities influences teaching quality too. This indicates the importance of ICT equipment and teaching resources (Adelabu, Adu, 2016). The lack of resources of ICT minimizes the use of ICT (Adeyinka 2011).

The cost of ICT equipment as computer cost was high and electricity, internet availability were the challenge of ICT deployment during COVID-19. This showed the cost on deployment of ICT equipment in public universities. The major factor was that those created huddle in the deployment of ICT equipment. The management in this case did not provide the right equipment. Specific areas in computer MS Word, Excel, PowerPoint, and computing enhance the higher academic performance. Teacher should focus on intervention program in the said areas of computer. This result shows the effect of MS office on student's achievement. This statement was similar to the point of view that MS Office was the base of computer whenever you learn computers. Good command of MS Office would provide you to do job in any offices or even remote job.

Pakistan is a developing country and is facing problem in integration of ICT in schools. Students interest show positive effect in ICT and improve their academic performance. GDP was the main

factor that has impact on ICT equipment in schools in almost all the cases. Student's interest and availability of resources affect student's learning. This study shows the importance of ICT and identifies the problem facing in ICT equipment placement in schools. This study also accepts that the rate of academic performance of students depends on the ICT equipment in the form of computer and software available in computer lab. Digital Education in school prove that ICT has influence on the student's performance. Juhanak et al., Zounek et al., Zaleska et al., Barta et al., & Vlckova et al. (2019). Virtual classroom like online class conducted by Zoom provides screen-sharing option to all participants so teacher can easily teach and check the student's hands-on practice digitally.

Secondary School student's performance increase when computer laboratories are well equipped and used for the student learning. This show that resources should be available in computer laboratory for better academic performance. Experts say that this statement proves that objectivity is essential for the development and enhancement of ICT in schools and colleges across Pakistan. A computer laboratory equipped with latest applications and software means that presence of computer and their use in practice increase the student's performance.

Research Methodology

Qualitative technique was used to design the research. The survey was based on the qualitative questionnaire. Questions were qualitative in nature. Questions were asked to both students and teacher, in order to understand the problem. The nature of questions asked by the teachers were based on their personal experiences and the challenges they faced during teaching.

Target Population

Students were the actual population in this study. All the students were enrolled in Grade IX. All students were in public secondary school and they did not have enough resources for performing computer Grade IX practicum. They partially relied on theory.

Sample and Sampling Techniques

Population size was 20. Students with different socio-economic background with difference in physical appearance, difference in mental and educational skills were in the sample. All of them were students of a public school in Karachi.

Ethical Considerations

Legally, the study considered all the ethical and legal aspects including the APS manual 7 suggestions on ethical aspects. The legal and ethical approvals were sought from the concerned quarters. The head of the public schools were informed and their consent were obtained legally. The survey was conducted per the rules and regulations. After the approvals and legal permissions, the researchers commenced their official tasks.

The data was collected voluntarily and no art of the study was aimed at harming the social, moral and ethical values of the participants. Its purpose was only educational in nature to create awareness and the importance of ICT equipment in education and their significant impact on teachers and learners. All the students were informed about the survey and they were satisfied with the survey procedures. The students were informed that they could participate in the survey voluntarily. The report was confidential and the researchers did not disclose the name of any students. The questions only related to availability and lack of computers in their secondary public school computer laboratory. Any question that not related to the research or outside the context was deleted or corrected per the research questions. All the students in this research were

volunteer. Similarly, teacher in this survey were volunteers too. Researchers collected data after getting their permission. The views of both students and teacher guided the study.

Data Analysis

The process of data collection is described here including how the data was processed and analyzed. Research questions answered by the grade IX students were analyzed. Focus was on the insufficient teaching resources of ICT equipment in secondary public school and their impact on education. The purpose of the qualitative questions was to understand the effect of academic performance on ICT equipment for Grade IX computer students. The data was be free from any bias and error. Data was collected within the limited timeframe. Data was analyzed in the pie chart form. Similarly, student's view in this research played crucial role to identify the importance of ICT in their academic performance.

Summary of the Study

Each section was studied and analyzed. Section 1 covered the background of the study to understand the problem. The purpose of the study was divided into two parts: 1 general purpose ii) specific purpose. On the basis of study conceptual framework, the study got the right direction. This led to the scope of study and define the significance of the study. The review of literature focused on the topic from many perspectives. Many responses did not accept the importance of ICT for the development and enhancement of computer science students' performance using ICT equipment. On the other hand, some of them accepted and agreed to use it in the classroom. Research found that the lack of ICT equipment in the computer laboratories were not functional. The study found the gap in the literature that should be covered. Section 3 was about the design of research that was qualitative. Google form was used for survey for both teachers and parents. The study population was Grade IX secondary public school. Section 4 was about data analysis.

Findings of the Research

The findings from qualitative questionnaire from teacher's perspective reveal teacher faced many issues and challenges. Assessment criteria for academic performance of students was grading system. There was no sufficient funds for up gradation of outdated software. Teacher used ICT for their lesson planning, but they wanted training session about integration of ICT in their lesson. Teachers believed that through multimedia presentation, student's academic performance could enhance to show the relationship between ICT and academic performance. This could be augmented through the use of worksheets. From student's perspective, their school's computer laboratory is functional and they do their practicum in the laboratory, but due to fewer computers in laboratory, they have limited access. Tis caused the students in Grade IX to perform low. They did not have the chance to hands on practice that affected Grade IX students' academic performance. They select computer science subject in Grade IX as their own desire. Students in grade IX take ICT simplify because of their own priority. On the other hand, students believe ICT distract their focus in some of the subjects because it was their parents' decision. Other resources of teaching not evenly distributed in the school teachers were not encouraging them to use ICT.

Conclusion

The study was carried out in the context of research direction with regards to ICT use in public school Grade IX students. The study was a survey-based research output. There was a significant relationship between two variable that was academic performance and ICT equipment. Academic performance depends on ICT equipment that was independent variable the research. Both students

and teachers agree with this point. 55% students agree that ICT affect their academic performance. 40% teacher agree to upgrade the ICT equipment. The teacher training to achieve academic goal through ICT is crucial. 32.5% teacher accept that there is a need of teachers training session for integration of technology in education. 62.5% teachers think students engagement significantly improve. 55% teachers accept the research point that they faced challenges during teaching because of insufficient ICT equipment. 37.5% teacher used educational software for effective learning 27.5% used multimedia presentation.

75% used ICT equipment on daily bases. Their computer laboratories were functional. 95% students confirmed the availability of computers in their public secondary school laboratory. 75% students accepted that ICT tools help them to understand their lessons. 65% said ICT helped them increase complex topics. i0% said to make lesson engaging through ICT. Public secondary school have lack or fewer computers that affect student's academic performance. 45% students agree with this point. 20% mentioned electricity issues and 15% agree with limited access due to minimum number of computers. 65% students select computer science subject in Grade IX in this public secondary school that was their own decision. 25% students agree that they want to become software developer in their future. This statement supports the research objectives. 70% students felt other resources were not provided in due course of time. 55% students want encouragement from their teacher in the used of ICT tools. 25% students think teacher gave them ICT based searching task that enhance their educational skills. 55% students have facilities of ICT equipment at their home. They just need proper guidance and awareness. The use of technology in their education is essential. They not only learn and increase their academic performance, but also provide job as they excel their skills in their core basic subjects.

Online resources most common was YouTube tutorial. It helps students in their learning. There android mobile phone has some applications of word processing. Moreover; Google account provide Google docs for students and could perform their practice sessions too. Google Docs and spreadsheet of excel could also be used for practicing. Need to be explore resources and training session for both teachers and students. To increase academic performance and utilization integration of technology in education.

Recommendations

Policy provision is required to develop the skills and knowledge of Grade IX students. This can be done through developed skills like collaboration and critical thinking practices. Their test score and grade show their academic performance. Interactive multimedia presentation is recommended to grab the student's attention. Teachers can collect many educational software and download them to make the classroom environment interactive worksheets through which student's formative assessment can be done. It is also recommended that Grade IX computer science students select this particular subject for higher education excellence too. They can be more interested in the professional setting of jobs too. Most of the students have home-based access to ICT equipment, but their teachers do not encourage them. It is recommended that teachers encourage them to use more ICT resources at home whenever and wherever possible. They are advised to explore the topic on internet through YouTube channel and learn something new about topic. Grade IX students must know the logic behind the application that can build their knowledge.

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