

Impact of ICT on Academic Achievement of Government Secondary School Students in Quetta City (Chiltan Town)

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Abstract

The impacts of ICT on academic achievement of students have been topic of great interest during the last two decades. Many researches have been conducted on ICT and on its impact. (Kulik, 1994; Sosin et al, 2004; Fushs & Wossman, 2004; Talley, 2005). The objective of the study was to find out the impacts of ICT on academic achievement of Government Secondary School students. For this purpose, 10 Government Secondary Schools, 116 participants, (teachers) & results of 100 students from the same schools were randomly selected. In order to collect the data questionnaire was developed, data was statically analyzed with correlation coefficient. The research finding brought out that ICT has positive impact on student's academic achievement. The outcome of the research and there inference have been discussed, and recommendations for further research studies have been provided.

Key Words: ICT (Information & Communication Technology), student, academic achievement. Quetta.

Introduction

The importance of ICT in education is undisputed globally. Recent work is about the impacts of ICT on academic achievements of Government Secondary Schools of Quetta City (Chiltan Town). Huge investment in the field of educational technology has been taken place in Government Sector of Quetta City, but the progress has often been disappointing. ICT is an integral part of both teaching learning process. One of the major benefits of ICT is an open access to the knowledge for the students of poor and under developed areas, like in different parts of Quetta City. But unfortunately access to these technologies is beyond the bonds of possibilities in majority of Secondary School of Quetta City.

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Educational technology has changed pedagogical techniques in many ways. These teaching techniques are now shifted to more student centered method rather than teaching centered techniques. New discoveries & researches has made use of ICTs inevitable, yesterday skills & outdated technologies are not meeting the needs of tomorrow's world.

In Pakistan, especially in the Balochistan, province of low literacy rate needs more access to modern technologies to meet the world challenges. Students at secondary level needs more detailed information. Woefully, in most of Government Secondary Schools in Quetta their lack access to knowledge and technologies which hinders the participation of students & teachers in the developmental process of life.

Integration of ICT in education provides proper way to redesign the educational system to all levels, thus leading to quality education for all. These technologies equip students for better learning & constructive use of knowledge. In Secondary School, those teachers who uses ICTs in their classes, their students' scores much better than those who do not. In majority of schools, IT is limited as a subject (ICT) only which is not much beneficial to strengthen education in increasingly digital work place. European Commission is promoting the use of modern technologies. E- Learning plan, "to improve the quality by facilitating access to resources and services as well as remote exchange and collaboration" (Commission of the European Communities, 2001, 2).

In this scenario, a study was carried out on ICT, a way to empower both teacher and student at Government Secondary School level in Chiltan Town of Quetta district. It is necessary to equip classroom with ICTs resources in order to enhance the learning opportunities for students. ICT not only focuses teaching-learning process, it also impacts quality of education, academic achievements of students, accessibility of education and improve educational standards for all which is the United Nations main objective. "Education for all". Integration of ICT in education provides proper ways to redesign the educational system at all levels, thus leading to quality education.

ICT as a tool of teaching learning process empowers both teachers and learners to develop their cognitive skills. ICT is very important for the present knowledge era, it provides platform for student's inquiry and helps in absorption of knowledge. The use of ICT in education has shifted it to more interesting approaches of learning and brought it to more constructive site, which plays an important role in student's achievements. According to Kofi Annan, the former General Secretary of the United Nation, ICT helps to

achieve the aim of Universal Primary Education by 2015; since it can take learning beyond the four walls of the classroom”.

Problem Statement

In recent years, several studies have highlighted the potential benefits and positive impacts of ICT.

However, Government has invested massively in ICT, the progress is still disappointing. There are many challenges that affect the application of ICT in schools of Quetta, especially in Government Schools. Cognitive ability is a strong indicator of academic achievement of students; Secondary level is an important stage of learning for students. They need more comprehensive information at this level. In majority of schools there is lack of resources and space, lack of ICT skills along with some schools with lack in ICT training and maintenance of the equipments. All these barriers are hindering the way to success. Students don't show much improvement due to poor implementation of educational technologies. Keeping in view the present situation, the study was carried out to highlight the major challenges in implementing ICT in schools and potential benefits of educational technologies and its impact on academic achievement of Secondary School students.

Objectives of the Study

The objectives of the study are:-

1. To find out the impacts of ICT on students academic achievement at Secondary School level.
2. To analyze that ICT as a tool for teaching learning process can influence student's achievement.
3. To find out the relationship between ICT and academic achievements of student's at Secondary School level in Quetta City.

Research Questions

The following are the research questions to guide the study.

1. How does ICT impact student's academic achievement?
2. How does ICT as a tool for teaching learning process can influence student achievement at Secondary School level?
- .3. Is there any relationship between ICT and students academic achievements?

Literature Review

Information and Communication technology is the most significant element that has impacted every aspect of human race. Related literature has been reviewed to understand the impact of ICT on student's academic achievement. Communication technologies are major catalyst to change, making potent alteration in our surroundings. These modern technologies have brought valuable changes in working conditions, sharing information, teaching techniques, new approaches in learning and most importantly in research. According to Daniels (2002) "ICTs have become within a very short time, one of the basic building blocks of the modern society". One of the major benefits of ICT is the revolution brought by the communication technologies in educational sector, which has impacted all the techniques in educational methodologies by providing wider possibilities to the students and teachers to improve themselves. According to Watson's (2001) "ICTs have revolutionized the way people work today and are now transforming education system".

Most of the studies have shown significant impact of ICTs on students' achievement (Fuchs and Woessman, 2005; Talley, 2005). Incorporated ICT teaching – learning process is one of the major priorities of educational institutions. Pakistan as a developing country has also grasped these technologies in academic institutions to enhance learning and student achievement at different educational levels.

According to famous study of Kulik's (1994) research studies, "students with computer based instructions scored better than those without computer. Student gains more knowledge in less time because the class became more enjoyable and interesting after the computer instructions". But it is very important to see how these technologies should be used for effective learning and enhancing student's academic achievement. "Proper implementation and use of these technologies with ICT trained teacher can not only empower teachers and learners but will also transform teaching – learning process from teachers centered to student centered, and this transformation will result in an increased learning and high academic achievements of students at Secondary School level".

Lav and Yuen (2014) study revealed the use of technologies and its validation in education for the students. According to the study these major elements are very important, assessing information literacy, internet literacy and computer literacy all these are parts of ICT, which shows importance of technology in education. Effective implementation and proper use of technologies with ICT trained teacher cannot only empower teacher and learner but will also transform teaching learning process to centered techniques. In this

transformation with result in an increase learning and high academic achievements of the students. "So far, economic research has failed to provide clear results on the impacts of ICT on student's achievement". (Saqib Khan, Irfan Ullah Khan, Vol.5, No. 1, 2015 pp. 85-94).

"Coates et al. (2004) surveyed and found no specific difference in the result of both groups of students using with and without ICTs. Even those without ICT instructions got 15% higher marks".

According to "Leuven et al. (2004) there are no evidence of relationship between increased educational uses of ICT in student's performance. Regardless of all this, there are also some challenges regarding ICT integration in education system which can negatively impact student's academic achievements for example lack of resources, no proper maintenance, poor ICTs skilled teachers with no ICT training and un-cleared Government policies on ICT integrated educational system. This means the integration of ICTs at different educational levels and different types of education is very challenging.

Despite of these challenges and limitations, information and communication technologies provides good standards of education. ICT encourages new ways of learning to be explored by the students and teachers. The basic aim of this study is to find out the impact of ICT on academic achievement of Government Secondary School students in Quetta City. Every educational level has its importance but secondary level is the most crucial stage for the students. They desire for new and improve learning. Student needs detail information related to their subjects along with text books. Educational technologies provide more detailed, flexible and self learning according to the student's mental level irrespective of place and time.

The integration of ICT in education system can enhance learning and cognitive abilities of students which can be a strong predictor of student's academic achievement.

"In Europe, appropriate use of ICT in school education is considered a key factor in improving quality of educational levels". (Albert and Mercedes, Nov, 2010. pp 207). In research study of Fuchs and Woessman (2004) "presented two different hypotheses. According to the first hypothesis, use of ICT in learning process can help in producing better and increased learning results. Use of ICT can transmit knowledge in a positive way to student's and provides possibilities of acquiring information for school purpose and it can also improve learning through communication.

The second hypothesis was that ICT can distract learning and restrict the creativity of the student's. Recent researches pointed out that impact of ICTs on student's achievement in any educational level, it is very important to transform teaching in order to integrate ICT effectively. This will improve the learning outcomes on the student's and so on student's performance and achievements. "Teacher quality measured by teacher fixed effect, has an important impact on students achievement, (Rockoff, 2004).

Communication technology has brought effective changes and significant impacts on student's academic achievements. "Kofi Anan, (2015) the former United Nations Secretary General, points out that in order to attain the goal of Universal Primary Education by the year 2015; we must ensure that information and communication technologies (ICTs) unlock the door of education system", this shows the Universal demands an increasingly vital place of ICTs in education system.

According to Voogt (2003) pp 217-236, "description on the major roles, distinguished ICTs as an object for study, an aspect of a discipline or a profession, and medium of instruction". Interesting element about ICT is, it makes learning less abstract for students and more relevant to their life situation. ICT enhance learning provide increase learner engagement. Technology integrated pedagogical techniques contribute effectively in teaching learning process. "As stated in the VI Annual Report on the development of the information society in Spain (AA. VV. 2006), since the 1980s every regional authority has fostered several programs aiming at integrating ICT in society and, particularly in education (Plan Avanza 2007)".

Previous studies revealed positive impacts of modern technology on improving teaching learning process and enhancing academic achievement of students. (Kulik and Kulik, 1991: Kulik, 1994: Susin et al, 2004). In most European countries, ICT use in education and teacher's training has become a priority during the last decades. ICT as a tool revolutionized teaching learning process at school. ICT integrated educational system leads to the democracy of education and support to personalize learning.

Methodology

In order to find out the impacts of ICT on academic achievements of Government Secondary School students, a quantitative research type was chosen.

Quantitative research is basically an inquiry in social problem. "According to Matthews and Ross (2010) quantitative research methods are basically applied

to the collection of data that is structured and which could be represented numerically”.

Population

All male and female SST Government Secondary School teachers and students of the same school (Chiltan Town Quetta) are the population of the study.

Sample

Simple random sampling technique was adopted 10 Government Secondary Schools were selected in which, 116 (N = 58 male & N = 58 female) teacher participants & 100 student from the same school were selected randomly. Researcher personally approached the participants and the questionnaire was filled in the presence of the researcher.

Limitation

In order to carry out useful research within available resources and limited time this study had a confined range. The study is limited to “ICT impacts on academic achievement of Government Secondary Schools students” in Quetta City (Chiltan Town).

It would be more compelling to broaden the research area to other towns of Quetta City as well as Private Schools.

Research Instrument

The researcher designed the questionnaire by studying the Government Secondary School text books, current situation of Government Secondary Schools of Quetta City, and by keeping in view the importance and necessity of ICT in present education system of Balochistan.

There are 30 questions in the instrument. This instrument is used as a scale to judge the impacts of ICT on academic achievements of students and meet the objectives of the research. The instrument is 5 point Likert - Scale labeled with notations: 5 = strongly agree, 4 = agree, 3 = undecided, 2 = strongly disagree, 1 = disagree. The overall reliability (CronBach Alpha) of the instrument comes out 0.738.

Procedure

Written authorization was acquired from education department of Balochistan to visit 10 Government Secondary Schools of Chiltan Town in Quetta City. The respondents (teachers) were met personally and concluded written detail about the purpose and aim of research was provided to them. The researcher ensured the obscurity of the data embellished by each teacher. All the schools were visited individually. The teachers independently provided with the

questionnaire and completed it calmly in the presence of the researcher. The researcher was there all the time to help in case of difficulty faced by the participants (teachers). 10 Schools were visited separately by the researcher to fill the questionnaire.

For the validity of questionnaire, the researcher got it checked by the experts in BUTIMS and the teachers presently involved with ICT. Some valuable comments were given by experts and concern teachers, therefore; few changes were brought in it. Pilot testing was conducted for the reliability. 30 teachers were randomly selected from the same population, and they were asked to fill the questionnaire. The teachers individually completed the scale in the presence of researcher separately. The reliability of the test (CronBach Alpha) was .738.

Data Analysis

The obtained data was analyzed in SPSS 20 by applying correlation coefficient.

Research Question No. 1

How does ICT impact student's academic achievement?

Table No. 1

The overall mean score and standard deviation of the respondents regarding ICT impacts on student's academic achievements.

	N	Mean	Std. Deviation	Std. Error Mean
The response of the respondents regarding impact of ICT	116	4.51	.502	.047

The table No. 1 specifies the overall mean score and standard deviation of the Government Secondary School teachers regarding ICT impacts on student's academic achievements. The mean score 4.51 (SD=.502) is the cumulative of the diverse attempt related to the student academic achievement and these attempts are the main variable (ICT Impact) of the research.

The cumulative mean score verify researchers assert regarding ICT impact. An effective use of ICT significantly impact on students learning which enhance student's academic achievements.

Research Question No. 2

How does ICT as a tool for teaching learning process can influence student achievement at Secondary School level?

Table No. 2

The overall mean score and standard deviation of the respondents regarding ICT as a tool of teaching learning process.

	N	Mean	Std. Deviation	Std. Error Mean
The response of the respondents regarding ICT as a tool of teaching - learning process influence student achievement.	116	4.41	.512	.048

The table No.2 highlights the overall mean score and standard deviation regarding ICT as a tool of teaching learning process can influence student academic achievement. The values of mean score 4.41 (SD=.512) is the cumulative of the different approaches regarding communication technology as a tool of teaching learning process.

The cumulative values of mean score and standard deviation clearly defines the positive response regarding respondents that ICT empowers both teacher and student to facilitate teaching- learning process which helps in achieving academically better..

Research Question No. 3

Is there any relationship between ICT and students academic achievements?

Table No. 3

The overall mean score and the standard deviation of the respondents regarding relationship between ICT and students achievement.

	N	Mean	Std. Deviation	Std. Error Mean
The response of the respondents regarding relationship between ICT and students achievement.	116	4.51	.582	.054

The table No. 3 defines inclusive values of mean score and standard deviation regarding relationship between information and communication technologies, and “Student Achievement”. The mean score 4.51 (SD=.582) is the cumulative of the diverse attempt regarding relationship between ICT and students achievement. The values of mean score and standard deviation show significant response of the respondents regarding relationship between the variables (ICT and Students Achievement).

The overall results clearly specify that ICT has positive impact on student academic achievement. Proper integration of ICT in education system can enhance student’s academic achievements. Effective use of ICT in teaching learning process can help in improving educational standards as well as facilitate both teaching learning process. Integration of modern technologies with pedagogy has made instruction students centered which helps in achieving desired learning outcomes. ICT integrated educational system empowers both teachers and learner which widen possibilities to achieve academically better. Communication technologies enhance cognitive abilities of the student which is strong indicator of the student academic achievement.

Table No. 4

Overall mean score and standard deviation of Government Secondary School.

Group Statistics					
	Which sector do you belong to?	N	Mean	Std. Deviation	Std. Error Mean
Overall Result	Government Sector	116	4.42	.262	.024

Overall mean score and standard deviation of Government Sector, table No. 4 clearly specifies the mean score and standard deviation of Government Secondary Schools regarding impact of ICT on academic achievements of Secondary School Students in Quetta City (Chiltan Town). The mean score and standard deviation of Government Sector is 4.42 (SD=.262). The result clearly defines the significant concern of the respondents from Government Sector (male and female secondary schools).

Table No. 5

The result of correlation between teacher response regarding ICT Impact on Student’s Achievement & Academic results of Secondary School Students.

The Result of Correlation					
Variables	N	M	SD	Sig. (2-tailed)	r
ICT impact of Govt. Sector Teachers	116	4.33	.229	.310	.103
Academic Achievement of Govt. Sector Students	100	727.15	62.782		

*Correlation is significant at the 0.05 level (2 tailed)

** $p \leq 0.5$

The table No. 5 highlights the correlation between ICT and Student academic achievement. There is a positive relationship between ICT (M =4.33, SD= .229) and student academic achievement (M=727.15, SD = 62.78) $r = .103$, $p \leq .05$, $n =116$). It can be observed through the results that there is correlation (.103) between ICT and Student academic achievement. The result reflects that there is a positive and significant correlation between both the variables’ “ICT” and “Student academic achievement”.

Discussion

The result of the research specified indicates that there is a positive relationship between ICT and academic achievement of students. The outcomes of the study are compatible with the previous researches on the same topic. ICT has positive impact on student’s academic achievements at Secondary School level. ICT is a valuable tool in improving students learning and developing cognitive skills for desired academic achievements. The finding of the study shows that there is a significant correlation between the ICT and students

academic achievement. The result clearly shows that ICT has positive impact on students' academic achievements. It also shows that more use of ICT integrated education system, better would be the academic achievement of students.

Proper use of ICT equips students for better learning and in turn better results. The results of correlation show that there is positive correlation between both dependent and independent variables which indicates that research questions have been found accurate.

It also reflects that ICT as a tool enhance learning and provide platform for student's inquiry, analysis of concepts and construction of new information. "ICT has potential to innovate, accelerate, enrich and deepen skills to motivate and engage students (Davis & Tearle, 1999; Lemke & Coughlin. 1998, Cited by Yusuf, 2005).

The results obtained from the questionnaires related to ICT impacts are consistent with the study of Kulik's (1994) "Students with computer based instruction scored better than those without computer". The results of the research study show significant impact on student's academic achievements.

Conclusion

The literature review and the result of the existing study explored the significant impacts in the present education system. The outcomes of recent study exhibit positive relationship between the ICT and student's academic achievements. Continuous application and development of ICTs in existing education will have strong impact on teaching learning practices and improving academic achievements. It has been perceived that proper integration of ICT in teaching can bring positive and significant impacts on student's academic achievement. Those students' scores academically better who use ICT integrated education system. ICT brings more constructive learning and better academic achievement.

Recommendations

The research can be carried out on a larger sample size including other areas of Quetta City. It would be more interesting study including Private School of Quetta City. Due to limited resources and time, the research could not be extended in other parts of the Quetta City. ICT integrated education system should be properly introduced in Government Sectors Schools. ICT integrated education system has positive impact on both teaching – learning process, which significantly impact student's academic achievement. The teachers should be properly ICT trained to improve their own teaching methodologies which helps in improving student's academic achievement. Hybrid system

(ICT integrated education system) can improve students' learning as well as academic achievement.

References

- Al Ammary, J. (2012). Educational Technology: A way to enhance student achievement at the University of Bahrain. *Procedia-Social and Behavioral Sciences*, 55, 248-257.
- Albugarni, S., & Ahmed, V. (2015). Success factors for ICT implementation in Saudi secondary schools: From the perspective of ICT directors, head teachers, teachers and students. *International Journal of Education and Development using Information and Communication Technology*, 11(1), 36.
- Buabeng-Andoh, C. (2015). Teachers' ICT usage in second-cycle institutions in Ghana: A qualitative study. *International Journal of Education and Development using Information and Communication Technology*, 11(2), 104.
- Cheema, J. R., & Zhang, B. (2013). Quantity and quality of computer use and academic achievement: Evidence from a large-scale international test program. *International Journal of Education and Development using Information and Communication Technology*, 9(2), 95.
- Coates, D., Humphreys, B. R., Kane, J., & Vachris, M. A. (2004). "No significant distance" between face-to-face and online instruction: Evidence from principles of economics. *Economics of Education Review*, 23(5), 533-546.
- Halewood, N., & Kenny, C. (2008). Young people and ICTs in developing countries. (2008): 171-177.
- Kulik, J. A. (1994). Meta-analytic studies of findings on computer-based instruction. *Technology assessment in education and training*, 1, 9-34.
- Lau, W. W., & Yuen, A. H. (2014). Developing and validating of a perceived ICT literacy scale for junior secondary school students: Pedagogical and educational contributions. *Computers & Education*, 78, 1-9.
- Leuven, E., Lindahl, M., Oosterbeek, H., & Webbink, D. (2007). The effect of extra funding for disadvantaged pupils on achievement. *The Review of Economics and Statistics*, 89(4), 721-736.

- Mikre, F. (2011). The roles of information communication technologies in education: Review article with emphasis to the computer and internet. *Ethiopian Journal of Education and Sciences*, 6(2), 109-126.
- Olakulehin, F. K. (2007). Information and communication technologies in teacher training and professional development in Nigeria. *Turkish Online Journal of Distance Education*, 8(1).
- Rockoff, J. E. (2004). The impact of individual teachers on student achievement: Evidence from panel data. *The American Economic Review*, 94(2), 245-252.
- Rockoff, J. E. (2004). The impact of individual teachers on student achievement: Evidence from panel data. *The American Economic Review*, 94(2), 247-252.
- Song, H. D., & Kang, T. (2012). Evaluating the Impacts of ICT Use: A Multi-Level Analysis with Hierarchical Linear Modeling. *Turkish Online Journal of Educational Technology-TOJET*, 11(4), 132-140.
- Woessmann, L., & Fuchs, T. (2004). Computers and student learning: Bivariate and multivariate evidence on the availability and use of computers at home and at school. (2008): 171-177.
- Sangrà, A., & González-Sanmamed, M. (2010). The role of information and communication technologies in improving teaching and learning processes in primary and secondary schools. *ALT-J*, 18(3), 207-220.
- Vasudeva, G. Volume-5 Issue-1: Published on March 05, 2015.
- Watson, D. M. (2001). Pedagogy before technology: Re-thinking the relationship between ICT and teaching. *Education and Information technologies*, 6(4), 251-266.
- Youssef, A. B., & Dahmani, M. (2008). The impact of ICT on student performance in higher education: Direct effects, indirect effects and organisational change. *RUSC. Universities and Knowledge Society Journal*, 5(1), 45-56.