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A correlative analysis of ICT and academic achievement of secondary school students

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Abstract

Information Communication Technology hold integral role in delivering the quality control in education system. The question is often put whether ICT Access can really support and improve learning and the quality of instruction and, additionally, in which way, under which conditions and for what it can be useful. ICT Access enables learners to be self-directed and to assume greater control over their learning. This paper focuses on correlative analysis ICT Access and academic achievement among secondary school students. Keeping in view, the present study has been delimited to 100 students of 11th and 12th classes. The present study has been delimited to two districts of Union territory of Jammu and Kashmir Viz. Shopian and Pulwama. Descriptive survey method was used in the study and random sampling was applied for the collection of data for the present study. The results reveal that there seems positive correlation between academic achievement and academic achievement and their ICT access.

Keywords: information communication technology (ICT), ICT access, academic achievement, secondary school students

1. Introduction

To accurately understand the importance of ICT in Education there is need to actually understand the meaning of ICT. ICTs stand for information and communication technologies and are defined, for the purposes of this primer, as a diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information. ICT permeates the business environment, it underpins the success of modern corporations, and it provides governments with an efficient infrastructure. At the same time, ICT adds value to the processes of learning, and in the organization and management of learning institutions. The Internet is a driving force for much development and innovation in both developed and developing countries. Countries must be able to benefit from technological developments. To be able to do so, a cadre of professionals has to be educated with sound ICT backgrounds, independent of specific computer platforms or software environments. Technological developments lead to changes in work and changes in the organization of work and required competencies are therefore changing. Recently, Information Communication Technology has rapidly acquired an important place in society (Wang, 2008) and is used increasingly as a learning tool in all forms and at all levels of education (Demirslan & Usluel, 2008). Students differ in their experiences with and attitudes toward ICT. At home, not all children have the same access to ICT, and they may use ICT resources available at home differently than at school. Therefore, differences in ICT access, knowledge and skills develop amongst students. Because of these differences, the increasing role of ICT as a learning tool can cause problems for students with less experience with technology or less affinity for ICT (Volman, Van Eck, Heemsker & Kuiper, 2004). It can influence the way students are taught and how they learn. It would provide the rich environment and motivation for learning by doing. ICT Access enables learners to be self-directed and to assume greater control over their learning. This necessitates an investigation in the present status of ICT Access of secondary school Students and its relation with their Academic achievement. Information Communication Technology (ICT): Information Communication Technology (ICT) is defined as diverse set of technological tools, devices and resources used to communicate, and to create, disseminate, store and manage information for the purpose of learning. ICT Access: The availability and opportunity to use of information communication

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technology equipment's, devices and software resources as part of learning by secondary school students. Secondary school Students: The term refers to pupils studying in class VIII, IX and X of recognized high schools of Kerala state. Academic Achievement: The Academic Achievement is referred to the tangible accomplishments or proficiency of performance of secondary school students in the subjects of a class or grade level as measured by some tests.

Therefore, from the above discussion, it is evident that ICT tends to expand access to education. Through ICT, learning can occur anytime and anywhere. Online course materials, for example, can be accessible 24 hours a day, seven days a week. Teleconferencing classrooms allow both learner and teacher to interact simultaneously with ease and convenience. Based on ICT, learning and teaching no longer depend exclusively on printed materials. Multiple resources are abundant on the Internet, and knowledge can be acquired through video clips, audio sounds, and visual presentation and so on. Current research has indicated that ICT assists in transforming a teaching environment into a learner-centered one. Since learners are actively involved in the learning processes in ICT classrooms, they are authorized by the teacher to make decisions, plans, and so forth. ICT therefore provides both learners and instructors with more educational affordances and possibilities. More specific benefits of using ICT in education are described below. ICT develops students' new understanding in their areas of learning. ICT provides more creative solutions to different types of learning inquiries. For example, in a reading class, e-books are commonly used in reading aloud activities. Learners can access all types of texts from beginning to advanced levels with ease through computers, laptops, personal digital assistants (PDAs). More specifically, these e-books may come with some reading applications, which offer a reading-aloud interface, relevant vocabulary-building activities, games related to reading skills and vocabulary acquisition, and more. Therefore, ICT involves purpose designed applications that provide innovative ways to meet a variety of learning needs.

2. Review of related literature

The investigator has reviewed some of the related literature in this area. The important research works, reviewed here, were mainly relevant and restricted to the works done on Access of ICT and its relation with Academic achievement. BECTA. (2000) investigated the relationship between ICT resources and pupil attainment in primary and secondary school and found a consistent trend for pupils in schools with better ICT resources to achieve better grades for English, Mathematics and Science. More than half of the schools with very good ICT resources were achieving above the national standards in science, compared with less than a third of schools with 'poor' ICT resources. There were similar results for English and Mathematics. Schools with very good ICT resources were found in a similar range of social contexts as schools with poor ICT resources. Osborne, J., Hennessy, S. (2003), investigated teachers' and students' changing role strategies in the context of using various forms of computer-based information and communication technology to support subject teaching and learning at secondary level. One hundred and fifteen teacher researchers participated in a collaborative programme of small-scale, classroom-based projects involving development, evaluation and refinement of new pedagogic

approaches, strategies and activities in six curriculum areas. An analysis was conducted across the case study data derived from lesson observations; follow up teacher interviews and teachers' written research reports. While interactions with individual students and small groups were increased and reportedly successful, mediating interactions between students and technology through whole-class interactive teaching, modelling and discussion appeared to be under-developed. Deaney, R. & Ruthven, K. (2003) studied pupils' views of the use of information and communication technology (ICT) within subject teaching and learning. Members of three-year cohorts (Years 8, 10 and 12) in six English secondary schools took part in focus group interviews during the first half of 2000. The views elicited in the course of the 27 interviews are summarised in terms of six themes. Pupils saw computer-based tools and resources as helping not just to affect tasks and improve presentation, but also to refine work and trial options. They associated the use of such tools and resources with changes in working ambience and classroom relations, as well as with raised interest and increased motivation on their part. Valentine *et al.* (2005) found that parents and pupils believed that ICT improved motivation and confidence, made school work more enjoyable and improved achievement. They reported a statistically small improvement in attainment in Mathematics and English linked to the home use of ICT for educational purposes at particular key stages, and concluded that home use brings advantages in terms of new sources of information, enhanced presentation and raised self-esteem which, in turn, affects attainment. The review of studies reveal that the Access of modern ICT tools and resources are important and challenging factors for 21st century students to attain academic excellence in an era of globalisation. A detailed study would help us to bring out the real picture of our students in this area.

3. Statement of the research problem

The Statement of the research problem is reported as under: A correlative analysis of ICT and academic achievement of secondary school students

4. Objectives of the study

The Objectives formulated for the study were:

1. To find out the Access of ICT among secondary school Students.
2. To find out the relationship if any between ICT Access of Secondary School Students and their Academic achievement.
3. To find out the relationship if any between ICT Access of Secondary School Students and their Academic achievement in total sample and the sub-sample based on Gender and Locale.

5. Hypotheses of the study

The Hypotheses formulated for the study were:

1. The Access of ICT among Secondary School Students is Low.
2. There is no significant relationship between ICT Access of Secondary School Students and their Academic Achievement.

6. Methodology

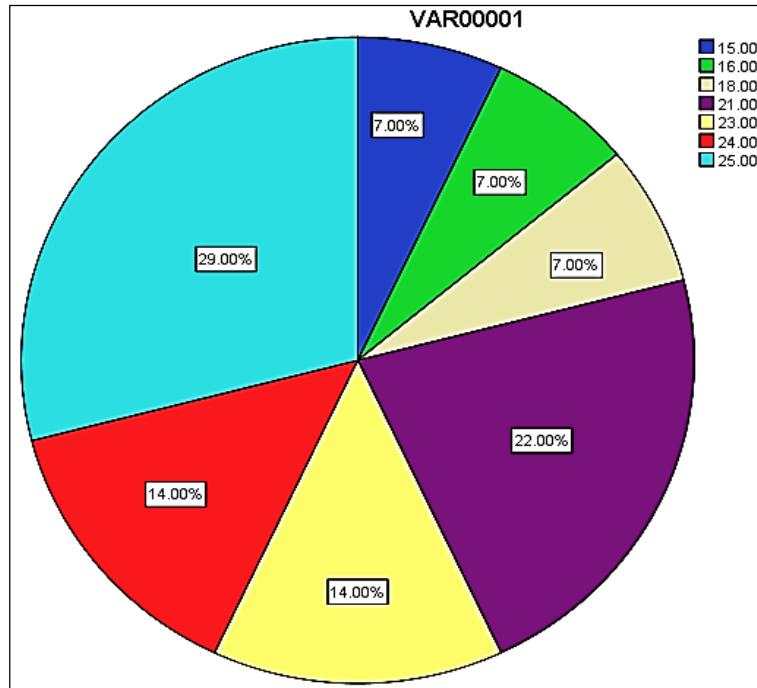
The methodology of the procedure is reported as under:

- Sample:** The total 100 Secondary school Students were selected as sample from two districts of Union territory of Jammu and Kashmir Viz. Shopian and Pulwama.
- Sampling technique:** The samples were selected by using “Random Sampling Method”.
- Tools used for the study:** A Check list for ICT Access of Secondary School Students was developed by Suresan Kokkot, Tamilselvi, I. (2018).
- Delimitations of the study:** The deviations of the study are reported as under:

- The present study has been delimited to 100 students of 11th and 12th classes.
- The present study has been delimited to two districts of Union territory of Jammu and Kashmir Viz. Shopian and Pulwama.
- Statistical techniques used for the study:** (a) Descriptive analysis (Mean, median, mode, Standard Deviation, Skewness and Kurtosis b) Correction analysis (Carl Person's Coefficient of correlation).

Table 1: Showing frequency distribution of respondents on their ICT Access

VAR00001					
	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	15.00	7	7.0	7.0	7.0
	16.00	7	7.0	7.0	14.0
	18.00	7	7.0	7.0	21.0
	21.00	22	22.0	22.0	43.0
	23.00	14	14.0	14.0	57.0
	24.00	14	14.0	14.0	71.0
	25.00	29	29.0	29.0	100.0
	Total	100	100.0	100.0	

**Fig 1.1:** Showing frequency distribution of respondents on their ICT Access**Table 1.2:** Showing frequency distribution of respondents on their ICT Access

VAR00002					
	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	12.00	2	2.0	2.0	2.0
	15.00	4	4.0	4.0	6.0
	16.00	5	5.0	5.0	11.0
	18.00	4	4.0	4.0	15.0
	21.00	14	14.0	14.0	29.0
	23.00	11	11.0	11.0	40.0
	24.00	12	12.0	12.0	52.0
	25.00	26	26.0	26.0	78.0
	30.00	3	3.0	3.0	81.0
	32.00	6	6.0	6.0	87.0
	35.00	8	8.0	8.0	95.0
	36.00	5	5.0	5.0	100.0
Total		100	100.0	100.0	

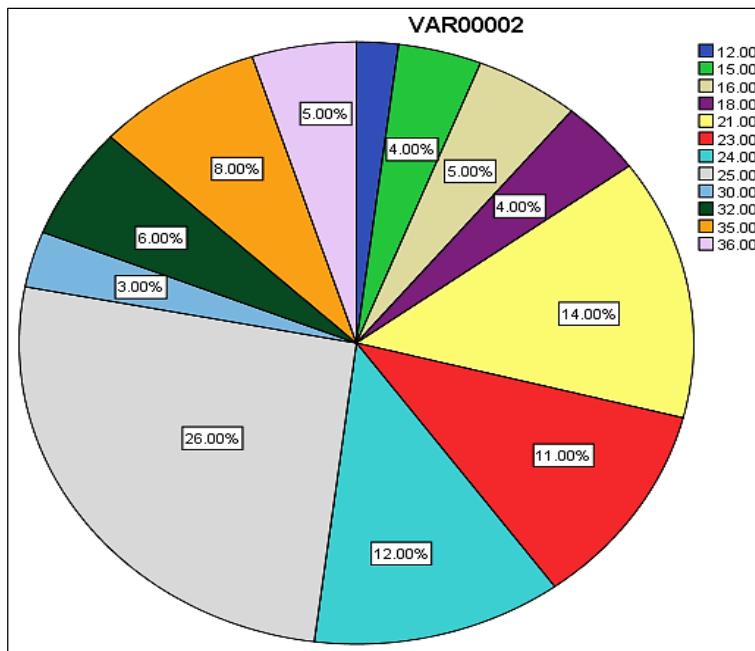


Fig 1.2: Showing frequency distribution of respondents on their ICT Access

Table 1.3: Showing descriptive analysis of respondents on their ICT Access and their academic achievement

Descriptive Statistics						
	N	Range	Minimum	Maximum	Mean	Std. Deviation
ICT	100	10.00	15.00	25.00	21.8800	3.26994
Academic Achievement	100	24.00	12.00	36.00	24.6300	5.84247
Valid N (listwise)	100					

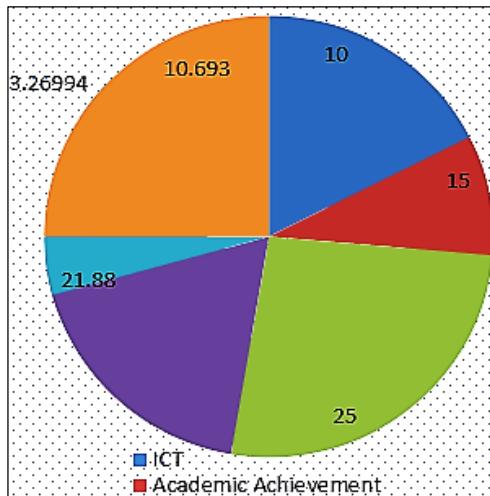


Fig 1.3: Showing descriptive analysis of respondents on their ICT Access and their academic achievement

Table 1.3: Showing correlative analysis of respondents on their ICT Access and their academic achievement

Correlative Analysis						
		Statistic	Bootstrap ^a			
			Bias	Std. Error	95% Confidence Interval	
VAR00001	Mean	21.8800	-.0076	.3170	21.2105	22.5000
	Std. Deviation	3.26994	-.01959	.21020	2.81821	3.64001
	N	100	0	0	100	100
VAR00002	Mean	24.6300	-.0339	.5831	23.4600	25.7100
	Std. Deviation	5.84247	-.05241	.39822	4.99313	6.55440
	N	100	0	0	100	100

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Table 1.4 Showing coefficient of correlative analysis of respondents on their ICT Access and their academic achievement

Correlations			VAR00001	VAR00002
VAR00001	Pearson Correlation		1	.290**
	Sig. (2-tailed)			.003
	Sum of Squares and Cross-products		1058.560	547.560
	Covariance		10.693	5.531
	N		100	100
	Bootstrap ^c	Bias	0	.005
		Std. Error	0	.122
		95% Confidence Interval	Lower	1
		Upper	1	.519
VAR00002	Pearson Correlation		.290**	1
	Sig. (2-tailed)		.003	
	Sum of Squares and Cross-products		547.560	3379.310
	Covariance		5.531	34.134
	N		100	100
	Bootstrap ^c	Bias	.005	0
		Std. Error	.122	0
		95% Confidence Interval	Lower	.043
		Upper	.519	1

**. Correlation is significant at the 0.01 level (2-tailed).

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

c. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

7. Interpretation of the data

The results reported in table 1.1 gives information about the descriptive analysis of respondents on their ICT Access and their academic achievement. The obtained results indicate that the mean vale of respondents on ICT was seen 21.88 and the mean value of respondents on 24.63. The maximum value in case of ICT access was seen 36 and in case of academic achievement the maximum value was seen 25.00. The perusal of the table 1.4 and 1.3 gives the correlative analysis of the respondents on academic achievement and their ICT access. The results reveal that their seems positive correlation between academic achievement and academic achievement and their ICT access.

8. Conclusion

The study revealed that students hold moderate level of ICT access. Apart from this, it was found that their seems positive correlation between academic achievement and academic achievement and their ICT access.

9. Conflict of interest: The researcher did no declare any conflict of interest.

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