Role of Computer in School Education in India

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Abstract:Education is an important aspect of social development. Schooling plays a major role in ensuring the success of the development of any nation. The learning children of a country need to have good skills and have to be proactive with an appropriate e-futuristic mindset. In India, more than 30,000 public primary schools are running computer-aided learning (CAL) projects. The adoption of Information and Communication Technology (ICT) and Computer Science (CS) in school education has been an important topic of study and research in several countries. Education technology means the use of all kind of modern media and materials for maximising the learning experiences. Education technology is suggested by expert as one of the potential means of impairing education effectively and efficiently. Previously, teachers used to teach in rigid, formal and stereo-typed ways. Education was then conceived as the process of transmitting knowledge and ideas. Student used to get by heart whatever was given by the teacher or textbook. They often could not understand what was taught and were expected to reproduce at the time of examination. The quality of CS education not only depends on the support from Government and curricular content but also on the knowledge and capabilities of teachers teaching CS subjects. Hence, effective teacher training in CS is imminent. According to Ragonis, dedicated CS teacher preparation programs should be developed, and only teachers with formal CS backgrounds should be allowed to teach CS in secondary schools.

Key-Words: ICT, Education, CS ,Students and Learning.

I. INTRODUCTION

Education is an important aspect of social development. Schooling plays a major role in ensuring the success of the development of any nation. The learning children of a country need to have good skills and have to be proactive with an appropriate e-futuristic mindset. In India, more than 30,000 public primary schools are running computer-aided learning (CAL) projects. The adoption of Information and Communication Technology (ICT) and Computer Science (CS) in school education has been an important topic of study and research in several countries. Education technology means the use of all kind of modern media and materials for maximising the learning experiences. Education technology is suggested by expert as one of the potential means of impairing education effectively and efficiently. Previously, teachers used to teach in rigid, formal and stereo-typed ways. Education was then conceived as the process of transmitting knowledge and ideas. Student used to get by heart whatever was given by the teacher or textbook. They often could not understand what was taught and were expected to reproduce at the time of examination. Pupils were silent audience and could not make any logical queries or independent thinking of their own. Today, the student is not considered as an empty vessel to be filled in by facts and figures. They are now expected to use so many media and materials and to get learning experience from all sides. Education is regarded as a process of interaction and interpersonal communication. The modern teacher has to help, to guide and facilitate the learner's development. The teacher has to inspire and motivate the young leaners and assist the adult learners in their quest for knowledge and skills. Technology in education is defined as an array of tools that helpful in advancing student learning and measured in how and why individuals behave.Educational technology is the study and ethical practice of facilitating e-learning, which is the learning and improving performance by creating, using and managing appropriate technological processes and resources. Educational Technology relies on a broad definition of the word "technology" which significant the tools and the sources to enhanced, to develop the skill of the Education.

According to the National Science Survey of India, students pursuing careers in Sciences preferred math. Compounding matters are the fact that most often the terms digital literacy, ICT, and CS are used interchangeably by educationists, teachers, and as a consequence, also by their students. It creates the illusion that CS is already being taught and integrated at the school level and as a result, efforts to improve the situation for CS education at school often end with giving more importance to digital literacy or ICT. Realizing the importance of CS skills in education many countries began to introduce CS as the main subject from primary school curricula. In India, CS school-going as elective subjects for

senior secondary school students. This study focuses on adolescence attitude, awareness and effectiveness towards CS education because adolescence is more concerns for the developing future, various interruptions sidetrack serious life decision making them. It is required for young individuals to create an identity in this period; otherwise, confusion disturbs their life. Therefore, the need for directing them to holistic development arises. Student empowerment is one of the primary intentions to help students to gain the confidence, experience, and skills necessary to meet the challenges of an ever-changing world. Computer-aided learning generally covered by Studies of CAL projects in India, the success and failure of such projects depends upon the support of government and social or organizational factors. It also depends upon the learning impacts of children with no prior experience in computer knowledge. The social change about the learning of computers among children, the academic literature leans towards a more critical look from an education policy perspective. On computer learning issues, however, there are general concepts that establishing to improve learning computers is generally difficult and that there are two sides to learning outcomes in schools, the cognitive and social knowledge development for young children who are using computers. The quality of CS education not only depends on the support from Government and curricular content but also on the knowledge and capabilities of teachers teaching CS subjects. Hence, effective teacher training in CS is imminent. According to Ragonis, dedicated CS teacher preparation programs should be developed, and only teachers with formal CS backgrounds should be allowed to teach CS in secondary schools.

II. MATERIALS AND METHOD

The present study is conducted by the age of the student and class of the student in which she is reading, comparative study conducted in five public and private schools of Gopalganj district, Bihar.

Sample and Sample Process

All adolescent students between the ages of 11-17 years of age studying in these schools at least from last one year and residing in nearby the selected schools are willing for sampling were enrolled in this study. A sample size of 320 students was collected out of which 320 forms are found properly filled. The ratio of students was obtained with approximately equal inclusion from boys and girls by using the formula n= 4pq/d2 and allowable error of 5% (where p = prevalence of study, q = 100-p, d = allowable error). After eliminating those forms in which questionnaires are not properly filled, a total of 130 boys and 190 girls from rural schools constituted the final cohort. Adolescent students who are studying in school from the last year between the ages group 11-17 years included in the study. A lecture on computer education benefit was delivered in the school campus to all school-going adolescents after that pre-determined questionnaire was given to the students satisfying inclusion criteria. A predetermined questionnaire and effectiveness collected data of government facility, household characteristics, attitude, awareness, socioeconomic indicators, and school-going habits were checked through the result of computer tests conducted by the schools.

III. RESULTS AND DISCUSSION

Table-1:

Mean Awareness, Attitude and Effectiveness of advertising on computer education on adolescent school going students in a different class at different age groups boys and girls {n=327} (student's t-test)

Age Group(in years)	Area (n)	Mean Awareness	Mean Attitude	Mean Effectiveness
11-12 years	Boys(n:36)	32.76±1.196	145.6±1.508	16.06±0.4532
	Girls(n:54)	32.76 ±0.0816	142.1±1.119	16.45±0.3175
	p-value	0.30	0.067	0.47

12-14 Years	Boys(n:60)	40.86±0.7138	155±0.9105	17.01±0.2048
	Girls(n:70)	41.00±0.6337	153.2±0.657	17.62±0.2360
	p-value	0.80	0.10	0.064
14-17 Years	Boys(n:34)	44.24±1.38	157.5±1.146	17.76±0.4448
	Girls(n:66)	44.50±0.608	156.1±0.7013	18.33±0.2768
	p-value	0.79	0.29	0.26
Total	Boys(n: 130)	39.96±0.5581	153.3±0.7585	16.96±0.1937
	Girls(n: 190)	40.00±0.6497	151.1±0.6316	17.53±0.1664
	p-value	0.88	0.02	0.02

Table-2:

Age-wise prevalence of understanding and Interest towards computer education in adolescent boys and girls students (n=320) (Fisher-exact test)

Age Group(in years)	**Area (n)**	**Understanding(%)**	**Interesting(%)**
11-12 years	Boys(n:36)	**6(16.6)**	**9(25)**
	Girls(n:54)	**17(31.48)**	**12(22.22**
	p-value	**0.21**	**0.79**
12-14 Years	Boys(n:60)	**13(21.66)**	**16(26.66)**
	Girls(n:70)	**18(25.71)**	**9(12.85)**
	p-value	**0.41**	**0.13**
14-17 Years	Boys(n:34)	**10(29.41)**	**12(35.29)**
	Girls(n:66)	**15(22.72)**	**15(22.72)**
	p-value	**0.47**	**0.23**
Overall	Boys(n:130)	**29(22.30)**	**37(28.46)**
	Girls(n:190)	**50(26.31)**	**36(18.94)**
	p-value	**0.29**	**0.10**

Table-3:

Frequency of school-going habit, Basic Computer and Advance computer knowledge

Frequency of classes	Basic Computer		Advance Computer	
	Boys (%)	***Girls (%)***	***Boys (%)***	***Girls (%)***
Daily	**7(5.38)**	**18(9.47)**	**28(21.5)**	**64(33.68)**
Twice in Week	**52(40.0)**	**45(23.68)**	**50(38.4)**	**38(20)**
Weekly Once	**26(20.0)**	**40(21.05)**	**15(11.5)**	**24(12.63)**
Once in fortnight	**4(3.07)**	**1(0.5)**	**2(1.53)**	**5(2.63)**
Monthly	**7(5.38)**	**8(4.2)**	**8(6.15)**	**4(2.10)**
Occasionally	**31(23.84)**	**77(40.5)**	**6(4.61)**	**54(28.42)**
Not at all	**3(2.30)**	**1(0.5)**	**15(11.53)**	**1(0.5)**
Total	**130(100)**	**190(100)**	**9(6.92)**	**190(100)**
Chi-square		12.21	**130(100)**	37.89

p-value		0.057		<0.0001

The mean of a study group of adolescent students was 13.59 ± 1.46 years (13.50 ± 1.34 years in boys and 13.65 ± 1.56 years in girls). The majority of students belonged to the age group of 13 to 14 years with 42.6%, followed by 15 to 16 years of age with 36.8% in girls and 50.5% in boy's students. The age group between 11-12 years old students contributes 27.8% in girls and 25.5% in boys. The analysis of awareness, attitude, and effectiveness among school-going adolescent boys and girls students after advertising for promotion of computer education. In both boys and girls schools, between age group 12-13 years are showing a maximum increase in mean attitude coinciding with interest. The mean age of basic computer knowledge was 13.2 years. Most of the students achieved computer knowledge by 13 years of age (23.3%) followed by 14 years (12.8%) and 12 years (12.5%). Computer knowledge was one year before adapted by boys as compared to girls ($p<0.001$). However, the difference in understanding and interesting among girls and the boy's students was not significant. It was disappointing to note that only 24.7% of students were found to have normal effectiveness. The majority of the students (73.7%) both boys and girls students combined through advertising, about 25-35% of adolescent's school going to both boys and girls students are not aware, no attitude change and there is no effect in their computer knowledge. Inclass 8th, 9th and 10th computer knowledge in both the groups has been increasing gradually. Students in these classes are at the age between, 13-15 years, showing a maximum increase in computer knowledge. Most of the students achieved good marks in 8th, 9th and 10th class, in the 6th class average percentage of boys is 31% followed by girls is 83% but in girls is 85%, similar trends were seen in 10^{th} result with a small margin of 2% percent girls get 88%, but boys in same class get 86%. In the 10th class boy, students obtain 65% average marks followed by girl students with 56%. In the 12th examination boy, students get 68% followed by 47% with a girl in the same class. In the current study, it is found that the majority of boys, 76.3% boys and 70.0% of girls belong to a nuclear family. The mother's literacy rate of boys' student is higher with 51.1% in respect of school-going girls. .Out of 327 school going students, negligible (1.2%) students have a computer at home. However, more than three-fourths of the schools going students (89.6%) were using a computer in school, while the rest (9.2%) were using a computer from another source also. Interestingly, girls had a better status regarding the awareness and effectiveness of computer education as compared to the boys. In the present study, 24.7%, 25.6%, 19.9%, and 28.1% of students had normal effectiveness after promotional advertising for computer education. In this study; however, it is found that after a great effort by different agencies and government departments to promote computer education.

In the 7th class average percentage of boys, students are 43% followed by girls students with 44%.In the 8th, 9th and 10th class overall good increase in computer knowledge is showing in the study. Theunexpected result is showing in class 9th, and 10th with a small margin girl is getting a good result in comparison with boys. The study of the advanced computer is higher in Boys in comparison with girls .. In the present study, only 20% of students know promotional advertising for computer education. Most of the family's members do not know basic computer, and they are not showing much interest in gaining computer knowledge, but they are interested in making their children computer literate.

Nearly one-fourth of India's population comprises of adolescents and those school-going adolescents are the future of the nation. Hence, it is of utmost importance to improve computer knowledge in school going students. Moreover, adolescent girls are considered a deprived segment and boys have a different approach to computer education. The current study noted many interesting observations related to the issues above and tried to tease apart the impact of advertising for the promotion of computer education among school-going adolescent students. The analysis of school-going adolescent students in the present study was comparable to the observations made by Sawyer. This may be explained by the fact that in the current study most of the students are from government schools where parents may provide fewer education facilities. Although the awareness was more in girls as compared to boys the difference was not significant. However, boys and girls students showed a similar mean attitude at all ages. It was dismal to observe that in the current study majority of adolescent

students (73.7%) were less awareness of computer education (Effectiveness<18.5) which again raises the issues related to poor parental and community attitudes regarding facility providing an educational environment in the house of school-going girls.

There was a consistently increasing trend of low effectiveness from the age of 11 years onwards as finding in this study. It was found that the mean effectiveness was significantly higher in girls as compared to the boy students except for 11-12 years age group. However, the applicability of effectiveness and its categorization for labeling less awareness in schools using the current criteria is questionable, and the authors propose that instead of using effectiveness <18.5 to label-less awareness, age-specific criteria for effectiveness should be used to categorize less awareness or more specifically understanding computer education. In the present study, the knowledge level of adolescents was also assessed by taking a computer test result. Interest in computer education, which is considered as an index for Knowledge and understanding computer which indicates lack of up to mark knowledge, were observed among the students in all the age groups in both area schools. The prevalence of understanding computers varied between12% to 35% among school-going girls. In the current study, the understanding of computers was more prevalent among boys and interest in computer education was more common amongst girl's students. Attitude being denominator ineffectiveness may be the reason for more Understanding despite less interesting among boys. The prevalence of interest in computer education was higher than the prevalence ofunderstanding among school-going, students. The phenomenon of the higher proportion of interest may indicate that knowledge of computing is responsible for attitude was far below the required level. This could be attributed to the increased support for computer education in rural children and the hostile environment and school-going habits of boys children.

Challenges use of Technology in Education

Despite early implementation of technologies in Education system, India still faces teething problem for the new technologies in education:

- Not enough or limited access to computer hardware & computer software in education institutes
- Lack of time in school schedule for projects involving use of technologies
- Lack of adequate technical support for education institutes
- Not enough teacher training opportunities are there
- Lack of knowledge about ways to integrate technologies to enhance curriculum
- Education technologies integration is not a priority
- Students and Teachers do not have access to the necessary technology at home

There is also a negative facets of new technologies used in education. Many ethical questions and issues arise with this use of the latest technologies in education.

- **The Copy and paste syndrome**– Schools and universities have more and more problems with students who prepare essays/ project/ presentation by using material from websites or blogs. Often, students just copy pieces of information that look relevant and paste them together, without sometimes even understanding them, let alone citing them.
- **Distortion of reality** – When students are looking for some information on the website, they usually employ a search engine. This will give them a ranked list of often incredibly many search results. There is the real danger that their view of reality is distorted by the website, by the fact that someone with enough money can influence what is written or ranked.
- **Too much trust in the information found** – When searching for some information on the website students tend to accept what they have found as true information, often without looking at other sources and hence having no justification to accept the information at face value.
- **Loss of privacy and profiling** – When students use services offered over the websites it is clear to us that they are making often information about us known to the service providers. The situation gets much more complicated if a company has a set of services so that combining all the information that potentially can be extracted gives a very detailed profile. There can be no doubt that some companies are collecting information or profiles on users, and on economic relevant developments. This may be done through stealth as described or from open social networks where many persons give away information that may well be harmful to them at some later stage.

IV. Conclusion

. The results of the current study, therefore, clearly conclude that in general there is a huge gap between optimal/ recommended and observed computer education growth, knowledge and school-going habits and facilities for government school-going adolescent girls in India, specifically in difficult terrains of Jharkhand and majority of an urban and rural school in India. It is unfortunate to note that despite huge expense on an advertisement for the promotion of computer education, facilities provided by schools and support from family, the rural school going girls have a lower attitude towards computer education. More studies will be required to find out the reasons for this observation, and specifically targeted strategies need to improve this situation of computer education in a government school. It can also be concluded that the age of basic knowledge is very much related to awareness, interest in computer education, promotional advertising and school-going habitsTechnology can reduce the tremendous effort given by students to gather number of printed book and journals for acquiring knowledge and increase students' focus on more important knowledge gathering process. Equally important, technology can represent education in ways that help students understand latest concepts and ideas. The Education Technology also enables teachers to integrate project based learning. With guidance from effective teachers, students at different levels can use these tools to construct knowledge and develop skills required in modern society such as presentation skills and analytical skills. In the present time the teacher's role in teaching is facilitator. The teacher has to facilitate the learning by providing students with access to technology. The teachers can find the means to engage students more easily in learning and to cater to the various needs of different students.

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