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Impact of E-learning on Child Education and Development in Rural Areas of India

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Abstract: The main aim of this paper was to analyse the impact of e-learning on child education and development in rural areas of India. In this study we found that students that use e-learning paradigms have significant improvements in academic performance as compared to the students that follow traditional teaching methods. Semi-structured interviews have been utilized for collecting the qualitative data. The interviews were conducted with all the teachers of the focus group. In the interview, most of the teachers indicate that students that use e-learning tools as part of the curriculum showed improvement in cognitive, social, linguistic, mathematical and literacy skill in this study. We also found that the use of the computer as a learning tool helps children learn quickly and improves their attention span.

***Keywords*—ICT (Information and Communication Technologies), E-learning, Child Development, Academic Performance.**

I. INTRODUCTION

E-learning is the use of different types of media such as: text, image, audio, video, information and communication technologies (ICT) - to help students in education. Education is considered to be one of the most vital factors facilitating "poverty alleviation" as well as accelerate "economic growth in developing countries" [1]; [2]; [3]. Using ICT for imparting education is seen to have enormous potential for the governments working towards meeting the increasing demand for education while facing a rising shortage of teachers (UNESCO 2006). Bernard Luskin [4], a pioneer of e-learning, advocates that the 'e' should be interpreted to mean "exciting, energetic, enthusiastic, emotional, extended, excellent, and educational" in addition to "electronic" . Hall [5] reports that e-learning is the fastest growing and most promising in the educational industry. Due to the enormous increase in popularity of e-learning in India, both public and private sectors are working together to develop an effective framework for e-learning. The Indian government is providing free education to the citizens, however, a large portion of the rural population, in fact, are not availing this opportunity. This is because they mostly live below the poverty line and cannot afford to send their children to school as they are helping their family to earn a livelihood. E-learning, if used effectively, can provide education to this hefty deprived group. According to Erica Loop, the attention span of children is very small, approximately 15 minutes [6]; [7]. Thus this phenomenon makes it very challenging to teach

young children. They feel uninterested if they are not provided with a fun learning atmosphere. The E-learning environment provides a variety of very effective educational resources that help children to learn through enjoyable lessons; keep them actively involved in their learning and produce high quality work; beginning E- learning for children at an early age is an important step to consider [8].

The main aim of this research is to analyse the impact of E-learning on children education and development. The paper has been organized according to the following sections: in Section-1 the introduction to e-learning is provided; role of e-learning on child education and development is discussed in Section-2; in Section-3 the digital divide between the rural and urban areas are discussed; research methodologies followed by the result and conclusion are provided in Section-4.

II. ROLE OF E-LEARNING ON CHILD EDUCATION AND DEVELOPMENT

Education is a birthright and literacy is a prerequisite of it. Literacy is an essential means for individual "self-fulfillment, effective social and economic participation and the exercise of freedom" [9]. Education for all has been the primary goal of the government. The cabinet passes a proposal "to make education a fundamental right for children in the age group of six to fourteen years." [10] . Government can achieve the goal "Education for All" if E-learning tools are effectively implemented in schools and higher education across the country. Following are some important point that e-learning contributes to child education and development.

A. COMPUTERS AND CHILD DEVELOPMENT

Computer plays an important role in curriculum and extra-curricular activities. "Learn while play" is an important methodology of teaching the early age children. ICT based learning has an important contribution to improve cognitive, emotional, linguistic, and literacy skill of a child [10]. It has also been found that children that use e-learning paradigm are innovative, quick learner and showed improvement in mathematical skill [11]; [8]. Children are actively participating in computer based activities, doing school work, playing games, talking with friends, active in social networking, and surfing the Internet. Use of E-learning showed a significant improvement in academic performance, student motivation, and class participation [8]. With e-learning tools, resources for children are designed with multimedia that helps children to learn through enjoyable lessons and games. Sakshat, "The national mission on education through ICT (NME-ICT) under Ministry of Human Resource and Development" is

funding different project to enhance basic IT infrastructure and develop E-learning modules for school and higher education as well as designing an assessment tools for evaluation of quality of E-content.[12].

B. IMPACT OF E-LEARNING ON STUDENTSEDUCATION

"E-learning can be viewed as an alternative to the [traditional] teaching methods or as a complement to it" [13]). E-learning technologies has unlimited prospective to elevate the traditional educational paradigm. It change the way of learning, it change the instructor centric paradigm to student centric paradigm. In instructor centric paradigm, the student passively receives information; knowledge is transmitted from the instructor to the student, the student is entirely dependent on the instructor for guidance, receiving information and direction. In student centric paradigm, the student is actively involved. Students are increasingly become independent, self-motivated, self- directed learners with a higher-level of critical thinking and problem-solving skills. In student centric paradigm, the student can learn at their own pace, repeat the material to strengthen learning, or exploring additional material to improve it. An undoubted advantage of E-learning is their role in facilitating children with special needs. It is well known that digital technologies have a prevalent learning scope for multimodal facilities [14] using sounds, images, and written texts in different colours. Children, who cannot actively participate in traditional learning paradigm due to specific learning disabilities, have all been helped through computer technology.

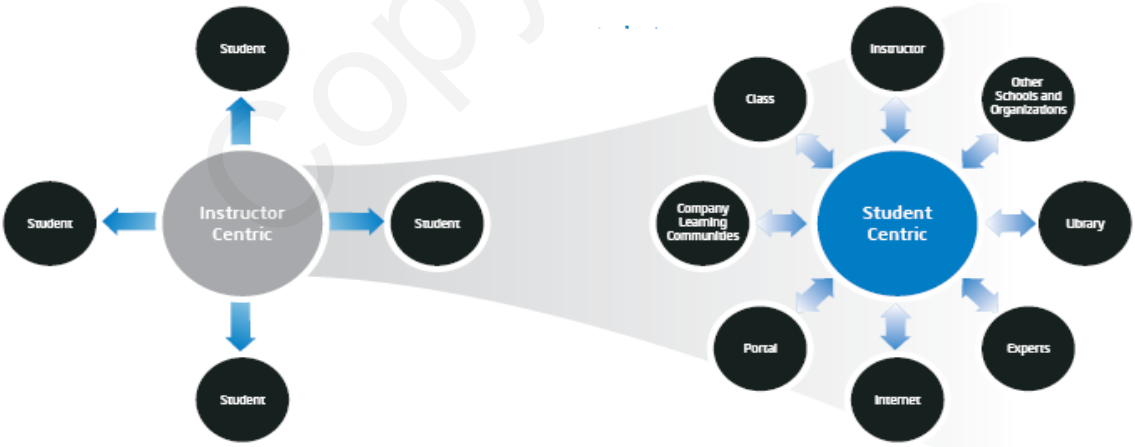

Figure.1: Shifting the Learning Paradigm from teacher centric to student centric [8].

III. DIGITAL DIVIDE BETWEEN RURAL AND URBAN AREA

The Digital Divide was identified by Pieper, Morasch and Piela [15] as "the divide between those groups of people who benefit from information and communication technology and those who do not have access to it" and this

divide is still evident between the rural and urban areas of India. The Digital Divide, according to Herselman and Brittion [16], is the educational divide between resource-advantageous and resource-deprived learners. India has many stumbling blocks to overcome before it can offer e-learning to its entire population. Large portion of the population live in rural villages that do not have access to telephone connectivity and the lack of basic infrastructure, poor communication and technology make it very difficult to implement the e-learning. Insufficient bandwidth of internet connections hampers the performance and ease of learning process. Bridging the digital gap requires substantial investments; "India has embraced wireless telephony increasing the teledensity to 75% in the last decade" [17]. The Information Technology and communications ministry is working with different companies "towards bridging the digital divide between the urban and rural India by developing infrastructure", improving communication and bringing down the cost of technology "to ensure that the rural areas of the country can usher the data revolution" [17]. The government of India has different educational schemes, especially for rural areas to improve the literacy rate. With the introduction of e-learning at school education, we have seen significant improvements in children academic performance and development.

Rural students, teachers and parents mostly all are naïve to computer technologies and e-learning paradigms. To make them understand the importance of e-learning, ministry of school education in India has to come forward to conducting workshops and seminars in rural areas in order to make them understand the importance of e-learning and impact of it on child development.

IV. METHODOLOGY

In this study, we followed a multi-methodological approach [18] by combining qualitative [19] methods (by observing users, interviews, focus group discussions), and quantitative [20] methods (by using questionnaires, statistical analysis and experiments) together. The focus group for the research consists of students from six different schools from the Kashmir region of India. All the students were aged less than 18 and studying at various levels ranging from 1-8th grade. So gatekeepers were used for obvious reasons.

Students of three schools (Group A) were provided with the e-learning tools, students from the remaining three schools (Group B) were using the traditional teaching methods. They were observed for one full academic year. For the quantitative part of the research, students' grades were collected and analyzed. Results of one group were compared with that of the other group to test our hypothesis. The teachers and/or the supervisors of this focus group

were also interviewed for the collection of qualitative data. The interview data were then analyzed to support the result obtained from the quantitative research.

IV. Results and Discussion

The average grade performance graph shown in Figure.2 was collected from Group A schools that uses e-learning methods as part of the course curriculum. Figure.3 shows the average grade performance graph of Group B schools that uses traditional teaching methods.

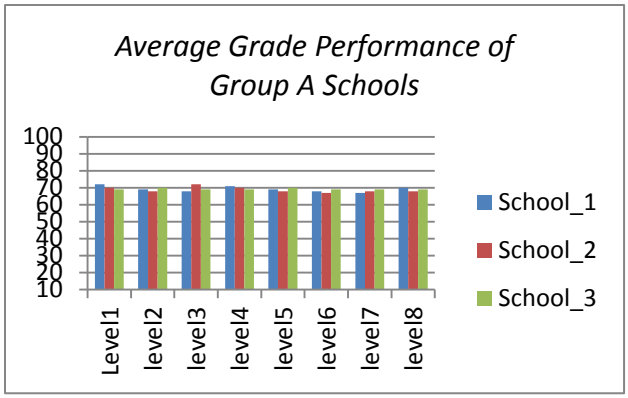

Figure.2: Average Grade performance of Group A Schools.

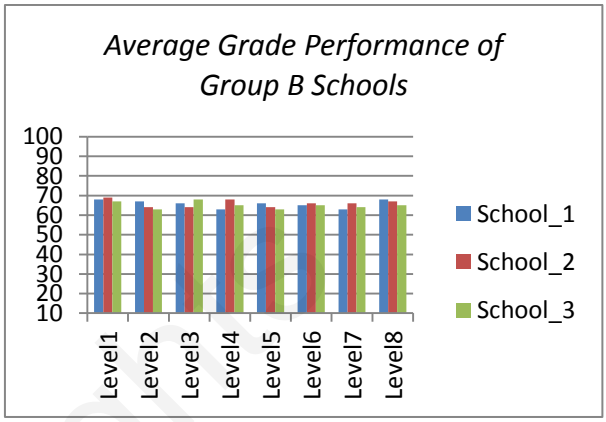

Figure.3: Average Grade of Group B Schools.

Figure. 4 shows the comparison of average grade performance between group A and group B schools. The graph shows, schools that use e-learning tools as part of the course curriculum have significant improvement in academic performance at all levels as compared to the schools that use traditional teaching methods.

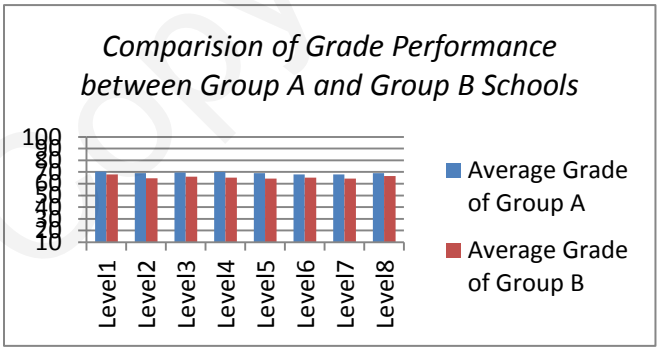

Figure.4: Comparison of grades between Group A and Group B.

In the interview, most of the teachers indicate that students of group A showed improvement in cognitive, social, linguistic, mathematical and literacy skill as compared to the Group B students. The interviewers revealed that Teachers and/or supervisors having perceived that student attendance was improved to a great extent and students are more actively involved in their learning. In the interview, the majority of the teachers have the same opinion that children learn quickly if text is integrated with multimedia and showed improvement in their attention span. Regardless of the small sample size and short span of time, significant differences were detected in the study that supported the positive impact of e-learning tools on children education and development compared to traditional teaching methods.

Conclusion

In this paper, we analyze the impact of e-learning tools on child education and development, especially in rural area. We found that e-learning tools have positive impacts on children academic performance, social, cognitive, literacy, linguistic and mathematical skills. The main factors that motivate students to use e-learning are the flexibility, User centric, Accessibility, Collaborative, and Adaptability of learning as well as the possibility to make an individual study plan. Although some negative impacts have also been observed. In rural areas, students and teachers are unwilling to use new technologies, have a high illiteracy rate, have insufficient bandwidth and a lack of basic infrastructure which make it difficult to implement e-learning. However, the government is working with different companies "towards bridging the digital divide between the urban and rural India by developing infrastructure", improving communication and bringing down the cost of technology "to ensure that the rural areas of the country" also reap the benefits of information and communication technology. We believe that e-learning has a wide prospective in the near future and it will definitely improve the quality of education and the literacy rate of the country.

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