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An Analysis of Information and Communication Technology (ICT) in Secondary Education in Jharkhand

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ABSTRACT:

Technology is the creation, modification, application, and understanding of tools, machines, crafts, systems, and organizational procedures in order to solve issues, improve upon existing solutions, achieve objectives, manage applied input/output relations, or perform specific tasks. It could also apply to an assortment of related tools, such as apparatus, modifications, configurations, and protocols. The ability of humans and other animal species to regulate and adapt to their natural settings is greatly impacted by advancements in technology. The expression might be applied broadly or specifically to certain places. Technology has had a wide range of effects on the environment and society. Technology has been beneficial to modern economies, particularly the global economy of today, and to the rise of the leisure class in many nations. Many modern activities deplete natural resources and pollute the environment, harming the planet's ecosystem. Different technical applications have an impact on a society's values, and new technology typically brings forth new ethical issues. This paper reflects an analysis of Information and Communication technology (ICT) in secondary education in Jharkhand.

KEYWORDS: wireless networks, discipline, technological, economic

I. INTRODUCTION:

Information and communication technology, often known as telecommunications-based technologies, is referred to as ICT. It is comparable to information technology (IT), despite focusing more on communication technologies. The internet, wireless networks, mobile devices, and other forms of communication are examples of this. It suggests that we now have more possibilities for incorporating ICT into teacher training programs and enhancing teacher quality in order to appropriately educate pupils. According to UNESCO, ICT is a management method, scientific, technological, and engineering discipline that is used for information handling and its application to social, economic, and cultural challenges. The aspect of education that modern culture values the most is the instructor. He never gives up trying to improve our society in all areas. Talented instructors can create good social workers, politicians, poets, philosophers, and other members of society from their students. Teachers are able to interact amicably with students. The rapid growth of technology has caused radical changes in our way of life and societal expectations. Today's teacher education institutions are working to restructure their educational programs and classroom infrastructure in light of the effects that new technologies are having on the workplace and daily life in order to close the technological gap between today's teaching and learning and that of tomorrow. In the current world, information and communication technologies (ICTs) are causing rapid changes. They have an impact on every element of life. The effects are becoming more noticeable in classrooms. Society is placing pressure on schools to effectively adapt to this technological innovation since ICTs allow both students and teachers additional options to personalize learning and teaching to individual requirements. Information and communication technologies, or ICTs, enable people to interact in a rapidly evolving environment where having access to numerous emerging technological advancements is gradually altering how people work and engage in other activities.

II. REVIEW OF LITERATURE:

The library, according to Dawa Doma Sherpa (2022), is the center of any academic institution. In order to make sure that the proper users receive the right information at the right time, the library is essential. ICT use in higher education has become critical to the teaching and learning process since the COVID pandemic, ensuring that the right users receive the right information at the right time. ICT use in higher education has been crucial to the teaching and learning process since the COVID pandemic. In the classroom, ICT may be advantageous to both students and teachers. ICT improves social, collaborative, and solitary learning. The use of ICT has revolutionized the nature and services of libraries today, including how information is received, processed, stored, accessed, and used. These technologies have also changed the expectations of the user community. It has transformed the concept of libraries from a repository for books to a center for information exchange. The purpose of this paper is to provide an overview of ICT-based applications utilized in classrooms, libraries, and higher education. The report also discusses the benefits of ICT in libraries and education.

The purpose of this study, according to Joy Uchechi Ndalu et al. (2022), was to examine how information and communication technology (ICT) can be utilized to manage schools in Rivers State, Nigeria, in a way that fosters long-term educational advancement. The declining quality of instruction and learning in our schools today made this study necessary. The investigation employed a descriptive survey. The population of the survey included all 278 senior secondary schools in Rivers State, with 6,956 instructors. Using the stratified random sampling method, 378 instructors from 164 senior secondary schools were randomly selected from this group. The 378 teachers who work in the schools include 164 principals and 214 teachers who were chosen for the study. Frequency counts, percentages, and Pearson Product Moment Correlation analysis were utilized to analyze the data using the Statistical Package for Social Sciences (SPSS) version 23.0. The primary source is a questionnaire that was used to gather the data. It was found that the senior secondary schools in the state received a fair amount of ICT supplies. The degree of principal management in the schools was similarly moderate. The two primary problems were determined to be a lack of financing and an inadequate power supply. The findings at the 0.05 level of significance also demonstrate a positive and significant relationship between ICT use and effective school management (r = 0.668**). Information and communication technology (ICT) has been discovered to be a crucial instrument for school administration and the improvement of education in contemporary culture. The report recommends educating individuals about the benefits of ICT for running schools and promoting long-term educational growth. If the Rivers State government can promote such an environment, ICT should thrive in schools. Students and teachers need to be retrained in order to increase the effective use of ICT resources.

Showkat Ahmad Lone et al. (2022) state that the primary objective of the study is to comprehend the relationship between ICT and teacher education. The specific objectives are: The Importance of ICT in Modern Society and ICT in Teacher Education: Why It Matters What ICT uses are there in teacher education, and how can you highlight their significance and value there? It is thought that teacher education is a continuous process that begins with initial training and continues with consistent, long-term service throughout the course of a teacher's career. Since the early 20th century, substantial changes have been made to the educational system, making teaching and learning much simpler than they were before. The difficult teacher-student interaction has been made noticeably simpler, while learning expectations have increased through the introduction of computer-assisted learning approaches and procedures. The most recent computer-assisted learning techniques have reduced instructor workload and enhanced student learning. The use of ICT in teacher education has resulted in teachers having improved subject-matter knowledge and understanding, pedagogical expertise, and understanding of children's needs and skill development. According to 2005 UNESCO research, if provided access to contemporary information and communication technologies, teacher education institutes can have a significant impact on future generations' knowledge and abilities.

Sogol Talebian (2014) asserts that the use of ICT in education has had a substantial impact on how learning and teaching are carried out. Beyond what was previously feasible, it has increased access to new educational resources and learning opportunities. In this case, the e-learning training strategy is a result of the integration of ICT into education. The advantages, disadvantages, conveniences, and limitations of using ICT in conjunction with online learning for agricultural students are examined in this study. The study focuses in particular on how ICT has affected Iranian students enrolling in agricultural higher education.

Meenakshi (2013) observed that one of the main problems that developing countries are currently facing is preparing society and governments for globalization and the information and communication revolution. Policymakers, educators, non-governmental organizations, intellectuals, and everyday individuals are all concerned about how to make their country competitive in the burgeoning information economy. Technology improvements and globalization have increased ICT use in a variety of sectors, including education. ICTs are being employed in education more often all around the world. ICTs may empower teachers and students, considerably boosting student learning and accomplishment, according to the general view. The majority of the educators whose thoughts on ICT in education were solicited concurred that its adoption and sensible application would greatly raise students' academic achievement. According to current studies on the effects of ICTs on student achievement, there aren't many strong arguments for or against the use of ICTs in education. Even at the most technologically equipped schools in industrialized countries, ICTs are not often seen as being fundamental to the teaching and learning process, according to studies. However, it appears that the methodologies used to measure results and the kind of learning that is promoted are at odds with one another. For instance, rather than the new knowledge and skills associated with the use of ICTs, standardized testing frequently examines the results of conventional teaching methods. It is clear that further study is needed to completely understand the complex connections between ICTs, learning, and achievement. Research shows that there is surprisingly little evidence available on the use and impact of video in education, with the exception of a few video efforts like UNICEF's cartoon series "Meena," which has emerged as a critical weapon in the struggle against gender and social injustice in South Asia. Many teachers are hesitant to use ICTs, especially computers and the internet. Some of the reasons for this resistance include poor software design, uncertainty about the power of computers to improve learning outcomes, a lack of administrative support, the extra time and effort needed to learn the technology and how to use it for teaching, and the fear that they will lose control of the classroom as it becomes more learner-centered. Few instructors reported using the internet or other ICT tools often or occasionally to get information, and the majority of those surveyed said they never or very infrequently utilized them for lesson planning.

III. RESEARCH METHODOLOGY

Based on the literature on the use of ICT in secondary schools in India and around the world, and the need to maximize the use of ICT, it was decided to study the key factors that affect the implementation of ICT in the secondary schools in Jharkhand, India.

Hypotheses :

The following are the hypothesis for the study:

1. Demographic differences do not affect the use of ICT in Schools

2. ICT use in schools is dependent upon the nature of the job
3. ICT use is dependent upon the type of school or location of the school
4. ICT use is dependent upon the resource availability in the schools

The study and its approach:

The scope of the study was limited to secondary schools in Jharkhand. Since the study was undertaken without the sponsorship of the industry or government, it was decided to limit the study to a representative sample and to use a questionnaire as a survey instrument to collect the data. The study was decided to be carried out in four districts of Jharkhand. With the willingness on the part of the schools selected for the study, paper-based survey of teachers and administrators were conducted. The data collected from the surveys were analyzed with standard statistical tools and synthesized. The results were used to validate the hypothesis.

Research design:

In designing the research method for the study on the use of ICT in secondary schools, similar studies conducted elsewhere were considered and the research methodologies used for those studies were evaluated. There have been a number of studies around the world that have looked at populations that are similar to that involved in this study. There have also been studies, whose scope was similar to the current research. This part of paper presents an overview of the relevant studies for the design of the research methodology, selection of sample for the study, design of the research instrument and the tools used for data analysis. It also presents the details of the elements of the research design for this study.

Survey Research:

Four districts were selected for the study. The population for this study consisted of about 15,000 teachers and administrators in the four districts, namely Hazaribagh, Dhanbad, Gumla, Ranchi. Of the total number of teachers and administrators, 1500 teachers and headmasters from the public, private and semi-private schools in these districts were selected for the purpose of this study. Random sampling method was used to select the schools and collect the data. Prior permission was taken from concerned school authorities and Headmasters for the distribution of questionnaire. A total of 68 schools were selected randomly for questionnaire distribution. A sample of 1500 teachers and headmasters constituted the sample. After the survey administration, 499 complete responses were obtained. The respondents are secondary school teachers and headmasters from the selected schools in the four districts of Jharkhand. A total of 122 teachers have returned the questionnaires with incomplete responses and hence those have not been considered as part of the data for the study. Valid data collected from 499 teachers has been used for analysis.

IV. DATA ANALYSIS :

This study on ICT uses in schools employed a questionnaire to collect pertinent data from a sample of 1500 teachers and administrators working in four districts of Jharkhand. A total of 499 usable questionnaire responses provided the data for the study. The results of the analysis of the data were presented under three categories, namely, Demographic data results on the use of ICT, Correlation analysis on the use of ICT, and the Statistical analysis of data using ANOVA and Tukey tests.

V. CONCLUSION:

a) Demographic Factors and the use of ICT:

From the study the following are the key conclusions:

- Women form the major portion of the teaching population
- Teaching population is relatively young with more than 70% are below the age of 40 years.
- The number of private schools have grown to equal the number of public schools in the state
- Almost all schools have computers and related equipment to teach ICT
- More than 60% of the population uses computers for instructional and communication purposes
- One in three teachers has attended formal computer related training for the purposes of ICT use.
- There is a general perception among the teachers that there are sufficient ICT resources in the schools
- It is also the perception that more training is needed to make better use of ICT.

b) Factors that are Dependent on Each Other in the Use of ICT:

In the use of ICT in schools, there are many dependent relationships. Based upon the correlation analysis of the data from the surveys, this study has concluded that the use of internet and teaching subjects such as science and computers have a highly dependent relationship. The following have contributed to the dependent relationship of these factors:

- Access to internet services makes it easier for teachers to search subject related information.
- Access to internet also facilitates teachers to learn about new instructional methods, new tools, and examples on how certain tools have been used
- Access to internet has opened up the possibilities to network with other teachers and learn from their experiences
- Availability of appropriate and free instructional material in the public domain have helped in the use of internet in expanded manner.

c) Role of Gender in the Use of ICT

The analysis of the data on the role of gender has led to the following conclusions:

The use of ICT in the following areas shows that there is a gender difference. Specifically, the male teachers have been using ICT more for the following:

- Managing documents
- Internet Use (substantially more than the female teacher's use)
- Use of computer accessories
- Use of ICT for academic activities
- Use of ICT for subject related teaching
- Use for communication activities

d) Nature of Job and the Use of ICT

There are two primary functions that were identified from the study results. They were the administrative functions and the instructional functions. The data show that the use of ICT is prevalent in administrative functions. They also show that the based upon the subjects taught, ICT use is more in computer-oriented classes than in any other subjects. The following are the conclusions:

- ICT use is more in such administrative functions as managing documents, and in communication
- ICT use is more in teaching computer subjects than the following:
    - Languages
    - Mathematics
    - Science
    - Social studies
- ICT use for subject related instruction is more in all the following areas:
    - Managing documents
    - Use of computer hardware
    - Use of computer software
    - Use of computer accessories
    - Use of internet

e) Relationship between the Type of School and the Use of ICT

There are three types of schools in this study, namely public schools, semi private schools and the private schools. The resources and provisions to use those resources in the schools led to the following conclusions in the use of ICT:

- Computer related resources are better in semi-private, private schools than in the public schools
- Computer related resources are better in private schools than in the semi-private and the public schools
- Maintenance of the computer related resources is better in the semi-private schools than in the public schools
- Maintenance of the computer related resources is better in private schools than in the semi-private and the public schools.

f) Role of Resources in the Use of ICT

The study results show that the private schools have better resources than the public schools and they facilitate better use of ICT. Further, the urban schools also have better resources than the rural schools and they also facilitate more use of ICT. The following are the areas of resources that contribute to the use of ICT:

- Computer hardware and software
- Trained teachers
- Commitment of teachers
- Internet access
- Computer maintenance
- Involved parents and students
- Satisfied students

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