Education
Explore–Journal of Research for UG and PG Students
ISSN 2278 – 0297 **(Print)**
ISSN 2278 – 6414 **(Online)**

http://www.patnawomenscollege.in/journal

An assessment of the level of integration of ICT in Secondary Schools of Patna

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Received : November 2011
Accepted : March 2012
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Abstract : *Information and communication technology is the most significant challenge that now confronts education at all levels. The challenge in brief is how the process of education and teaching are affected by the increasing pace of digital information and communication technology (ICT) revolution and its level of integration to all school levels. India today aspires to emerge as a front-runner amongst the knowledge-based societies. The Information and Communication Technology (ICT) revolution in the world has considerably enhanced the scope for delivery of education of desirable quality to a greater number. ICTs are not only expanding the learning opportunities for students, but have emerged as a potent tool for teachers' education and capacity building.The present paper attempts to assess the level of integration of ICT in secondary schools of Patna. The study has been conducted on the students, teachers and non-teaching staff members of secondary schools of Patna and a sample of 80 students, 20 teachers and 4 non-teaching staff members were taken from different secondary schools by using the Random sampling technique.*

Key words: *Level of integration, ICT, Secondary schools.*

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Introduction :

Integration of ICT in school education is critical for a true transition into the 21st century (Chambers and Sprechers, 1983). It has been on the national agenda since proclamation of NPE 1986, especially after its modification in 1992. It led to two major centrally sponsored schemes, namely, Educational Technology (ET) and Computer Literacy and Studies in Schools (CLASS) (Qureshi, 2004). In 2004, a more comprehensive centrally sponsored scheme - Information and Communication Technology @ Schools was inaugurated (Rao, 2010). Educational technology also found a significant place in another scheme on up-gradation of science education (Chand and Pahuja, 2004).

The significant role of ICT in school education has been highlighted in the National Curriculum Framework (NCF) 2005. "If ET is to become a means of enhancing curricular reform, it must treat the majority of teacher and children not merely as consumers but also as active producers …….Providing children more direct access to multimedia equipment and Information Communication Technology (ICT), and allowing them to mix and make their own productions and to present their own experiences, could provide them with new opportunities to explore their own creative imagination."

In Bihar, under the scheme of ICT@school around 300 schools (until 2009) are operational (Selvan, 2010). This is built on a Build Own Operate Transfer (BOOT) model whereby each school gets 10 computers, a server, network connectivity and diesel generator (DG) sets. Teachers are also provided by the BOOT operator. The project will be managed and maintained by NIIT for three years and the total cost is estimated to be Rs 73 crores.

Beyond the Government's initiatives, the non-government schools affiliated to various boards have risen to address the popular demand of an ICT savvy environment in schools. Today digital learning has become a burgeoning business with number of private players (Srivastava, 2010).

In light of all these initiatives and policies the present work is structured to evaluate the condition of teaching learning practices of schools of Bihar. This exercise is essential for assessing the practical conditions of the schools. These conditions may refer to the preparedness of schools to integrate ICT in curriculum, approaches and views of management and administration, competency of teachers in using and teaching ICT, effectiveness of available ICT resources, whether the institution has a vision, mission and objectives for it, the adaptability of the institution to incorporate ICT etc.

Objectives of the Study :

1. To find out the ICT infrastructure of the schools.
2. To find out the ways by which the schools integrate ICT in curricular activities.
3. To find out the ways by which the schools use ICT for non-curricular activities.
4. To find out the competence of the teachers in using and teaching ICT.
5. To find out the percentage of secondary school students who use ICT in their day-to-day life.

Methodology :

Population of the Study : The aim of this study is to assess the level of integration of ICT in secondary schools of Patna. Hence, the population selected for the purpose of this study was all the students, teachers and non-teaching staff members of the secondary schools of Patna.

Sample of the Study : A sample is a small proportion of a population selected for observation and analysis. By observing the characteristics of the sample, one can make certain inferences about

the characteristics of the population from which it is drawn. Due to the limited budget and time for the study, only four schools of Patna were chosen by random sampling technique to draw the data. The affiliating boards of the schools are not considered while selecting the sample of the study.

Sample Selection : Random sampling technique was adopted to select a representative sample from the above mentioned population.

Sample Size : 80 students, 20 teachers, and 4 non-teaching staff members of the 4 different secondary schools of Patna were taken as the sample of the study. The students were of standard IX and X. These students, teachers and non-teaching staff members belong to Rajkiya Kanya Ucch Madhyamik Vidyalaya, Bankipore; Devipad Choudhary Shahid Smarak Inter School; Lohia Nagar Mount Carmel High School and St. Xavier's High School, Patna.

Break-up of the sample

S. No.	Name of the Schools	Sample size (students)	Sample size (teachers)	Sample size (non-teaching staff members)
1.	Rajkiya Kanya Ucch Madhyamik Vidyalaya, Bankipore	20	5	1
2.	Devipad Choudhary Shahid Smarak Inter School	20	5	1
3.	Lohia Nagar Mount Carmel High School	20	5	1
4.	St. Xavier's High School, Patna	20	5	1
	Total	80	20	4

Tools for Data Collection :

For the collection of relevant data, three questionnaires were prepared and standardized by the supervisor. The type of questions used in this study was closed ended.

The first questionnaire was administered upon the students. It consisted of two sections, first section for extracting personal information about the students and second section included the questions related to the use of ICT by the students.

The second questionnaire was administered upon the teachers. It consisted of two sections. First section was for extracting personal information about the teachers. Second section was divided into two sub-sections. First sub-section consisted of 9 items related to the integration of ICT in curricular activities. Second sub-section consisted of 11 items related to the competency of the teachers in using and teaching ICT.

The third questionnaire was administered upon the non-teaching staff members. It consisted of two sections. First section was for extracting personal information about the non-teaching staff members. Second section was divided into two sub-sections. First sub-section consisted of 10 items related to ICT infrastructure of the school. Second sub-section consisted of 10 items related to the use of ICT for non-curricular activities.

Reliability :

Reliability of the questionnaires was found by split-half method. The reliability coefficients of the two half tests were found to be 0.49, 0.46 and 0.47 respectively and the reliability coefficients of the whole tests were found to be 0.62, 0.66 and 0.67 using Spearman-Brown Prophecy formula. The reliability coefficients of 0.62, 0.66 and 0.67 were significant at 0.01 levels which show that the reliability of the questionnaires was high and the tools were sufficiently reliable.

Validity :

Content validity of the tests was established by the constructors with the help of various experts' opinions and suggestions. The items were thoroughly evaluated and criticized by the experts.

DATA ANALYSIS AND INTERPRETATION

ICT Infrastructure of the Schools

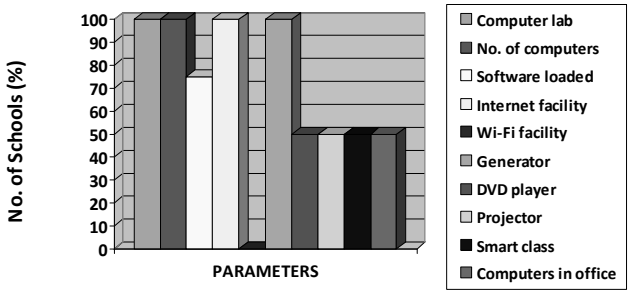

Figure 1

It can be clearly seen from the bar graph that 100% schools have computer labs in their schools and the number of computers available in the computer lab is also according to the number of the students. 75% of the schools use latest software in their computers and 25% schools still work on old software. Almost all the schools have internet and generator facilities but none of the schools have Wi-Fi facility in their campus. 50% schools possess the facilities such as DVD player for watching educational CDs, teaching through projector, smart class and 5-10 computers in administrative office.

Integration of ICT in Curricular Activities

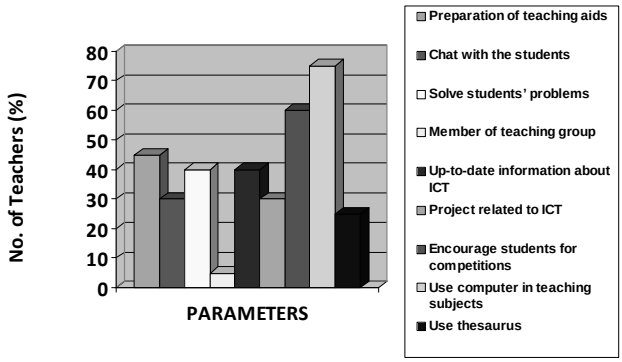

Figure 2

It can be clearly seen from the bar graph that 45% teachers use internet in making teaching aids. Only 30% and 40% teachers respectively use ICT to communicate with the students and to solve their problems. The percentage of the teachers who are the member of any teaching group on internet is very less i.e. 5% only. Very small percentage of teachers keep up-to-date information about technical changes and conduct project work related to ICT i.e. 40% and 30% respectively. 60% teachers encourage their students to participate ICT related scholarship competitions. 75% teachers said that they use computer in teaching their subject. Only 25% teachers use thesaurus or dictionary available on internet to improve their language.

Integration of ICT for Non-curricular Activities

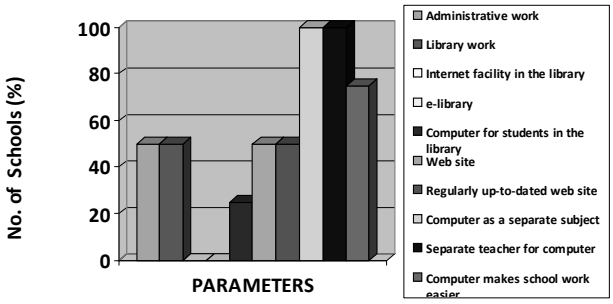

Figure 3

It can be clearly seen from the bar graph that the percentage of schools, in which administrative work and library work is done through computer, is only 50. None of the schools have internet facility in their library and the facility of e-library. Only 25% schools have computers in their library for the students. 50% schools have their own web site and it is regularly updated. In almost all the schools computer is taught as a separate subject and they have a separate teacher for this subject. 75% schools say that computer makes the school work easy.

Competency of the Teachers in Using and Teaching ICT

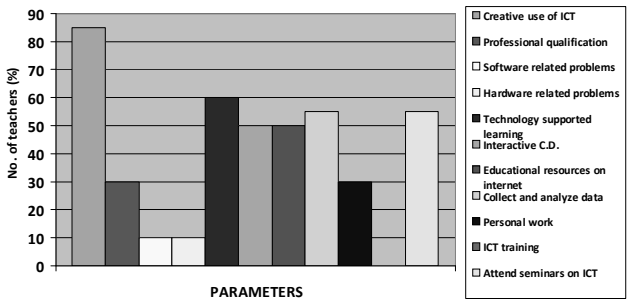

Figure 4

It can be clearly seen from the bar graph that 85% teachers use ICT creatively. Only 30% teachers possess professional qualification related to use of ICT. Only 10% teachers can solve the problems related to software and hardware. The percentage of teachers who provide the opportunity of technology supported learning to their students is 60 only. 50% teachers use interactive C.D. and free educational resources available on the internet. 55% teachers use ICT for data collection and analysis. Only 30% teachers use ICT for their personal work. The percentage of teachers who participated in ICT training programme organized by the government is 0, but the percentage of teachers who participated in seminars on ICT is 55.

Use of ICT by the Students

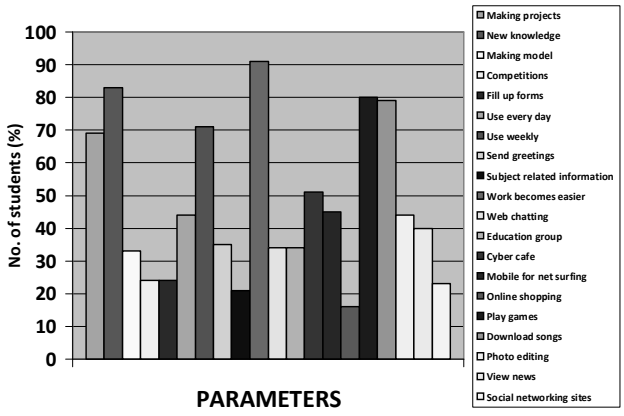

Figure 5

It can be clearly seen from the bar graph that 69% students use computer in making projects. 83% students use internet for acquiring new knowledge. Only 33% students use computer in making models. The percentage of students who participate in competitions on internet and fill up the competitive examination forms through computer is same i.e. 24%. 44% students use computer daily whereas 71% students use it weekly. 35% students send greetings through e-mail to their friends. Only 21% students search internet for gathering more information about their subjects. 91% students believe that computer makes their work easy. Only 34% students do web chatting and are associated with education group on internet. 51% students go to cyber café to use internet. 45% students said that they use mobile phone for surfing internet. The percentage of students, who do online shopping, is very small i.e. 16% only. The percentage of students who play games on computer and download films/songs from internet, is rather good i.e. 80% and 79% respectively. 44% and 40% students respectively use internet for editing photo and viewing news. Very small percentage of students use social networking sites i.e. 23% only.

Conclusion :

1. From the study, it can be concluded that except Wi-Fi facility, most of the schools possess almost all the ICT infrastructure facilities. Thus, the schools are above the emerging stage.
2. On the basis of the study, it can be concluded that while a large portion of participant teachers were integrating computer technologies into their teaching at moderate and high levels, a significant portion of teachers were using technologies at low levels. In terms of instructional practices, most of the teachers tended towards learner-based, constructivist approach. On the other hand, some of the

respondents were still tending to classical, subject-matter approach. Because an important fraction of participant teachers were still at awareness, exploration and infusion levels, which are under the level of integration, they should be helped to improve on how to integrate technology in their classroom.

3. The study also leads us to the conclusion that though all the schools are teaching computer as a separate subject and they have a separate teacher for teaching this particular subject, some of schools are still not incorporating ICT in their offices and library. Hence, it can be said that they are under the level of integration and they require to improve upon the situation.

4. Findings show that although teachers have some awareness of technology related tool, they do not have the confidence about using and troubleshooting with technology. They prefer more traditional activities in classroom and use technology in limited and basic operations.

5. The study reveals that quite a large number of students use ICT in their day-to-day life, but still it has not become a part and parcel of their lives. There is a long way to go to achieve the level of integration.

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