

Chapter IV

ANALYSIS, RESULTS AND INTERPRETATIONS

4. DATA ANALYSIS, RESULTS & INTERPRETATIONS:

All data gathered was cleaned before being analyzed. Descriptive Statistical method was used for data analysis. The results were presented in percentages and counts in all tables and charts.

This chapter focuses on the analysis of data, its interpretation and results related to availability of Information and Communication Technology, infrastructure of ICT in schools of Ganjam district of Odisha. The infrastructure of ICT included availability of computers; adequacy of ICT infrastructure; internet connections; ICT peripherals; school website. This chapter also discusses the use of ICT by students, teachers and principals in schools.

4.1. Infrastructure

The access of ICT in any school depends on the adequacy and the quality of available infrastructure. This section presents ICT infrastructural issues as reported by respondents. Issues of ICT maintenance and technical support were also examined in addition to the access of computer and internet by teachers and students in schools. The number and location of computers in schools was also examined as a major factor for understanding access. All the data together provided insight into the issues that rose as a result of availability and access to infrastructure, and how these could be addressed. Finally, the chapter looks at the availability of ICT peripherals in schools, and it concludes by providing observations through case studies.

4.1.1. Availability and access of computers in school

Computers were available in 8 schools including government, Kendriya Vidyalayas, Government-aided and Private schools in the district. The results of the study reveal that the meaning of the terms “technology” and “ICT” is primarily understood by respondents to denote computer, the internet and computer peripheral products (printer, modem etc.). This was true for teachers as well as students. This may be the reason that computer is the most popular device in terms of technology infrastructure. Only a handful of schools have installed interactive classroom technologies with digital content, hence penetration of ICT was low and mostly restricted to urban schools.

The following figure indicates the range of technology available in schools.

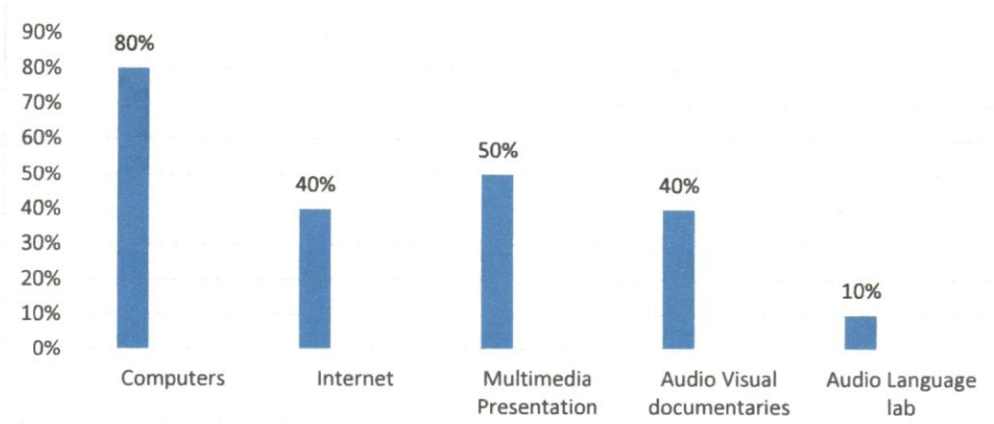


Figure 4. 1 - Range of technology infrastructure in schools

From the Fig. 4.1, it was concluded that:

- In the district, 80% schools were having computers and 50% were having multimedia presentation. Around 40% were having internet connection, and 40% audio-visual documentaries. Audio-language lab was found only in 10% of the schools.

By and large, all the private schools had better technology infrastructure than the government schools as shown in Table 4.1. There was a sense of ownership for infrastructure in the private schools, which was often missing in the government schools. While private schools were seen to be having better technology infrastructure, there appeared to be complacency in upgrading the hardware once installed.

4.1.2. School type wise availability of computers

The table below presents the number of computer in schools in the district according to the type schools.

Table 4. 1 - Details of no. of computers according to the type of schools in the district.

No. of Computers	Central Govt.	State Govt.	Private
No Computers		02	
1 – 5		01	03
6 – 10			01
11 – 15	02		01
16 – 20			
Above 20			
Total	02	03	05

From the Table 4.1, it was found that:

- The Central Government schools (KV/ NV) were well equipped with computers. Both of the Central Government schools surveyed, had 11-15 computers.
- In the district, 3 State Government schools were surveyed and it was found that 1 schools had less than 5 computers was located in urban region while 2 other schools had no computers as it was in rural areas.
- Three private schools had 1-5 computers, 1 school had 6-10 computers and 1 more school had 11-15 computers.

4.1.3. Adequacy of ICT infrastructure

The following table describes the perspective of teachers on adequacy of ICT infrastructure.

Table 4. 2 - Teachers' perspective on ICT infrastructure

SL. NO.	Teacher Response	ICT as a subject	ICT for Other subjects
01	Sufficient	50%	40%
02	Deficient	25%	35%
03	Often remain unutilized	25%	25%

From the Table 4.2, conclusion can be drawn as:

- 50% of the teachers found that the sufficient infrastructure were available in the school for teaching ICT as a Subject. Whereas other 50% teachers said that ICT was deficient or often remain unutilized for teaching ICT as subjects.
- At the same time 40% teachers reported that ICT infrastructure were sufficient for teaching other subjects whereas 60% teachers reported that ICT were deficient or often remain unutilized.

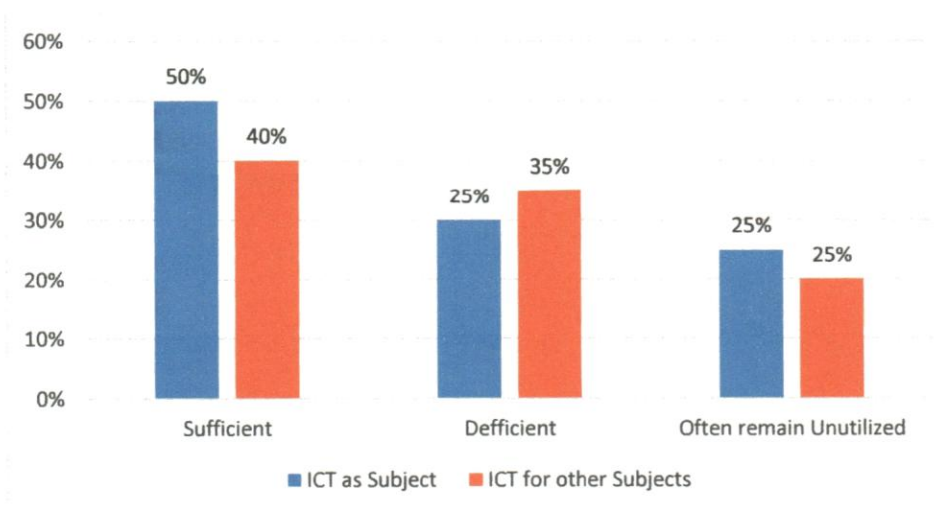


Figure 4. 2 - The perspective of the teachers about the infrastructure

4.1.4. Internet connection in schools

The detail of internet connections in schools of the district is given in Fig 4.3

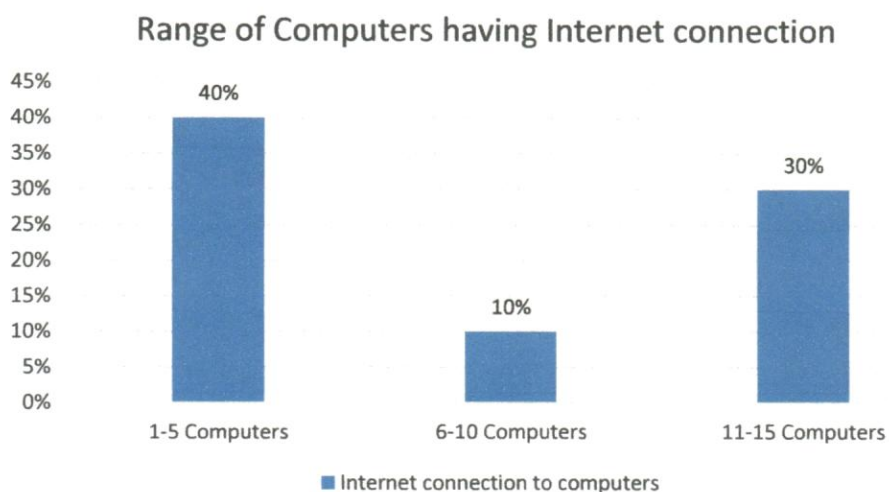


Figure 4.3 - Internet connection in schools

Table 4.3 - Details of number of internet connected computers in selected schools

No of Comp.	Central Govt. Schools	State Govt. Schools	Private Schools
No Comp.		Utkalamani High School & City High School	
1 – 5		Govt. High School, MKCG Hospital, BMP	Maa S.S.V Mandir BMP, Oxford Public School BMP & Mukteswar Vidya Mandir, Surala
6 – 10			New DePaul, BMP
11 – 15	K.V. & J.N.V		D.A.V, BMP
Total	02	03	05

From the Table 4.3, it can be concluded that:

- Out of 10, 8 Schools have either broadband or dial up internet connection and 2 schools have no internet connection.
- However the teachers reported that (i) internet connection was limited to 1 to 5 computers in 4 schools, (ii) internet connection is given to 6 to 10 computers in 1 schools, (iii) in 2 schools internet connection was given in 11-15 computers.
- Most of the schools surveyed had 10 or less internet connected computers. Most State Government schools in District have only 1 to 5 internet connected computers.

While conducting the survey based on type of schools, it was found that most of the private schools are the front runners on internet connectivity, with almost having less than 15 computers with internet connectivity. Both of the central government schools had 11 – 15 computers that had internet connectivity. As the data shows, state government school is having less internet connection in computers i.e. (majority of rural State Government schools have no computers with internet connection).

4.1.5. Availability of e-educational material, subject software and school website

The e-Educational materials consist of generic knowledge enhancing material whereas subject software are related to specific subject areas. The availability of softwares and school websites has been shown in the Graphs in Figure 4.4 location wise and as in Figure 4.5 type of schools

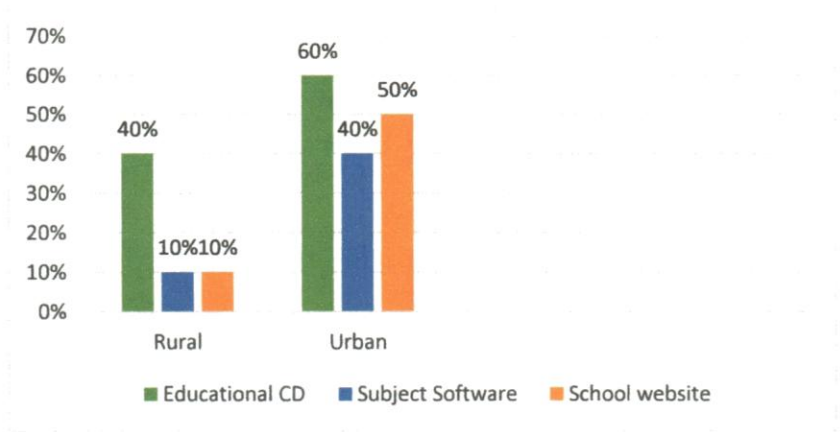


Figure 4. 4 - Availability of e-educational material, subject software and school website

It appears from the above graph that all the three educational softwares are available more in urban area school than that in rural areas. The availability of subject software is minimal as compared to the availability of Educational CD(Ed- CD) and School website.

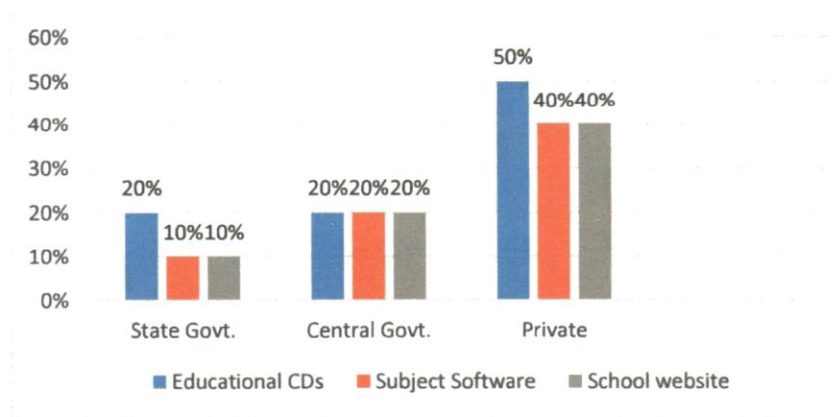


Figure 4. 5 - Availability of e-educational material, subject software and school website

The Fig 4.5, shows that:

- School website was available in 40% of Private schools, 10% in State Govt. Schools and 20% in Central government schools.
- Private schools take the lead regarding Web Site as well as more educational CDs.

In general, it was found that limited areas of the school curriculum were supported by e-material and software. Rural schools were at a disadvantage in comparison to the urban schools, presumably due to non-availability of materials in rural areas. Private schools and central government schools were in a better position to provide e-learning experience to their students as compared to state government schools.

4.2. Access to computers and peripherals

Access to computer and its peripherals plays an important role for using ICT in schools. The proportion of teachers and students having access to computer facilities is discussed below:

4.2.1. Access by teachers

In any school, where use of ICT is encouraged, teachers need to use the computer or internet to prepare for lessons and manage their classes. They can create instructional material, access model lesson plans, research based practices and can keep record of students. All teachers should have access to computers and other peripherals.

However, the ground reality in schools studied in this report was different. That is, only 4 schools have computers in staff rooms – that too only in private schools, K.V and J.N.V. And those teachers who are in these schools can access computers whereas few or no teachers could access computers in rural areas.

4.2.2. Access by students

The proportion of students who had access to ICT in schools is presented in the following figure: 4.6

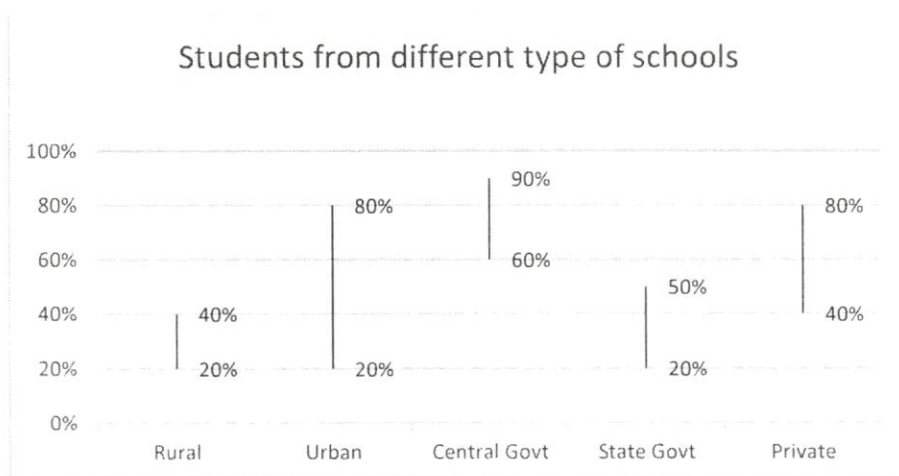


Figure 4. 6 - Proportion of students who have access to ICT in schools

The Principals and teachers reported that students' access to ICT in schools was 20-40% in rural schools whereas in urban schools it was reported 20 to 80%, in urban schools, which was due to better access conditions in private schools, and K.V. The variation in ICT access by students was far more in urban areas as compared to rural areas.

Government school children had less access to computers and peripherals .A large number of students in schools face constraints with regard to contact opportunities and this aspect of promoting ICT in schools was very challenging, thereby highlighting the infrastructure problems referred to earlier in the report. Therefore there is a need for more computers for the use of students.

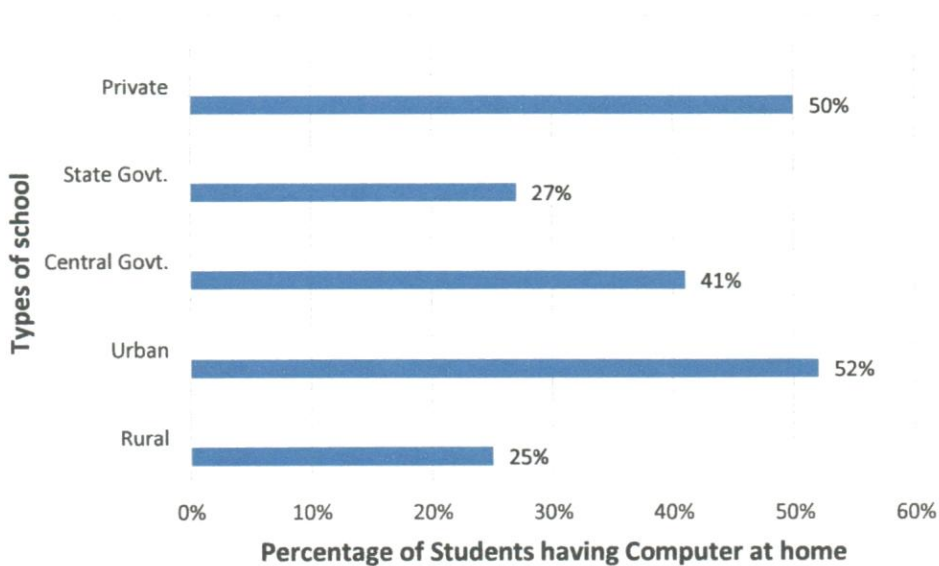


Figure 4. 7 - Proportion of students having access to computers at home

Students were also asked about the access to computers in school as well as at home. And Figure 4.7, shows the following results:

- Rural students were found at disadvantageous state both in school as well as at home. 25% students had access to computer sat home in rural areas.
- 52% of the students had access to computer at home in urban areas.
- And 27% percentage of student in Government schools, where as in private schools 50% students had access to computers at home.
- A number of students, who did not have computers at home, tried to access technology at other places, such as a cyber café, a friend's or relative's house.

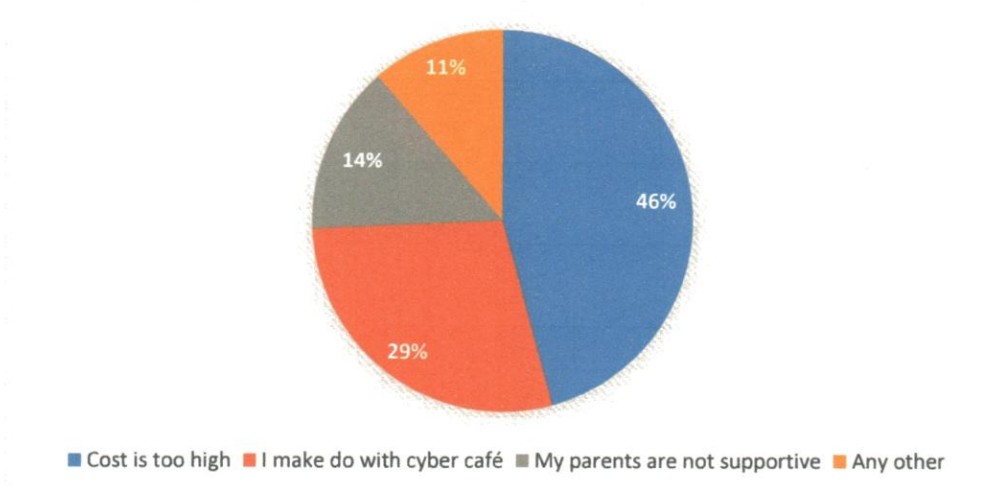


Figure 4. 8 - Reasons for not having a computer at home

The study further inquired into reasons for not having a computer at home. And Figure 4.8 shows the following results:

- Quite a large number of students (46%) did not have a computer at home because of the high cost – affordability is an issue.
- 29% students used cyber cafe and 11% students were mentioned that there is other reasons for not having technology and 14% reported that their parents were not supportive.

This issue thus needs to be dealt with as part of a socio-economic milieu that is a reality in many parts of India. Schools and ICT program makers need to respect that by providing equitable access in schools so these students are not excluded from mainstream agenda of 21st century learning and skills.

4.3. Usage of ICT

This section deals with usage of ICT for various activities in school and its contribution to teaching and learning in secondary schools. It examines how students and teachers were familiar with the relevant technology and its applications by looking at their ICT qualifications and skills. The section then reviews the use of ICT in education settings and its use in assessment, drawing on information collated from different category of schools.

4.3.1. Use of ICT peripherals

Printers were found to be the most frequently used ICT peripherals for educational purpose in schools. However most teachers never used printer, those who are in government schools in urban as well as rural areas. Few teachers reported making use of a printer less than once a month or at least two or three times per month when they conduct class tests in private and central government schools in urban areas. Few teachers reported using scanner at least once a month, most of the teacher never used scanner. The next most frequently used peripheral is Smart Board and projector which was used at least 2-3 times a month by the

teachers of JNV, KV and few private schools, though the availability of such boards is limited to the surveyed schools. Availability of these ICT peripherals are not seen in government schools of rural areas whereas in 1-2 urban school peripherals like only printer and scanner were available in administration only.

4.3.2. Teachers' ICT skills

Teachers were asked to state their perceived level of proficiency in a number of important ICT skills areas. An analysis of the responses (presented in the graph) to this question showed that the majority of teachers did not consider themselves proficient in a wide range of ICT skills and applications.

Most teachers in the sampled schools were of view that bringing technology to the classroom was crucial as it provides a better world view on subject matter. Experts in technology believe that ICT skills come with practice and it is important for students and teachers to access technology on a regular basis. The figure 4.9 shows teacher specific skills related to the use of ICT applications.

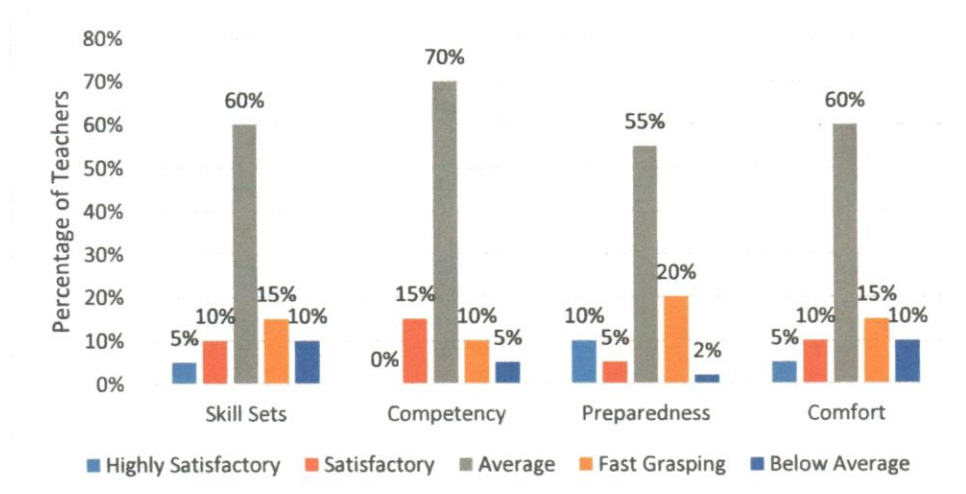


Figure 4. 9 - Teachers' self-perception on knowledge and competency

Figure 4.9, indicates that:

- Only 5%-15% teachers considered themselves under “satisfactory” to highly satisfactory’ in terms of skills, competency, preparedness and comfort in the use of ICT.
- 2%-10% of teachers considered themselves as ‘below average’ in competency, preparedness and comfort in ICT use.
- 10%-20% of teachers considered themselves as fast grasping in use of ICT.
- More than 55% of teachers’ self-perception about knowledge and competency indicated an average level. This shows an overwhelming number of teachers rated themselves as “average” on skills, competency, preparedness and comfort.

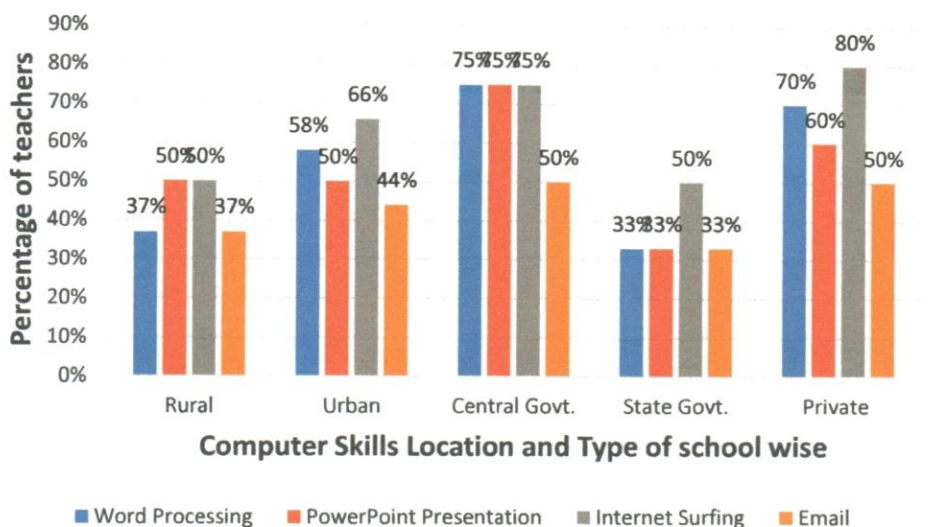


Figure 4. 10 - Teachers' self - assessment of their specific computer skills

Skills in ICT based on types and locations of schools in the Figure 4.10, shows that:

- The proficiency of using computer for PowerPoint Presentation, internet surfing, email including word processing was low in rural and state government schools.
- Central government school has more than 75% teachers and Private schools has more than 50% teacher had proficiency of using all the skills of computer.

4.3.3. ICT Access by students

School location wise and School type wise analysis has been done with regard to access to computers and internet at home. With reference to table 4.4, Central Govt. and Private schools are the forerunners both in access to computers and internet, on the basis of school types. And on the basis of location, urban schools students access computers and internet more than rural schools students. But students of rural areas and State Govt. schools lag behind.

Table 4. 4 - Percentage of students having access to computers and internet at home

Location/Type of School	Computer at Home (%)	Internet at Home (%)
Rural Schools	25%	20%
Urban Schools	52%	41%
Central Govt. Schools	41%	33%
State Govt. Schools	27%	22%
Private Schools	50%	43%

Table 4.4, shows that:

- In Central schools, 41% students were having computers at home and out of them 33% were accessing internet at home.
- And in private schools, 50% students were having computers and 43% were accessing internet at home.
- Whereas in state govt. schools, 27% students were having computer at home and 22% of them accessing internet.
- In urban areas, 52% students have access to computers and 41% have access to internet at home, but the students in rural households are at a disadvantage both at school as well as at home.
- Only 27% of students in rural areas have access to computers of which Internet is available to just 22%. The students from rural areas often use computers at other places, such as cyber café, a friend's house or a relative's house. The high cost of computers tends to be a bigger deterrent for not owning computers in rural areas as opposed to urban areas.

Table 4. 5 – School location wise Student's own rating in use of technology

	Skill Sets (%)		Competency (%)		Preparedness (%)		Comfort (%)	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Highly Satisfactory						17		22
Satisfactory	25	22	20	25	34	25	20	27
Average	50	72	66	70	50	58	70	44
Fast Grasping	25	6	14	5	16		10	7

From the Table 4.5 it was found that:

- Most of the student's own rating about their ICT use as 'Average' in both rural and urban areas.
- In urban areas, students' own rating in Skill sets and Competency was 'Average' i.e. about 70% of students has given rating themselves as Average. And in Preparedness 58% and in Comfort 44% students has given rating themselves in skills as Average.
- Whereas in rural areas, 50% students has given rating in Skill sets and Preparedness as Average. And in Competency 66% and Comfort 70% students gave rate as Average.
- In urban areas 17% students in Preparedness and 22% students in Comfort has given rating as Highly Satisfactory.

4.3.4. Use of ICT tools by students

In the survey process, the students were asked about their use of computers and technology tools in schools.

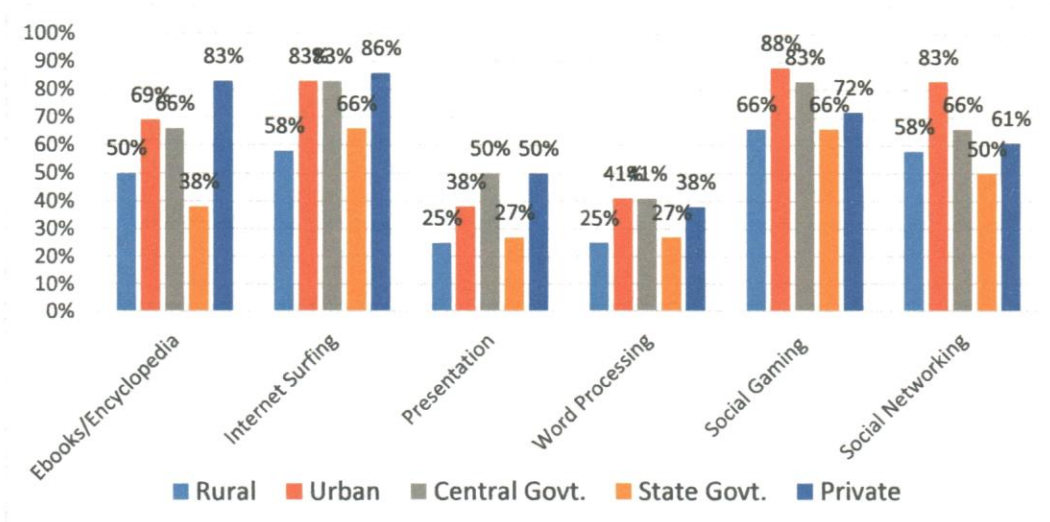


Figure 4. 11 – School location wise and School type wise use of Technology tools by students.

As shown in Figure 4.11,

- More than 50% students were using social gaming both in rural and urban areas.
- Above 50% both in Internet surfing and Social Net-working in three type schools and both in rural and urban areas.
- But in Presentation and Word Processing Central Govt. and Private school students were forerunners.
- Whereas based on location most urban students use all the tools than rural school students. Rural students lag behind maybe due to the lack of opportunities and knowledge.