Computer Literacy of Teachers

By

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Computers offer exciting approaches to teaching that were not even dreamed of twenty years ago, but the extent to which the educational potential of computer technology will be realized remains to be seen. Use of computers can revolutionize teaching and learning and could bring advances that would improve education dramatically. Ordinary students would make massive gains and bright students could meet greater challenges. Wherever illiteracy is a problem, it would be eliminated and handicapped students would have vast new vistas opened to them.

Teacher attitudes toward computer technology may be a significant factor in the use of computers in education. Computer literate individuals will reap greater benefits than their counterparts who lack that knowledge. To promote computer literacy of both teachers and students, the government is investing considerably. To evaluate the impact of these investments and thereby help ensure that the intended results are achieved, Information and Communication Technology (ICT) literacy of students and teachers should be measured periodically. The Department of Census and Statistics and the Ministry of Education conducted a census on Computer Literacy of Academic Staff of Government Schools, Approved Private Schools and Pirivenas to find out the computer literacy levels of teachers and ICT related facilities and hardware available in schools. This census was conducted on 2nd November 2006.

This Census was conducted under the Census Ordinance of the Department of Census and Statistics. Under this Ordinance, respondents are required to provide accurate information requested by the Department. Department is bound not to divulge any information at individual level. Only statistics at aggregate levels will be published. Therefore, teachers were requested to report their perceptions of their competencies and teachers were assured that information provided by them would not be divulged with identification information of individuals.

This Census was conducted countrywide. For three districts in the conflict-affected areas - Jaffna, Mannar, and Killinochchi, completed census schedules are yet to be received. Of 9124 schools in other districts, 8388 returned the completed schedules. This is a very high response rate of 92 percent. However, the response rate for Mulativu (48%) and Vavuniya (38%) are low and therefore results for these districts should be used cautiously.

In addition to the government schools, there are 652 pirivenas in the country. Completed schedules were received for 77 percent of them. The total number of approved private schools in the country is 79. The response rate for approved private schools is 80 percent. Complete data covering all districts and all categories of schools will be included in the final report. The preliminary findings of this Census have been released disaggregated by district, category of school (National schools, Navodya schools, Other government schools, Approved Private schools and Pirivenas) and number of students (100 or below, 100 – 300, 300 – 930, 930 or more).

To use the ICT in teaching and learning process there are some basic ICT related facilities that need to be available in schools. Electricity is one such facility. The level of availability of electricity is very impressive. About three fourth of schools/pirivenas have this facility. The institutions best served are the National schools (99.4%), Navodya schools (97.9%), Privenas (98.4%) and approved private schools (96.8%). In contrast, just over 70% of other government schools have electricity available to them. Schools with smaller number of

students are less likely to have electricity. Only half the schools with 100 or less students have electricity, while 99% of schools with more than 930 students have this facility.

The linkage of telecommunication and computers is behind the rapid developments in the field of ICT. To obtain information using Internet, schools should have a telephone connection. Availability of a land phone is at low level and only 26 percent of schools/pirivenas have land phones. Schools best connected to land lines are national schools (95%) and approved private schools (94%). This is followed by pirivenas (90%)) and Navodya schools (67%). In contrast, only 16% of other government schools have a land-line connection available to them. Only 15 percent of schools with 100 students or less have a telephone facility while 85.8 percent of schools/pirivenas having 930 or more students have this facility.

Internet facility and e-mail facility are available in very small proportions of 6.4 and 4.1 percent of schools respectively. Highest availability of nearly 50% is in national schools and equally in private schools. Among the other government schools numbering 7639 enumerated, only 3% have Internet available to them. Internet is also more available in larger schools and almost not available in the small schools with less than 100 students.

Having a computer laboratory, a library and books/magazines on ICT is useful to encourage students and teachers to use ICT in teaching and learning processes. Although 72 percent of schools/pirivenas have a library, only 17 percent of schools have a computer laboratory. Books/magazines on ICT are available only in 27 percent of the schools.

Availability of hardware in schools/pirivenas was also assessed in this Census. Most of the facilities and hardware are more available in national and Navodya schools and to a similar extent in private schools. Other government schools, which are also, the small student size schools are the least well equipped with ICT facilities and hardware.

Computer is a key factor in using ICT in schools. Nearly 30 percent school/pirivenas have computers and about 26 percent of schools have computer printers in working conditions. The penetration of computers varies by category and size of schools. National (95.2%) and Navodya (90.1%) schools are better equipped with computers compared to other government schools (23.9%). Availability of desktop computers in Private schools (84.1%) is also considerably high. Only 17.0 percent pirivenas reported to have computers. Larger schools are better equipped with computers than smaller ones. The percentage of schools with 930 students or more having computers is 88.5 percent. Availability of computers in schools with less than 100 students, 100 – 300 students and 300 – 930 students are 6.5, 17.7 and 46.5 percent respectively.

A widely used indicator on the infusion of computers to education system is students-computer ratio. That is the number of students per computer. This ratio for schools/pirivenas now stands at 137. Teacher-computer ratio is 7.

Scanners and multimedia projectors are very useful but expensive hardware in using ICT for education to all students in schools across the country. For example teaching about pests in biology for GCE (A/L) students can be done in two ways. One way is to use a textbook where pictures of pests in black and white are given with several paragraphs written describing them. Here there is a risk of different students understanding these features differently. The other method is to find colour pictures/video clips of pests from a book or by searching in the Internet and displaying it on a large screen using a multimedia projector. If this method or similar alternative method was used, the knowledge can be imparted more effectively. This method requires that schools have scanners and multimedia projectors. Percentages of school

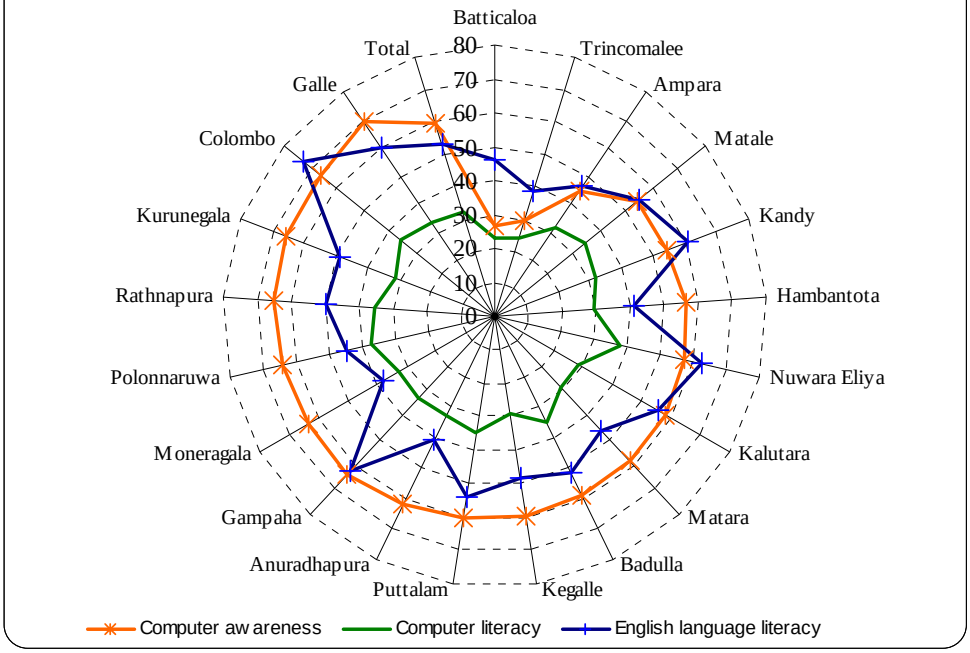
with scanners and multimedia projectors are 5.8 and 2.3 percent respectively. Only 0.5 percent of schools have laptop computers.

Three self-reported indicators on teachers' language and computer literacy were assessed. Those were computer awareness, computer literacy and English language literacy. Nearly 60 of the teachers of schools/pirivenas have the computer awareness, which was defined as knowing about at least one use of computers. This ratio for male teachers and female teachers are 63 and 58 percent respectively.

According to a study conducted in 2004 by the Department of Census and Statistics, a much lower proportion of only 18 percent of people in Sri Lanka in the age group of 5 – 69 years, were aware about computers. There could be a number of reasons for the difference in these estimates. One is the age group. The very young and the more elderly are less likely to be computer aware. Secondly, teachers are among the more educated population and more likely to have access to technology. On the average, about 28 percent of teachers in government schools are graduate teachers. The percentage of trained teachers is 68 percent. Their chances of exposure to computers during training and studies are likely to be high.

Self-reported computer literacy of teachers, which was defined as the ability to use a computer and do some work on their own, of schools/pirivenas is 32 percent: male teachers 39 percent and female teachers 30 percent. Development of technological knowledge of teachers is very important in using ICT for making revolutions in the learning and teaching process in classrooms. Students-computer literate teacher ratio is 56 and this is three times higher than the normal students-teacher ratio 18.

Self-reported computer awareness, literacy and English language literacy of government school teachers (percentages)



Percentage of teachers in schools/pirivenas who reported that they could read and understand documents written in English language is 54 percent: male teachers 56 percent, female

teachers 53 percent. A statistical test carried out on relationship between English language literacy, computer awareness and computer literacy shows that there is no significant relationship between English language literacy and computer awareness but there is a significant positive relationship between computer literacy and English language literacy. Also as expected there is a strong relationship between computer awareness and computer literacy. Another statistical test carried out at district level revealed that there is no statistically significant relationship between computer literacy of teachers and availability of computers in schools. This is a cause for concern. Having computers in schools alone do not improve the computer literacy of teachers. Traditional teaching using blackboards and textbooks perhaps is the dominant mode of teaching still and teachers have little or no time to use whatever available ICT facilities to enhance their own skills or to teach. This points to the need for policies and action to promote the use of ICT facilities by teachers.

It is a worldwide-accepted fact that the use of ICT in education can bring about positive changes to the society, which requires infrastructure facilities such as electricity, telephone, educational software, Internet facilities and hardware such as computers, scanners, and multimedia projectors. The levels of educational indicators such as enrollment rate, gender parity in education, primary education completion rate etc is very impressive in Sri Lanka. But issues, such as poverty, unemployment etc are still persistent. This emphasizes the need to improve quality of education and providing equal education for all students across the country. ICT is influential in providing equal education for all students. Even though all schools do not have required facilities, innovative thinking can bring solutions until the necessary facilities are provided. For example, without expecting teachers of rural schools to develop educational materials, standard materials can be prepared with very user-friendly multimedia tools and copies burnt into compact disks can be distributed to all relevant schools. This will promote providing equal education for all students. Covering these aspects, there is a need to prepare a ICT policy for the Education system of the country to obtain the maximum benefits of the rapid developments in ICT for teaching and learning process in the class rooms.

Copies of the preliminary report could be obtained from the sales counter of the Department of Census and Statistics.

Address: 5th Floor, Unity Plaza, Galle Rd., Colombo 4.

Technological tools and facilities available in government schools, approved private schools and and pirivenas by numbers

No.	Indicator	Number of students				
		100 or below	100 to 300	300 to 930	930 and above	All schools/ pirivenas
1	Number of schools/pirivenas enumerated	2861	2798	2271	1021	8951
Schools/pirivenas with						
2	Electricity (%)	53.3	78.0	91.7	98.6	76.0
3	Land phones (%)	15.3	10.2	32.5	85.8	26.2
4	Internet connection (%)	1.0	1.1	6.1	36.6	6.4
5	e-mail facility (%)	0.8	.9	3.6	23.0	4.1
6	Computer laboratory	1.6	4.7	24.8	75.9	17.0
7	Library (%)	57.0	69.4	83.7	93.9	71.9
8	Books/magazines on ICT (%)	8.7	15.5	41.0	76.7	26.8
9	Desktop computers (%)	6.5	17.7	46.5	88.5	29.6
10	Printers (%)	4.3	12.4	42.8	87.5	26.2
11	Schools/pirivenas with printers as a percentage of schools/pirivenas having computers (%)	59.4	64.4	84.5	96.4	83.1
12	Scanners (%)	0.4	1.5	7.0	29.4	5.8
13	Schools/pirivenas with scanners as a percentage of schools/pirivenas having computers (%)	5.9	8.3	14.2	32.3	18.7
14	Multimedia projector (%)	0.0	0.4	3.2	11.5	2.3
15	Schools with multimedia projectors as a percentage of schools/pirivenas having computers (%)	0.5	1.8	5.3	12.1	6.6
16	Overhead projectors (%)	0.3	6.1	38.3	76.6	20.5
17	Laptop computers (%)	0.1	0.3	0.5	1.8	0.5
Teachers in schools/pirivenas						
18	Self reported computer awareness (%)	50.0	54.6	59.4	63.9	59.3
19	Self reported computer literacy (%)	19.3	22.3	33.0	40.4	32.3
20	Self reported English language (read and understand) literacy (%)	37.1	40.5	47.9	56.0	53.7
21	Teacher-computer ratio	65	26	6	5	7
22	Students-computer literate teacher ratio	40	59	59	57	57
23	Student-teacher ratio	8	13	20	23	19
Students in schools/pirivenas						
24	Students-computer ratio	513	347	123	120	138