Working Paper 310

# E-Education: An Impact Study of Sankya Programme on Computer Education

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# E-EDUCATION: AN IMPACT STUDY OF SANKYA PROGRAMME ON COMPUTER EDUCATION

**N Sivanna* and Suchetha Srinath****

## Abstract

*A lot of children do not have access to a standard school environment with good teaching facilities, especially in government and unaided schools and most of the students are deprived of the advantage of computer literacy due to lack of facilities. Sankya, a pro-social initiative in e-education, intends to create a virtual network connecting schools, teachers and children through a framework that will facilitate dissemination of information and knowledge to a larger section of children. This paper analyses the impact of computer education and its utility in schools and organisations that were using computers donated by Sankya.*

## Background

Sankya is a collaborative initiative undertaken by software and hardware industries and Rotary Clubs of Rotary District 3190 to enhance the impact of education by using computers and technology. Sankya, established in 2007, has been engaged in the collection of used computers from the industry and refurbishing them with the necessary OS, applications and software and deploying them in various government and unaided schools to provide the basic infrastructure to facilitate computer usage among school children and prepare them for the future. This initiative began when Sankya learnt that working computer systems were being shipped to warehouses for storage after they were replaced by newer systems every three years or so by software/hardware industries. Realising the potential of re-using these computers, Sankya evolved an innovative programme in collaboration with HP, Azim Premji Foundation, Microsoft and Rotary Clubs to donate these computers to schools and other organisations. Within one year, Sankya deployed more than 2,000 computer systems in about 400 to 500 schools in Karnataka, with a few going to Chennai, Baroda, Delhi and Kolkota.

## 1. Context

A lot of children do not have access to a standard school environment with good teaching facilities. There are around 45,000 government and unaided schools in Karnataka and most of the students are deprived of the advantage of computer literacy due to lack of facilities. Sankya, a pro-social initiative in e-education, intends to create a virtual network connecting schools, teachers and children through a framework that will facilitate dissemination of information and knowledge to a larger section of children. The immediate target is the children in government and unaided schools but this initiative can reach other children who are not covered in the initial phase. The key challenges in education today can be summarised as:

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- Lack of good teachers who can deliver the lessons in class rooms in a uniform and consistent way in all the schools, especially in remote rural schools
- A high percentage of slow learners amongst children who need repeated classroom sessions
- Lack of good infrastructure like laboratories, equipment, experimental facilities etc., in many schools

## 2. Objectives and impact of the programme

The programme envisages setting up a Centre of Excellence with the necessary hardware and software to meet the following objectives in a phased manner.

1. Create a Knowledge Centre that will become a hub to connect as many schools as possible through the computers deployed by Sankya.
2. Create a framework for content storage, accessible by the children using a standard computer system, broadband links and satellite links.
3. Create or identify content in creative learning, education, hygiene, science etc.
4. Make the communication between the children and the Knowledge Centre interactive

The social impact of the programme is envisaged in terms of covering around 500 schools every year by providing them with computer facilities and thereby connecting a large percentage of the population to a Knowledge Centre. This will, consequently, bring in a sea change in their learning, awareness and behaviour and have a long-term impact on society, on the economy and on the wealth of the nation. Some of the key impact areas will be

- Teacher training
- Increased awareness in computer usage
- Hygiene and health
- Teaching Science
- Environment and understanding

## 3. Need for impact study

There are many instances of organisations donating used computers to schools or to NGOs, through Rotary Clubs. None of these programmes can be termed as effective or successful because the reach of the organisation was limited. Once the computer systems are donated, the donor-organisations do not keep track of the usage or the working condition of the computers. The receiving institution does not have any clue about the system or how it works. Soon the computers are packed and kept aside with everyone feeling frustrated. If an organisation donates, say 100 computers, the lack of processes to check their working condition, OS, content, deployment at schools, support etc., leads to the gifts becoming useless. **Set in this backdrop, the impact study** addresses some of the following issues:

1. What are the overall and specific focuses of the programme?
2. Whether the objectives of the programme are achievable or not?
3. Impact – what impact is expected out of it and in what time frame? Impact on learning, pass percentages, and concept understanding

4. What are the perceptions of the
    a. Donor agencies
    b. School management and other user organisations (is it another dumped object or a valuable asset!)
    c. Teachers, parents and children (excited, bored or used to it?),
    d. Rotary clubs (yet another project!)
    e. Are there any problems or constraints?
5. What are the expectations – by the donors, schools, teachers, children, other user organisations and rotary clubs?
6. The extent of usage – what percentage is being used? (User profile)
7. Shortages – as perceived by the teachers, children, school management and other user organisations. What else would they like to get/see?
8. Spread effect of the programme - felt by other school managements or other user organisations
9. Transparency of operations – website, processes, adherence to processes, traceability etc.

## 4. Methodology

Based on random sampling, the schools and organisations were selected covering various institutions and organisations providing services to physically challenged persons, spastics, *bala mandiras*, speech and learning disabled, braille centres, blind schools, centres serving mentally retarded and NGOs. A detailed questionnaire, which was approved by Sankya, along with the list of schools and organisations, was administered covering physical, institutional and quality aspects of the use of computer by the respective schools and organisations. One-to-one interviews were held with the stakeholders to capture the perceptions of the students, parents and teachers and members of the management about the positive and negative aspects of computers. Of the 40 schools and organisations selected, 35 were surveyed and the remaining 5 were not accessible because contact details were not clear.

Schools and organisations were selected based on the number of computers donated by Sankya, the minimum being 5. Sample selection was made with the intention of including all geographical areas of Bengaluru city. This paper is presented in the form of sections: Section I lays out the background, context, rationale, objectives and the methodology followed for studying the impact of computer education on school going children; Sections II and III present details pertaining to schools and organisations in implementing the programme and; Section IV provides an overview of impact of the programme and some suggestions to strengthen the programme further.

## 5. Relevance of the Study

The world today is characterized by dramatic cultural, economic, social and educational differences; a young individual's circumstance depends largely on the skills he or she is able to acquire during schooling. Simultaneously, the use of information and communication technologies (ICT) is skyrocketing in all aspects of life. Lack of computer literacy in this immensely diverse living environment can leave a person floundering in an unprecedented and unifying global culture. This has made it necessary for educational institutions to offer ways and means of enabling children who pass out of schools to

succeed in this information age or, as it is sometimes labelled, this post-industrial, virtual and cyber society.

The idea behind all these terms is that ICT at present plays a central role in young people's lives and in society at large. Two major assumptions underlie the role of ICT: the first is that the proliferation of these technologies is causing rapid transformation in all areas of life; the second is that ICT tends to unify and standardize culture (World Youth Report, 2003: 311). It is on the basis of these assumptions that Sankya's initiative becomes so important.

### 6. Policy Initiatives

In this sector, the Central Government operates four Centrally Sponsored Schemes to enhance computer literacy in schools. They are, (i) Information and Communication Technology (ICT) in schools for providing assistance to state governments for computer education and computer-aided education in secondary and higher secondary schools, (ii) Integrated Education for Disabled Children (IEDC) for assisting state governments and NGOs in mainstreaming the disabled children in school education, (iii) Access and Equity for providing assistance to NGOs to run girls' hostels in rural areas, and (iv) Quality Improvement in schools which include provision of assistance to state governments for introduction of yoga, improvement of science education in schools, environment education and population education in addition to supporting science olympiads (Planning Commission 2009:6) .

However, these schemes are solely in the public sector. Sankya project, in collaboration with the initiative undertaken by software and hardware industries and Rotary Clubs, is a scheme that is initiated and run by the civil society, and benefits from the corporate social responsibility (CSR) initiatives of software companies. This enables the project to fill the gaps that the state may not be able to. Drawing from the public responsibility school of thought as supported by Preston and Post (1975, 1981), such CSR initiatives by managements of companies enable them to fulfil their 'public responsibility' and augment policy processes.

## Impact of Computer Education in Schools

We contacted 23 schools and 12 organisations to collect necessary information to analyse the impact of computer education particularly on students' education and the overall performance of schools and organisations. The data collected through administering questionnaires and one-on-one interviews have been analysed and presented in the following tables and graphs.

### 1. Overview of schools surveyed

We approached 23 schools to meet and discuss with the management, principals/ head masters, teachers and students about the usage of computers donated by Sankya. The following table provides information pertaining to certain features of schools that were visited.

**Table 1: Details about the schools**

| Type of school | Frequency | Per cent |
|---|---|---|
| Government | 2 | 8.7 |
| Aided | 11 | 47.8 |
| Private | 10 | 43.5 |
| **Total** | **23** | **100.0** |
| **Year of establishment** | | |
| Before 1940 | 2 | 8.7 |
| 1941-1960 | 2 | 8.7 |
| 1961-1980 | 9 | 39.1 |
| 1981-2000 | 7 | 30.4 |
| After 2001 | 3 | 13.0 |
| **Total** | **23** | **100.0** |
| **Level of schooling** | | |
| **Nursery** | | |
| Yes | 20 | 87.0 |
| No | 3 | 13.0 |
| **Total** | **23** | **100.0** |
| **Primary** | | |
| Yes | 21 | 91.3 |
| No | 2 | 8.7 |
| **Total** | **23** | **100.0** |
| **Higher primary** | | |
| Yes | 21 | 91.3 |
| No | 2 | 8.7 |
| **Total** | **23** | **100.0** |
| **High school** | | |
| Yes | 19 | 82.6 |
| No | 4 | 17.4 |
| **Total** | **23** | **100.0** |

**Figure 1: Type of school**

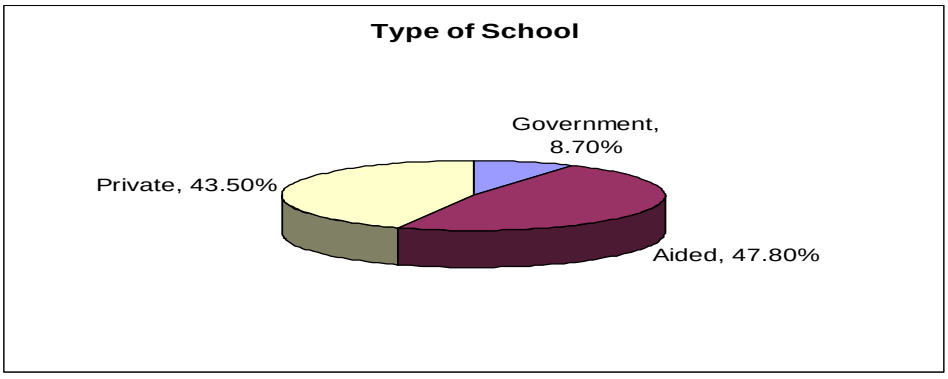
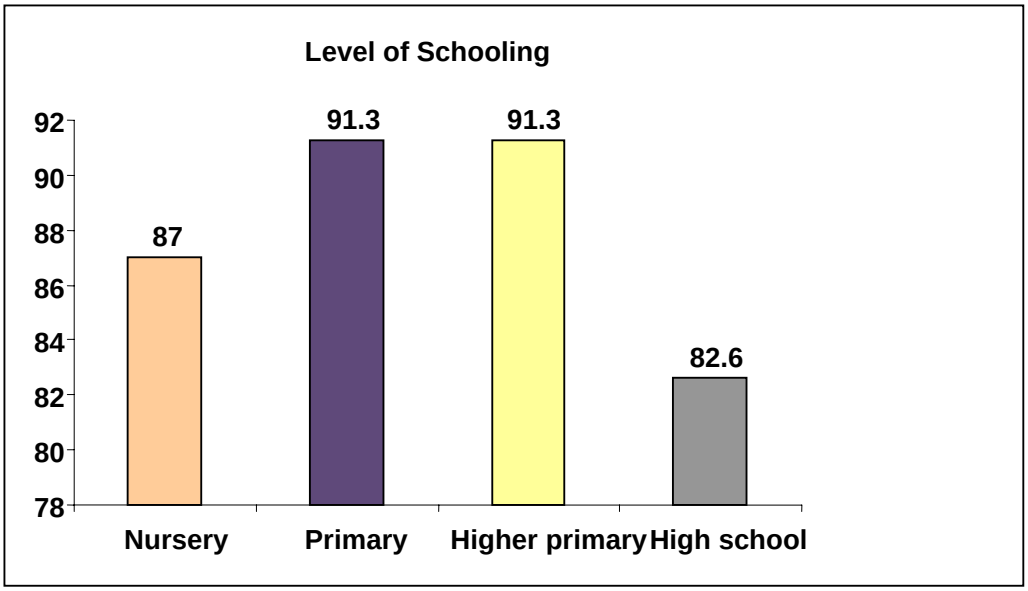


**Figure 2: Level of schooling**




It is evident from the above table and graphs that out of 23 schools surveyed, 47.8 per cent was government-aided schools, 43.5 per cent private schools and 8.7 per cent (2 schools) government schools. In terms of year of establishment, almost 39 per cent of the schools were established between 1961and 1980 while 30.4 per cent was between 1981 and 2000. It is significant to note from the table that some of the schools surveyed started functioning prior to independence. Primary and higher primary levels of education were being provided by 91.3 per cent of schools. 87.0 per cent provided nursery/pre-primary level of education and 82.6 per cent high school education.

## 2. Staff and students

The charts below provide information pertaining to staff strength, both male and female, in schools and student strength including boys and girls. As seen in Figure 3 female staff members were more compared to male staff members. Of the surveyed schools, three did not have any male staff members. In terms of teacher strength, 10 schools had (43.48 per cent) more than 21 females whereas 15 schools (65.22 per cent) had less than 10 male teachers**.**

**Figure 3: Number of staff members**

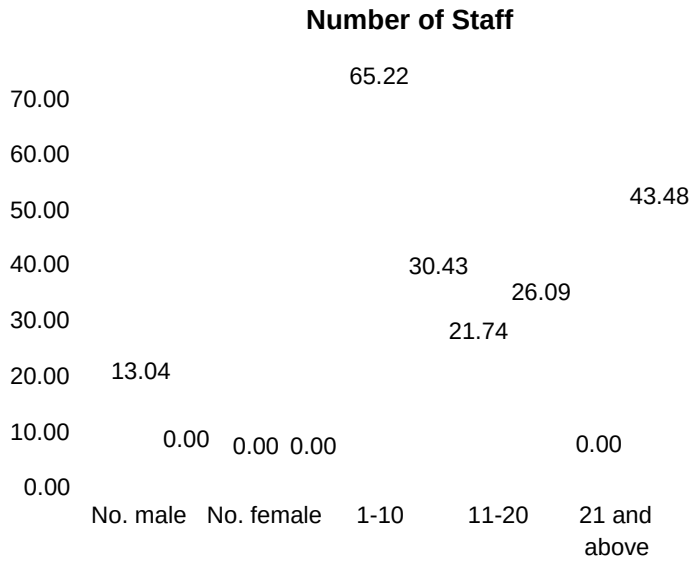
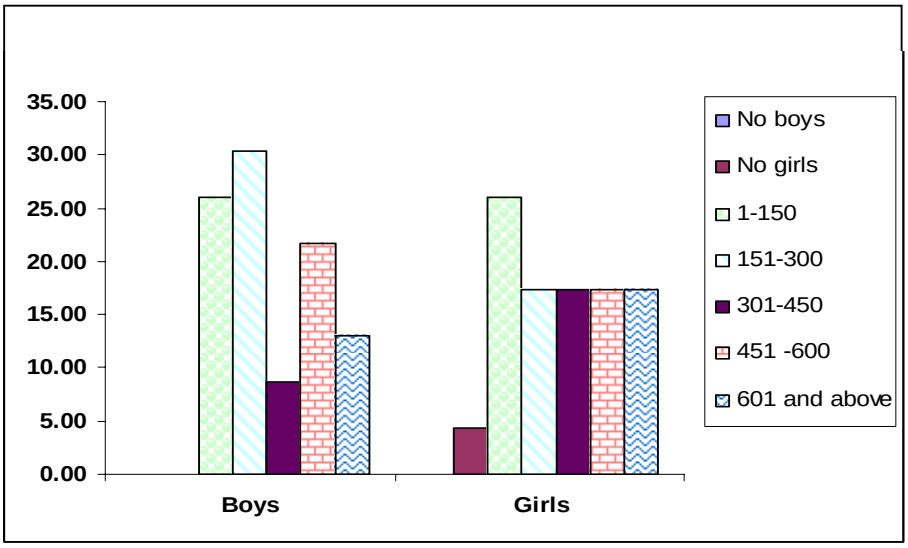



**Figure 4: Number of students - both boys and girls**




This is indicative of the fact that the schools would like to have female teachers rather than male teachers. Almost all (except for one school, purely for boys) the schools surveyed had co-education. Of the total, around 50 per cent of schools had a strength ranging between 1 to 300 and the remaining between 301 and 600 and above 601.

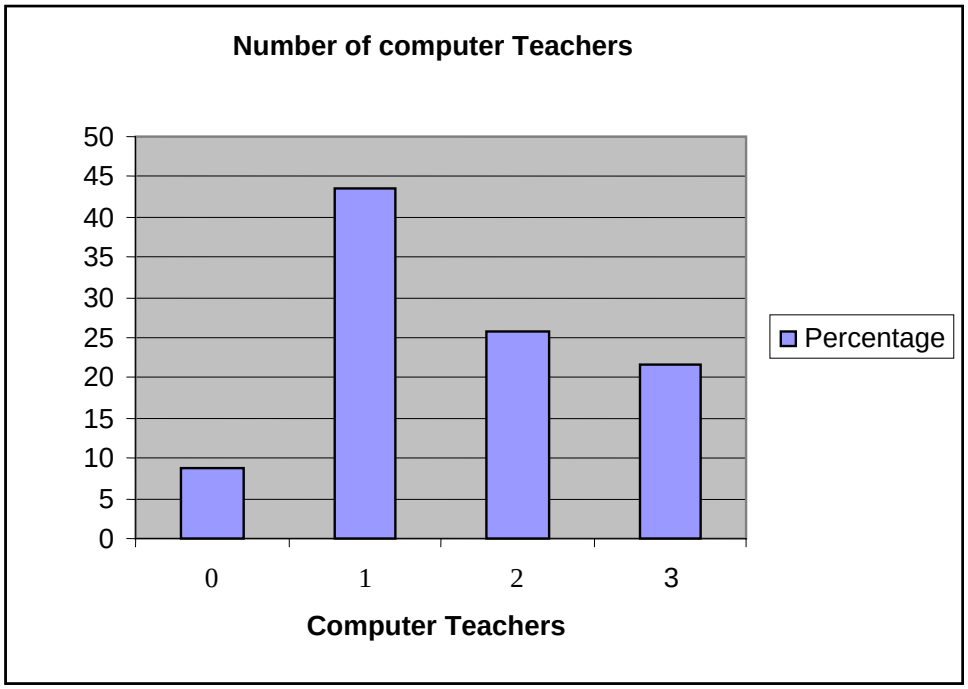
With regard to number of computer teachers available to teach computer education, the information provided in Table 2 and Figure 5 shows that 43.5 per cent of the schools surveyed have one

computer teacher in the teaching faculty of the school. About six schools (25.7 per cent) have 2 computer teachers and 5 schools (21.7 per cent) have 3 computer teachers. The RSPA Charitable Trust and Sri Rama Mandira Sri Shakuntala Devi Higher Primary and Middle School did not have any assigned computer teacher. They reported that the class teachers were teaching the basics of computer theory to their students.

**Table 2: Number of computer teachers - school-wise**

| Number of Computer Teachers | | |
|---|---|---|
| **No. of computer teachers** | **Frequency** | **Percentage** |
| 0 | 2 | 8.7 |
| 1 | 10 | 43.5 |
| 2 | 6 | 25.7 |
| 3 | 5 | 21.7 |
| **Total** | **23** | **100** |

**Figure 5: Number of computer teachers**




## 3. Source of donation

The present study mainly looked at the impact of computers donated by Sankya on computer education in schools. However, we also came to know that other organisations were involved in similar activities. The details are presented in the following table.

**Table 3: Details about year and source of receiving the computer**

| Year | Frequency | Per cent |
|---|---|---|
| **From Sankya** | | |
| 2007 | 13 | 56.5 |
| 2008 | 10 | 43.5 |
| **Total** | **23** | **100.0** |
| **Other organisations** | | |
| Yes | 6 | 26.1 |
| No | 17 | 73.9 |
| **Total** | **23** | **100.0** |

It is clear from Table 3 that of the total schools surveyed, 56.5 per cent received computers from Sankya in 2007 and 43.5 per cent in 2008. Apart from procuring computers from Sankya, six schools (26.1 per cent) had approached other organisations such as American Indian Association, IBM, Pinderest India, JP Nagar and Rotary Club and also individuals and politicians for computer donations. On receiving computers in good working condition, the managements of the schools thanked Sankya for extending support to various schools through generous contribution of computers. For example, the management of one of the schools expressed their feelings thus: "We did not feel that we were receiving charity! We were impressed with the way the computers were packed and delivered in cardboard boxes."

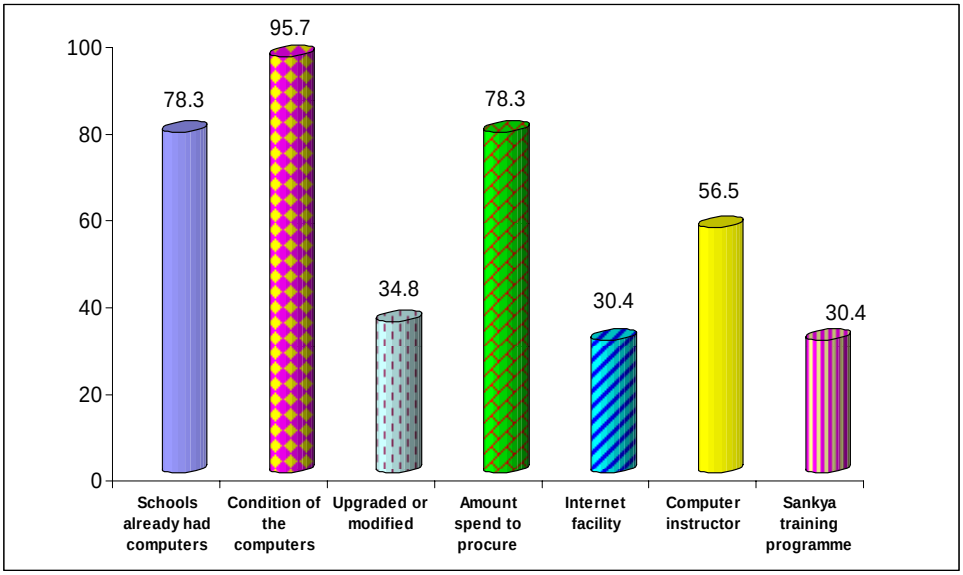
## 4. Status of computers

The content and quality of any item that is either donated or purchased will be valued only when it is used and maintained in good working condition. With this backdrop, we collected necessary information and the analysis of the same is presented in the following table.

**Table 4: Details about computers received and their status by the school**

| No. of computers received | Frequency | Per cent |
|---|---|---|
| 5 | 12 | 52.2 |
| 7 | 2 | 8.7 |
| 8 | 2 | 8.7 |
| 9 | 1 | 4.3 |
| 10 | 6 | 26.1 |
| **Total** | **23** | **100.0** |
| **Schools already had computers** | | |
| Yes | 18 | 78.3 |
| No | 5 | 21.7 |
| **Total** | **23** | **100.0** |
| **Condition of the computers** | | |
| Working | 22 | 95.7 |
| Not-working | 1 | 4.3 |
| **Total** | 23 | 100.0 |
| **Upgraded or modified** | | |
| Yes | 8 | 34.8 |
| No | 15 | 65.2 |
| **Total** | **23** | **100.0** |
| **Amount spent to procure** | | |
| Yes | 18 | 78.3 |
| No | 5 | 21.7 |
| **Total** | **23** | **100.0** |
| **Internet facility** | | |
| Yes | 7 | 30.4 |
| No | 16 | 69.6 |
| **Total** | **23** | **100.0** |
| **Computer instructor** | | |
| Yes | 13 | 56.5 |
| No | 10 | 43.5 |
| **Total** | **23** | **100.0** |
| **Sankya training programme** | | |
| Yes | 7 | 30.4 |
| No | 14 | 60.9 |
| Don't know | 2 | 8.7 |
| **Total** | **23** | **100.0** |

**Figure 6: Number of computers received and their status (% of Yes)**




A close look at Table 4 shows that of 23 schools surveyed, 51.2 per cent had received 5 computers each from Sankya, 26.1 per cent had received 10 computers each and 8.7 per cent up to 7 or 8 computers. However, in one school (Government High school, Govindasettipalya) the number of computers supplied by Sankya did not match the number of computers received by the school and the serial numbers of the computers did not match what was on record. It is significant to note that 78.3 per cent of the schools already had computers prior to receiving the same from Sankya whereas 5 schools (21.7 per cent) did not have any computers. The schools that had computers prior to Sankya's donation mainly received them from organisations that are mentioned above. Some of the schools, with the exception of 5 schools, had purchased at least one computer for administrative tasks. With the exception of one school, a majority (95.7 per cent) reported that the computers received from Sankya were in good working condition. One school, Shri Rajarajeshwari Vidya Shale, claimed that two of the monitors and one CPU received were not working.

It is quite significant and equally encouraging to document here that about 8 schools (34.8 per cent) had indeed upgraded or modified the computers after procuring them from Sankya. Of these schools, four schools (50 per cent) had increased the RAM of the computers as the systems donated from Sankya did not have enough memory; two schools (25 per cent) had to install the operating system and some schools also installed additional software like MS Logo and software Nuddi. Further, 78.3 per cent of schools said that they had to incur some expense for the annual maintenance of the computers. In five schools, there was no such expenditure as the computer teacher or a volunteer maintained the computers. Maintenance of computers in government schools was done by certain agencies free of cost. With regard to extending internet facilities, 69.6 per cent of the schools did not have internet connection and the schools that were having the facility (30.4 per cent) allowed only the teachers to use the facility that was available only on one or two computers. Most school authorities were worried about the abuse of internet because they were not equipped to restrict access to certain

sites on the internet. Notwithstanding this, the management was of the view that they were ready to extend the internet facilities if Sankya would help to bear the cost.

About half of the schools visited had computer teachers and the schools that did not have computers as a part of their curriculum had class teachers or volunteers to impart basic computer skills to students. A few schools said that it would benefit them a lot if Sankya could assist them with providing computer faculty and volunteers. A majority of the schools (60.9 per cent) were not aware of the training programme offered by Sankya while 30 per cent schools benefited from the same. With regard to the training programme, suggestions were made as follows:

- Sankya need to disseminate more information about the training provided
- Some schools requested a newsletter to be mailed with details about the training.
- Systematic follow-up after training is needed.
- Different levels of computer training would be helpful.
- Training and updates on IT products and advanced training for instructors.
- Sankya should conduct training sessions in their school for all the teachers.

## 5. Use of computers

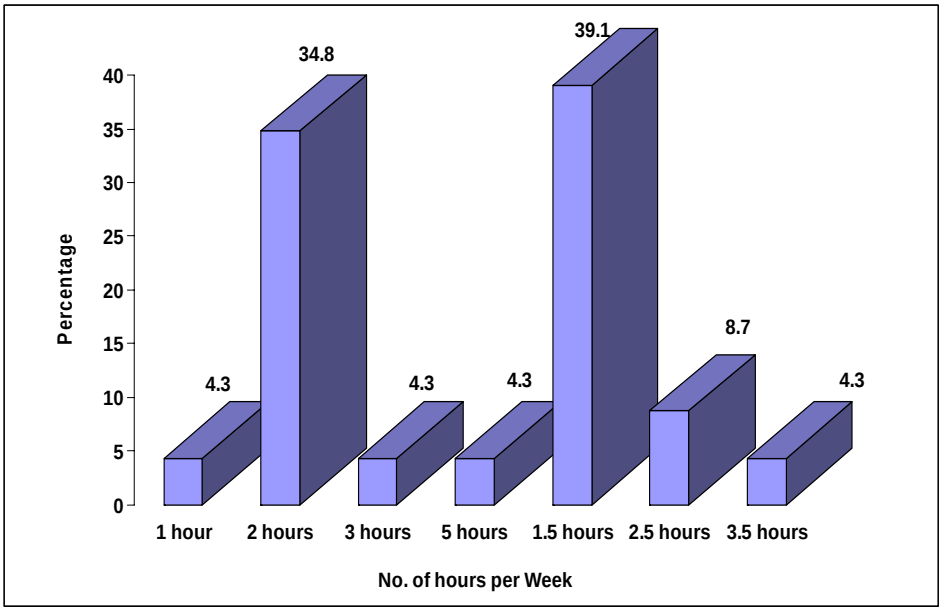
The impact of any product is effectively understood and felt only when it is properly used and utilised. Similarly, the impact of the donated computers is demonstrated by the effective use of the same by teachers and students of the schools. The table below shows the use of computers by the schools.

**Table 5: Details pertaining to use of computers**

| Use of computers | Frequency | Per cent |
|---|---|---|
| **Part of curriculum** | | |
| Yes | 20 | 87.0 |
| No | 3 | 13.0 |
| **Total** | **23** | **100.0** |
| **No. of hours per week** | | |
| 1 hour | 1 | 4.3 |
| 2 hours | 8 | 34.8 |
| 3 hours | 1 | 4.3 |
| 5 hours | 1 | 4.3 |
| 1.5 hours | 9 | 39.1 |
| 2.5 hours | 2 | 8.7 |
| 3.5 hours | 1 | 4.3 |
| **Total** | **23** | **100.0** |
| **Packages taught** | | |
| Windows, MS-office | | |
| Yes | 20 | 87.0 |
| No | 3 | 13.0 |
| **Total** | **23** | **100.0** |

| | | |
|---|---|---|
| **Educational stories** | | |
| Yes | 4 | 17.4 |
| No | 19 | 82.6 |
| **Total** | **23** | **100.0** |
| **Computer games** | | |
| Yes | 10 | 43.5 |
| No | 13 | 56.5 |
| **Total** | **23** | **100.0** |
| **Programming:** | | |
| **C,C++,Logo** | | |
| Yes | 5 | 21.7 |
| No | 18 | 78.3 |
| **Total** | **23** | **100.0** |
| **Java** | | |
| Yes | 3 | 13.0 |
| No | 20 | 87.0 |
| **Total** | **23** | **100.0** |
| **Tally** | | |
| Yes | 2 | 8.7 |
| No | 21 | 91.3 |
| **Total** | **23** | **100.0** |
| **DTP** | | |
| Yes | 2 | 8.7 |
| No | 21 | 91.3 |
| **Total** | **23** | **100.0** |
| **Photoshop** | | |
| Yes | 5 | 21.7 |
| No | 18 | 78.3 |
| **Total** | **23** | **100.0** |
| **Internet** | | |
| Yes | 4 | 17.4 |
| No | 19 | 82.6 |
| **Total** | **23** | **100.0** |
| **Web-designing** | | |
| Yes | 7 | 30.4 |
| No | 16 | 69.6 |
| **Total** | **23** | **100.0** |
| **Used by management** | | |
| Yes | 13 | 56.5 |
| No | 10 | 43.5 |
| **Total** | **23** | **100.0** |
| **Used by office staff** | | |
| Yes | 15 | 65.2 |
| No | 8 | 34.8 |
| **Total** | **23** | **100.0** |

**Figure 7: Number of hours per week for computer instruction**




It is apparent from Table 5 that 87 per cent of the schools have computer education as part of their curriculum while the rest do not have teachers to teach the subject because it is not a mandatory subject as per the Board of Education. Nearly 39.4 per cent of the schools devote 1.5 hours a week for computer instruction while one-third use 2 hours a week. In 87 per cent of the schools basic computer skills along with Windows were being taught to students regularly. Educational stories were mainly used by government schools and schools that did not have computer education as part of their curriculum and almost half of the schools permit children to play computer games in school. In some schools, it was used as an incentive for good behaviour in class. Most of the schools surveyed did not have DTP, JAVA, Tally, C or C++ as part of computer education syllabus in schools. About one-third of schools use web designing as part of their computer syllabus while almost 70 per cent do not. Almost 56 per cent of managements and 65 per cent of staff show interest and use the computers in schools. In one of the schools surveyed, the computers were used by the management for administrative purposes.

## 6. Impact of the programme

The prime objective of this study is to assess the impact of computer education on students and teachers. In order to collect information on this vital aspect we interacted with students and teachers to document their perceptions concerning various components of the project. The details are presented in the following table.

**Table 6: Details pertaining to impact of the programme**

| Impact of the programme | Frequency | Per cent |
|---|---|---|
| Making children aware of computers & giving them hands on experience | 21 | 91.3 |
| Gives the management an opportunity to market their school | 2 | 8.7 |
| **Total** | **23** | **100.0** |

From the above table it can be deduced that a majority (91.3 per cent) of the schools, while acknowledging that the computers donated by Sankya have been very helpful and useful, reiterated that the students were made aware of the use of computers and their confidence and self-esteem were boosted by gaining adequate knowledge of computers. The Sankya Programme has empowered the students with computer skills that would help them in their academic endeavours. The managements of two schools felt that by marketing their schools as ones with facilities for computer education, they increased the enrolment of students.

## 7. Problems in using computers

An attempt was also made to document the problems faced by the schools in providing computer education and in maintaining the computers. The table below provides this information:

**Table 7: Details about problems in using computers effectively**

| Problems | Frequency | Per cent |
|---|---|---|
| Need Qualified computer teacher | 13 | 56.53 |
| Not very fast | 8 | 34.78 |
| Absence of CD drives | 2 | 8.69 |
| **Total** | **23** | **100.0** |

The above table reveals that almost one-third of the surveyed schools felt that the computers donated were not very fast and hence they had to upgrade the RAM on the computers. One school received high-end computers without the Operating System installed in them. More importantly, the schools (56.53 per cent) did not have qualified computer faculty and this was seen as a de-motivating factor in the programme. Most of the schools, with the exception of three, did not experience any difficulty in using the Operating System (OS). Three schools had difficulty using the OS because the operating system had to be reloaded and the system was very slow.

## 8. Support system

While interacting with the members of school managements, a point that was often brought up was the support that they were expecting from the donors. They needed support in training teachers, maintaining computers and acquiring more computers. The table below gives this information

**Table 8: Details with regard to schools needing support**

| Support system | Frequency | Per cent |
|---|---|---|
| Need help in maintenance of computers | 11 | 48.7 |
| Need more computers as existing ones do not work | 3 | 12.9 |
| Would like Sankya to provide training and trained teachers | 9 | 38.9 |
| **Total** | **23** | **100** |

An analysis of Table 8 shows that almost half the schools needed help in the maintenance of computers. A majority of the schools/organisations employed consultants for the maintenance of the computers. In some schools, the computer teacher or office staff maintained them. One point that was frequently raised was the need for training and having trained computer teachers. As seen from the table, more than 38 per cent of the schools were expecting Sankya to provide trained teachers. Some of the teachers interviewed observed that it was pointless to get more computers without the required number of teachers. However, there were demands from the schools that Sankya should donate more computers.

## 9. Report submission

The effective implementation of any programme or a project depends largely on how it is being monitored and the feedback on its progress. This will help the funding or donor organisations to initiate corrective measures to strengthen the various components of the programme.

**Table 9: Details about submission of installation report/ photographs**

| Report submission | Frequency | Per cent |
|---|---|---|
| Yes | 2 | 8.7 |
| No | 21 | 91.3 |
| **Total** | **23** | **100** |

Table 9 shows that most (91.3 per cent) of the schools had not submitted any reports or photographs to Sankya. None of these institutions was aware of the need to do so. Most of the schools wanted a letter from Sankya stating the requirements.

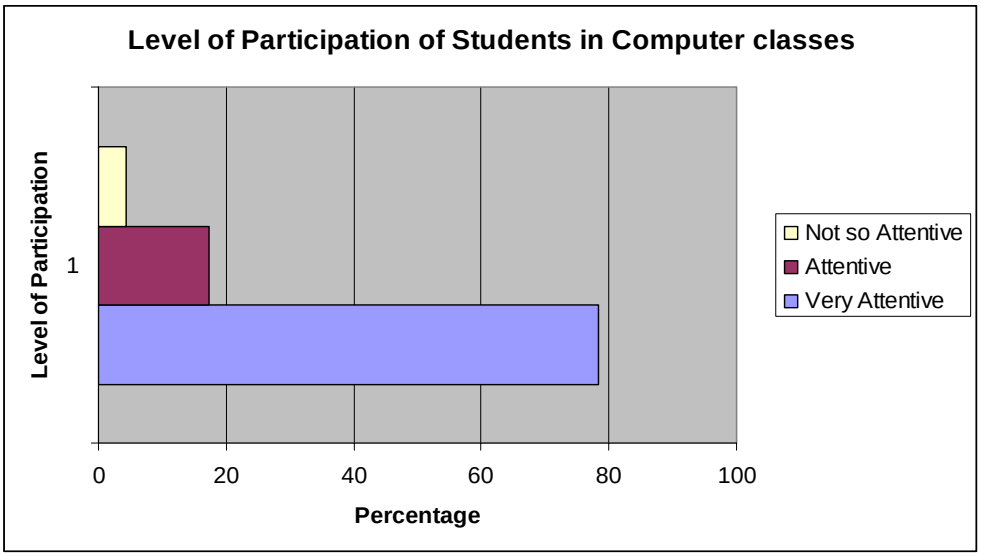
## 10. Student participation in computer classes

The computer programme was specially designed and implemented for the benefit of the student community and to help teachers update their computer knowledge and skills. Here an attempt is made to document the participation of students in acquiring computer education and the details are as follows.

**Table 10: Details pertaining to students' participation in computer classes**

| | Frequency | Per cent |
|---|---|---|
| **Level of participation** | | |
| **Very attentive** | 18 | 78.3 |
| Attentive | 4 | 17.4 |
| Not so attentive | 1 | 4.3 |
| **Total** | **23** | **100** |
| **Find very interesting** | | |
| Very inquisitive to know more | 22 | 95.7 |
| Inquisitive | 1 | 4.3 |
| **Total** | **23** | **100** |
| **Attend classes very regularly** | **23** | **100** |
| **Performance in class test/examination** | | |
| Yes | 17 | 73.9 |
| No | 4 | 17.4 |
| Do not know | 2 | 8.7 |
| **Total** | **23** | **100** |
| **Improvement in attendance** | | |
| Yes | 6 | 26.1 |
| No | 12 | 52.2 |
| Do not know | 5 | 21.7 |
| **Total** | **23** | **100.0** |
| **Improvement in quality of teaching** | | |
| Yes | 8 | 34.8 |
| No | 15 | 65.2 |
| **Total** | **23** | **100.0** |
| **Recognition of talent** | | |
| Yes | 5 | 21.7 |
| No | 18 | 78.3 |
| **Total** | **23** | **100.0** |
| **Syllabus is easy to follow** | | |
| Yes | 20 | 87.0 |
| No | 3 | 13.0 |
| **Total** | **23** | **100.0** |

**Figure 8: Level of participation of students in computer classes**




From Table 10 it is obvious that all the students surveyed in the 23 schools found computers interesting and attended classes regularly. Almost 75 per cent of the students were very attentive in class and felt that it had an impact on their performance in class tests and examinations. Almost half of them felt that computer classes did not have any impact on their attendance and 65 per cent felt that it had no impact on improving the quality of teaching in school. The researcher felt that students answered the questions pertaining to teachers' performance positively due to fear of repercussions from staff. A majority (78.3 per cent) of the schools did not have any means to show appreciation of students for excellence in computer education, while 21 per cent of the schools did acknowledge their excellent students with prizes on Annual Prize Day or Science Day. With the exception of 13 per cent, the majority of students felt that the computer education syllabus was easy to follow.

## 11. Merits and demerits of programme

The end-result of any programme is always assessed in terms of its merits and demerits. A close look at the present computer programme initiated by Sankya reveals that it is evolving and has the potential to extend its footprint not only in Karnataka but also in Tamil Nadu and Andhra Pradesh. The combined views of students and teachers are presented in the following table.

**Table 11: Merits and demerits of having computers in schools**

| Merits and demerits | Frequency | Per cent |
|---|---|---|
| Very helpful & useful for teaching | 17 | 73.9 |
| Giving children an opportunity to learn about computers | 1 | 4.3 |
| Making children aware of computers & giving them hands on experience | 3 | 13.0 |
| Gives the management an opportunity to market their schools | 1 | 4.3 |
| Without good teachers it is difficult to teach computers | 1 | 4.3 |
| **Total** | **23** | **100.0** |

Table 11 reveals that about three-fourths of the sample schools found computers in schools very helpful and useful. Some teachers found computers to be very valuable when teaching science and social studies. Thirteen per cent of the schools felt the programme made the children aware of computers and gave them hands on experience. The major demerit noted by one school is that the lack of qualified teachers would make the task of teaching computers very difficult. Also, one school said the programme gives children an opportunity to learn about computers and another that it gives the management an opportunity to market their schools.

## Impact of Computer Education in Organisations

We approached 12 organisations, covering different geographical areas of Bengaluru city, to collect relevant information to analyse the impact of computer education particularly on the overall performance of the organisations. The data collected through the questionnaire and one-to-one interviews have been analysed and presented in the following tables and graphs.

### 1. Details about the organisations

The following Table 12 gives us information about the type of organisation and their year of establishment.

**Table 12: Details about the organisations**

| Type of organisation | Frequency | Per cent |
|---|---|---|
| Government | 2 | 16.7 |
| NGO | 10 | 83.3 |
| **Total** | **12** | **100.0** |
| **Year of establishment** | | |
| Before 1940 | 1 | 8.3 |
| 1941-1960 | 1 | 8.3 |
| 1961-1980 | 2 | 16.7 |
| 1981-2000 | 4 | 33.3 |
| After 2001 | 4 | 33.3 |
| **Total** | **12** | **100.0** |

**Figure 9: Year of establishment of the organisations**

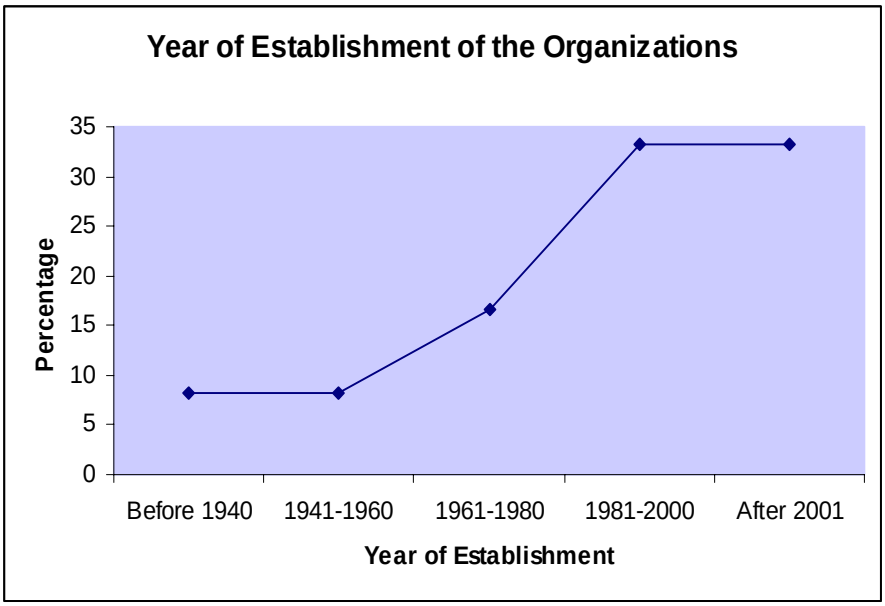



Table 12 shows that the majority (83.3 per cent) of organisations surveyed were NGOs while 16.7 per cent consisted of government organisations (Koushalya Shaale and Government Children's Home for Girls). Of the 10 NGOs, four organisations (Samarthanam Trust for the Blind, Sneha Deep, Enable India and The National Association for the Blind) cater to the needs of the visually handicapped and three organisations help in the rehabilitation of autistic children. As seen in Figure 9, about 33 per cent of the organisations were founded between the years 1981 and 2000 and 33.3 per cent after 2001. Only one organisation (Abalaashrama) was established before 1940, which provides support, shelter and education for girls/women.

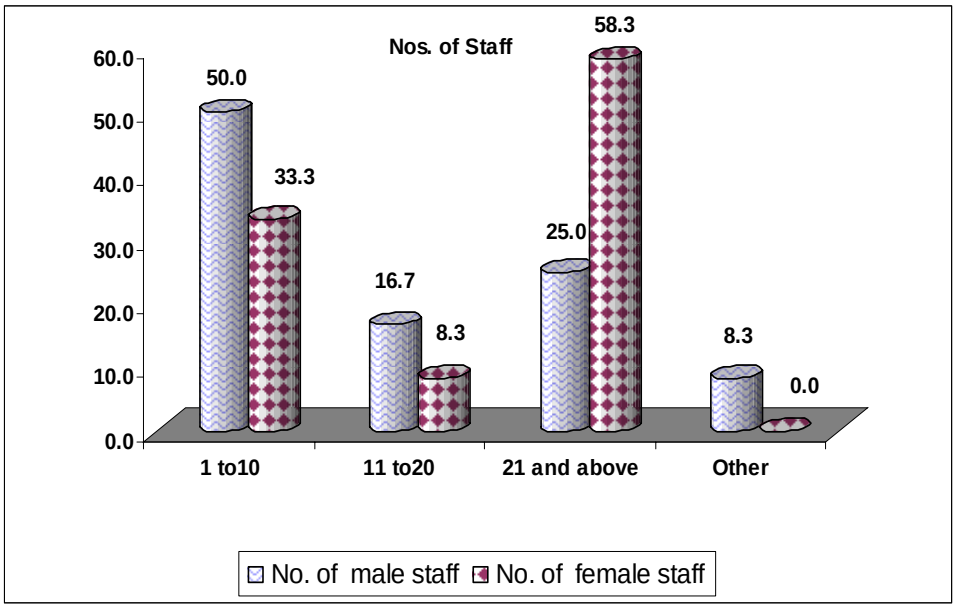
## 2. Details about staff of the organisation

The table below provides information pertaining to staff strength, both male and female, of the organisations that were approached during the fieldwork

**Table 13: Details about staff**

| Strength | Frequency | Per cent |
|---|---|---|
| **Staff** | | |
| **No. of male staff** | | |
| 1 to10 | 6 | 50 |
| 11 to20 | 2 | 16.7 |
| 21 and above | 3 | 25 |
| Other | 1 | 8.3 |
| **Total** | **12** | **100** |
| **No. of female staff** | | |
| 1 to10 | 4 | 33.3 |
| 11 to 20 | 1 | 8.3 |
| 21 and above | 7 | 58.3 |
| **Total** | **12** | **100** |

**Figure 10: Shows the distribution of male and female staff in the organisations**




From the above table it is evident that half of the organisations surveyed have 1-10 male staff while 33.3 per cent of the organisations had a similar number of female staff. Twenty-five per cent of the organisations had more than 21 male staff members on their roster. Only one organisation, Abalaashrama, could not provide accurate figures about the number of employees because they had only residents and volunteers working for the organisation. With regard to the number of female staff, about 58.3 per cent of the organisations had more than 21 female staff members and 33.3 per cent had less than 10 female staff members.

## 3. Sources of donation and the status profile of computers

The data obtained from the organisations indicated that the main source of computers was Sankya followed by others. The tables below provide information with regard to the source and also the status of computers received.

**Table 14: Details about year and source of receiving the computer**

| Year | Frequency | Per cent |
|---|---|---|
| **From Sankya** | | |
| 2007 | 6 | 50.0 |
| 2008 | 4 | 33.3 |
| 2009 | 2 | 16.7 |
| **Total** | 12 | 100.0 |
| **Other organisation** | | |
| Yes | 3 | 25.0 |
| No | 9 | 75.0 |
| **Total** | 12 | 100.0 |

Table 14 reveals that half of the organisations received computers in 2007 and 33.3 per cent received them in 2008. Only two organisations out of those surveyed received computers in 2009. One-fourth (25 per cent) of the organisations received donations from IBM, Canara Bank, individuals etc. Sankya was the sole donor for the majority (75 per cent) of the organisations.

**Table 15: Details about computers received and their status by the organisations**

| | Frequency | Per cent |
|---|---|---|
| **Number of computers received** | | |
| 5 | 5 | 41.7 |
| 6 | 1 | 8.3 |
| 10 | 2 | 16.7 |
| 15 | 3 | 25.0 |
| 35 | 1 | 8.3 |
| **Total** | **12** | **100.0** |
| **Organisations owning computers prior to Sankya donation** | | |
| Yes | 9 | 75.0 |
| No | 3 | 25.0 |
| **Total** | 12 | 100.0 |
| **Condition of the computers** | | |
| Working | 11 | 91.7 |
| Not-working | 1 | 8.3 |
| **Total** | 12 | 100.0 |
| **Upgraded or modified** | | |
| Yes | 7 | 58.3 |
| No | 5 | 41.7 |
| **Total** | 12 | 100.0 |

| | | |
|---|---|---|
| **Amount spent to procure computers** | | |
| Yes | 6 | 50.0 |
| No | 6 | 50.0 |
| **Total** | 12 | 100.0 |
| **Internet facility** | | |
| Yes | 12 | 100 |
| No | 0 | 0 |
| **Total** | 12 | 100.0 |
| **Appointment of Computer instructor** | | |
| Yes | 4 | 33.3 |
| No | 8 | 66.7 |
| **Total** | 12 | 100.0 |
| **Sankya training programme** | | |
| Yes | - | - |
| No | 12 | 100.0 |
| **Total** | **12** | **100** |

It is evident from Table 15 that 41.7 per cent of the organisations received five computers and one organisation (Koushalya Shaale) received 35 computers from Sankya. One-fourth (25 per cent) of the organisations surveyed received 15 computers from Sankya. Nine (75 per cent) of the 12 organisations surveyed owned computers prior to the donation of computers from Sankya. Ninety-one per cent of the organisations said that the computers received from Sankya were in good working condition while only one organisation (Balajyoti Centre for the Disabled) claimed that the computers received had dysfunctional CD drives.

About 58 per cent of the organisations upgraded their computers to increase RAM and to install CD drives and speakers. Since many of the organisations catered to the disadvantaged and disabled, audio enhancements had to be installed on the computers. The amount spent for upgrading ranged between Rs 4,000 and Rs 30,000 depending on the number of computers the organisation had and the level of upgradation. All organisations were equipped to access the internet. Thirty-three per cent of the organisations appointed a computer instructor after receiving the computers while 66.6 per cent of the organisations had computer instructors prior to the donation. Not all the organisations were aware of the computer training offered by Sankya. However, some organisations felt that their training included medical transcription training, training for the visually challenged and the disabled and that the training offered by Sankya would not benefit them. There was a request for training by Sankya on the latest technology so that the instructors could be aware of what was available and needed in the current job market.

## 4. Details pertaining to use of computers

An attempt was made to understand the use of computers by the organisations concerned. The information collected indicated the multiple ways in which the computers were used by the organisations. The objective behind this attempt was to establish how effectively the donated computers were used by the organisations and the impact of the same. The table below reflects the use of computers by the organisations.

**Table 16: Details pertaining to use of computers**

| Use of computers | Frequency | Per cent |
|---|---|---|
| **Day to day functioning** | | |
| Yes | 11 | 91.7 |
| No | 1 | 8.3 |
| **Total** | 12 | 100.0 |
| **No. of hours per week** | | |
| 1-4 hours | 4 | 33.3 |
| 5 hours | 3 | 25.0 |
| Not Applicable | 5 | 41.7 |
| **Total** | 12 | 100.0 |
| **Packages taught Windows, MS-office** | | |
| Yes | 7 | 58.3 |
| No | 5 | 41.7 |
| **Total** | 12 | 100.0 |
| **Educational stories** | | |
| Yes | 3 | 25.0 |
| No | 9 | 75.0 |
| **Total** | 12 | 100.0 |
| **Computer games** | | |
| Yes | 4 | 33.3 |
| No | 8 | 66.7 |
| **Total** | 12 | 100.0 |
| **Programming: C,C++,Logo** | | |
| Yes | 2 | 16.7 |
| No | 10 | 83.3 |
| **Total** | 12 | 100.0 |
| **Jaws** | | |
| Yes | 4 | 33.3 |
| No | 8 | 66.7 |
| **Total** | 12 | 100.0 |
| **Tally** | | |
| Yes | 2 | 16.7 |
| No | 10 | 83.3 |
| **Total** | 12 | 100.0 |
| **DTP** | | |
| Yes | 2 | 16.7 |
| No | 10 | 83.3 |
| **Total** | 12 | 100.0 |

| | | |
|---|---|---|
| **Photoshop** | | |
| Yes | 2 | 16.7 |
| No | 10 | 83.3 |
| **Total** | 12 | 100.0 |
| **Internet** | | |
| Yes | 3 | 25.0 |
| No | 9 | 75.0 |
| **Total** | 12 | 100.0 |
| **Web-designing** | | |
| Yes | - | - |
| No | 12 | 100.0 |
| **Total** | 12 | 100.0 |
| **Used by management** | | |
| Yes | 2 | 16.7 |
| No | 10 | 83.3 |
| **Total** | 12 | 100.0 |

**Figure 11: Shows the programmes and packages taught in the organisations**

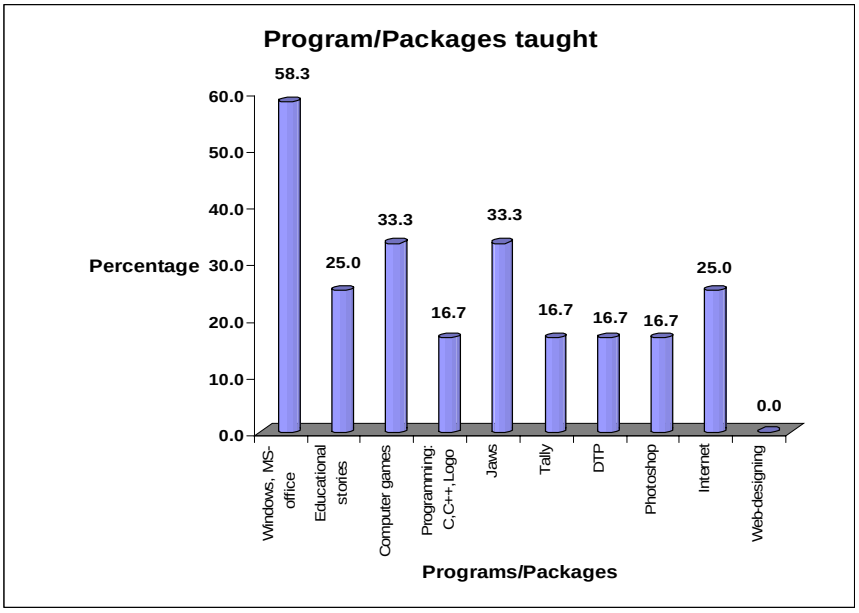



Table 16 shows that the majority (91.7 per cent) of the organisations with the exception of one (Asha Medical Centre) used computers daily. The Asha Medical Centre is an organisation that rehabilitates autistic and physically challenged children and computers are used during certain phases of the child's development. About 33 per cent of the organisations use computers 1-4 hours a week and 25 per cent use computers for 5 hours a week. Some organisations like Enable India, Sneha Deep and National Association for the Blind could not specify the number of hours because students are taught using JAWS throughout the day and they are allowed to work on the computers after their sessions are

done for the day. The Government Children's Home for Girls did not use the computers at all. Organisations like Balajyoti Centre for the Disabled and Asha Education Centre could not be very specific on the hours of usage because this depended on the level of development of the special children. The survey researched the kind of software used by the organisation either for training or as part of their curriculum. About 58.3 per cent of the organisations were teaching the use of Windows and Microsoft Office. Only 25 per cent of organisations used educational stories as a teaching tool. The three organisations (Com Deall Trust, Asha Education Centre and Balayothi Centre for the Disabled) that actively used them were involved in the rehabilitation of children with special needs.

Four (33.3 per cent) organisations (Com Deall Trust, Asha Education Centre, Balayothi Centre for the Disabled and Abalaashrama) used computer games as a mode of teaching and four (33.3 per cent) organisations (Enable India, Samarthanam Trust for the Blind, Sneha Deep and National Association for the Blind) used JAWS, an interactive software that specifically catered to the needs of the visually handicapped. Only two organisations taught C/C++ programming, Tally software, DTP and Photoshop while 3 (25 per cent) organisations trained students in the use of Internet. The majority (83.3 per cent) of the organisations did not train their students in DTP or Photoshop. None of the organisations trained their students in Web Designing.

The managements of two organisations (Koushalya Shaale - 4 computers and Sneha Deep - 1 computer) used the computers for administrative purposes. A majority (83.3 per cent) of the organisations owned computers for administrative purposes prior to receiving computers from Sankya

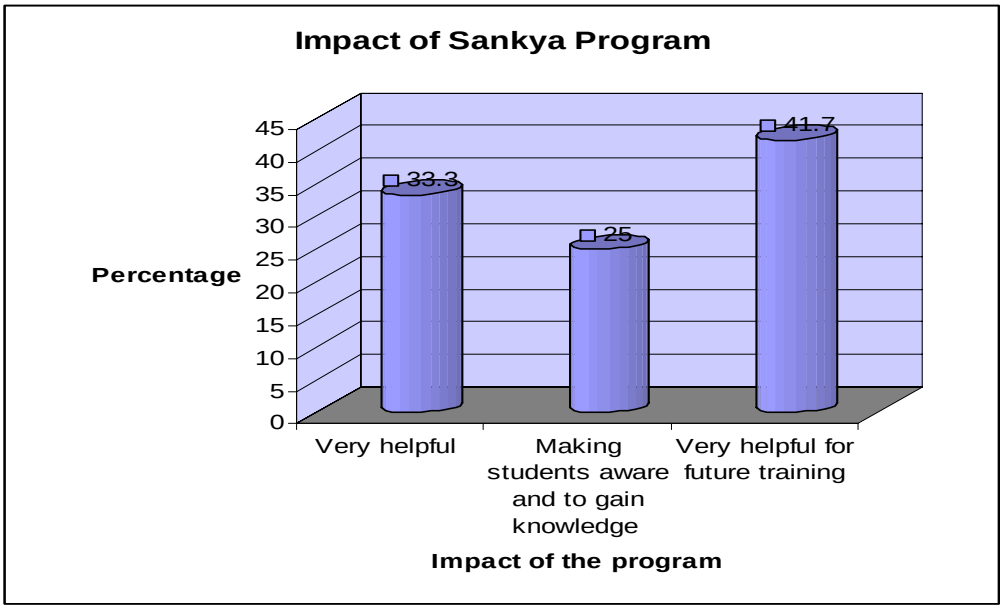
## 5. Details pertaining to impact of the programme

The prime objective of this study is also to assess the impact of donated computers and their utilisation in the daily activities of the organisations. In order to collect information on this vital aspect, we interacted with the functionaries of the various organisations to document their perceptions on the programme. The details are presented in the following table.

**Table 17: Details pertaining to impact of the programme**

| Impact of the programme | Frequency | Per cent |
|---|---|---|
| Very helpful | 4 | 33.3 |
| Making trainees/students aware of computers and to gain knowledge that is beneficial | 3 | 25.0 |
| Very helpful for future training | 5 | 41.7 |
| **Total** | 12 | 100 |

**Figure 12: Impact of the programme**




It is evident from the above table that all the organisations surveyed had positive remarks about the impact of the Sankya programme — 41.7 per cent felt that the programme was helpful for future training of their students and 25 per cent felt that it made students aware of computers and the knowledge gained was beneficial for their future. They felt that the students could be trained to fit into the mainstream and become independent. The organisations catering to the visually handicapped felt that the computer was an excellent tool for their rehabilitation. Other organisations dealing with the special needs of young children felt that the programme provides a visual media for children with a handicap and a change in routine activities, and fine-tunes their motor skills.

## 6. Problems in using computers

The table below presents the problems confronted by the organisations in using and maintaining the computers.

**Table 18: Details about problems with the operating system and in using the computers effectively**

| Problems | Frequency | Per cent |
|---|---|---|
| Not very fast | 1 | 8.3 |
| Absence of CD drives/ No internal/external speakers | 5 | 41.7 |
| Replace or install OS | 2 | 16.7 |
| No problems | 8 | 66.6 |

**Figure 13: Problems in using the computers**

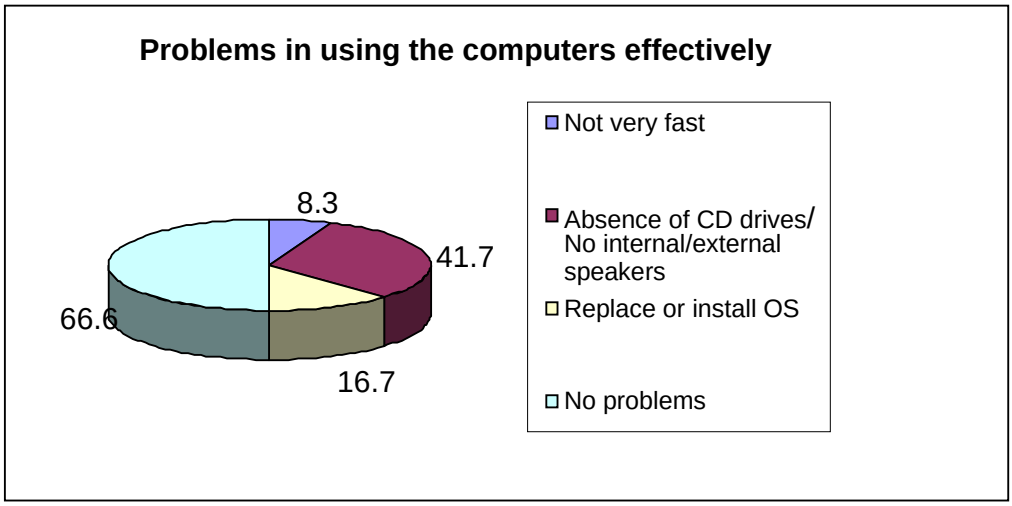



Table 18 shows that eight (66 per cent) organisations did not have any problems with the computers. About 41.7 per cent of the organisations felt that the absence of CD drives and Speakers hindered the effective use of computers. Koushalya Shaale reported that their systems did not have any operating systems loaded on their 35 computers when they were delivered. Enable India reported that they had to replace the operating system in one of the computers with assistance from Sankya. The Balajyothi Centre for the Disabled reported that with the exception of one computer, interactive speech recognition software that is essential for autistic children could not be installed on the other computers.

## 7. Support system

While interacting with the members of the organisations, a point that was often raised was the support that they would be expecting from the donors. They needed support in training teachers, maintaining computers and acquiring more computers. The table below gives this information

**Table 19: Details with regard to organisations needing support**

| Support system | Frequency | Per cent |
|---|---|---|
| Provide teachers | 1 | 8.3 |
| Need computers with accessories like speakers, mouse, Dot matrix printers etc. | 3 | 33.3 |
| Need faster computers with better memory/RAM | 3 | 33.3 |
| Need good maintenance and need help with upgrading computers | 1 | 8.3 |
| Need high end computer after P4 generation | 1 | 8.3 |
| No comments | 3 | 33.3 |
| **Total** | **12** | **100.0** |

Table 19 reveals that 33.3 per cent of the organisations would be grateful if Sankya could donate computers with accessories like speakers, mouse, printers, etc. The need for computers with

better memory and RAM was voiced by 33.3 per cent of the organisations. The Chandrashekhar Institute of Speech and Hearing reported that it would really be grateful if Sankya could donate high-end computers of the P4 generation.

## 8. Report submission

An effective implementation of any programme or a project depends largely on how it is being monitored. The monitoring process helps the organisation initiate corrective measures to strengthen the various components of the programme. The following table provides information on this aspect.

**Table 20: Details about submission of installation report / photographs**

| Report submission | Frequency | Per cent |
|---|---|---|
| Yes | 1 | 8.3 |
| No | 10 | 83.3 |
| Don't Know | 1 | 8.3 |
| **Total** | 12 | 100.0 |

From Table 20 it is obvious that the majority of organisations did not submit any report. Most organisations were not aware of the report required by Sankya and expressed willingness to do so in future. Koushalya Shaale stated that a report along with photographs was sent to Sankya upon installation of the computers. The Association of People with Disability was not sure whether the person in charge earlier had submitted the report to Sankya.

## 9. Merits and demerits of programme

A closer look at the present computer programme initiated by Sankya reveals that the programme has the potential to expand outside Karnataka into other states like Tamil Nadu and Andhra Pradesh. Table 21 presents the views of members of the organisations.

**Table 21: Merits and demerits of having computers in the organisation**

| Merits and demerits | Frequency | Per cent |
|---|---|---|
| Be independent and gain knowledge and vocational skills | 3 | 25.0 |
| Helpful in rehabilitation of the blind | 3 | 25.0 |
| Helpful and useful to children | 3 | 25.0 |
| Helps with the syllabus and training | 1 | 8.3 |
| Can be on par with the mainstream world | 2 | 16.7 |
| **Total** | **12** | **100** |

Table 21 shows that one-fourth (25 per cent) of the organisations felt educating with the aid of computers helped their trainees/students to gain knowledge and skills, and reduced dependency on others. Three organisations (Com Deall Trust, Asha Education Centre, Balajyothi Centre for the Disabled) that work for the rehabilitation of autistic children felt that the computer was an excellent

visual medium of instruction for children. In today's technology driven world, 25 per cent of the organisations serving the visually impaired reported that computer education played an important role in the rehabilitation of the blind. Few stated any demerits in the usage of computers by their students/trainees.

## 10. Suggestions to improve the programme

Any programme or project needs constructive suggestions to improve its functioning. During our interactions with members of various organisations, suggestions were made by them in support of improving Sankya programme. The details are presented in the following table.

**Table 22: Suggestions for improving Sankya Programme**

| Participation | Frequency | Per cent |
|---|---|---|
| Have a network of volunteers | 1 | 8.3 |
| Keep continuity and increase the employment of students and internships | 1 | 8.3 |
| Keep in contact with organisations through effective evaluation programmes and willingness to work with Sankya to benefit both organisations effectively. | 7 | 58.3 |
| Periodic updates from Sankya on the latest products available in the IT industry and make organisations aware of training programmes available. | 2 | 16.7 |
| Need help with software and technical input from professionals to help rehabilitation | 1 | 8.3 |
| Would like to have more computers | 1 | 8.3 |
| No comment | 1 | 8.3 |
| **Total** | **12** | **100.0** |

It is obvious from the above table that the majority (58.3 per cent) of organisations would like to keep in touch with Sankya. About 16.7 per cent of the organisations reported that they would be very grateful to Sankya if they received periodic updates on the latest technology and programmes available in the market related to Information Technology. Enable India suggested that Sankya maintain continuity with the organisations and support the students with offers of employment and internships. Com Deall Trust requested Sankya to provide software and technical input from professionals to assist in rehabilitation of children with special needs.

# Impact of Computer Education and Some Suggestions

Based on the above description and an analysis of the impact of the computer education programme implemented by Sankya, the study comes out with the following findings and some suggestions to strengthen the programme further:

- All schools were grateful to Sankya's generous contribution. One school (Siddaganga Public School, Chandra Layout) expressed gratitude and stated, "We did not feel that we were receiving charity! We were impressed with the way the computers were packed and delivered in cardboard boxes."
- With the exception of one school, all others (95.7 per cent) reported that the computers they received from Sankya were in good working condition. Similarly, 91 per cent of the organisations reported that the computers received were in good condition.
- In 87 per cent of the schools visited, computer education was a part of their curriculum
- As a result of computer education, students were found to be very attentive in the classes and this in fact had a significant impact on their performance in class tests and examinations.
- In some schools, separate computer labs were set up after receiving computers from Sankya.
- With regard to use of computers, it was revealed from the survey that in 87 per cent of the schools basic computer skills along with Windows were being taught to students regularly.
- 39.4 per cent of the schools surveyed devoted 1.5 hours a week for computer instruction while 33 per cent spared 2 hours a week.
- The majority of the schools surveyed did not have DTP, JAVA, Tally, C or C++ as part of the computer education syllabus in schools. About one-third of the schools had web designing as part of their computer syllabus while almost 7 per cent did not include it in their syllabus.
- Almost 56 per cent of the managements and 65 per cent of the staff showed interest and used the computers in schools. However, in one of the schools surveyed (RSPA Education Trust, Jayanagar), the computers were not used by children but by the management for administrative purposes.
- The teachers felt that their students were very inquisitive and eager to learn more about computers and attended computer classes regularly.
- Many of the schools visited did not have equipment (such as tables, chairs, benches etc.) especially in Government schools and low-income schools.
- Some schools needed faster computers with higher RAM as well.
- One main problem was the lack of qualified teachers to handle computer classes.
- Many schools, especially low-income schools, expressed difficulty in maintaining computers because of the cost of maintenance. **Some of the suggestions were as follows:**
- Better communication from Sankya was needed about the training programme. Some schools requested a newsletter to be mailed with details about the training.
- Systematic follow-up after training on future requirements was needed.
- Need to collaborate on a one-to-one relationship, and correspondence between the school managements and Sankya needs to be developed
- Need to evolve or develop a proforma for biweekly/monthly reporting, monitoring and learning; there is need for a concurrent evaluation of the process.
- There needs to be better advocacy about capacity building, in terms of training and orientation workshops. Some schools and organisations requested a letter to be mailed with details about the training.
- Before donating computers, there is a need to ensure whether schools are willing to recruit computer teachers and spend on maintenance.

- Schools and organisations strongly felt that it would be beneficial if Sankya coordinates with service agencies to provide technical support at minimal cost.
- Schools and organisations need to earmark in their internal budget funds for recurring expenses towards computer maintenance.
- More importance should be given to enhancing and providing a comprehensive computer education, which would include donating more computers, upgrading existing computers, and providing manpower and maintenance.
- Contact details need to be updated periodically because the person in charge during the delivery of the computers may not be working with the same organisation.
- If possible, Sankya needs to have a pool of computer teachers to support these institutions.

## Conclusion

It can be seen that Sankya's pro-social initiative in e-education for children in government and unaided schools has allowed students deprived of computer literacy to benefit greatly. The organisation has been instrumental in providing deprived children access to a standard school environment with good teaching facilities. Fine tuning of this program will further increase its efficacy and allow for the creation of an efficient virtual network that connects schools, teachers and children. In our current knowledge-based economy that runs on ICT, this training is vital to ensure a bright future for the children.

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