QUEST Alliance

Draft Report

Evaluation of the
Computer-Assisted Learning Programme

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List of Abbreviations

APF	*Azim Premji Foundation*
B.Ed	*Bachelor of Education*
BRC	*Block Resource Centre*
BRP	*Block Resource Person*
C.Ped	*Certificate course in Physical Education*
CAL	*Computer Assisted Learning*
CRP	*Cluster Resource Person*
D.Ed	*Diploma in Education*
DIET	*District Institute of Education and Training*
HM	*Head Mistress/Master*
KSQAO	*Karnataka School Quality Assessment Organisation*
M.Ed	*Master of Education*
NCERT	*National Council of Education Research & Training*
NCF	*National Curriculum Framework*
PUC	*Pre University Certificate*
QUEST	*Quality Education and Skills training*
SC	*Schedule Caste*
SDMC	*School Development & Management Committee*
SSLC	*Secondary School Leaving Certificate*
ST	*Schedule Tribe*
TLM	*Teaching Learning Material*
UNESCO	*United Nations Educational, Scientific and Cultural Organization*

List of Figures

1. Introduction

Quality Education and Skills training (QUEST) Alliance is involved with advocacy and implementation of projects that aim at improving the quality and relevance of basic education and skills training for vulnerable and marginalized children and youth. The Computer Assisted Learning (CAL) programme in Bangalore that is the focus of the present study, is implemented by Azim Premji Foundation (APF), also a part of QUEST Alliance.

1.1 Overview of the programme

APF has experience in running CAL programme, having initiated 225 computers assisted learning centres all over Karnataka. The learning gained have fed into the current programme. The current programme was initially planned for implementation in 12 Government higher primary schools at Bangalore. Subsequently, thanks to funds mobilized from local communities, it was extended to 8 more schools. The duration of the programme was two years. The schools were short listed with the help of block officials on the basis of the following criteria:

- School strength is more than 250

- Availability of an extra room

- Presence of legal electricity power connection

- Interest envisaged by teachers

- Contribution of community over the last three years

The head teachers of these 23 short listed schools were then oriented by APF personnel about inviting community for a meeting and the arrangements that needed to be made for the meeting. The head teachers were also informed of the process of school selection. Subsequently, 12 schools were finalized on the basis of the interest and support lent by the community members. The programme was extended to another 8 schools.

Each school was provided with six computers. In addition one computer and

printer were supplied for the exclusive use of teachers, at their behest. Another hall mark of the programme was the appointment of a support teacher in each of these schools. A fairly rigorous process was employed in the selection and training of these support teachers. A co-ordinator was appointed exclusively for the monitoring, feedback and follow-up of this programme. The co-ordinator was supported by three personnel from APF.

The time table for using computers was prepared by the head teachers and teachers of individual schools. It was planned that on an average each child was to get 2 periods at the computer every week.

This CAL programme differs from the previous CAL programmes implemented by APF on the following aspects:

- Role of support teacher has been perceived differently from that of Young India Fellow of previous programmes

- Support teachers' basic qualification was pre-university certification, preferably with a Diploma in Education (D.Ed)

- Training for support teachers was more rigorous

- More number of tried and tested CD's were provided to schools

- Grouping of children was done more carefully

- There was greater stress on documentation

- Monitoring was more intensive

- Teachers were encouraged to view CDs with students

- Monitoring software has been installed on an experimental basis in 3 schools

- CAL model for low electricity consumption is being piloted in 8 schools.

1.2 Design of the study

The present study was conceptualized as a process based evaluation.

The objectives of the study were:

1. To capture the implementation processes of the programme
2. To identify the challenges and problems faced while implementing the programme
3. To document best practices
4. To ascertain the perception of stakeholders (students, teachers, parents, community members) about the effectiveness of the programme
5. To study the implications of the programme in terms of:
   - Children's attendance
   - Children's learning levels
   - Retention of students
   - Classroom practices
   - Gains for students
   - Changes for teachers

Apart from interacting with APF personnel involved in the programme and studying relevant documents, a field survey of all the 20 schools was taken up. Out of these 20 schools, in 12 where the programme was launched in 2006, the and had ended in June, 2008. We refer to these as Pase-1 schools. In the remaining 8 schools (Phase -2) the programme was launched in 2007 and is expected to continue till 2009.

A team of six investigators visited the schools to collect data. A workshop was conducted to orient the investigators as to the nature of the CAL programme; objectives of the evaluation; conducting interviews and focussed group discussions; observing classrooms and the kind of information to garner. It took 12 weeks (September to November, 2008) to complete the field work. The delay was primarily due to the examinations followed by month long vacation for schools.

Sample

While general information was collected from all the 20 schools, the following sampling procedure was used to get data from stakeholders:

➢ Teachers: The mandate was to interview 2 teachers in each school. However, in most schools all teachers showed inclinations to interact with the study team. Hence, focussed group discussions were held.

The following figures give the details of teachers who formed our sample.

Fig 1.1: Percentage of Male and Female teachers
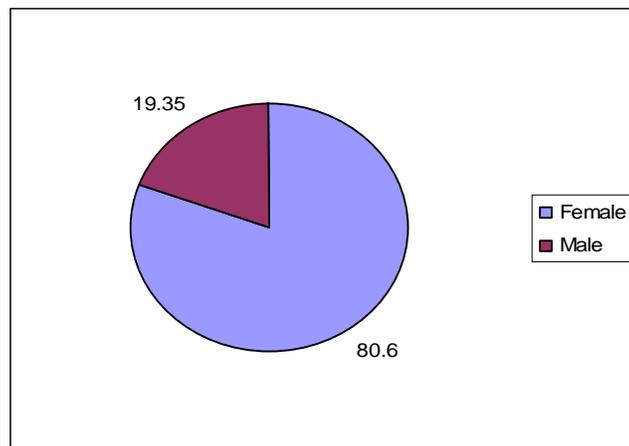
Fig 1.2: Percentage of Academic qualification of teachers
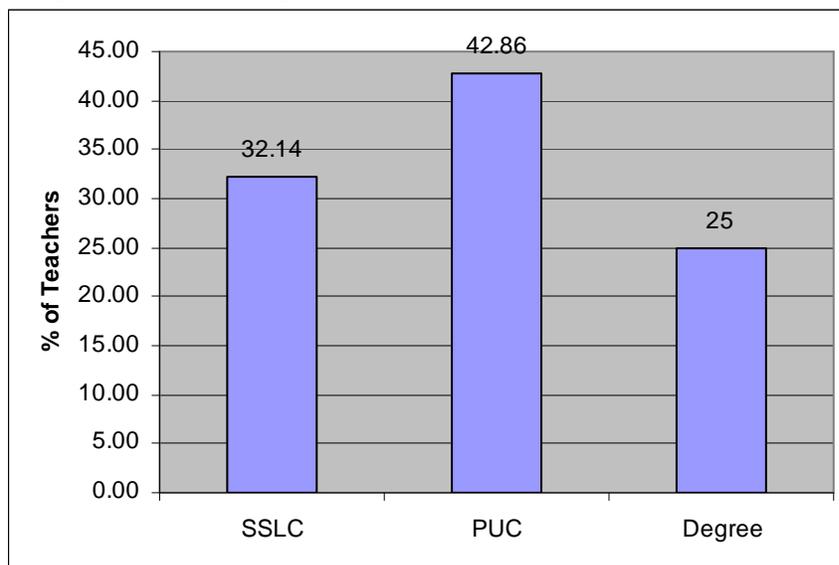
Fig 1.3 Percentage of Professional qualification of teachers
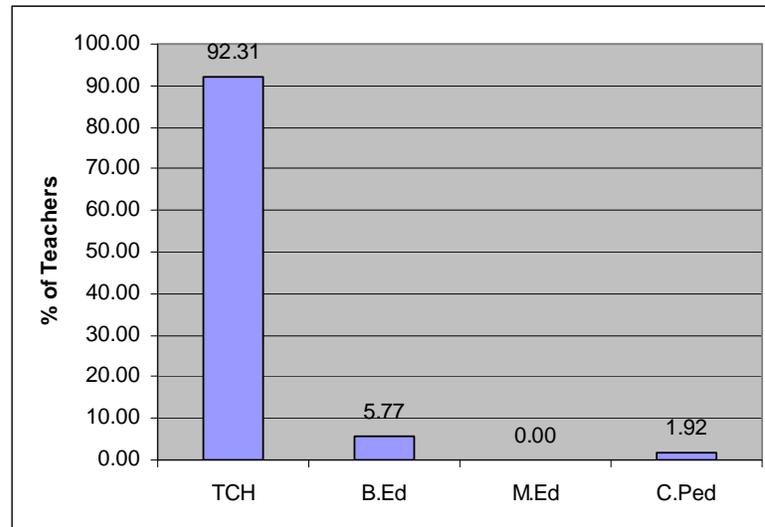
➢ Support teacher: In schools where services on support teacher were continued, we interviewed her.

➢ Students : Ten students of class 5 and ten students from class 7 were randomly selected, ensuring proportional representation of girls and boys. Discussions with class 5 and class 7 students were held separately.

➢ Parents / SDMC members: In each school, we interviewed the SDMC President where available. In 5 of the schools where we could not meet President, we ensured that atleast one SDMC member was interviewed. In addition we interacted with 4-8 parents, whose children study in the school.

➢ Community members: We spoke to a few members of the community living in the vicinity, of the school.

In addition to interacting with stakeholders, one computer class and one regular classroom were observed to capture integration process, in any.

Classroom in progress

Tools

Prior to the preparation of tools, this researcher visited two schools where the programme was on-going. This helped gain a perspective for tool development. A set of 9 forms were developed to aid data collection. Form 1 captured basic school details. Form 2 provided guidelines for classroom observation. Guidelines for observing a computer class were given in Form 3. Forms 4 to 8 had guidelines for interviewing/conducting focussed group discussions with regular teachers; support teacher; students; parents/SDMC members and community members respectively. Form 9 had leading question for discussions with APF personnel. These forms are appended to the report.

Data

The following table maps the data required with the objective

Table 1: Nature of data collected and source of data

Objectives	Data collcted	Data Source
1. To capture the implementation processes of the programme	Primary data from organisation / individuals implementing the programme	• All available documents • Interactions with people involved
2. To identify the challenges and problems faced while implementing the programme	Primary data from school teachers and support teachers and programme implementers	Interviews and focused group discussions with concerned personnel
3. To document best practices	Primary data from school teachers and support teachers, schools	• Interviews • Classroom observation
4. To ascertain the perception of stakeholders (students, teachers, parents, community members) about the effectiveness of the programme	Primary data from stake holders	• Focussed group discussions with stake holders
5. To study the implications of the programme in terms of: Children's attendance, Children's learning levels, Retention of students, Classroom practices	Secondary data pertaining to students primary data from classrooms	• Attendance registers before and after implementation of the programme • Students' programme report/KSQAO scores (where available) • Classroom observations

Data Analysis

Since much of the data were qualitative, descriptive analyses were used. The little quantitative data we collected were entered in Excel spreadsheet and

subjected to frequency analysis.

Limitations of the study

The study involves mainly process indicators alone. Input indicators have been adequately captured by the implementation agency. We merely cross verified during field visit. Output indicators have not been adequately captured for lack of baseline data.

Hence, assessing the impact of the programme in quantifiable terms is not possible.

The next chapter gives the implementation processes of the programme.

2. Implementation Processes of the Programme

One of the primary objectives of this evaluation was to capture the processes that went into the implementation of the programme in terms of providing resources, building the capacity of concerned people, monitoring and feedback mechanisms. Data for this was obtained from the internal reports and other pertinent documents prepared by APF, as well as through interactions with persons involved in the implementation of the programme. These were then substantiated during field visits.

2.1 Resource Provision

The following physical resources have been provided in each school:

> ➢ 6 computers: The rationale for providing with 6 computers was that 24 children could be accommodated at a time in the computer class with a maximum of 4 children per computer.

> ➢ All computers has speakers, headphones were also provided for each child.

> ➢ Around 75 multimedia, interactive CDs created by APF were given

> ➢ The computer room was equipped with basic furniture

> ➢ A printer and an additional computer has been provided for the exclusive use of teachers.

What we found during field visit

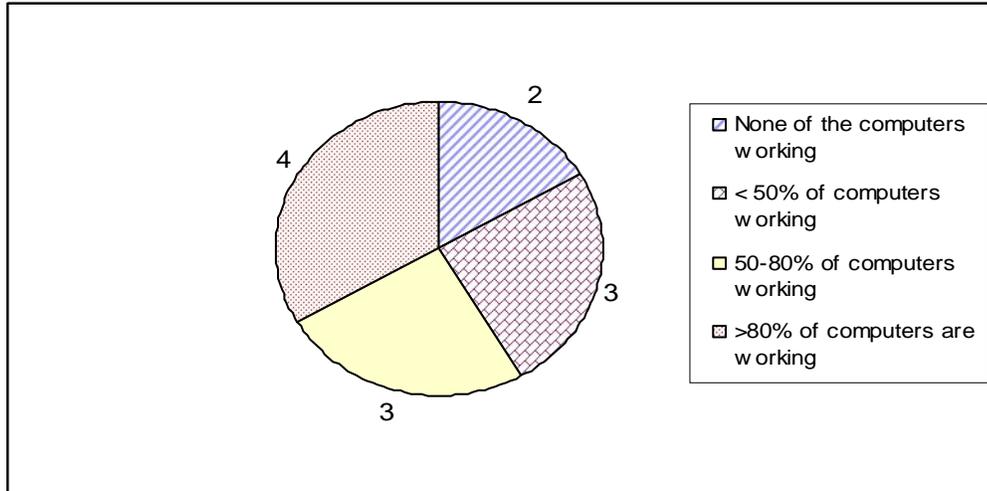Fig 2.1: Percentage of computers working – Phase-1 schools

Fig 2.2: Percentage of computers working – Phase-2 schools
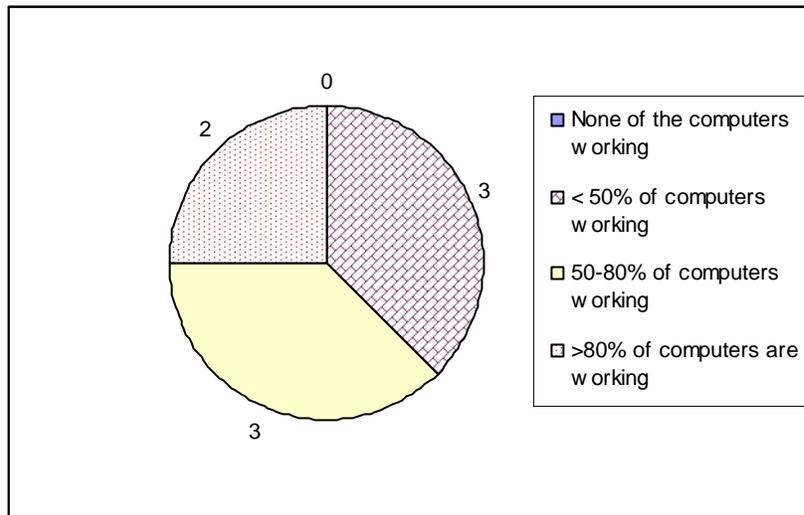
- In two of the 12 Phase-1 schools, none of the computers are working

- In three more schools less than half of the computers provided are working

- In the remaining schools, either all computers are working (in four schools) or only one computer is under repair

- In the Phase-2 schools, in two schools all computers were working. In the remaining, only 2 or 3 of the 6 computers were working

- Children tend to misuse headphones – biting on the wire, pulling it etc., In only a few schools, were the headphones functional

- Each school was equipped with around 50-60 CDs

- Printer and computer meant for teachers remained unopened, in all but three schools

Man Power Resources

- One support teacher was appointed for each school

- 50% of the support teacher's salary of Rs.2000/- was borne by the programme, for the two years it was in effect

- A co-ordinator was appointed to oversee the programme in all 20 schools. In addition, three co-ordinators from APF were also involved in the close monitoring of the programme.

What we observed

- Support teachers are there in all of Phase-2 schools

- Services of the support teachers has been continued in 3 of the12 Phase-1 schools where the programme has come to an end.

- The programme co-ordinator had left the organisation soon after the programme ended in phase-1 schools. Co-ordinators from APF are monitoring phase-2 schools.

2.2 Capacity Building

Support Teachers

As mentioned earlier, a fairly rigorous process was employed in selecting and training the support teachers.

SDMC members/head teachers were asked to identify a candidate who has completed PUC, preferably with D.Ed qualifications, else with an inclination for teaching.

The short listed candidates were observed during group discussions they were asked to participate in. This was followed by an interview. Two candidates were selected for each school, with the proviso that they would be appointed, after their training.

A five day residential training programme was conducted for over 20 candidates. The training was intended to meet the participants with basic computer skills and to orient them to pedagogic skills.   Accordingly, the content of the training programme was:

- Overview of learning theories

- Introduction to how children learn; learning styles of children

- Basic computer skills

- Use of CD's and selection of CDs

- How to group children

- Hands-on experience for working with children

- Working with teachers, head teachers, parents and government officials

- Developing positive thinking

- Improving communication skills

The modality of this training programme was:

- observation

- hands-on with children

- self reflection

- discussions

After the training, 12 were appointed as a support teacher for each school. Follow-up of this training was done at schools.

What we found

Fig 2.3: Percentage of support teacher trained by APF
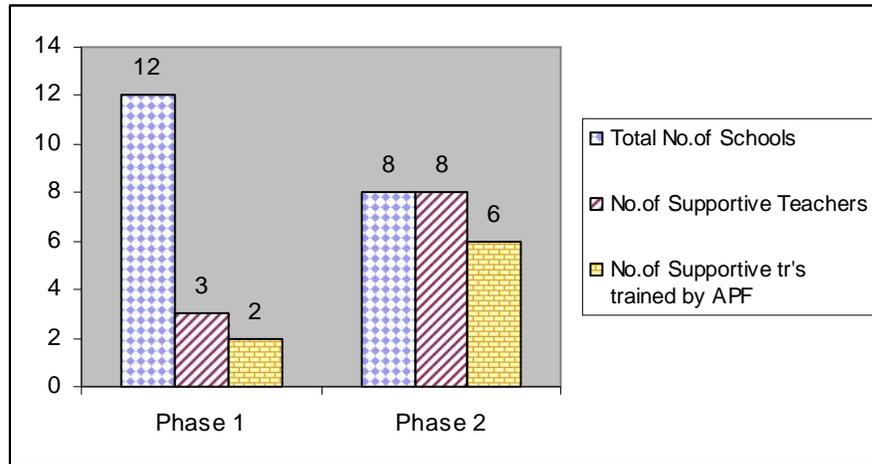
In all 8 phase-2 schools, support teachers are there. Two of these 8 teachers have not received training from APF

In 3 of the 12 phase-1 schools, support teachers are continuing. Both these teachers have been trained by APF. We gathered that attrition had been rather high, with support teachers leaving, once they get government jobs etc. However, all the support teachers opined that the training provided by APF was useful. They were especially appreciative of the soft skills component of the training.

Regular Teachers

Training for the regular school teachers was given at their respective schools by the co-ordinators. The duration of the programme was three days. The objectives of this training were to:

- Give an overview of the programme

- Teach teachers to switch the computers on and off

- Help teachers view CD context

Discussions were held on integration and ideas/issues for helping support teachers.

What we observed

Of the 62 teachers from 20 schools we had interviewed, 28 said they had received training from APF personnel.

Fig 2.4 Percentage of teachers who have received training from APF
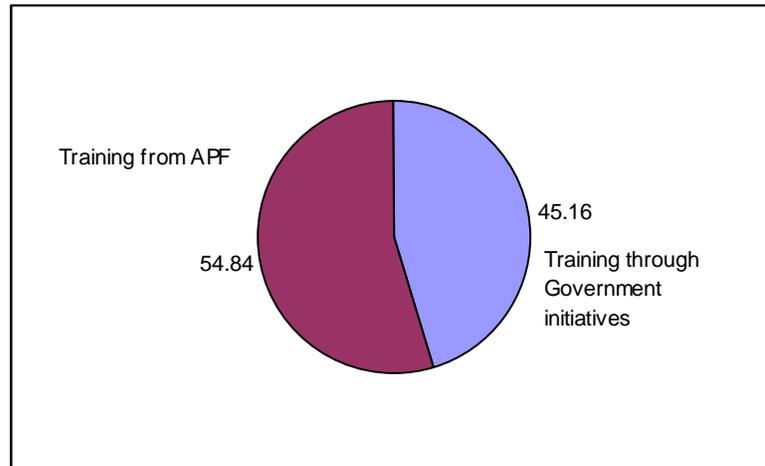
Among these 28, 10 have received training through Government initiatives, as well. These have been conducted by DIET/BRC/CMC. In one school, four teachers had undergone 40 days training by Intel. Most of the teachers do not seem to have taken the training provided by APF seriously. Their typical response was, "APF has not given us any training". When prodded about it they replied, "Oh! We were taught how to turn a computer on and off".

As to the CD's except in seven schools, teachers in other schools have seen only one or two CDs. We also came across 6-7 teachers (most of them male) who hadn't seen a single CD. Those teachers who have seen the CDs find value in them. This is discussed in section 4.2.

Most of these teachers said the support teacher had helped them handle the computer, when they faced difficulties.

In four schools, a teacher has taken the initiative in entering, the time table, marks list, students' details etc. In one of these four schools, the support teacher types out the question papers for subject teachers. In another school, a teacher who is learning to type in Kannada said she saves her notes in the computer.

2.3 Community Mobilisation

Community buy-in for the programme has been its mainstay. One of the criteria for selection of schools was the level of participation of community members in the meetings organized at selected schools.

The head teachers were requested to invite parents, SDMC members, Panchyat members, local leaders and donors for the meeting. During the meeting, APF personnel taught 2-3 children of the school to handle a mouse and displayed the CD content on big screen, to create awareness among the community members.

To ensure sustainability of the programme, community members were asked to bear 50% of the salary of the support teacher and electricity bill. They were also informed that the local community has to garner funds to run the programme independently. Once external funding ceases. Local community members had seeded money at the time of commencement of the programme

What we found

During our interaction with parents and SDMC members, we found that they were rather proud that the school their children are studying in equipped with computers. Couple of them said that during the initial days soon after computers were installed they would stand outside the computer class just to watch their ward handling the computer. The SDMC President is most schools has been taking keen interest in trying to mobilize funds to continue the programme. They informed us that while they were able to pool in resources from the local community for paying electricity bill and attending to minor repairs. In the three phase-1 schools where support teacher is continuing, individual donors are contributing towards her salary.

But other than parents or relatives of children studying in the school, there was little awareness about the presence of computers in the school, among other community members.

2.4 Monitoring and Feedback

APF had appointed a co-ordinator exclusively to monitor the 20 schools. In addition, there were three other APF personnel who were monitoring the programme closely.

This had helped attend to problems without delay. Periodic feedback given to support teacher helped ensure the programme remained on track.

A head teachers meeting was arranged by APF to provide them with an overview of the CAL programme. The aims of the programme and the direction of learning envisaged through the programme were discussed with the head teachers. They, in turn, came up with practical problems they face, in terms of sustenance of support teachers; shortage of regular teachers; management of mid-day meals and so on.

What we found

All the teachers of Phase-1 schools were unanimous that the close monitoring resulted in attending to repairs in computers with little time lag. Only in one school (Bidaluru) was there a complaint about none of the computers working even during the project period. But, the co-ordinator had interacted only with the support teacher and not with the regular teachers of both Phase-1 and Phase-2 schools found the interactions with the coordinators very useful. They said it helped them gain confidence and remain motivated.

2.5: Challenges and Problems faced

We captured the challenges and problems faced during the implementation of the programme, through interactions with APF Personnel, head teachers, regular teachers, support teachers and parents. The following were the recurrent issues that emerged:

- Difficulty in getting qualified support teachers, as the salary offered was not lucrative enough

- High levels of attrition among support teachers, especially those with D.Ed qualification

- Erratic power supply

- High electricity bill

- Paying salary for support teachers, after the programme ended

- Attending to technical problems, schools said they find it difficult to find manpower and funds to attend the repairs. APF has provided schools with contact details of computer technicians. However, schools say that the technicians refuse to attend to their problems saying that Annual Maintenance contract has ended.

- Maintenance of head phones is a challenge. Children tend to handle them carelessly. In the absence of headphones, the noise level is very high

- Number of CD's are few. After a year, children are complaining of getting bored seeing the same CD's.

- Purpose of using CD is unclear to both regular teachers and support teachers. They are using the CD's for reinforcement, if at all.

- Integration is not happening as envisaged

- Grouping of children based on their academic performance wherein one or two children who perform well academically are grouped with two or three who do not; appears to be detrimental to the latter

- During our field visit, we found children using CD's much below their cognitive level. For example class 5 students, were viewing 'Akshara Bandi' meant for 6-7 year old

The next chapter documents some of the best practices we observed.

3. Supporting and Detrimental factors

In any education-related programme given a similar set of inputs, the outputs are varied. It is therefore of interest to look into the factors that help realize the objectives of a programme and those that are detrimental. While no doubt, some of these factors are context specific, generic lessons and be drawn from them.

3.1 Supportive Factors

- Enthusiasm and interest shown by children, in general. Everywhere we found the level of confidence shown by most children in handling computer was enormous

- Where regular teachers have involved themselves, programme has continued effectively after end of project period

- English learning in terms better pronunciation and sentence formation has improved. In a couple of schools, children themselves have recognized this

- CD's pertaining to mathematics and science concepts have helped improve understanding in a few children, in one school

- Children have used computers during holidays. Both teachers and parents were appreciative of this opportunity, as otherwise the children would have whiled away their time

- Children have enjoyed animations in the CD's

- CAL has helped initiate small group discussions among children

- Role of external agency was effective. Monitoring and feedback was intense and helpful

- APF trained support teachers have been far more effective than support teachers without training

- As long as the project was in effect, computer classes were being held regularly, based on the time table

We were also able to document instances wherein the programme yielded

benefits that went beyond the intended objectives. These have been enumerated in the following section.

3.2 Collateral Benefits

Since there are school specific instances, the name of the school is mentioned in brackets

- Children won a quiz competition at the taluk level for the first time and the school attributes this success to CAL progamme (Ajjanahalli)
- The Block Education Officer has shown interest in the programme and asks for frequent updates (Kachuvanahalli)
- Increased involvement of parents (Ramagondanahalli)
- Teachers utilise activities/ideas from CD's in their classroom teaching (Guddemaranahalli)
- A teacher who is a resource person for block level training has got many ideas for conducting his training programmes, from the CD's (Vishwanathapura)
- A private school had to close due to decreased enrolment after CAL programme started in the Government school (Bidaluru) [While this may not be direct benefit, parents and teachers consider it a great pride that they have been able to wear back children from the more 'privileged' private school]
- CAL is being used for remedial teaching (Kaikondahalli)
- One group of class 7 students have visited a browsing centre to get information for their social science project (Vishwanathapura)

3.3 Detrimental Factors

Based on our observations and interactions we culled out the following factors that are coming in the way of effective continuation of the programme:

⇒ Difficulty in maintaining the hardwares - Computers, UPS and especially the headphone. The difficulty stems both from raising money to attend to the repairs and getting technicians

- ⇒ Low salary offered for support teacher has led to high levels of attrition

- ⇒ Little buy-in from teachers and department officials

- ⇒ CD meant for single user is being by four children

- ⇒ Children complained of boredom after a year, as they were being made to seethe same CDs again the following year (Around 50 CD titles have been provided to each school)

These factors were common to most schools. The presence of an external agency-APF had helped mitigate these factors as long as the project was in force. However as enumerated in the previous section, some of the phase 1 schools have been able to overcome them – where teachers have taken interest (2 schools) or the HM/SDMC President has been able to garner funds for continuing the support teacher.

To gain a better perspective of these factors in context, we have included two contrasting case studies in the next section.

3.4 Case Studies

Both these schools are Phase-1 schools.

Kachuvanahalli

Kachuvanahall, is a small village tucked away in the paddy field about 20 kms away from the Kanakapura-Mysore road.

We went to Kachuvanahalli unannounced. The school has a well maintained garden. The corridors were clean. Children were sitting in small groups revising their lessons for the upcoming I semester examination.

The school has 4 male teachers and a headmaster. The teachers came across as a highly motivated group of individuals working together well.

Computer room: Computer room was well maintained. At the time of visit, class 7 students were being shown the CD "Shakthiyodane Sarasa". The children were sitting on the floor and watching the CD on one monitor. Upon being asked to see children use the computer themselves, children were made

to work in groups of threes and were made to watch CD's of different subjects. The students were quite well versed with handling computers.

Subject teachers: Teachers have made use of the computers to teach subjects like English, Mathematics and Science. They opined that the computers helped them teach children going beyond their syllabus. For example:. speaking in English fluently; teachers have also been giving students the English equivalent terminologies in mathematics and science which they picked up from the CDs.

The teachers also felt that the students had an opportunity to discuss in small groups of 3 about a problem/question which other wise they would not have got. Teachers are adept in handling computers and have been using computers to prepare question paper, for maintaining records as well as invitation cards for school function etc., They appreciated the APF staff for periodic monitoring and feedback.

The overall impression was that even after the support teacher had stopped coming to Kachuvanahalli the teachers have continued good work. They appear to be making a conscious effort to link what is being taught in classroom with the available CDs. With more training hand holding and guidance, integration could be more successful and children would reap the benefits.

Students: They were also excited to talk about what they learnt from computers. The children on their own said that pronunciation of English in CD's sounded better than their teachers and they learnt how to form sentences in English from CDs. Children have also learnt MS Paint and were able to use word-pad for typing. They seemed to have liked and learnt a lot from Ms.Shylaja, a APF trained support teacher. The students had come to school during the summer holidays from 10.00 am to 2.00 pm to play on the computer.

Community members: Kachuvanahalli is a typical small village with a small farming community. Talking to the SDMC president, it was evident that most land lords were in the city while only landless labourers and very small farmers live in the village. Hence collecting money to pay Rs.500/- for electricity charges was an uphill talk for them. Even though both the teachers and the SDMC

President felt a support teacher was necessary, they did not think they would be able to collect enough money to pay. The parents felt that CAL programme had helped their children compete with those from private schools.

Madabal

This school is a little away from the main road. The school is to celebrate its centenary year. The HM was not informed about our visit. The school had 7 female teachers and 2 male teachers (including the HM).

Computer room: It was very untidy. The children were asked to dust it as we entered it. A television set was placed in the middle of the room. One computer and printer supplied for the teachers' use were not even opened from their cover. As long as the support teacher was there the computer classes were regular. The UPS was making shrilling noise which made it difficult to be in that room. But the children were not bothered with the noise and they were fully involved in watching their CDs. The HM told us that this is how it has been for the past few months. The support teacher had taught the students to operate the computers and they were doing so independently. The students have learnt drawing and painting from their support teachers. They looked very confident in handling the computers.

Subject teachers: Only two subject teachers have watched the CDs that too, one or two. They were unable to recall the names of these CDs. They said group activity has increased among children as they helped each other. They appeared disinterested in guiding their students to computer room as they feel that their workload is already more. They also said that because of computers, Edusat and radio programme it is difficult for them to finish their syllabus! They wanted a support teacher who can take care of the computer room and handle computer classes.

Teachers do know to switch on/off a computer. They say they are ready to learn more but *are not ready to undertake computer classes for the children on regular basis.* One of the teachers said the CDs are helping the slow learners.

Students: They enjoy the computer classes but they said the frequency of these classes had reduced drastically after the support teacher left the school. They enjoy the Maths CD as it has games and makes it easy for them.

One of the students whom we met had pronunciation problem and we were told that with the introduction of computers, he has learnt to speak more clearly.

Community members: Community members other than parents are unaware of this computer programme. The parents are happy to see their children learning from computer and CDs. Their only concern was that they do not have funds to continue their APF trained teacher.

The next chapter deals with how teachers, children, their parents and other community members perceive the programme.

4. Perception of stakeholders

We interviewed teachers; talked to class 5 and class 7 children separately; held focussed group discussions with parents/SDMC members/community members in order to ascertain their perception about the utility of the programme and its sustenance.

4.1 Teachers

The role of teachers is rather crucial in this programme. We therefore spent considerable time in getting their views. However, most of their comments were general, interspersed with a list of requirements. Since most of them were recurrent, we have included both in this section. Also, there was no difference in the perception of teachers of Phase-1 and Phase-2 schools.

Interaction with Teachers

- CAL programme is good

- Role of external agency was crucial for the programme

- Periodic monitoring during the project period ensured the programme ran smoothly

- Presence of support teacher is absolutely necessary

- Students' attendance has improved after CAL programme started

- The programme is helping slow learners (though this is a general perception of all teachers, we only came across one instance where CAL was being used for remedial teaching)

- Variety of activities in the CD appeals to children

- CDs to be assigned to the state syllabus/textbooks

- CDs for higher classes especially classes 7 and 8 are needed

- More CD titles are required (This was a universal refrain, although very few of the had actually seen all CDs. What differentiated the responses of those teachers who had seen the CDs from those who did not was that the former had a specific list of concepts/topics for which they felt multimedia context would be useful)

- More training needed to learn basic computer skills

- More inputs needed to help us adopt CD content to our lessons.

A majority of the teachers felt that CAL was another programme like Edusat or radio programme. A few teachers said that all these programmes take away their teaching time and they are unable to 'complete the portions'! We were also informed that where Edusat relay time clashes with computer period, preference is given for Edusat as their higher authorities vigilantly check records pertaining to Edusat programme.

4.2 Students

Students were in general articulate. They were also candid as we interacted with them in the absence of their teachers. This is what they feel about the programme:

- Enjoy computers a lot

- Like using the Paint tool on computers

- Love the animated characters in the CDs

- Appreciate the songs very much (in a couple of schools, class 7 students

sang songs from the CDs)

Students Performing for our benefit

- Like listening to English in the CDs. A majority of the children said English pronunciation on the CD is better than their teachers. Quite a few students said after having played the Kannada version a couple of times, they now opt for the English version. The children said they are able to read and comprehend English language better, on their own

- Like to play games on computers. Many students said they pay Rs.5/- for half-an-hour to play games at the local cyber café's/browsing centres

- In atleast six schools, children explicitly said they liked their support teacher a lot and miss her

- Computer classes were conducted regularly when 'computer' teacher was there

Students engrossed with a CD

Almost all children could easily recall the names of CDs they had viewed and describe the games they played. However, only a few (less than a dozen) were able to recollect the concepts learnt, especially in mathematics and science. Interestingly most of the CD titles they could recall pertained to Kannada language learning. Also, the students had their prejudices – whenever we attempted to draw out the most shy and reticent girl/boy into conversation, the others would say she/he is peddi/pedda and cannot handle a computer. We learnt that while working in a group on the computer, these children took on a passive role, letting others in the group operate the computer

4.3 Parents, SDMC members and Community members

Very few community members whose wards were not studying in the school were aware of the CAL programme. But, the situation was different with parents. There was a general feeling of euphoria about their children learning computers and their expectations from the programme are rather naïve, but high.

- The parents feel that their children's level of confidence has increased, after they learnt to handle computers

- Children have started showing more interest in school

- They are very happy and grateful to the external agency for having given exposure in computers to children

- Most parents feel this exposure would be a passport for good job opportunities for their children, in the future

- Parents opined that what is taught should not be based only on their school subjects but should also be useful for the future

- In about five schools, parents said they would feel so proud of their children working on computers that during the initial days when the project was launched, they would stand outside the computer room watching their children

- 4-5 parents said their children are pressurising them to buy computers at home

- In atleast four Phase-1 schools, parents suggested that all teachers be trained in the use of computers so that classes can go on as before

- Some of the parents have noticed that their children's English language has improved over the past year. Two of them told us that their child is attempting to teach at home as well.

SDMC/Parents in school

Interacting with Community Members in school neighbourhood

Most parents admitted that they have started taking more interest in what their children learn at school after the CAL programme. However, other than the SDMC President, none of the others had any clue about utilization of funds.

The next chapter enumerates the possible implication of the programme.

5. Implications of the Programme

The focus of this study was primarily on evaluating the processes. However, some quantitative data on enrolment and achievement scores have been captured for the periods before the commencement of the CAL programme and after the end of the programme (in the case of phase-1 schools). This cannot be strictly treated as baseline and endline assessment and it would be tenuous to try to assess the impact of the programme, based on these figures. Nevertheless, they could be used as indicators on the implications of the programme, along with the qualitative data collected for the study.

5.1 Classroom Integration

Integrating computers in classrooms is being studied in fair amount of detail, especially in the Western countries. Various researchers have come up with different models to understand the stages of development (Berenfeld, 1998; UNESCO, 2005; World Bank, 2003). What is common to all these models is that once the preliminary stage of learning to use computers is taken care of, the initial stage of integration would involve teachers:

1. selecting multimedia content suitable to the cognitive level and interest of their students; and
2. deciding when to use the content – for example: As an introduction to a new concept while teaching the concept; or as reinforcement after teaching.

In the present study, we found during our visits that CDs were being used for reinforcement, without exception. We also found many instances where children were using CDs much below their cognitive level. Nowhere had the ideas/activities in CDs become infused with the regular classroom activities. Classroom and computer room were treated as two insular places.

Computers have tremendous potential to help classrooms shift from learning by telling to learning by doing (Schank, 2001), as envisaged in the National Curriculum Framework (NCERT, 2005). If teachers are helped during the initial stages with some hand holding and they being to feel empowered, future possibilities using computers to transform classrooms can become real.

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5.2 Gains for students

As mentioned earlier, the reliance has primarily been on qualitative data to ascertain gains for students. Quantitative data pertaining to enrolment is given below.

Fig 5.1: Comparison of Average enrolment of students in Phase-1 Schools
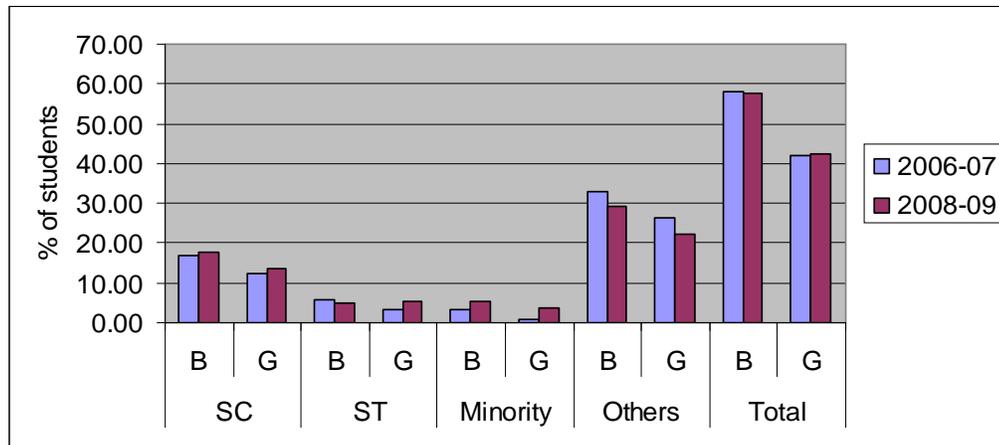
It is interesting to note that there has been a marginal increase in enrolment of both boys and girls among, 'Scheduled Caste' and 'Minority'. Enrolment of 'Scheduled Tribe' girls has increased. But, there is a dip in the enrolment of boys and girls belonging to the 'others' category. This has resulted in the total enrolment of boys and girls in 2006-07 and 2008-09 very nearly equal.

Fig 5.2 Comparison of Average enrolment of students in Phase-2 Schools
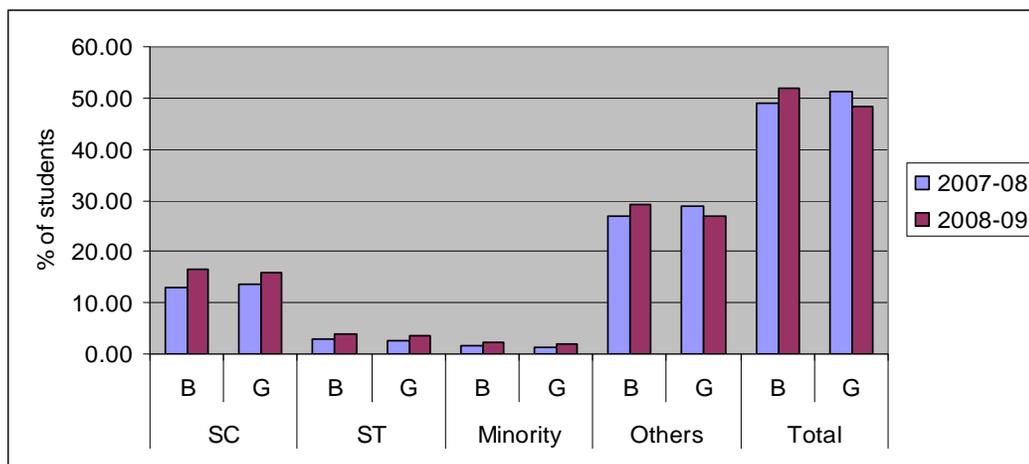
While the trends in phase-2 schools are similar to that of phase-1 schools for 'SC' and 'Minority', the enrolment of boys has increased in both 'ST' and 'Others' categories, unlike in phase-1 schools.

However, it has to be borne in mind these trends in enrolment are affected by myriad factors and cannot be attributed directly to the CAL programme. During our school visits, in atleast six schools, we were informed of specific instances wherein students have shifted from private schools, after the launch of CAL programme.

We do not have reliable data on attendance and retention. But, all the teachers, parents and even children themselves informed us that attendance and retention has improved, after computers were introduced in the school.

Data pertaining to scholastic achievement are the KSQAO scores of class 5 and class 7 students in 2005-06 and 2008-09. Karnataka School Quality Assessment Organisation has been conducting annual assessments of all government school children of classes 5 and 7, since 2005-06.

Fig 5.3: Comparison of average KSQAO scores of students in Phase-1 schools
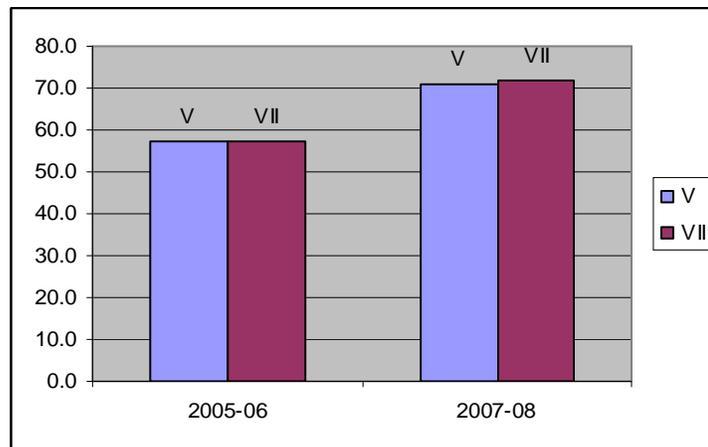
Fig 5.4: Comparison of average KSQAO scores of students in Phase-2 schools
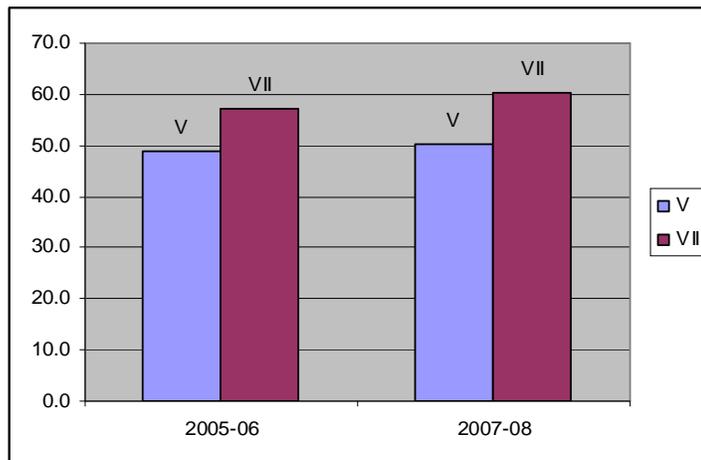
As can be seen from the figures, the scores have increased across board. This has been the trend across the state and not peculiar to the CAL schools. Hence, it is not possible to draw conclusion about the programme based on this data.

Again during interactions with teachers and students and observation of students we were able to discern perceptible impact the CAL programme has made on students.

- Children have picked up computer skills

- Their interest in school has piqued (though, this has not necessarily translated into learning)

- Children are beginning to display greater levels of confidence

- Their ability to comprehend instructions has increased

- They have learnt to work and interact in a group

- Students have gained better exposure to English language

- Children are well disciplined inside the computer room – in some cases even without supervision

5.3 Gains for teachers

CAL can support changes in pedagogy and there is documented evidence of such programmes changing the role of teachers – for example: In Chile, a CAL programme has helped create a more egalitarian relationship between teacher and students (Alvarezetal, 1998).

Before this can happen, teachers need to see value in CAL. They would then be willing to invest time and effort to adopt to the technology. While there is no rigorous research-based evidence for this, experience points out that teachers need a lot of support and hand holding, till they are able to confidently use CAL meaningfully (Mythili.R, 2007).

In the present study, we found that teachers in general are convinced that CAL programme is useful for children. Very few of these teachers have realized it could be a powerful tool for themselves. Among those, who did, they listed the following as what they had gained from the CAL programme:

- Helped improve their own knowledge of some Maths and Science concepts (Around 8 teachers from 2 schools)

- Gained fluency in English (2 teachers from 1 school)

- One teacher who is a resource person for other taluk teachers has used the CDs to get ideas for activities/preparing TLMs

- Computers have been used to enter time tables and marksheet (in 2 schools)

- Teacher of one school is preparing notes of lessons using computer

It is interesting to note that given similar inputs, these dozen or so teachers have been able to gain from the programme, while others do not seem to perceive gains for themselves. In the present study, we have not consciously attempted to probe this difference. But upon reflection, we found two factors that possibly could account for this difference:

1. Presence of atleast 3 teachers in one school, who were self motivated enough to take initiatives to learn and use computers

2. Presence of either a pro-active head teacher or one who does not interfere with teachers' work

It would be of academic interest to study these differences in greater detail in the future.

The next and concluding chapter collates the findings of the study and the inherent lessons therein to make this and other such similar programmes more effective.

6. Conclusion

This chapter looks at issues to consider for enhancing effectiveness of the programme in the light of the findings of this study. In doing so, we have broadly focussed on the objectives with which the CAL programme was launched.

6.1 Resources

The implementing agency has been very diligent in providing resources, going beyond what was initially planned.

Findings

- In two of the 12 Phase-1 schools, none of the computers are working

- In three more schools less than half of the computers provided are working

- In the remaining schools, either all computers are working (in four schools) or only one computer is under repair

- In the Phase-2 schools, all computers were working in two schools. In the remaining schools, only 2 or 3 of the 6 computers were working

- Children tend to misuse headphones – biting on the wire, pulling it etc., In only a few schools, were the headphones functional

- Each school was equipped with around 50-60 CDs

- Printer and computer meant for teachers remained unopened, in all but three schools

Man Power Resources

- Support teachers are there in all of Phase-2 schools

- Services of the support teachers has been continued in 3 of the12 Phase-1 schools where the programme has come to an end.

Issues

Maintenance of resources especially UPS and headphones is a problem. Also, attending to repairs appears to be major bottleneck. This despite the fact that

APF has provided schools with a list of technicians and their contact numbers. As to the support teachers, there was unanimous agreement that their presence is needed to continue the programme effectively. Generating funds for their salary and high levels of attrition among them are the two major issues facing schools.

Suggestions

Greater buy-in from the Government Department of Education may ensure better maintenance. Tying up with the Mahiti Sindhu Programme, where in operation, may help in attending to repairs. Greater synergy with the local Panchayat/self help groups would also be useful.

As to support teachers, it would be untenable to continue paying them salary in the long run. Moreover, if the objective of CAL programme is on integration, it would be better if teachers were to manage the programme. Three or more regular teachers from a school could be identified, based on the interest they show, and trained for the programme.

6.2 Training

Findings

- A fairly rigorous 5-day residential training has been provided by APF to support teachers

- The support teachers have found the training very useful. They were all especially appreciative of the soft skills component of the training

- A majority of the regular teachers have not taken the on-site training provided by APF seriously

Issues

High attrition among support teachers has led to some wastage of training. A majority of teachers have not taken ownership of the programme and are therefore apathetic towards it.

Suggestion

There is evidence from research that suggests significant correlation between level of technical and pedagogical support for ICT use in teaching and increased ICT use by teachers (Law, 2006).

Considering that the support teachers found APF training useful, the same may be offered to interested teachers. Of course, the training needs to be followed up with substantial hand holding, over a period of time. After all, well trained teachers are the key to effectiveness of any programme in a classroom setting.

6.3 Follow-up and Feedback

Findings

- APF had appointed a co-ordinator for the monitoring of the programme

- There has been frequent and periodic follow-up and feedback by the co-ordinators

- This has resulted in attending to repairs and other problems on an immediate basis

Issues

The support teachers said they found the feedback from the co-ordinators helpful in keeping them motivated. But, there had been no interactions with the regular teachers.

Suggestion

During the project period, the co-ordinator can tie-up with the Cluster/Block Resource Person for monitoring visits. This could help build the capacity of the CRP and BRP whose job is to monitor the academic activities in schools and provide feedback to teachers. Once the externally funded project ends, the CRP/BRP can continue this role, without considering it an added burden. It is also imperative to talk to regular teachers, during each visit, even when the support teacher is there.

Follow-up and feedback can also be brought under the purview of

SDMC/Community. A framework can be evolved to identify components of the programme that can be effectively monitored by SDMC/Community Members. Such components that require pedagogic expertise can be left to the CRP/BRP.

6.4 Sustainability

Sustainability has been the mainstay of this programme. Community was expected to match the external grant. Assurance was taken from them to continue the programme, after funding stops.

Essential documentation was also factored in. Support teachers in schools were trained to maintain records.

Findings

- SDMC President in most schools is taking keen interest in trying to mobilize funds to continue the programme

- Schools have ceased maintaining records pertaining to the programme, even where APF trained support teachers are continuing

Issues

Apart from parents, other community members in most schools are unaware of the programme. One school (Bidaluru) has collected money from parents for the programme. Unfortunately none of the computers in the school are working for more than six months.

Documentation utility has not been adequately perceived by support teachers and regular teachers.

Suggestion

Networking with local youth/women groups that are active, could help mitigate the lack of visibility to an extent. These groups can also canvas for reallocation of some of government budgetary provisions for schools towards CAL programmes, as well as generate external funds, if necessary.

Tying up with BRP/CRP for monitoring may ensure better compliance for maintenance of documents.

6.5 Classroom Environment

Experts are unanimous that innovation cannot occur in a teacher centric environment.

CAL has potential to directly improve learning and indirectly increase attendance by making school a more attractive place. Moreover, it offers opportunities for students to become co-operative learners, when they use a computer as a group.

Findings

- There is anecdotal evidence to suggest improved attendance, attributable to presence of computers in schools

- Teachers have noted that children have learnt to work in groups while using computers

- There was not a single instance of grouping in regular classrooms

Issues

While initial enthusiasm could have resulted in improved attendance, sustenance of students' interest in the present set-up is going to be a challenge.

There is little transfer of learning from computers to regular classrooms.

What children learn through computers is not being adequately harnessed within classrooms.

Suggestion

Emphasis, during the training programme and other sensitization efforts should be on learning culture rather than use of computer per se. Repeated exposure and discussions with teachers may improve classroom environment in tune with that envisaged in NCF, 2005.

6.6 Pedagogic Approaches

CAL provides students with opportunities to learn in new ways. While computers are pedagogically neutral, teachers can use multimedia content to help students interpret information and not receive it passively (NCERT, 2006). CAL can be

imaginatively harnessed to promote reasoning, creativity and critical thinking in children.

Findings

- Classrooms continue to remain didactic

- There is heavy reliance on textbooks both by teachers and students

- CDs are used to reinforce what is taught in classrooms

- There was no evidence of hands-on, activity based learning as promulgated in CDs, being transferred to actual classroom teaching

Issues

CDs essentially designed for single user, is being used by 4 or more children. Purpose of using CAL is unclear to most support teachers and regular teachers.

Suggestion

The pedagogic contribution of multimedia content, whose function is similar to that of classroom teaching, has to be reinterpreted in the light of newer evidence from cognitive science on how people learn.

There has to be a shift from prescriptive to a more engaging approach to learning. Teachers need to be provided with adequate support and training to make this possible. Otherwise, there is the risk of computers becoming an expensive add-on, instead of an integral part of a new pedagogy as envisaged.

The larger value of CAL rests in their capacity to motivate students, increase equity of access and reduce time needed to accomplish a given set of objectives CAL is not just a tool for learning but represents a whose new environment for teaching/learning.

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Appendix
R.V. Educational Consortium
Rashtreeya Sikshana Samithi Trust
Jayanagar, Bangalore-11

EVALUATION OF COMPUTER ASSISTED LEARNING PROGRAMME OF QUEST ALLIANCE

Name of field assistant: **Date of observation:**

Form 1: School Details

1. Name of the school   :

2. Nature of school   :   Multi grade/single grade

3. Name of the cluster   :

4. School Strength   :

	Boys	Girls
No of students enrolled		
No. of students present on the date of visit		

5. Students' profile   :

	SC	ST	MIN	OTHERS
Boys				
Girls				

6. Class wise details of students' strength:

	Class 4	Class 5	Class 6	Class 7
2006-07				
2007-08				

7. Performance of students in KSQAO's assessment (% of marks):

	Class 5	Class 7
2005-06		
2007-08		

8. Kindly observe the school premises and fill in the table:

8.1 Is there adequate space around the school?	Yes	No
8.2 Are the classrooms spacious?	Yes	No
8.3. Are the school surroundings clean?	Yes	No
8.4 Are the classrooms clean?	Yes	No
8.5 Is there a library?	Yes	No
8.6 Is the library being utilized?	Yes	No

9.1   How many computers are there?

9.2 Are all the computers in working condition?

10. Kindly refer to the records maintained in the computer room and place a tick if these records are maintained:

10.1 Number of students using computers   :

10.2 Class-wise time-table for computer time   :

10.3 Subject-wise time allocation   :

10.4 Details of CD's viewed by students   :

10.5 Details of CD's viewed by teachers   :

EVALUATION OF COMPUTER ASSISTED LEARNING PROGRAMME OF QUEST ALLIANCE

Form 2: Guidelines for Classroom Observation

1.Whether the classroom is   : Multi grade ☐   Single grade ☐

2. Subject taught during observation : Kan ☐ Maths ☐ Science ☐ Social Science ☐ Eng ☐

3. Class(es) handled by the teacher: ----------------------- No. of students: -------------------------

4. Gender of the teacher   : Male ☐ Female ☐

5. Classroom Environment

5.1 Is the classroom clean?	Yes/No
5.2 Is there a seepage-free even flooring?	Yes/No
5.3 Is there a secure, leak-proof roof?	Yes/No
5.4 Is the classroom well ventilated?	Yes/No
5.5 Are there benches / desks for children?	Yes/No
5.6 If no, how are the children seated?	In rows / In groups
5.7 Did the children keep their bags stacked	Yes/No
5.8 Is there a table / chair for the teacher? If yes, how often did the teacher sit on the chair?	Yes / No Rarely / often / very often
5.9 Are there visuals displayed? If yes, are they:	Yes/No Student created/teacher created/purchased?

6. Classroom Management

6.1 Where was the class conducted?	Inside the classroom / outside the classroom
6.2 If inside the class, were the students seated in one place throughout the class?	Yes/No
6.3 Did the teacher attend to the seating arrangement of the children?	Yes/No
6.4 How frequently did children write?	Not all / once in a while / often
6.5 While the children wrote, did the teacher go around checking their work?	Yes/No
6.6 Did the teacher expect complete silence in the classroom?	Yes/No
6.7 Did the teacher spend extra time with slow learners?	Yes/No
6.8 How did the teacher engage students who finished their work ahead of others?	

7. Teaching (provide details for all items under this category)

7.1. Games played	
7.2 Activities given	
7.3 Use of : • Models • Charts • Textbook • Other books, • Newspaper • Magazines • Computer / CD • Any other teaching aid(please specify)	
7.4. Stories / anecdotes / examples given	
7.5 Dramatization / Role play done	
7.6 Use of blackboard	
7.7 Drill work / practice given	
7.8 Use of surrounding environment	
7.9 Written / oral work given	
7.10 Grouping of children	

8. Integration with CD's (Please provide the following details if this is being done)
8.1 Link with previous CD's viewed
8.2 Instruction for viewing CD relevant to the topic being taught
8.3 Background information / Preparatory work for students before viewing CD
8.4 Suggestions/Ideas/Discussions based on CD's
8.5 Any Other

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EVALUATION OF COMPUTER ASSISTED LEARNING PROGRAMME OF QUEST ALLIANCE

Form 3: Guidelines for Observation of Computer Class

1. Class :	
2. Subject :	
3. No. of students :	
4. No. of students per computer :	
5. Seating arrangement of students :	
6. Title(s) of CD(s) being viewed :	
7. Stage at which CD is being used: (before, during or after a topic has been taught)	
8. Whether all students are viewing the same CD simultaneously : If yes, whether they are doing so in a single group or in small groups : If in a single group, how the other children are occupied :	
9. Level of interaction between support teacher and students :	
10. Level of participation by students :	
11. Intervention by support teacher :	
12. Confidence shown by students in handling the computer :	
13. Interaction among students :	
14. Motivation shown by students In using CD's :	
15. Discipline maintained by students :	

EVALUATION OF COMPUTER ASSISTED LEARNING PROGRAMME OF QUEST ALLIANCE

Form 4: Guidelines for Regular Teachers' Interview

1. Name of the teacher   :
   (Need not be filled, if so desired)

2. Gender   :   Male / Female

3. Age   :

4. Academic / Professional Qualification   :   SSLC/PUC/Degree   TCH/B.ED/M.ED

   If graduate, mention subject   :   _____

5. Experience of the teacher   :   in LPS_____yrs   in HPS_____ yrs

6. Whether the teacher has had computer training   :   Yes / No   Duration of

                                                training___

7. How was it useful? Did they gain any new insights about how children learn and how
   they can be taught?

8. Did they have prior exposure to computers? If No, do they feel confident about handling

   a computer now?

9. What CD's have they viewed?

10. Which ones did they like? Why?
    Which ones did they NOT like? Why?

11. Do they discuss with other teachers about the CD's? If yes, what is the nature of
their discussion?

12. What inputs do they give the support teacher?

13. What are their ideas on integrating computers in classroom teaching?

14. What value do they see in the CAL programme:
    - For themselves

    - For students

15. What is their perception of CAL programme vis-à-vis :
    - its general utility

    - its impact on student learning

    - community involvement

    - role of support teacher

    - role of external agency

16. What were their expectations when the programme was launched? Have they been met?

17. What has been their learning in this programme?

18. How can this programme be improved to better cater to theirs and students needs?

EVALUATION OF COMPUTER ASSISTED LEARNING PROGRAMME OF QUEST ALLIANCE

Form 5: Guidelines for Interviewing support teachers

1. How do they view their role as support teacher?

2. What was their experience at the training programme?

3. What support did they receive from APF?

4. How does the HM support them?

5. What interactions do they have with community members?

6. Do department officials (CRP, BRP's or BEO's) show interest in the programme? Have any of them visited the computer room and taken note of what is happening?

7. What kind of inputs do they receive from teachers?

8. Do teachers view CDs? If yes, how frequently?

9. Which CD titles are preferred by:

   - Students

   - Teachers

Which are their personal favourite CD's?

10. Other than viewing CD's are students taught computer skills?

11. Are all students actively involved while using computers?

12. Do they ask questions? If yes, what kind?

13. How do they arrange for viewing CD's?

14. What are the challenges/problems they face? How do they overcome them?

15. Whom do they turn to when they run into problems?

16. What is their perception of CAL programme vis-à-vis:

    - its general utility

    - its impact on student learning

    - community involvement

    - role of support teacher

    - role of external agency

17. How can computers be better utilized?

18. What do they like most about this programme?

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EVALUATION OF COMPUTER ASSISTED LEARNING PROGRAMME OF QUEST ALLIANCE

Form 6: Guidelines for students' Interview

1. Do they like coming to school? Why?

2. Do they like computers?

3. What do they like to do most in the computer room?

4. Which CD's do they like most?

5. What have they learnt in computers?

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EVALUATION OF COMPUTER ASSISTED LEARNING PROGRAMME OF QUEST ALLIANCE

Form 7: Guidelines for Interviewing Parents/SDMC members

1. Are they satisfied with:
   (i) the schools?

   (ii) the teachers?

   - Why or why not?

2. Is the education provided by school relevant to their children?

3. What is their opinion on CAL programme?

4. What changes have they seen in their children, after computers were introduced in the school?

5. What were their expectations from the programme?

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EVALUATION OF COMPUTER ASSISTED LEARNING PROGRAMME OF QUEST ALLIANCE

Form 8 : Guidelines for interviewing Community members

1. Are they happy with the CAL programme? Why?

2. What has been their role in the programme?

3. How do they plan to continue the programme in the absence of outside support?

4. How have the HM/teachers co-operating with them for this programme?

5. What has been the role of the department officials in the programme?

6. How do they monitor the use of computers and utilization of funds?

EVALUATION OF COMPUTER ASSISTED LEARNING PROGRAMME OF QUEST ALLIANCE

Form 9 : Leading questions for discussion with APF personnel

1. Why was this programme conceptualized?

2. How is it different from APF's existing CAL programmes?

3. What is the rationale for appointing support teachers in lieu of involving regular teachers?

4. What was the criteria for appointing support teachers?

5. How were they selected?

6. What was the frequency, duration and nature of training the support teachers?

7. What was the content of the training programme?

8. What were the modalities for feedback/ follow-up of these programme?

9. How were regular teachers involved in the programme?

10. What support was rendered to them?

11. What was the role envisaged for the community?

12. How was the community moblised?

13. What were the steps taken for resource mobilisation?

14. What was the process put in place for monitoring of the programme?

15. How was the evaluation of the programme conceptualized?

16. What were the challenges faced during implementation of this programme?
- Launching stage

- Implementation state

- Monitoring and feedback