Guidelines for In-service Training Program for Need-based Integration of ICT in Schools

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Abstract

For the purpose of quality education in primary schools, Municipal Corporation of Delhi had initiated 'Sharda' Project for Computer Aided Learning Program (CALP). Besides, in order to empower primary teachers of MCD Schools with ICT skills, MCD initiated 'Shiksha' project, in collaboration with the Microsoft Corporation (India) Ltd under its program named 'Partners in Learning'. A 12 days In-Service Training Program on ICT, at its six science centers under the ICT trainers of Microsoft Corporation (India) Ltd (CALP-MCD, 2006) was organized under this programme. Investigator studied the extent of training in ICT, the availability of ICT to the teachers in MCD School. Evaluation of the training in ICT in terms of attainment of competencies conducted a need assessment in further ICT training for the teachers and prepared four phased guidelines for future ICT in-service training for school teachers.

Introduction

Technical innovation is a continuous process and inventions always remain never ending so tremendous use of ICT is in every sphere of life. A huge amount of ICT is going to be accessed and invented in the next decade (2020-2030). In first decade of the 21st century, rapid changes in ICT and by ICT have taken place in teaching methods and learning styles with the integration of ICT in teaching-learning. ICT has become, within a very short time, one of the basic building blocks of modern society.

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For changing school practices to provide quality education to every child, the Department of Education of the NCT of Delhi initiated the Computer Education Project in 2000, and later on CALtoonZ, a specialized Computer Aided Learning Program (CALP) was introduced in 2005 in all its schools to ensure that learning in schools is joyful, interesting and meaningful (DOE-GNCT). Some other efforts to bring changes in the schools of Delhi, including those run by the **Municipal Corporation of Delhi (**MCD); that has become a trifurcated local body, can be observed through the introduction of the use of ICT e.g. use of radio for English conversation, T.V., Computer and at Science centers through Community ICT mode, KYAN.

For the purpose of quality education in primary schools, Municipal Corporation of Delhi had initiated the 'Sharda' Project for Computer Aided Learning Program (CALP). Besides, in order to empower primary teachers of MCD Schools with ICT skills, MCD had initiated the 'Shiksha' project in collaboration with Microsoft Corporation (India), and a 12 day In-Service Training Program named, 'Partners in Learning' at its six Science centers under the ICT trainers of Microsoft Corporation (India) Ltd (CALP-MCD, 2006) was organised under this project.

Need of Further In-service Training on ICT

Investigator conducted a need assessment of teachers in further ICT training. Hence, the investigator systematically endeavoured to go through the program objectively. It was also important to bring forward the in-service teachers' felt needs of further training in ICT.

Investigator observed in-service teachers' computer operational skills in the CAL Lab of the selected ten schools for observation. It was observed that they were quite unsuccessful due to lack of practice in operation of the computer. In-service teachers' ICT performance was unsatisfactory. There were computer related problems in the school regarding improper training of teachers, inappropriate number of computers, dysfunctional computers, softwares, educational packages and so on.

Besides, in-service training was perceived in effective to a significant number of the in-service teachers because in-service computer training was either very little useful or not useful for in-service teachers, and in-service teachers could not do project work independently. It was found that in-service teachers had gaps, and these gaps were the same needs that were assessed through the interview. There were substantial number (87.25 per cent) of in-service teachers who were ready to undergo further training under the in-service training in ICT for their own reasons such as they were excited to overcome difficulties, improving and clearing doubts, if the department provided opportunity further. Some

teachers brought out the issues of resistance among teachers about the uses of computer. They said that the computer was introduced in school and became very evident in the last five years, hence, older teachers did not have computer training during that time.

Guidelines for Future ICT In-Service Training

Eventually, the investigator came up with some useful guidelines for future ICT in-service training program because all working teachers have to undergo in-service training in ICT in the future as bringing quality improvement in education. The National Policy on Information and Communication Technology in School Education-2012. (NPIACTSE) has now become reality with widespread vision from students, teachers, and school management.

Hence, In-service Teacher Training in ICT has become the policy matter at the national level, and all States will have to adopt the policy in future, not as compulsion or trend, but seeing its significance also. Gradually, in-service teachers of all levels will have to undergo the INSET program in ICT. Thus, investigator asked-

1. What should be the content of training on computer?
2. How should teachers be trained?
3. How should they be evaluated or assessed whether they have been trained?

In relation to the first question, the investigator suggested basic competencies, which should be attained by teachers to use ICT in their teaching to improve students' learning. These are based on the analysis of data and need assessment:

- understanding his/her role and the use of ICT in teaching
- abilities to use animation, presentation, and simulation features in teaching
- skills of fundamental operations of computer and other ICT
- good knowledge of basic IT concepts
- teaching plan; how to get support of ICT during the teaching-learning process
- abilities to use technology to enhance own creativity and teaching-learning
- understanding social, ethical and legal concerns in the use of technology in classroom
- ability to identify useful learning materials from ICT sources.

There might be so many additional points to be more proficient, but as per the investigator's point of view, these were the minimum in which teachers have to be necessarily competent. But, it is only possible when teachers have certain skills of computer such as:

- Knowledge of all peripheral devices, e.g. scanning, OCR, digitizing, parallel, serial, Internet, Intranet, Ethernet, LAN, WAN, Server, TCP/IP, Printer, Hard disk, DVD writer, Keyboard, Output devices, Input devices etc.
- Basic operations on a computer,

and entering password correctly in both networked environments and in individual systems.
- Using anti-virus program to protect the system against viruses.
- Opening and closing files, naming and renaming files and folders, restoring files and folders, copying and deleting files and folders, and printing documents etc.
- Using multimedia resources, educational software, installation and un-installation of the software or programs, run DVDs or flash drive on the machine.
- Communicating electronically-writing sending and receiving electronic mails etc.
- Using digital cameras and scanners to create documents for using in teaching or publishing.
- Using IT tools by using commonly available software tools e.g., printing on paper, stored in electronic media and disseminated through the World Wide Web, importing scanned images, digital photographs, diagrams, graphical representations of data and bringing out materials ready for dissemination, using other IT tools to enrich documents for publication with photographs taken with a digital camera, images reproduced using scanner and pictorial representation of data and using troubleshooting programs of the operating system to solve the hardware, software and connectivity problems including anti-virus programs to avoid some of the common troubles.
- Making multimedia presentations by creating, selecting, inserting and importing the graphics in presentation slides and presenting the slides using time controlled presentation techniques.
- Using the Internet as a learning resource.

In relation to the second question, the investigator found out three key principals as are cited in the UNESCO planning guide for ICT in teacher-education for effective ICT development in Teacher Education that were put forward by Society for Information Technology and Teacher Education (2004).

1. That technology should be infused into the entire teacher education programme, implying that ICT should not be restricted to a single course, but needs to permeate in all courses in the programmes.
2. That technology should be introduced in content. Accordingly, ICT applications like word-processing, databases, spread-sheets and telecommunications should not be taught as separate topics, rather encountered as the need arises in all courses of teacher-education programmes.
3. That students' teachers should experience an innovative technology supported learning environment in teacher-education programmes. This requires that

students' teachers should see their teacher educators engaging in technology to present their subjects utilising powerPoint or simulations in lectures and demonstrations. Students' teachers should also have the opportunity to use such applications in practical classes, seminars and assignments.

The application of these three principles will be a milestone towards effectively integrating ICT in teacher-education.

On these principals investigator prepared a blue-print of the ICT training program followed like the NCERT split up model of in-service training under SSA. This training program may have four phases, and every teacher will have to pass every phase, and every phase, will be of several days. All four phases will have to be completed at least in twenty five days during school timings only from 8:00 to 12:30 Hrs, for the morning shift and 13:00 to 17:30 Hrs for the second shift schools teachers. This training should be conducted at the nearest venue i.e. *a resource centre* for every twenty schools, that should be established with all essential ICT tools and equipments. At the resource centre, there should be a conference room, computer lab with all necessary peripheral devices, software and good infrastructure, and an ICT based classroom where teachers may be assessed in real situations of teaching learning. Formative and summative tests have to be conducted during every phase and on the last day. This training should be given professionally through teachers educators and IT experts, through strategically selecting transactional methodologies such as-project-based, hands-on experience with technologies-practicum, demonstration, simulations, peer discussions, brainstorming, joint planning, and lectures. All four phases should be carried out in at least five days of the breaks between two phases in the following way-

First Phase—two Days' Orientation Program

In this phase, teachers should be made aware of the importance and possibilities of ICT in teaching-learning. Teacher educator himself /herself will use ICT during the two days' orientation program at the *resource centre* during his/her delivery of the model lesson teaching. In this phase, interest in the use of ICT should be generated in the teachers by showing them various easy and simple, but effective techniques such as user interface plug in and play techniques etc. The teacher educator will also discuss learning theories and ICT integration during the classroom processes. Finally, every teacher's opinion about the use of ICT in teaching is very important to know for the purpose of research and development of the program. On the first day of the training, the resource material in printed form and digitized form should be provided to the in-

service teachers so that they study before coming to the next phase.

There may be the trainees, who have already good knowledge of ICT, and they may cause disturbance to beginners. They should be separated from the beginners by keeping them in a separate batch of the second phase. These teachers may be trained easily as Master Trainers or Model Teachers in ICT who can use ICT effectively in the teaching-learning process.

Second Phase—Eighteen Days' Computer Skills Program

In this phase, teachers will develop their skills, and try to be more competent in every component of skills such as basic hardware skills, fundamental operation skills that include understanding the system environment, using applications of the software, using multimedia, and browsing/surfing on the Internet. Before beginning this phase, every in-service teacher will access the computer only through his/her user ID.

During this training phase of the program, first computer literacy should be brought among the teachers through the fundamental operation of the computer and content of training that follow :

a. **Peripheral Devices and Functions –** Start/ Shut down, On / Off, all applications of the devices.
b. **System Environment –** (Windows Operating System, others) opening, closing and saving files, optimising hard disk, managing files, opening and renaming files, viruses etc.
c. **Software Applications –** MS Office applications such as Word processing (MS Word), Spreadsheet (Excel), Presentation (PowerPoint), Website navigation, and, Internet searching (Internet Explorer) and E-mailing (MS Outlook).

   Graphics and drawing, designing print materials, scanning text and graphics, video production and editing, and chatting within teachers' discussion groups.

During this eighteen days' training in computer, teachers should be assessed through centrally controlling and monitoring the program with the help of necessary software individually through checking his/her progress through his/her user ID anytime.

On the last day, every teacher should be given at least ten different projects based on the practical applications of the training. These projects will have to be prepared by teachers from outside the computer lab or these may be prepared at home. After completion, these will have to be submitted to the coordinator of the program in soft and hard copy. The coordinator will download these projects in their user ID and prepare a report of the trainee about his/her attained competencies. If he/she attains 80 per cent of competencies (Bench Mark), he/she will be allowed the next level of the phase, otherwise

this phase will be repeated by him/her.

Third Phase— Three Days' Workshop on Pedagogical Integration of ICT Tools

Successful in-service teachers of phase two will participate in this workshop to perform on the acquired IT skills which will be integrated with their pedagogy innovatively and creatively. The entire program in this phase will be recorded through a video camera to maintain a record.

During this phase, trainees could learn the specific use of applications of the software and ICT tools, ICT tools integration with the unit plan, approaches to managing ICT-based teaching groups, assessment of students' learning through the use of ICT and creating teachers and students' support materials as per the syllabus. Teachers will also learn how ICT is used in administration, record-keeping, reporting and transfer of information, and maintaining their personal teaching records etc. Teachers will also be made aware of social, legal, ethical and health issues regarding the use of ICT. They will have to be trained in integration of ICT into teaching specific subjects, which are taught at the school level, such as- English, Hindi, Urdu, Mathematics, environmental studies, science, social science etc.

After completion of this phase, teachers will have to prepare five lesson plans on five different subjects of different classes that will be taught in the real situation with the help of ICT in the next phase.

Fourth Phase – Teaching with ICT in Real Situations

The teacher educator has a very important role because any two lesson plans of the five will have to be observed critically during the model teaching with the use of ICT. His/her critical remarks will depict the specific character of the teacher's teaching with the use of ICT. Teachers will perform on these two lesson plans selected by the teacher educator in the real classroom situation at the *resource centre*, where all the necessary ICT tools are already available. All trainees will be passive observers to observe the problems during teaching with the use of ICT and what steps have to be taken to sort out the problems by themselves.

Eventually, after a successful completion of all these phases, all trainees could be expected to teach in the classroom, making use of ICT that will enhance the students' learning and improve quality of education. But it will be concern that all necessary functional ICT tools should be available in the schools.

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