

Conducting In-service Training of Teachers: Some Experiences

S. C. Agarkar

Homi Bhabha Centre for Science Education

Tata Institute of Fundamental Research

Mankhurd, Mumbai 400 088

sca@hbcse.tifr.res.in

Background

- Homi Bhabha Centre for Science Education (HBCSE) is the national centre of the Tata Institute of Fundamental Research (TIFR) for science and mathematics education.
- Established in July 1974 its activities are centered around equity and excellence.
- Over the past 33 years it has undertaken R & D projects in curriculum development, teacher preparation, students' misconceptions, etc.
- It has conducted a large number of in-service teacher training courses both in urban as well as in rural parts of the country.

Training Courses at Primary Level

- Khiroda Project (1974-1979): Teachers in rural region of Maharashtra were trained to overcome problems faced by first generation learners.
- Joint Innovative Project (1985-87): Undertaken in collaboration with MSCERT and funded by UNICEF the project focused on training the teachers to use activity based method of teaching.
- Saturation Project (1987-90): It involved two tier model of teacher training in tribal blocks of the state of Maharashtra (Surgana, Nashik district). Selected primary teachers and headmasters were trained to work as resource persons. Members of State Institute of Science Education (SISE) were also trained to undertake training courses in another tribal block of the state (Chikhaldara, Amravati district).
- Solapur Project (1990-93): Undertaken in collaboration with the Solapur Science Centre (SSC) the project attempted to train voluntary workers of SSC for implementing and monitoring science education programme in the city.

Strategy of Teacher Training

Close interaction with the practising teachers during training courses enabled HBCSE personnel to understand needs and requirements so practising teachers. Based on this understanding a strategy of teacher training has been worked out. It essentially has five components:

1. Content discussion
2. Pedagogic guidelines
3. Hands on opportunities
4. Enrichment sessions
5. Guidance for action research

Content Discussion

- Content discussion sessions during the training courses are used for the following:
 - Conceptual clarifications
 - Concept maps
 - Learning difficulties and remedial Measures
 - Dealing with students' questions
 - Linkages with everyday life

Pedagogic Guidelines

- Pedagogy sessions during the training courses focus on
 - Changed thinking about learning from educational psychology (behavioristic approach to cognitivistic approach to constructivistic approach) and its implications for day to day teaching.
 - Enhancing pupil participation in classroom deliberations.
 - Projects and leisure time activities for students
 - Developing proper attitudes and values among the students.

Hands on Opportunities

- Considerable time of the training course is used for laboratory programme. It attempts to achieve the following:
 - Provide first hand experiences to perform experiments developed at HBCSE
 - Design low-cost and relevant activities to be used in day to day teaching
 - Guidelines for making the experiment interesting and relevant.
 - Guidelines for developing skills and attitude of experimentation among the students

Enrichment Sessions

- These sessions are used to acquaint the teachers with current issues in education in general and mathematics education in particular.
- Teachers are familiarized with the idea of ethnomathematics and how to correlate modern mathematics with it.
- Teachers are also familiarized with various mathematics education projects and the research outcomes of those projects.

Action Research

- Training teachers in reflective practices so that they can reflect on their own teaching and improve upon it.
- Provide the idea of action research, its scope and limitations.
- Discussion of some illustrative examples of action research where teachers have attempted to find solutions to educational problems on their own.

Other Needs

- Just a training does not lead to behaviour changes among the teachers. Three things are found useful to bring about noticeable changes in classroom interaction. They are
 - Print Material
 - Follow-up activities
 - Institutional support

Print Material

- Types of material that are found useful can be categories as:
 - Remedial/enrichment material
 - Laboratory manual
 - Answers to children's questions
 - Dictionary of technical terms
 - Projects and activities

Follow-up activities

- School Visits: On-spot guidance plays a crucial role in achieving behaviour changes among the teachers. Schools need to be visited regularly and local problems need to be solved.
- Seminars: Monthly seminars to share the ideas and experiences are found quite useful.
- Bulletin: Providing guidelines for teaching different topics along with answers to their questions are appreciated by practising teachers.

Institutional Support

- Laboratory development is essential to practice activity based teaching of mathematics. It must contain necessary gadgets and also the facility to try out new experiments.
- Library development is also essential. Print as well as digital resources must be acquired and made available both to students and teachers.
- Cooperation among teaching community is necessary. It could be achieved through periodic interaction among teachers.

Thank you

Any Question?