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# Collaborative Learning among the Pupil - Teachers Influences their Practical Knowledge of Computers: An Action Research Report

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**Abstract:**

*The revolution in information and communication technology has changed life styles and influenced almost all human activities. The teachers must use information and communication technology to support their teaching. For this, the most important factor is appropriate training of teachers to enable them to make use of the most of the technologies. Action research methodology offers a systematic approach to introducing innovations in teaching and learning. It is a form of self-reflective enquiry undertaken by professionals in educational situations, in order to improve the rationality and justice of their own educational practices, their understanding of these practices and the situations in which the practices are being carried out. It is most rationally empowering when undertaken by teachers collaboratively, sometimes in cooperation with others. Cooperative learning is an approach to group work that maximizes the learning and satisfaction that result from working on a high-performance team. Cooperation enhances learning in several ways.*

*It was noticed during the training period that the pupil teachers avoid using computers in teaching learning process. Therefore, to provide the pupil teachers an opportunity to develop associated skills for use of computers and to make them competent in the field, an action research approach was used and collaborative learning strategies were employed. The result obtained reflects that collaborative learning among the pupil teachers influences their practical knowledge of using computers.*

**Key words**: Collaborative Learning, Pupil Teachers, Action Research, Computer literacy, Practical Knowledge.

> "Through systematic, controlled action research, higher education teachers can become more professional, more interested in pedagogical aspects and more motivated to integrate their research and teaching interests in a holistic way. This, in turn, can lead to greater job satisfaction, better academic programmes, improvement of student learning and practitioner's insights and contributions to the advancement of knowledge in higher education." (Zuber-Skerritt 1982)

It is true that learning is an individual issue and each student has his or her own particular learning style. For this reason, as teachers are expected to implement the same curriculum programme in all classrooms, they may encounter problems that arise because of the different learning styles of their students and teachers should know how to recognize and solve them through educational research. In sum, teachers who are competent in educational research can easily recognize teaching problems that arise in their classrooms, can solve these efficiently.

Traditionally, lecturers have not been encouraged to draw upon theoretical development as a means of improving curriculum design and delivery. However, more recently, a number of initiatives at all levels have been established to create the conditions for innovation in these activities, and teaching/ learning is becoming recognized as a more valid area of enquiry for academics across all disciplines, rather than as the unique preserve of specialists.

Action research is a term used for an increasingly popular movement in educational research. This methodology offers a systematic approach to introducing innovations in teaching and learning. It seeks to do this by putting the teacher in the dual role of producer of educational theory and also user of that theory. This is both a way of producing knowledge about education and a powerful way of improving learning and

teaching practices. No separation need be made between the design and delivery of teaching and the process of researching these activities, thereby bringing theory and practice closer together. It encourages the teachers to be thoughtful and reflective about school practices.

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Action research involves experimenting with teaching and learning strategies. It is an excellent way to improve teaching and student's learning. Most professionals who have tried them find their projects very absorbing and useful. It aims to improve practice rather than to produce knowledge. In addition, this type of research is concerned with diagnosing a problem in a specific context and attempting to solve it in that context. Therefore, it is very much qualitative in nature. In other words, through Action Research teachers investigate their own practices and work places in order to make beneficial changes, and systematically analyze their own teaching and their students' performance.

Action Research is popular with researchers running small-scale projects, because it enables teachers to reflect on and evaluate different aspects of their work and so perform better as true professionals. It can also be used for different purposes, such as school-based curriculum development, school improvement, professional development, educational research, system planning, school organization, staff development, evaluation and the democratization of the workplace. Besides this, it should be noted that, according to Grundy (1987), Action Research challenges certain traditional assumptions about teaching.

Analysis of Action Research activities reveal that they grant many benefits, such as helps to solve classroom problems, encourage effective changes, revitalizes teachers, empowers teachers to make decisions in their classrooms, identifies effective teaching and learning methods and promotes reflective teaching. It also promotes ownership of effective practices, verifies what methods work, provides a connection between instructional methods and results, helps teachers apply research findings to their own classroom and widens the range of teachers' professional skills to become change agents. The Action Research process involves several different steps, which include identification of the problem, collection of data, analysis of data, and decision-making about a course of action based on data analysis and reflection.

Cooperative learning has been a popular topic in educational circles for more than a decade. The term cooperative learning refers to students working in teams on an assignment or project under conditions in which certain criteria are satisfied, including that the team members be held individually accountable for the complete content of the assignment or project. It is an approach to group work that minimizes the occurrence of unpleasant situations and maximizes the learning and satisfaction that result from working on a high-performance team. Cooperation enhances learning in several ways. Weak students working individually are likely to give up when they get stuck; working cooperatively, they keep going. Strong students faced with the task of explaining and clarifying material to weaker students often find gaps in their own understanding and fill them in.

Researchers and practitioners have found that students working in small cooperative groups can develop the type of intellectual exchange that fosters creative thinking and productive problem solving. Student interaction makes cooperative learning powerful. To accomplish their group's task, students must exchange ideas, make plans, and propose

solutions. In addition to intellectual growth, cooperative learning enhances students' social and personal development too.

Students completing cooperative learning group tasks tend to have higher academic test scores, higher self-esteem, greater numbers of positive social skills and greater comprehension of the content and skills they are studying.

## Perception of the problem / dissatisfaction:

It was observed during the training period of Bachelor of education that the pupil teachers don't have skills to use computers in teaching and learning process. It was noticed that they hesitate to use computers in the classroom and avoid working on computers. The researcher used action research method to improve the practical knowledge of computers among the pupil teachers of B.Ed level.

## Background of the Study:

During the training programme of B.Ed., assignments were given to the pupil teachers. They have to submit the assignment in hard and soft copies. It was observed that all the pupil teachers are not computer literate and are not skilled in using computers whereas, to succeed in teaching profession, one should be competent enough to use these modern technologies during their service. Today, these skills are necessary to make the teaching learning process effective.

Therefore, the problem taken in hand was "How to improve the practical knowledge of the pupil teachers in computers".

## Objectives of the Project:

To improve the knowledge and skill related to computers

among the pupil teachers, an action research project was conducted with the purpose to

1. realize the importance of computers in the teaching profession,
2. develop interest and associated skills among the pupil teachers towards computers,
3. make them competent to use computers efficiently,
4. raise the percentage of computer literate pupil teachers and
5. to encourage them for collaborative learning

**Significance of the project**:

The most remarkable development till today that has changed the world of communication is the Internet. The world has entered the information age resulted in change in the nature of the global society. In today's context, no teacher can be taken to be trained unless she/he has the necessary confidence in the computer literacy skills. For living effectively in the age dominated by communication and information technology, it will be essential that teachers should acquire such skills to make them professionally competent. Through designing appropriate learning experiences during the training, essential computer skills can be developed among the student teachers to make them effective in teaching world. The revolution in information and communication technology has changed life styles and influenced almost all human activities. The challenge now is to use its full potential in education. The principal task of teacher educators now is to enable the pupil teachers with the ability of learning/teaching, how to learn with evolving technologies. For learning how to learn, it would be necessary that teachers own skills should be well developed. Therefore, teachers' capacity to construct their knowledge may have to be learnt by student-teachers during their pre-service courses, their service training. The challenge before teacher is

to use its full potential in education while that of teacher educator is to become competent to train the teachers to use technology for excellence in the view of today's E- learners and i-kids.

The present work was taken in hand with the goal to improve the knowledge of computers and associated skills among the pupil teachers by using the strategy of cooperative leaning. It will further assist in developing confidence and competencies of the student teachers and add in their personality. They will become competent for modern technologically advanced teaching world and will imbibe professionalism in them.

**Scope of the project:**

Action research is about changing an environment, system or practice and learning about the context through changing it. Action research is essentially *research through action*. It is usually a collaborative activity involving input from people who are likely to be affected by the research. This kind of work is not simply about reporting but also *improving* an environment. As John Elliott says, action research is "the study of a social situation with a view to improving the quality of action within it". Therefore, the present work will increase the level of knowledge and skills to use computers in teaching learning process among the pupil teachers through pairing and sharing. It will enhance their practical knowledge by collaborative learning and they will become competent to use computers in writing assignments, research proposals and reports, calculate data/ marks, analyze data, present their content with power point, and share their knowledge through internet and many more.

## Delimitation:

The project was delimited to the students of B.Ed. studying in Indira Devi College of Education, Yamunanagar. It is limited to only the practical knowledge of pupil teachers towards computers. It is also restricted to the skills associated with use of word, excel, powerpoint of Microsoft office and internet surfing.

## Understanding of probable causes:

The problem was analyzed for, why all the pupil teachers don't have practical knowledge to use computers in teaching learning process. After analyzing the problem, the probable causes identified have been listed below.

- Lack of interest.
- Lack of motivation.
- Lack of positive attitude.
- Economic problems/ unavailability of computers
- Lack of knowledge regarding computers.
- Lack of confidence.
- Influence of peer group.
- Technophobia
- Coming from different family backgrounds.
- Lack of trained teacher educators

**Table 1: Analysis of the Problem**

| S.No | Causes | Evidences | Control | Fact/Estimation | Prioritizing |
|---|---|---|---|---|---|
| 1. | Lack of interest among the pupil teachers. | Observation | Researcher | Fact | III |
| 2. | Lack of motivation | Observation | Researcher | Fact | II |

| | | | | | |
|---|---|---|---|---|---|
| 3. | Lack of positive attitude of students | Observation | Researcher | Fact | IV |
| 4. | Economic problems/ unavailability of computers | Discussion | Researcher | Fact | V |
| 5. | Lack of knowledge regarding computers | Test | Researcher | Fact | I |
| 6. | Lack of confidence. | Self evaluation/ interview | Researcher | Estimated | VI |
| 7. | Influence of peer group | Self evaluation/ interview | Researcher | Estimated | IV |
| 8. | Technophobia | Self evaluation/ interview | Researcher | Estimated | VII |
| 9. | Lack of trained teacher | Discussion | Researcher | Estimated | VIII |
| 10. | Different family backgrounds | Discussion | Researcher | Estimated | VIII |

Table 1 depicts the probable causes of the problem i.e. why pupil teachers avoid using computers in teaching learning process. The causes are identified on the basis of evidences collected through the method of evaluation by the researcher, observation, test and discussion with the pupil teachers. Collections of all the evidences were in the control of researcher. It was found that the probable causes were either

fact or estimated. Depending on the nature of evidences, the causes were prioritized. In the present case, individual factor was graded I.

**Developing an action Hypothesis**:

Visualizing the probable causes and their priority, an action hypothesis was formulated as

- If interest and positive attitude will be developed among the pupil teachers and will be motivated to use computer, providing practical knowledge and training through promoting collaborative learning and if opportunities will be given to remove technophobia the above problem could be worked out.

**Planning an intervention**:

Quantitative and qualitative both the approaches were used for the research work.

| S.No. | Activities | Method | Agency/ strategy | Control | Duration |
|---|---|---|---|---|---|
| 1. | Developing interest in computers. | By lecture, guest lecture | Computer aided | Researcher | 5 days |
| 2. | Motivating pupil teachers. | Guidance and counseling, lecture, seminar | A.V. aids, Paper, Magazines | Researcher | 5 days |
| 3. | Developing positive attitude of students | Guest lecture | Teleconferencing | With help of Principal | 3 days |
| 4. | Providing knowledge regarding computers | Knowledge assessment<br>Hands on training | Questionnaire<br>Lab training | Researcher<br>Comp. teacher | 2 days<br>12 days |

| | | | | | |
|---|---|---|---|---|---|
| 5. | Promoting collaborative learning | Extra classes | Peer learning | Researcher | 18 days |
| 6. | Giving opportunities to remove technophobia | Hands on training | Self learning | Comp. teacher | 10 days |
| | Total | | | | 45 days |

**Execution of the intervention:**

Actions were taken according to the plan and following activities were conducted.

1. **Development of interest for using computers among the pupil teachers**

To develop the interest, an encouraging lecture was delivered by the researcher describing the importance of computers in daily and professional life. With the help of computer- teacher and research scholars, pairs of pupil teachers were made on the basis of their choice to conduct different computer oriented activities. Pupil teachers were made free to form pairs. Slogan writing competition was conducted and a workshop was organized during which pupil teachers were guided to prepare chart/models on the various parts of computers. Time taken for these activities were 5 days and the agencies used were computers and other material aids. The technique employed was pair and share.

2. **Pupil teachers were motivated to use computers**

To motivate the pupil teachers, Guidance and counseling services was given with the help of principal, other teachers especially the computer teacher and research scholars. Guidance was given in groups. They were interviewed and encouraged and made comfortable to communicate their problem without hesitation. Counseling was given to those who

were willing for the same.

10 groups of pupil teachers were formed randomly and directed to choose their leaders. A seminar was organized for pupil teachers during which leaders of group were presented their views and submitted the same in hard copy. The views presented were prepared on cooperation basis. Everyone had to actively participate in paper presentation. Feedback was given by the computer teacher and researcher to the pupil teachers. It was kept in mind that the main objective was to motivate each one therefore feedback was given to the whole group in the positive way for improvement. These activities were organized in 5 days.

### 3. Developing positive attitude among the student teachers

A Guest lecture was conducted with the objective to develop positive attitude towards the use of computers among the pupil teachers. Dr. Veena Sharma, an expert teacher educator presented her influencing views on use of computers through teleconferencing (through skype). The experience was very interesting and promising. It resulted in two ways, firstly, the students were enlightened by the wisdom of an expert and very eminent professional and secondly, it motivated them to use computer in a different way. In addition, the monotonous lives of classroom teaching were also removed. This activity was completed in 3 days, the agency was expert lecture and the technique used was teleconferencing.

### 4. Providing knowledge regarding computers

- Celebration of ICT week

A week was celebrated to motivate and provide knowledge to pupil teachers related to computer. During the Information Communication Technology week celebration, the environment of the institution was maintained very conducive and enthusiastic. A drama was conducted by the pupil teachers on

illiteracy of computers. During the celebration time, cultural programs were also organized by them. To give the event a formal look, the institute was decorated by them and ribbon was cut by the chairman on inaugural session. Specific colours of Days were decided by the pupil teachers and everyone including the director and teachers were to wear the specific colour.

A rally was organized with banners and slogans made by the pupil teachers in the nearby area to aware the local people for computer literacy. Hands on training were given by the comp. teacher to each and every pupil teacher which was the main objective to celebrate the week. These activities are conducted with the help of Chairman, teachers, Comp. teacher and research scholars. It takes 14 days for the activities.

## 5. Promoting collaborative learning

Knowledge assessment: the knowledge of pupil teachers were evaluated through a questionnaire and through practical experiences. They were categorized in five classes on the basis of their knowledge (table-2).

| **Categories** | **Class I** | **Class II** | **Class III** | **Class IV** | **Class V** |
|---|---|---|---|---|---|
| Level of knowledge | 0-20% | 21%-40% | 41%-60% | 61%-80% | 81%-100% |

**Table-2: Categorization of pupil teachers according to their knowledge**

Pairs were formed on the basis of their level of knowledge (table-3). Six different type of pairs and total 45 pairs were formed.

| Pair 1 | Pair 2 | Pair 3 | Pair 4 | Pair 5 | Pair 6 |
|---|---|---|---|---|---|
| Class I and Class V | Class I and Class IV | Class I and Class III | Class II and Class V | Class II and Class IV | Class III and Class V |

**Table-3: Paring of pupil teachers**

Extra classes were conducted. Opportunities were provided to the pairs to share their knowledge and skills. They were motivated for continuous practices even at their living place. All the pairs had directed to prepare a resume in word, an advertisement of their choice, finding average of a data in excel, preparation of bar and pie chart, a power point presentation of 10 slides with minimum three pictures downloaded from internet in their methods of teaching and an emailing the weekly experience to the pair. These are organized in 18 days and the technique employed was Peer learning. A quiz completion was organized during which four groups were formed. And to motivate them, appreciation certificates were given.

### 6. Giving opportunities to remove technophobia

For the next 10 days, opportunities were given to every pupil teacher to work on computer individually under the supervision of computer teacher and research scholars to remove technophobia if any and develop competencies among them. This process imbibed in them the needed confidence to use computers in future.

### Evaluation of the intervention:

After the execution of the above plan of activities, the practical knowledge of the pupil teachers related to use of computers was assessed through the work conducted by them. They were given the task of resume preparation, ppt, data analysis and searching on the given topic on the internet. Very interesting and provoking results were obtained. Nearly all the pupil teachers were found motivated and interested. However, very few were not so confident. Some of them who were categorized in class-I before the work were found in class-IV after the

research which was really very inspiring. More than 94 % of pupil teachers who had less than 40% knowledge were found to be gained in their practical knowledge to use computers. The result revealed that maximum numbers was obtained by pair 6 followed by pair 4, pair 5, pair 1, pair 2 and pair 3 respectively. Very little difference was found between the total marks of pair 1 and pair 2. Although, it was noticed that all the pupil teachers of the classes have improved their practical knowledge, pupil teachers of classes 2 and 3 have improved more than others. Pupil teachers were highly motivated as they took an oath during ICT week celebration that they will not only use computers for their work but will motivate others too.

**Decision Making:**

The result obtain after the execution of the plan of action framed for the formulated hypothesis, it was interpreted that the researcher has satisfied enough with the results obtained and it was surely minimized the problem as the level of practical knowledge of computers among the pupil teachers has improved/increased. Cooperative learning is found to as very promising strategy to increase the competencies of pupil teachers to use computers.

**Conclusion:**

From the present work, it is concluded that practical knowledge of computers among the pupil teachers is an important ingredient of their professional life. They should have sufficient knowledge and skills to excel in the teaching job. Today, the students studying in the schools are very intelligent and technologically advanced. To cope up with their level, it is essential that the teachers should be professionally proficient in every field including the modern technology.

The interest and positive attitude of pupil teachers play

an important role in knowledge acquisition. They learn effectively through cooperation. They should be motivated for collaborative learning. Further, they develop skills associated with computers if trained to actively participate in the learning process. They should be inspired to become competent professionals of teaching world.

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