SUMMARY

INTRODUCTION

Teachers are today at the centre of the scene in educational reforms. National governments, international organizations and even international non-government organizations (NGOs) assume that the quality and performance of education systems depend more and more on what teachers know and do in the classroom. (Verger, Altinyelken & Koning, 2013). Consequently, countries had to improve their educational systems in order to provide their people enough knowledge to use this technology. Paralleling fast changes in Indian society, like in other countries, there have been some changes in the purpose of the functioning of education. Hence, the necessity to make improvements in teacher preparation and training is a current issue. To be highly qualified, teachers must be well prepared, especially in improving the quality of education facing global challenges. For this purpose, we need teacher education reform that aligns teacher preparation with the demands of an emerging information society and an increasingly interdependent world in the 21st Century. (Tarman, 2010). So, in this era of information and technological advancement, the teachers and teacher educators must play an important role in incorporating the understanding of the challenges of globalization and making necessary changes into the substance of education.

ICT have the potential to enhance access, quality and effectiveness in education in general and to enable the development of more and better teachers in particular (Sumalatha, 2009). The use of ICT in and for Teacher Education is now seen world wide as both a necessity and an opportunity. With the moral and intellectual strength in the present scenario, the use and implementation of ICT is the only key for India to attain more advanced system of Education. The quality of education depends on the quality of teachers. Without maintaining the quality of teachers no innovation can be expected. All nations attempt to impart quality education and today when there is virtual explosion of information, it is highly essential that Teacher Education is of the highest quality and standard. Overall quality of education depends to a large extent upon the quality of the Teacher
Summary

Education. Teachers play vital role in the development of any society. The teachers are considered as the torchbearers in creating social cohesion and national integration. Only enlightened and emancipated teachers lead communities and nations by their efforts towards better and higher quality of life.

So, the latter-day teachers should be not only an information provider, but also an example to be followed, an adviser and supporter in building up the students' capacities and mobilizing them to acquire knowledge and wisdom. Depending on the educational and social context, the teacher shall play various roles; and in this case, modern ICT can offer an important support and influence the relative importance of different roles. The development of modern information society determines the dynamics of change for various aspects of teachers' activities and mission. The Government of India’s policies have focused especially on teacher education institutes as these institutions are responsible for the education of the teachers of tomorrow. The National Curriculum Framework- 2005 for school education also emphasizes a paradigm shift in respect of the entire process of education. Looking to the potentialities of ICT, National Council for Teacher Education (NCTE) has put lots of emphasis on its use (Khokhar, 2008).

Various approaches have been tried to provide quality teacher education. Prominent among these strategies are training programs designed to raise skill levels and foster positive attitudes towards computers among teachers. National Assessment and Accreditation Council (NAAC) has also put ICT as one of the criteria of grading the teacher-training institute. NCTE also organizes ICT orientation camps for training the teacher educators. One of these programs is Intel Teach Program. It is a professional development program for In-service and Pre-service teachers. This program has been working in association with NCTE since 2002. Later, in December 2006 NCTE and Intel signed an MOU on project named XPDITTE (Rama & Lakshmi, 2008). The objectives of this MOU are to impart sustained professional development to all teacher educators from all the institutions of teacher education across the country and to make ICT a part of the Teacher education curriculum. Intel Teach has two important segments - the In-service segment and the Pre-service segment. The Pre-service Program enables
Teacher educators to discover how to use technology to promote inquiry-based learning through research, communication, and productivity tools (Rama & Lakshmi, 2008).

The Indian program works closely with Ministry of Human Resource Development (MHRD) and five state governments and eminent educationists and academicians. In India, Intel Teach has two important segments: The In-Service segment (comprising Government Schools and private schools) and the Pre-service segment (University Departments of Education and Colleges). The Intel Teach Pre-Service was implemented in the year 2002 in India with an objective to empower teacher educators across colleges of education and the future teachers with the skilful use of technology in the pedagogy. Intel Teach training is imparted to the faculty of teacher education institutions about ICTE, and the Intel curriculum is integrated in the University curriculum for teacher education. Intel has signed an MOU with National Council for Teacher Education (NCTE) to integrate the Intel curriculum in the B.Ed. curriculum nationally and to provide professional development to all teacher educators in all recognized teacher education institutions across the country. The project is entitled X-elerated Professional Development on integration of Technology in Teacher Education (XPDITE).

JUSTIFICATION OF THE STUDY

Reform and change can be either ‘top-down’ or ‘bottom-up’ in terms of its origin (Bailey et al., 2001). Top-down changes are initiated by those at the top of the organizational chart (e.g. reform designers or administrators) and bottom-up changes are those initiated at the ‘grassroots’ level (e.g. by teachers or students). Positive effects of ‘top-down’ strategies include their efficiency and superb overview of higher levels. On the negative side, if reforms are perceived to be imposed from the top (e.g. the Ministry of Education) it can be difficult for lower levels (e.g. local schools and teachers) to accept them. A bottom-up strategy allows for more experimentation and a better feeling for what is needed at the bottom (by teachers or students). Bottom-up changes may occur at the level of awareness, attitude, skills, or knowledge.
The point is that, even with access to ICT, positive ICT policy and technical support, maximum teachers also need to know how to handle the technology and fully exploit it for school use. Individual factors, especially teacher factors, influence teacher take-up of ICT significantly (Veen 1993, Mumtaz 2000). Teacher factors such as beliefs about and attitudes towards teaching methodology, computer-handling technical skills and ICT pedagogy (ICT knowledge and skills in managing classroom activities) are regarded as most influential in teachers’ use of computers (Mumtaz 2000; Hu and Webb 2009). Thus, both institutional and individual factors should be taken into account in the implementation of ICT in education. As O’Connor and Gatton (2004) state that without a real commitment on a broad institutional and personal front, even the most successful programme will lose ground.

Information and Communication Technology (ICT) can play an important role in the preparation of quality teachers. It inculcates the necessary pedagogical skills and competencies among the teachers and makes them professionally competent to meet the demand of society and provide access to the technology enhanced learning projects created under the program. ICT Programs can provide more flexible and effective ways for professional development for teachers. They help teachers to promote higher order thinking among the students and create student-centric learning environments. Teacher’s attitude towards ICT programs and digital literacy are major factors related to both the initial acceptance of ICT as well as future behaviors regarding its use.

The technology initiatives taken to be adopted by educational policymakers worldwide seem to be focused on the tangible potentials of technology per se to manipulate classroom interaction in a more constructive and Meaningful way to cause inclusive development, much though in a hurry. In developing countries, in particular, the policy-makers appear to have adopted ICT in education to accelerate the nation’s development efforts too in the process. In such hasty adoption, however, building teachers’ skills and attitudes toward ICT would have often been ignored. The literature hints at the need for studies not only on the teachers’ level of ICT skills and their attitudes toward ICT but also on the factors responsible to have produced or hindered them. A very little research
Summary

can be found related to the attitude of teacher educators towards ICT and no research is so far reported related to the effects of Intel Teach Program on Attitude towards ICT, digital Literacy and Study Process of teacher educators in Haryana. It is, therefore, necessary that adequate research needed to be carried out to assess the extent to which technology integration has taken place in those teacher education institutions in which Intel training is imparted. It would also reveal that in order to maximize the benefits that can be derived from new technology in the classroom, teachers may need training for proficiency in the technology. It would help the teacher educators to learn how they can best use the technology to enhance teaching and learning using the Intel Teach Pre-service curriculum and how can turn the power of ICT into teaching strategies. Taking the practical relevance of ICT training into consideration, the present research was an endeavor to reveal the effects on the professional development of the teacher educators after attending this program and subsequent use in the actual classroom. The outcomes of the study, it was expected, would not only reveal the status of efforts made by NCTE and Intel Teach Program, but also possible future directions needed to strengthen the process and how it can improve the digital literacy and study process, through developing proper attitude of teacher educators towards ICT. Suggestions based on the perceptions of the individual teacher educators engaged in pre-service teacher education programs may be given to enhance the qualitative functioning of teacher education in colleges of education of Haryana. So, the present research was based on this pressing need to study the effectiveness of this Intel Teach Program on In-service Teacher Educators of Haryana in relation to their Attitude towards ICT, Digital Literacy and Study Process.

STATEMENT OF THE PROBLEM

EFFECTIVENESS OF INTEL TEACH PROGRAM ON ATTITUDE TOWARDS ICT, DIGITAL LITERACY AND STUDY PROCESS OF TEACHER EDUCATORS
OPERATIONAL DEFINITIONS OF THE TERMS USED

Effectiveness

It refers to the effect of particular treatment given to a learner which produces a significant change in teacher educators’ behavior in terms of their attitude towards ICT, digital literacy and study process.

Intel Teach Program

Intel Teach Program is an orientation program. It is a professional development program for In-service and Pre-service teachers. It is a world-wide accepted professional development program that helps teacher educators to integrate technology into the classroom to enhance student learning, but its effectiveness has yet to be investigated with reference to teacher educators in India.

Attitude Towards ICT

International Encyclopedia of Psychology (2000) defines attitude as a positive or negative evaluation of a person, place or thing. Attitude may be used on direct personal experience with the object or person in question or an indirect, second-hand experience. Similarly, Smith and Fabringer (2000) refer attitude to a relatively generally and enduring evaluation of some object, group or concept along a dimension ranging from negative to positive.

In the present study the investigator has taken the meaning of attitude towards ICT as what the teacher educators feel and think and react about Information and Communication Technology which may affect its use in the classroom positively or negatively. It is thus, their tendency to use or avoid and encourage or discourage the use of Information and Communication Technology in the classroom while teaching.

Digital Literacy

Hansen (2005) defined Digital Literacy as an individual’s abilities to adopt, adapt, invent, and evaluate technology to positively affect his or her life, community, and environment. The term digital literacy is being increasingly used
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by educational institutions and other organizations, refers to possessing basic level of computer technology skills by their students/employees.

The Digital Literacy in the present study refers to the ability of the teacher educators to use digital technology, communication tools or networks to locate, organize, understand, evaluate, use and create information related to undertaken studies. It involves a working knowledge of current high-technology and understanding of how to use it for education.

Study Process

Loughran and Northfield (1998) defined Study Process as primarily a personal inquiry, researcher’s benefits by working with collaborators who help them “step outside” themselves in order to notice patterns and trends in their work.

In the present study the Study Process refers to the process in which the teacher educators as users integrate technology and obtain knowledge and become able to communicate the content effectively to the students in a way which will be an effective aid in their appropriate constructions of knowledge.

Teacher Educators

In the present study, the teacher educators working in Colleges of Education affiliated to Kurukshetra University, Kurukshetra were considered as teacher educators.

1.15 OBJECTIVES OF THE STUDY

The objectives of the present study are:

1. To study the Attitude of teacher educators of Haryana towards ICT.
2. To study the Digital Literacy of teacher educators of Haryana.
3. To study the Study-Process of teacher educators of Haryana.
4. To investigate the effectiveness of Intel Teach Program on teacher educators of Haryana in relation to –
   a) Attitude towards ICT
   b) Digital Literacy
5. To investigate the differences in Attitude towards ICT of teacher educators on the basis of demographic variables such as-
   a) Gender (Male vs Female)
   b) Management (Government/Aided vs Self-financing)
   c) Streams (Science vs Humanities)

6. To investigate the differences in Digital Literacy of teacher educators on the basis of demographic variables such as-
   a) Gender (Male vs Female)
   b) Management (Government/Aided vs Self-financing)
   c) Streams (Science vs Humanities)

7. To investigate the differences in Study Process of teacher educators on the basis of demographic variables such as-
   a) Gender (Male vs Female)
   b) Management (Government/Aided vs Self-financing)
   c) Streams (Science vs Humanities)

8. To investigate the relationship of Attitude towards ICT with Digital Literacy of teacher educators of Haryana.

9. To investigate the relationship of Attitude towards ICT with Study Process of teacher educators of Haryana.

10. To investigate the relationship of Digital Literacy with Study Process of teacher educators of Haryana.

1.6 HYPOTHESES OF THE STUDY

Following hypotheses were formulated to achieve the objectives of the present study-

1. There is no significant difference between Pre-test and Post-test scores related to the Attitude towards ICT of teacher educators attending Intel Teach Program.
Summary

2. There is no significant difference between Pre-test and Post-test scores related to Digital Literacy of teacher educators attending Intel Teach Program.

3. There is no significant difference between Pre-test and Post-test scores related to Study Process of teacher educators attending Intel Teach Program.

4. There is no significant difference in Attitude towards ICT of teacher educators on the basis of -
   a) Gender (Male vs Female)
   b) Management (Government / Aided vs Self-financing)
   c) Stream (Science vs Humanities)

5. There is no significant difference in Digital Literacy of teacher educators on the basis of -
   a) Gender (Male vs Female)
   b) Management (Government / Aided vs Self-financing)
   c) Stream (Science vs Humanities)

6. There is no significant difference in Study Process of teacher educators on the basis of -
   a) Gender (Male vs Female)
   b) Management (Government / Aided vs Self-financing)
   c) Stream (Science vs Humanities)

7. There is no significant relationship between Attitude towards ICT and Digital Literacy of teacher educators.

8. There is no significant relationship between Attitude towards ICT and Study Process of teacher educators.

9. There is no significant relationship between Digital Literacy and Study Process of teacher educators.
DELIMITATIONS OF THE STUDY

Due to paucity of time and resources the present study was delimited to the following:

1. In-service teacher educators working in different colleges of education affiliated to Kurukshetra University, Haryana.

2. Only 200 In-service teacher educators were taken.

3. Only the teacher educators who were undergoing training during the years 2009 and 2010 were selected for the experimental study.

4. Only those In-service teacher educators were taken in the study those who were taking part in Intel Teach Program.

5. Only three variables namely – Attitude towards ICT, Digital Literacy and Study Process were taken for investigation.

RESEARCH DESIGN

The present study was experimental in nature and it was based on single group pre-test post-test design to study the effectiveness of Intel Teach Program on Attitude towards ICT, Digital Literacy and Study Process of teacher educators. This design includes a pre-test measure followed by a treatment (Intel Teach program) and a post-test for a single group. It is the part of Pre-Experimental Designs. So, with pre-experimental designs, the researcher studies a single group and provides a treatment during the experiment. This design does not have a control group to compare with the experimental group. In the present study Intel Teach Program was the treatment variable. Attitude towards ICT, Digital Literacy, and Study Process were measured twice during the experiment, first before the conduct of the experiment i.e. at the pre-test stage and then after providing the experimental treatment i.e. at post-test stage. The difference in the measurement of Attitude towards ICT, Digital Literacy, and Study Process was taken as the amount of change as the result of the application of treatment variable.
SAMPLE

The investigator selected the teacher educators from all the colleges of education affiliated to Kurukshetra University, Kurukshetra who were going to attend the Intel Teach Program. All the teacher educators who were attending Intel Teach Program during the years 2009 and 2010 comprised the sample of the present study. Only five or six batches are being trained by Intel Teach Program in a year that comprises approximately 200 teacher educators. Teacher educators who already attended Intel training were not included in the sample. Thus, in total a sample of 200 teacher educators participated in the present study. Out of these 200 teacher educators 68 and 132 teacher educators were male and female respectively. Only 22 teacher educators were from Government/Aided Colleges of Education while 178 were from Self-financing Colleges of Education. Among these participants, 54 teacher educators were of Science stream while remaining 146 were of Humanities stream.

RESEARCH TOOLS USED

As the present study was focused on the effectiveness of Intel Teach Program on Attitude towards ICT, Digital Literacy and Study Process of teacher educators, the investigator used following tools for the data collection:

- Attitude towards ICT Scale (AICTS) developed by the investigator
- Digital Literacy Scale (DLS) developed by the investigator.
- Study-process scale (SPS) developed by the investigator.

COLLECTION OF DATA

The investigator visited all the colleges personally for the administration of tools and collection of data where Intel Teach Program was going to be conducted. First of all permission was sought from the concerned authority of the colleges. After getting the permission, teacher educators were being approached and tools were administered on them on personal basis. The respondents were also assured that their responses will be kept confidential and used only for research purpose. The investigator interacted with them informally and answered their queries till they were satisfied. The same tools were administered on them after the time gap of one week.
STATISTICAL TECHNIQUES USED

1. In the present study Mean, S.D. and t-test were employed to find out the significant difference between the concerned groups.

2. Product Movement Method of correlation was also used to find out the relationship between different variables.

MAIN FINDINGS

After the analysis and interpretation of the data, the investigator was in a position to draw certain findings, the same are presented here:

Findings of the Effectiveness of Intel Teach Program on Teacher Educators of Haryana in relation to Attitude towards ICT and its Dimensions

1. There exists significant difference between the Mean scores of pre-test and post-test of teacher educators on Perception about ICT. It concludes that Intel Teach Program helps in developing the positive perception of teacher educators about ICT.

2. There exists significant difference between the Mean scores of pre-test and post-test of teacher educators on the dimension of Utility of ICT. It concludes that Intel Teach Program helps in developing the positive attitude of teacher educators regarding the utility of ICT.

3. There exists significant difference between the Mean scores of pre-test and post-test of teacher educators on the dimension of Avoidance of ICT. It concludes that after being trained by Intel Teach Program teacher educators do not want to avoid the ICT.

4. There exists significant difference between the Mean scores of pre-test and post-test of teacher educators on the dimension of Anxiety about ICT. It concludes that after being trained by Intel Teach Program the anxiety level of teacher educators about ICT has been decreased.

5. There exists significant difference between the Mean scores of pre-test and post-test of teacher educators on the dimension of Importance of ICT. It concludes that Intel Teach Program helps in developing the positive attitude of teacher educators towards the importance of ICT in life.
6. There exists significant difference between the Mean scores of pre-test and post-test of teacher educators on the dimension of Enhancing productivity through ICT. It concludes that Intel Teach Program helps in developing the positive attitude of teacher educators regarding the productivity value of ICT.

7. There exists significant difference between the Mean scores of pre-test and post-test of teacher educators on the dimension of Improvement through ICT. It concludes that Intel Teach Program helps in developing the positive attitude of teacher educators towards ICT as they realize that ICT is helpful in the improvement of their profession.

8. There exists significant difference between the Mean scores of pre-test and post-test of teacher educators on Attitude towards ICT. So, it concludes that Intel Teach Program helps in developing the positive attitude of teacher educators towards ICT.

Findings of the Effectiveness of Intel Teach Program on Teacher Educators of Haryana in relation to Digital Literacy and its Dimensions

1. There exists significant difference between the Mean scores of pre-test and post-test of teacher educators on the dimension of MS tools. It concludes that Intel Teach Program helps in developing the document building literacy of teacher educators through ICT.

2. There exists significant difference between the Mean scores of pre-test and post-test of teacher educators on the dimension of Power point presentation. It concludes that after being trained by Intel Teach Program teacher educators can create power point presentations.

3. There exists significant difference between the Mean scores of pre-test and post-test of teacher educators on the dimension of Compact disk. It concludes that after being trained by Intel Teach Program teacher educators can easily perform the tasks related to compact disk.

4. There exists significant difference between the Mean scores of pre-test and post-test of teacher educators on the dimension of MS Publisher. It
concludes that Intel Teach Program helps in developing MS publisher literacy of teacher educators.

5. There exists significant difference between the Mean scores of pre-test and post-test of teacher educators on the dimension of Adobe reader. It concludes that after being trained by Intel Teach Program teacher educators can easily perform the tasks related to adobe reader.

6. There exists significant difference between the Mean scores of pre-test and post-test of teacher educators in Digital Literacy. It concludes that Intel Teach Program has developed the Digital Literacy of teacher educators. It is helpful in developing the ICT related skills of teacher educators

Findings of the Effectiveness of Intel Teach Program on Teacher Educators of Haryana in relation to Study Process and its Dimensions

1. There exists significant difference between the Mean scores of pre-test and post-test of teacher educators on the dimension of Use of ICT for Academics. It concludes that after being trained by Intel Teach Program teacher educators have started using ICT for their academic works.

2. There exists significant difference between the Mean scores of pre-test and post-test of teacher educators on the dimension of Use of ICT for Evaluation. It concludes that after being trained by Intel Teach Program teacher educators have started using ICT for their evaluation works.

3. There exists significant difference between the Mean scores of pre-test and post-test of teacher educators on the dimension of Use of ICT for Teaching. It concludes that after being trained by Intel Teach Program teacher educators have started using ICT for their teaching.

4. There exists significant difference between the Mean scores of pre-test and post-test of teacher educators on the dimension of Use of ICT for Research. It concludes that after being trained by Intel Teach Program teacher educators have started using ICT for their research works.

5. There exists significant difference between the Mean scores of pre-test and post-test of teacher educators in Study Process. It concludes that after
being trained by Intel Teach Program teacher educators have started using ICT in their Study Process which may include their teaching work, evaluation and research work etc.

**Findings of Attitude towards ICT of Teacher Educators on the basis of Gender**

1. There exists no significant difference between the Mean scores of male and female teacher educators on perception about ICT. It concludes that after being trained by Intel Teach Program there is found no significant difference between the perceptions of male and female teacher educators about ICT.

2. There exists no significance difference between the Mean scores of male and female teacher educators on utility of ICT. It concludes that after being trained by Intel Teach Program there is found no significant difference between the attitudes of male and female teacher educators about the utility of ICT.

3. There exists significant difference between the Mean scores of male and female teacher educators on avoidance of ICT. It concludes that after being trained by Intel Teach Program there is found significant difference between the attitudes of male and female teacher educators regarding the avoidance of ICT. The male teacher educators think that ICT does not make any difference in academic area and training should not be given any priority instead of female teacher educators.

4. There exists no significant difference between the Mean scores of male and female teacher educators on anxiety about ICT. It concludes that Intel Teach Program does not bring any significant difference between the attitudes of male and female teacher educators on anxiety about ICT.

5. There exists no significant difference between the Mean scores of male and female teacher educators on importance of ICT. It concludes that Intel Teach Program does not make any difference between the
attitudes of male and female teacher educators about importance of ICT.

6. There exists no significant difference between the Mean scores of male and female teacher educators on enhancing productivity through ICT. It concludes that Intel Teach Program does not make any difference between the attitudes of male and female teacher educators on enhancing productivity through ICT.

7. There exists significant difference between the Mean scores of male and female teacher educators on improvement through ICT. It concludes that after being trained by Intel Teach Program there is found significance difference between the attitudes of male and female teacher educators regarding the improvement through ICT.

8. There exists no significant difference between the Mean scores of male and female teacher educators on Attitude towards ICT. It concludes that after being trained by Intel Teach Program there is found no significant difference between the attitudes of male and female teacher educators towards ICT.

Findings of Attitude towards ICT of Teacher Educators on the basis of Management

1. There exists no significant difference between the Mean scores of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education on perception about ICT. It concludes that after being trained by Intel Teach Program there is found no significant difference between the perceptions of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education about ICT.

2. There exists no significant difference between the Mean scores of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education on utility of ICT. It concludes that after being trained by Intel Teach Program there is found no significant difference between the attitudes of teacher educators who belong to
Government/Aided Colleges of Education and Self-Financing Colleges of Education regarding the utility of ICT.

3. There exists no significant difference between the Mean scores of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education on avoidance of ICT. It concludes that Intel Teach Program does not make any significant difference between the attitudes of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education on avoidance of ICT.

4. There exists no significant difference between the Mean scores of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education on anxiety about ICT. It concludes that Intel Teach Program does not make any significant difference between the attitudes of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education on anxiety about ICT.

5. There exists no significant difference between the Mean scores of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education on importance of ICT. It concludes that after being trained by Intel Teach Program there is found no significant difference between the attitudes of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education about the importance of ICT.

6. There exists no significant difference between the Mean scores of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education on enhancing productivity through ICT. It concludes that after being trained by Intel Teach Program there is found no significant difference between the attitudes of teacher educators who belong to Government/Aided Colleges of Education and Self-Financing Colleges of Education regarding the productivity of ICT.
7. There exists no significant difference between the Mean scores of teacher educators working in Govt./Aided Colleges of Education and Self-Financing Colleges of Education on improvement through ICT. It concludes that after being trained by Intel Teach Program there is found no significant difference between the attitudes of teacher educators who belong to Government/Aided Colleges of Education and Self-Financing Colleges of Education regarding the improvement through ICT.

8. There exists no significant difference between the Mean scores of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education on Attitude towards ICT. It concludes that after being trained by Intel Teach Program there is found no significant difference between the attitudes of teacher educators who belong to Government/Aided Colleges of Education and Self-Financing Colleges of Education towards ICT.

Findings of Attitude towards ICT of Teacher Educators on the basis of Stream i.e. Humanities vs Science

1. There exists no significant difference between the Mean scores of teacher educators of different streams i.e. humanities and science on perception about ICT. It concludes that after being trained by Intel Teach Program there is found no significant difference between the perceptions of teacher educators of humanities and science streams about ICT.

2. There exists no significant difference between the Mean scores of teacher educators of different streams i.e. humanities and science on utility of ICT. It concludes that after being trained by Intel Teach Program there is found no significant difference between the attitudes of teacher educators of humanities and science streams about the utility of ICT.

3. There exists no significant difference between the Mean scores of teacher educators of different streams i.e. humanities and science on avoidance of ICT. It concludes that Intel Teach Program does not make any significant difference between the attitudes of teacher educators of humanities and science streams on avoidance of ICT.
4. There exists no significant difference between the Mean scores of teacher educators of different streams i.e. humanities and science on anxiety about ICT. It concludes that Intel Teach Program does not make any significant difference between the attitudes of teacher educators of humanities and science streams on anxiety about ICT.

5. There exists no significant difference between the Mean scores of teacher educators of different streams i.e. humanities and science on importance of ICT. It concludes that after being trained by Intel Teach Program there is found no significant difference between the attitudes of teacher educators of humanities and science streams regarding the importance of ICT.

6. There exists significant difference between the Mean scores of teacher educators of different streams i.e. humanities and science on enhancing productivity through ICT. It concludes that after being trained by Intel Teach Program there is found significant difference between the attitudes of teacher educators of humanities and science streams regarding the productivity value of ICT. The teacher educators of humanities stream consider ICT helpful in getting in touch with people and knowledge across the globe and enhances productivity rather than science stream teacher educators.

7. There exists no significant difference between the Mean scores of teacher educators of different streams i.e. humanities and science on improvement through ICT. It concludes that after being trained by Intel Teach Program there is found no significant difference between the attitudes of teacher educators of humanities and science streams regarding the improvement value of ICT.

8. There exists no significant difference between the Mean scores of teacher educators of different streams i.e. humanities and science on attitude towards ICT. It concludes that after being trained by Intel Teach Program there is found no significant difference between the attitudes of teacher educators of humanities and science streams regarding ICT.
Findings of Digital Literacy of Teacher Educators on the basis of Gender

1. There exists no significant difference between the Mean scores of male and female teacher educators on MS tools. It concludes that after being trained by Intel Teach Program there is found no significant difference between the digital literacy of male and female teacher educators regarding MS tools.

2. There exists no significant difference between the Mean scores of male and female teacher educators on power point presentation. It concludes that after being trained by Intel Teach Program there is found no significant difference between the digital literacy of male and female teacher educators on power point presentation.

3. There exists no significant difference between the Mean scores of male and female teacher educators on Compact disk. It concludes that after being trained by Intel Teach Program there is found no significant difference between the digital literacy of male and female teacher educators on compact disk.

4. There exists no significant difference between the Mean scores of male and female teacher educators on MS publisher. It concludes that after being trained by Intel Teach Program there is found no significant difference between the digital literacy of male and female teacher educators on MS publisher.

5. There exists no significant difference between the Mean scores of male and female teacher educators on Adobe reader. It concludes that after being trained by Intel Teach Program there is found no significant difference between the digital literacy of male and female teacher educators on adobe reader.

6. There exists no significant difference between the Mean scores of male and female teacher educators on Digital Literacy. It concludes that after being trained by Intel Teach Program there is found no significant difference between the male and female teacher educators on Digital Literacy.
Findings of Digital Literacy of Teacher Educators on the basis of Management

1. There exists no significant difference between the Mean scores of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education on MS tools. It concludes that after being trained by Intel Teach Program there is found no significant difference between the digital literacy of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education regarding MS tools.

2. There exists no significant difference between the Mean scores of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education on power point presentation. It concludes that Intel Teach Program does not make any significant difference between the digital literacy of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education regarding power point presentation.

3. There exists no significant difference between the Mean scores of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education on Compact disk. It concludes that after being trained by Intel Teach Program there is found no significant difference between the digital literacy of teacher educators who belong to Government/Aided Colleges of Education and Self-Financing Colleges of Education regarding compact disk.

4. There exists no significant difference between the Mean scores of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education on MS publisher. It concludes that after being trained by Intel Teach Program there is found no significant difference between the digital literacy of teacher educators working in different managements regarding MS publisher.

5. There exists no significant difference between the Mean scores of teacher educators working in Government/Aided Colleges of Education and Self-
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<tbody>
<tr>
<td>6.</td>
<td>There exists no significant difference between the Mean scores of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education regarding adobe reader.</td>
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</table>

**Findings of Digital Literacy of Teacher Educators on the basis of Stream i.e. Humanities vs Science**

1. There exists significant difference between the Mean scores of teacher educators of different streams i.e. humanities and science on MS tools. It concludes that after being trained by Intel Teach Program there is found significant difference between the digital literacy of teacher educators of humanities and science streams regarding MS tools. The teacher educators of humanities are more digitally literate in the functions of MS tools rather than the teacher educators of science stream.

2. There exists no significant difference between the Mean scores of teacher educators of different streams i.e. humanities and science on power point presentation. It concludes that after being trained by Intel Teach Program there is found no significant difference between the digital literacy of teacher educators of humanities and science streams on power point presentation.

3. There exists no significant difference between the Mean scores of teacher educators of different streams i.e. humanities and science on Compact disk. It concludes that after being trained by Intel Teach Program there is found no significant difference between the digital literacy of teacher educators of humanities and science streams about compact disk.
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4. There exists no significant difference between the Mean scores of teacher educators of different streams i.e. humanities and science on MS publisher. It concludes that Intel Teach Program does not bring any significant difference between the digital literacy of teacher educators of humanities and science streams about MS publisher.

5. There exists no significant difference between the Mean scores of teacher educators of different streams of humanities and science on adobe reader. It concludes that after being trained by Intel Teach Program there is found no significant difference between the digital literacy of teacher educators of humanities and science streams about adobe reader.

6. There exists significant difference between the Mean scores of teacher educators of different streams of humanities and science on Digital Literacy. It concludes that after being trained by Intel Teach Program there is significant difference found between the teacher educators of different streams on Digital Literacy. Humanities teacher educators are more digitally literate than the science teacher educators.

Findings of Study Process of Teacher Educators on the basis of Gender

1. There exists no significant difference between the Mean scores of male and female teacher educators on use of ICT for academics. It concludes that after being trained by Intel Teach Program there is found no significant difference between the male and female teacher educators regarding the use of ICT for academics.

2. There exists no significant difference between the Mean scores of male and female teacher educators on use of ICT for evaluation. It concludes that after being trained by Intel Teach Program there is found no significant difference between the male and female teacher educators regarding the use of ICT for evaluation.

3. There exists no significant difference between the Mean scores of male and female teacher educators on use of ICT for teaching. It concludes that after being trained by Intel Teach Program there is found no significant
difference between the male and female teacher educators regarding the use of ICT for teaching.

4. There exists no significant difference between the Mean scores of male and female teacher educators on use of ICT for research. It concludes that Intel Teach Program does not make any difference between the male and female teacher educators regarding the use of ICT for research.

5. There exists no significant difference between the Mean scores of male and female teacher educators on Study Process. It concludes that after being trained by Intel Teach Program there is found no significant difference between the male and female teacher educators regarding the use of ICT in their Study Process.

Findings of Study Process of Teacher Educators on the basis of Management

1. There exists no significant difference between the Mean scores of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education on use of ICT for academics. It concludes that after being trained by Intel Teach Program there is found no significant difference between the teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education on their use of ICT for academics.

2. There exists no significant difference between the Mean scores of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education on use of ICT for evaluation. It concludes that after being trained by Intel Teach Program there is found no significant difference between the teacher educators of Government/Aided Colleges of Education and Self-Financing Colleges of Education on their use of ICT for evaluation.

3. There exists no significant difference between the Mean scores of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education on use of ICT for teaching. It concludes that after being trained by Intel Teach Program there is found no significant difference between the teacher educators who belong to
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4. There exists no significant difference between the Mean scores of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education on use of ICT for research. It concludes that after being trained by Intel Teach Program there is found no significant difference between the teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education on their use of ICT for research.

5. There exists no significant difference between the Mean scores of teacher educators working in Government/Aided Colleges of Education and Self-Financing Colleges of Education on Study Process. It concludes that Intel Teach Program does not make any significant difference between the teacher educators who belong to Government/Aided Colleges of Education and Self-Financing Colleges of Education on Study Process.

Findings of Study Process of Teacher Educators on the basis of Stream i.e. Humanities vs Science

1. There exists significant difference between the Mean scores of teacher educators of different streams i.e. humanities and science on use of ICT for academics. It concludes that after being trained by Intel Teach Program there is found significant difference between the teacher educators of humanities and science streams on the use of ICT for academics. Humanities teacher educators mostly use ICT for their academic tasks rather than science teacher educators.

2. There exists significant difference between the Mean scores of teacher educators of different streams i.e. humanities and science on use of ICT for evaluation. It concludes that after being trained by Intel Teach Program there is found significant difference between the teacher educators of humanities and science streams on their use of ICT for evaluation.
3. There exists significant difference between the Mean scores of teacher educators of different streams i.e. humanities and science on use of ICT for teaching. It concludes that after being trained by Intel Teach Program there is found significant difference between the teacher educators of humanities and science streams on the use of ICT for teaching.

4. There exists significant difference between the Mean scores of teacher educators of different streams i.e. humanities and science on use of ICT for research. It concludes that after being trained by Intel Teach Program there is found significant difference between the teacher educators of humanities and science streams on the use of ICT for research.

5. There exists significant difference between the Mean scores of teacher educators of different streams i.e. humanities and science on Study Process. It concludes that Intel Teach Program has brought significant difference between the teacher educators of humanities and science streams on Study Process.

Findings of the relationship of Attitude towards ICT with Digital Literacy

There exists significant positive correlation between the scores of Attitudes towards ICT and Digital Literacy. It concludes that teachers having positive attitudes towards ICT are more digitally literate.

Findings of the relationship of Attitude towards ICT with Study Process

There exists significant positive correlation between the scores of Attitudes towards ICT and Study Process. It concludes that teachers having positive attitudes towards ICT also integrate technology in their study process.

Findings of the relationship of Digital Literacy with Study Process

There exists significant positive correlation between the scores of Digital Literacy and Study Process. It concludes that teachers who are more digitally literate also use this technology literacy in their Study Process.

DISCUSSION OF RESULTS

The present study has been carried out to study the effectiveness of Intel Teach Program on Attitude towards ICT, Digital Literacy and Study Process of
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teacher educators. The overall results of the study reveals that the main objectives framed for the present study have achieved. There was significant difference found between the pre-test and post-test scores of teacher educators with regard to Attitude towards ICT, Digital Literacy and Study Process. Teacher educators had higher scores in post-test on all these variables. It indicates that Intel Teach Program fulfilled its goals very well and there was marked differences between the scores of Attitude towards ICT, Digital Literacy and Study Process of teachers educators. This Intel Teach Program has been working in association with NCTE since 2002. Later, in December 2006 NCTE and Intel signed an MOU on project named XPDITTE. The objectives of this MOU was to impart sustained professional development to all teacher educators from all the institutions of teacher education across the country and to make ICT a part of the Teacher education curriculum. So, this program is providing more flexible and effective ways for professional development for teachers educators. Through the ICT training programs more avenues may be open for teacher educators to create student-centric learning environments.

This shows that the Intel Teach Program had a positive effect in improving Attitude towards ICT, Digital Literacy and Study Process of teacher educators. The findings of the study were somehow consistent with the studies conducted by Wllance (1999), Jao(2001) and Galanouli, Murphy and Gardner (2004) who found that training programmes had a measure of increasing teachers’ confidence in using ICT. Training made teachers more comfortable with the use of technology and their positive attitude towards ICT increased. They began to use technology to enhance the learning environment for students.

The significant relationships between three variables under observation in this study were very important regarding the overall impression of a teacher regarding his/her job. These positive relationships show that these three variables i.e. Attitude towards ICT, Digital Literacy and Study Process increased simultaneously and they were fairly alike. It was found right that teacher’s attitude towards ICT and about ICT training programs and digital literacy are major factors related to both the initial acceptance of ICT as well as future behaviors regarding its use. The results also supported by the studies of Kizil
(2011) and Ogundele and Etejere (2013) who found that positive attitude enhanced the computer literacy of teachers and its use in the teaching learning process.

The results also supported to the findings of Wozney, Venkatesh and Abrami (2006) that technology related training works as a key factor, and suggesting that it plays a crucial role in developing teachers' competency with computer applications as well as influencing teachers' attitudes towards computers. The results also supported to the study conducted by Kersaint (2003) who found that the teachers with positive attitudes towards the technology feel more comfortable while using it and them usually incorporate it into their teaching activities. Therefore, the teachers' attitudes towards computers are one of the significant factors in enhancing the ICT skills and the quality of computer usage for instruction (Yuen, Law, & Chan, 1999). ICT training in the colleges is important. To achieve successful training we need to be aware of the user's attitudes toward computers (Zoltan & Chapanis, 1982).

On the other hand, in the present context there is a need to facilitate teachers training on ICT at the pre-service and In-service level. ICT training can play an important role in term of capacity building of the teachers to equip them to face the emerging challenges. It equips teachers with skills that enable them to turn the power of technology to develop teaching and learning tools that captivate students, motivate them and ultimately make them autonomous learners. Though this program encourages integration of information and Communication Technology (ICT) for teaching and learning, the skills learnt can be applied to teach virtually every subject and grade level both at the college and school levels. So it is the flagship program of Intel education which provides training to school teachers and also equips teacher educators to adopt ICT based teacher education.

Having the above results viewed, it could be concluded that most of the sampled teacher educators have favourable attitude towards ICT. The results clearly supported by the findings of the research conducted by Baylor and Ritzcie (2002) that teacher educators must have the skills, knowledge and attitude necessary to inculcate ICT into the curriculum. It also supported to the views that teachers attitude towards technology use have been universally recognized as an
important factor for the success of technology integration in education (Rogers, 1995; Windschitl & Sahl, 2002).

Hence, from the findings of the study it may be concluded that the teacher educators have favourable attitude towards ICT irrespective of their gender, management and stream. ICT training program enhances their digital literacy and enable them to integrate these technology skills in their study process. So, in this age of rapid change and uncertainty there is one thing of which we can be certain that teachers will need to adopt to change if they are to survive and keep pace with new methods and technologies especially ICT. And the latter-day teacher shall not only be an information provider, but also an example to be followed, an adviser and supporter in building up the students' capacities and mobilizing them to acquire knowledge and wisdom. Depending on the educational and social context, the teacher shall play various roles; and in this case, modern ICT can offer an important support and influence the relative importance of different roles. The development of modern information society determines the dynamics of change for various aspects of teachers' activities and mission. ICT cannot replace the role of teacher in the classroom. It is just a tool in the hand of teacher which facilitates and helps him/her to take full advantage of the potential of technology to enhance student learning. ICT is rightly replacing traditional methods of teaching and offering new teaching and learning experiences to both teachers and students.

EDUCATIONAL IMPLICATIONS

The most outstanding characteristic of any research is that it must contribute something new to the development of the area concerned. So the investigator needs to report the educational implications of the study. The present study also bears some important applied and theoretical implications. A few of them are enumerated below:

1. The present study is helpful for policy planners, administrators and teacher-educators. In the present century knowledge of ICT is essential for a competent teacher. The policy planners may ensure that ICT must be a compulsory subject (theory and practical) for Pre-Service teacher education programmes i.e. D.Ed., B.Ed., M.Ed. etc.
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So, teacher educators will be computer literate to cater the needs of future generations.

2. This study is also helpful for administrators to impart the training of ICT at in-service and pre-service levels by organizing refresher and orientation programmes at state and district level in collaboration with various ICT agencies and NGOs.

3. More and more seminars, conferences related to ICT should be arranged for the teacher educators so that they can update their knowledge in the field of ICT and can provide latest knowledge to their pupil teachers.

4. Technology Education curriculum should be updated and new dimensions of technology education should be added in the form of ICT so that the teacher educators will be able to group and understand the new problems and try to solve them.

5. More and more awareness campaigns are required to be initiated at local level and government level to make teacher educators aware about the latest developments in the field of technology.

6. U.G.C. should provide more grants for the extension of ICT labs in colleges of education.

7. Only provision of grants will not be sufficient, so there should be time to time evaluation by the administrators to check on the adequate use of grants.

8. Since ICT tools are the electro mechanical devices so there should be periodical maintenance facilities for the ICT labs.

9. Authorized group of teachers should be made responsible for accurate combination of theory and practical curriculum regarding technology.

SUGGESTIONS FOR FURTHER STUDY

Any research work cannot say the final word of the problem because it is very difficult for a researcher to touch all the aspects of a problem. Every investigation may contain some limitation and there is always some scope of
improvement and further explanation. So the suggestions for further research in this direction may not be kept out of place here. These are as follows:

6. The present study is confined to only one University of Haryana. A similar study can be replicated in other Universities of Haryana where Intel gives the training to generalize the results.

7. The sample can be extended for more comprehensive results and generalizations.

8. A similar study can be replicated by analyzing other variables i.e. urban vs rural, educational qualification, period of teaching experience etc.

9. A similar study can be replicated by taking sample of teachers of different departments, degree colleges and other educational institutions.

10. The study can be replicated by selecting the teacher educators from the other states of India.

11. More rigorous statistical techniques can be applied for further analysis of data.

12. Similar efforts may be made in order to assess the impact of various ICT programmes being launched by the government and non-government agencies.

13. A study can be undertaken to investigate the attitude of community in relation to certain socio-psychological variables on various ICT related issues.

14. A study may be conducted to see the effect of certain curricular packages for pre-service and in service teachers and their effect on the awareness about ICT.