CHAPTER I

INTRODUCTION

Computer is the outcome of technological innovation. A technological innovation has become a common place phenomenon and is frequently taken for granted by contemporary society. In everyday life, technology plays an ever-increasing role, innovations such as cellular telephone, hand-held computers, automatic teller machines. Information is available in for greater quantities than ever before, and the means to access and share it with others is extraordinary. The speed of refined technological change is rapid, however, little is known about its effect on the society that it pervades.

A computer is a general purpose device that can be programmed to carry out a finite set of arithmetic or logical operations only. Since a sequence of operations can be readily changed, the computer can solve more than one kind of problem. Usually, a computer consists of at least one processing element, typically a central processing unit (CPU) and some form of memory. The processing element carries out arithmetic and logic operations, and a sequencing and control unit that can change the order of operations based on stored information. Computers are playing very important role in education as well. The classroom is a microcosm of society and technology is having an increasing impact in schools throughout the country.
What could be more fun than learning to use computers, which is like learning a new language? We live in the computer age. Most of our daily activities are being influenced by the use of computers, it is almost impossible to achieve improvement in the area of science and technology without using computers. Some of the feature that makes computers powerful and a part of every new emerging technology are speed, accuracy, consistency, storage capacity and flexibility. A computer is a general-purpose machine for storing and manipulating information. Now it becomes necessary to know the importance of computers in the field of education:

1.1 Use of Computer in Education and its Benefits

Computers provide a key ingredient that was lacking in all the previous tools that raised high expectations when introduced in the educational system: From blackboard to television, the previous tools were presentation tools only. Computers can not only present information with all the audio-visual expressive prospects of television or film, but also can receive information from the user, and can adjust the presentation to the user needs, likings or desires. Likewise, in those schools where the Internet is available, the computer is the gateway to information without boundaries, and the facilitator for teacher and student. Today, when a major effort is being invested in the revolution of the classroom, moving away from frontal, expository, educational demonstrations to surroundings where learners are dynamic innovators and makers of knowledge, the computer is the tool with the potential to help in reaching these goals. For a detailed
description of uses and the benefits of computers in education
Journal of Indian Education highlights some points as following:

1.1.1 Computer-Assisted Learning

The student learns by interacting with a program stored in the computer. This program is designed to react to the student’s needs according to fixed pedagogical criteria. In this case the student conducts a “distant dialog” with the authors of the educational program, who - in a normal-designed program - will have considered the learning difficulties involved in the topics studied, and designed accordingly a set of remedial interventions. Development units should have been included also, to attend to the interests of students who want to study in depth, beyond the curriculum requirements. Each student may learn according to his or her intellectual level and learning speed, independently of his or her classmates. Each student receives individual guidance, with explanations tailored to supposed problems, and opportunities for in-depth learning according to individual interests.

1.1.2 Simulation and Exploration

There are topics of study that deal with real systems whose complexity makes them hard to grasp, operate, or predict. When we want our students to learn how to cope with such a system, the best pedagogical approach is not to provide a set of rules that describe the behaviour of the system, but rather to let them explore the behaviour, make decisions and predict their
consequences or, in short, learn according to their own experience with the system. The student is actively exploring phenomena, instead of being a passive recipient of information. Thus each student builds his or her mental models of knowledge and develops the skills of searching information and creating hypotheses, which then can be verified or rejected using experimental results. The teacher may use simulations to generate class discussions and to stimulate students to generate hypotheses and critically analyse a phenomenon.

1.1.3 Computational Tools

Teachers and students can use computer-based tools, such as text or graphic editors, databases, spread sheets, or presentation packages, to help in processing information. Two important benefits that come to mind are: a) teachers’ can enrich their presentations with rich graphics and tables, which can be stored in their computer, easily updated, and readily accessible for presentation to the whole class by means of a projection device; b) Students’ papers may be of higher quality, particularly if, instead of just assigning a grade, the teacher requests that each paper be typed using a word processor and delivered on a diskette or through e-mail, thereby allowing the teacher to insert comments and suggestions and return it to the student for corrections until a satisfactory paper has been achieved. Teachers and students get used to working in the style and with the tools that permeate industrial, commercial and intellectual life.
1.1.4 Communication Networks

Students and teachers can communicate with their peers and access around the world, in order to develop joint projects, exchange information, or request advice. Instead of the expository presentation of a topic, the teacher may ask a student, or a team of students, to research the topic by exploring the Internet for relevant information. Not all the information on the Internet is reliable, but such is the information we gather in the real world, so that students will have to develop their analytical and critical skills. These skills are not usually developed in the restricted environment of the typical classroom, where most information has been filtered for them. Teams of students in one country can develop joint projects with teams of students in other countries by exchanging and comparing data on similar or contrasting phenomena. Instead of isolated classes, students can communicate with people and gather information from around the world, thereby increasing their motivation to use higher-level analytical skills in their school work. In addition, communication among people from different countries helps to break down stereotypes and may expand intellectual horizons. Teachers who work in relatively isolated environments are able to exchange information with their peers, receive advice from experts around the world, and download an increasingly broad array of teaching and learning materials available on the Internet.
1.1.5 Pedagogical Administration

Teachers can access a student database, where information about each student’s knowledge map is stored. This information allows teachers to organize more effective learning environments for each student. For the first time the teacher has the tools to make sophisticated and complex pedagogical decisions, based on appropriate information. Without computers, individualizing or personalizing instruction was quite difficult because it is impossible for a teacher to keep track of the different trajectories of all of his or her students in the universe of knowledge defined by the curriculum. A pedagogical administration system can show the topics mastered by a student, the topics where help may be needed, suggestions for topics and materials to be presented or assigned, and the possible groupings of students for team projects, selecting automatically students who have satisfied the prerequisites for each project being considered. Another important consequence is that they serve as good examples for teachers who may be isolated. Based on such examples, teachers may expand their repertoire of strategies, and recognize the need for improvement in their classroom practices.²

In the current digital era, the development in various aspects of computer technology has reached beyond our thoughts and hopes. Even though computer has a lot of applications in various fields, one should not forget its applications in the field of education. It is very useful and helpful in the teaching and learning process. Therefore, computer literacy is very much
needed for teachers. The computers have created a revolution in the field of education and in the nature of teaching-learning process. They have the capability of multiplying the human intellect beyond part conceptions. Computers have tremendous implications for education also. They have a great impact upon our educational structure.

Computers are gradually well-known, influencing many aspects of our social and work lives, and many of our leisure activities. As more tasks involve human computer interaction, computer skills and knowledge have become more positively correlated with both occupational and personal success. Therefore, as we move into a technology based society, it is important that children’s classroom experiences with technology be impartial and balanced for males and females. In most cases, the teacher is key to effective implementation of the use of computers in the educational system and given that teachers have wonderful potential to transfer beliefs and values to students, it is important to understand the biases and stereotypes that teachers may hold about the use of computers and the factors that act as facilitators to teachers’ positive computer usage.

1.2 Attitude

Another term in the present research is attitude, now the investigator is defining the concept of attitude. Attitude is a psychological term. Attitudes are part of the collection of human behaviour. As a layman an attitude can be defined as a predisposition to behave in a particular way towards a given
object. We should develop variety of attitudes like – attitude towards studies, attitude towards self, attitude towards friend and class fellows, attitude towards certain ideals and attitude towards computer.

The investigator has compiled some definitions of the famous scholars to conceptualize the term attitude:

**Katz**³ defines attitude as “*a predisposition of the individual to evaluate some symbol or object or aspect of his world in a favourable or unfavourable manner.*”

**Thurstone**⁴ says that “*attitude denotes the sum total of man’s inclinations and feelings, prejudice or bias, pre-conceived notions, ideas, fears, threats about any specific topic.*”

The term attitude is defined by **Freeman**⁵ as “*a dispositional readiness to respond to certain situations, persons, objects or ideas in a consistent manner, which has been learned and has become one’s typical mode of response.*”

**Krech and Crutchfield’s**⁶ say “*an attitude can be defined as an enduring organization of motivational emotional perceptual and cognitive processes with respect to some aspect to the individuals’ world.*”

So, according to the above definitions, we can say that an attitude is a sensitively toned tendency to react in a certain way towards a person, an object, an idea or a situation. Attitude is a
point of view, sustained or not, true or false which one holds
towards a person, object, task etc.

Thurstone defines an attitude as the degree of positive
negative affect associated with some psychological object. By a
psychological object, Thurstone means any symbol, phrase,
slogan, person, institution, ideal, or idea toward which people
can differ with respect to positive or negative effect. A particular
job, for example, may be a psychological object. The United
Nations, a political party, the title of a book, a minority group, a
nation, labour unions, and a particular food are still other
examples of psychological objects. An attitude can be considered
the cause of a person’s behaviour toward another person or an
object. The concept of attitude helps to explain the consistency
of a person’s behaviour, since a single attitude may underline
many different actions. Ones attitude toward various individuals,
institutions and social issues reflect the way one perceives the
world around him. It is a tendency to react in certain way toward
a designated class of stimuli. These are the ways in which an
individual thinks feels and acts. In the present study the
computer attitude of secondary school teachers have been taken.
Attitude is a hypothetical construct that represents an individual's
like or dislike for an item. Attitudes are positive, negative or
neutral views of an "attitude object": i.e. a person, behaviour or
event. People can also be "ambivalent" towards a target,
meaning that they simultaneously possess a positive and a
negative bias towards the attitude in question. Attitudes come
from judgments.
Attitudes develop on the ABC model (affect, behavioural change and cognition). The *affective* response is a physiological response that expresses an individual's preference for an entity. The *behavioural intention* is a verbal indication of the intention of an individual. The *cognitive* response is a cognitive evaluation of the entity to form an attitude. Most attitudes in individuals are a result of observational learning from their environment. It is an important attribute of behaviour. One’s behaviour, to a great extent depends upon ones attitude towards the things – idea, person or object in his environment. The entire personality and development of a child is influenced by the nature of his attitudes. From the above explanation about the attitude we can conclude some characteristics of the term attitude:

i. Attitudes are learned with our experiences. It could be any interaction with other people at school, office, temple etc.

ii. The attitude is relatively stable. It is not concerned with sudden impulse or transitory mood.

iii. It is an object based.

iv. Individual differences are found in attitudes.

v. It is unified into a systematized structure.

vi. It guides the behaviour of an individual in a particular direction.

1.2.1 Principles of Attitude

i. Communication of factual data is more effective in changing attitudes.
ii. Emotional part is likely to be more effective than logical argumentation, but if attitude is not very intense then logical argumentation is likely to be more effective than emotional appeal.

iii. Attitudes are affected by the prestige and credibility of the person.

iv. Attitude depends on the nature and the intensity of the experience.

v. Attitudes give meaning to one’s daily perceptions and activities.

vi. The attitude to be developed must be clearly defined and understood by the person who wants to change another’s predisposition.

vii. Attitudes give continuity to human personality.

viii. Attitudes serve as a fabric for philosophy of life.

ix. Attitude is a mental or neutral state of readiness.

1.2.2 Dimensions of Attitude

Analysis of attitudes reveals that they have four dimensions:

i. **Direction:** The direction of an attitude is either positive or negative. May be a person attract or repel from a situation. He might regard that favourably or unfavourably, with approval or disapproval.

ii. **Intensity:** The intensity of a positive or negative attitude is the degree to which it motivates the person’s behaviour toward the activity component.

iii. **Extension:** The extension of an attitude is the degree to which it is generalized, or the number of cases it covers.
iv. **Duration:** The duration of an attitude is the length of time it endures. Some attitudes are merely a short term may change overnight but some are so deeply ingrained as to appear permanent.

### 1.2.3 Attitude Inculcation

Attitudes are formed or developed on the following basis:

i. **Influence of Family:** Family is the first and probably the foremost training ground of attitudes. Newcomb and Svehla have studied parent child correlations in different levels or in various age groups. The results have been explained to which the children and parents were exposed and the role of the parents in the inculcation of attitudes. With increasing age of the child, similarity to parents’ attitudes tended to decrease.

ii. **Influence of Socio-economic Factors:** individuals from the upper occupational groups like business owners, managers etc. were predominantly conservative whereas among persons categorized as white-collar, skilled or aided-skilled “workers”, much larger proportions held radical views.

iii. **Membership of a group** also helps the formation of individual attitudes.

iv. When attitudes relate to standards of conduct, it may be designated as ethical or moral values. Attitudes relating to ethnic or social groups displayed in the forms of dislike, discrimination or tension are often called social prejudice.
v. The kind of environment in which he grows has an indelible impact on the attitudes he possesses. It may be positive or negative.

vi. Value Reactions: A person forms positive attitudes towards those objects, human groups, institutions, and associations etc. which are instrumental in his achievement of values. Values are largely determined by attitudes which a person has towards things and ideas like:

- **Aesthetic** which means an attitude of joy and loveliness.
- **Social**, which means an attitude to recognize that friendly human contacts are relatively higher than other goods.
- **Theoretical**, which means an attitude that knowledge is precious thing in life.
- **Religious**, which is an attitude of indifference to worldly things and inclination for spiritual development.

Thus, attitudes are not static, rigid entities. They change radically under certain conditions or even breakdown entirely. Attitudes are caught as often as they are taught. Many of attitudes are acquired through their own experiences or as second hand from social interactions.⁷

### 1.3 Importance of Attitude in Learning

Attitudes are of chief importance not only for person’s character formation but for his mental health and achievement as normal. Like other aspect of personality, attitudes are acquired, not innate. Attitudes are not only purely cognitive in nature but
they are cognitoemotive in nature. The term Cognitoemotive have two components viz, cognitive and emotional towards psychological aspects – complex or simple. Attitudes are about generalized object. It is genotype in its nature. “The optimist sees the rose and not its thorns; the pessimist stares at the thorns, oblivious of rose,” observed Khalil Gibran, the Persian poet.

Our lives are brightened or darkened, enriched or impoverished by the kind of attitude we bestow our fellow human beings; Attitudes are not inborn traits. We acquire them through social interaction. Family plays a paramount role. Parents mould our attitude. Freedom of thought ought to liberate us from the strange-hold of dogmas and superstitions and urge everyone to develop a robust freewill and usher in an era of peace, prosperity and plenty. Attitudes have three main components – **Affective** pertains to the feelings, **Cognitive** the knowledge on which it is based or the extent to which it is intellectualized and **Active** to the overt behaviour in which it results.

The success of any initiatives to implement technology in an educational program depends strongly upon the support and attitudes of teachers involved. It has been suggested that if teachers believed or perceived proposed computer programs as fulfilling neither their own or their students’ needs, they are not likely to attempt to introduce technology into their teaching and learning. Among the factors that affect the successful use of computers in the classroom are teachers’ attitudes towards computers. Attitude, in turn, constitutes various dimensions. In
many developed countries, nearly all schools are equipped with the infrastructure to conduct ICT mediated teaching and learning. Positive teacher attitudes towards computing are critical if computers are to be effectively integrated into the school curriculum. A major reason for studying teachers’ attitude towards computer use is that it is a major predictor for future computer use in the classroom.

In achieving excellence in schools, it is important to ensure that teachers are able to integrate technology into the curriculum. As such, the groundwork must be laid at the secondary school teacher’s level. In the course of their training, pre-service teachers should be provided with the tools and experiences that will be useful for the regular activities in their future job: classroom instruction, research, and problem solving. Using technology enables teachers to arrange their environment and adjust their instructional strategies. On the part of teacher educators, there is a need to understand the dimensions that influence pre-service teachers’ attitudes towards computers as a means for effective development of teacher training curriculum that will prepare teachers to face the challenges in the information age.

The attitudes of teachers are directly related to computer use in the classroom. For example, teachers often view the computer as a tool to accomplish housekeeping tasks, manage their students more efficiently, and to communicate with parents more easily. The success of student learning with computer technology will depend largely on the attitudes of teachers, and
their willingness to embrace the technology. Gaining an appreciation of the teachers’ attitudes towards computer use may provide useful insights into technology integration and acceptance and usage of technology in teaching and learning.

The integration of computers into education has a relatively brief history. The earliest studies were attempts to establish programs that would provide the students with rapid feedback and thus make the students take an active role in the learning process, but because of the high costs of computers no prevalence could be obtained. After the personal computer (PC) revolution in 1975 computers entered the realm of education profoundly all around the world.

But in India the situation has been significantly different. There are six phases of technological applications in education:

i. Recognition
ii. Research
iii. Examination
iv. Application
v. Improving by using the results of application
vi. Examination and improving

There are numerous research areas in use of computers in education. The followings can be counted as an outline for these areas:

i. Software,
ii. Hardware,
iii. Teachers and Educators,

iv. Organization and development of these main sources above in the process of education.

The concern of this study is the third point mentioned above as it tries to unveil faculty attitudes towards use of computer in education and the factors that shape them. As a result of prevalent, immense and rapid changes in technology, the interaction between education and technology has become more profound than ever. When the roles of computers in education are considered, this rapidity and immensity become crucial for education. Due to similar changes in computer technologies, it has now become more and more difficult to make predictions about the future of education. For instance, some, taking computers into consideration, foresee a future without schools and teachers; some others predict a future education without computers as we know them today. Nevertheless, taking the present conjunctures into account, it is now impossible to talk about contemporary education without mentioning computers. Education at secondary level, computers in education, and attitude of teachers towards computers in education are three main points which shaped the main problem of this study.

Realizing the importance of computers in education, computer education is made an essential part of the syllabus at every level of education. The teachers should be in terms with the physical reality of the computers, and learn how to take actual advantage of the machines’ educational potential. For this,
computer knowledge is essential for teachers. Computer knowledge may be stated as “**knowing about the various fundamental aspects of computers and the basic skills involved in the operations of computers**”. It also includes the applications of computer in teaching and learning process. Favourable attitude towards computer plays a very important role in making one really interested in it. Unless the teachers possess a favourable attitude towards computer, they may not be interested in it, which in turn will affect their knowledge of computer and also they will find teaching with help of computer difficult, which in turn will affect students learning. Therefore, if the teachers have favourable attitude towards computer, then there may be a chance for them to be motivated in acquiring knowledge of computer, as it is clear that the computer knowledge is very much needed for teachers. A good teacher should be ready to adopt new technology in education. Yet there are some teachers who are not ready to accept the changes; they are not flexible enough to welcome new innovations. The present research will investigate that does the attitude of teachers affect the quality of computer education?

**1.4 Need and Importance of the Study**

As computers are becoming very important part of human life therefore it becomes obvious that how the field of education could be untouched. Computer education is now a compulsory part in the syllabus at every level of education. The National Policy on Education (NPE)\(^{10}\), 1986, has provided for environment awareness, science and technology education to
include in the syllabus for secondary education. Though the teacher is an integral part of teaching-learning process, so teachers’ attitude towards computer becomes more important. Ultimately it is the teacher who will teach the class. If teacher has positive attitude towards use of computer in education then he will feel comfortable and interested in the use of computers in education. He/she will encourage the students to make use of computers. He/she will teach at class with the help of computers. On the other hand if teacher is not very prompt towards technological changes in education then he/she will avoid the use of computers in education; or will criticize the use of computers in education. He/she will think use of computers in teaching as wastage of time. As a result, the technological development of education will suffer badly and quality of computer education would be poor. Hence, to get the feedback of the computer attitude of the teachers, it is imperative that a detailed study should be made to find out and analyse the comprehensive set of issues, so that the benefits of the positive computer attitude of teachers could be exploited and limitations of the negative attitudes could be overcome. Men, on the other hand, are reportedly more interested in mastering computer commands and want computers with voice recognition and features that extend their senses. Women want to be able to use the machines; men want to command the machines.11

This difference in attitude about computer technology based on gender has been explained by some individuals as an outcome of the socialization process. Society views computers as highly technical and part of a male domain. At present,
computers have emerged in schools at all levels in increasing numbers. As a result, current teachers have had far more exposure to the computer than the subjects studied in present era. Although females have been seen as being less receptive to technology than males, recent experiential evidence and increased computer use suggest that this condition may no longer exist. Therefore, this research attempted to determine whether males and females exposed to regular technology use for practical applications differ in their attitudes about technology. Many researches prove it also. As education systems become remoulded by technological innovations, teachers in these institutions are faced with need to gain knowledge and skills to survive in this renewed environment. Lack of such knowledge and skills is known to adversely affect the applicability of technological practice. The successful use of technologies in the classroom depends on several factors such as funding, dynamic teaching styles, decisions concerning hardware, software, and so forth. Yet whether all these factors will yield the wanted learning outcomes or not is usually determined by one individual, the teacher, since it is the teacher’s skills, beliefs, attitudes, perceptions, opinions, personality, knowledge, among many other factors, that affect the choices he/she makes about what, when, and how to teach through using computer technologies (Nespor, 1987)\(^{12}\). Among these factors, however, computer affects “such as attitudes, values, and self-judgements can exert a profound effect on behaviours”. Therefore, if teachers are expected to be effective users of computer, it is essential that they have positive attitudes in using computers.
1.5 Statement Of The Problem

While studying the present study the investigator decided to investigate the computer attitude of secondary school teachers in relation to gender, experience and educational qualifications. Consequently, the study might be stated as “An investigation of Computer Attitude of Secondary School Teachers in Relation to Gender, Experience and Educational Qualifications”

1.6 Key Terms

1.6.1 Computer Attitude

In the present study the computer attitude refers to a response of the teachers, towards the use of computers in teaching learning process.

1.6.2 Attitude

In the present study the attitude refers to the tendency to react in a certain way toward a designated class of stimuli. These are the ways in which an individual thinks feels and acts.

On the basis of the scores, obtained on the ‘Computer Attitude Scale for Secondary School Teachers’ three categories of the computer attitude were formed:
i. **Slightly Positive Computer Attitude**

In the present study the teachers who scored from 137 to 165 were considered as having slightly positive computer attitude.

ii. **Moderately Positive Computer Attitude**

In the present study the teachers who scored from 166 to 195 were considered as having moderately positive computer attitude.

iii. **Highly Positive Computer Attitude**

In the present study the teachers who scored from 196 to 224 were considered as having highly positive computer attitude.

1.6.3 **Secondary School**

In the present study the secondary schools refer to the education that covers children 14-18. School grades from nine to twelve (which includes lower and upper secondary group).

i. **Government Secondary Schools**

In the present study the schools that are funded, managed and organized by the Uttar Pradesh state government.
ii. **Aided Secondary Schools**

   In the present study the schools that are funded by the Uttar Pradesh state government and managed and organized by private organizations or individuals.

iii. **Private Secondary Schools**

   In the present study the schools that are funded, managed and organized by the private organizations or individuals.

1.6.4 **Experience**

   In the present study the term experience refers to the length of the teaching experience at secondary level by a teacher. On the basis of the experience, obtained on the ‘Computer Attitude Scale for Secondary School Teachers’ three categories of the experience were formed:

i. **Less Experience**

   In the present study the teaching experience of four to ten years is assumed as less experience.

ii. **Moderate Experience**

   In the present study the teaching experience of eleven to seventeen years is assumed as moderate experience.
iii. High Experience

In the present study the teaching experience of eighteen to twenty five years is assumed as high experience.

1.6.5 Educational Qualifications

On the basis of the experience, obtained on the ‘Computer Attitude Scale for Secondary School Teachers’ three categories of the experience were formed:

i. Doctorate

In the present study the teachers who had Doctorate degree were considered as doctorate.

ii. Post-Graduate

In the present study the teachers who had post graduate degree with any professional degree were considered as post-graduate. (Trained post-graduates)

iii. Graduate

In the present study the teachers who had graduate degree with any professional degree were considered as graduate. (Trained graduates)
1.7 Objectives Of The Study

Following are the objectives of the study:

1. To study the attitude towards computer of the secondary school teachers.
2. To study the attitude towards computer of the secondary school teachers with respect to gender.
3. To study the attitude towards computer of the secondary school teachers with respect to experience.
4. To study the attitude towards computer of the secondary school teachers with respect to educational qualifications.

1.8 Hypotheses Of The Study

In order to achieve the above objectives following hypotheses have been formulated:

Rationale:

M. Ray, Carolee Sormunen and Thomas M. Harris\textsuperscript{13} in their study, found that women reflected more positive attitudes than men. Females held more positive attitudes than males regarding the value of computers to make users more productive. As has found by the earlier studies, the investigator has chosen gender because it may be the cause of the different opinions.
1. There is significant difference in computer attitude of secondary school teachers with respect to gender.

2. There is significant difference in computer attitude of government secondary school teachers with respect to gender.

3. There is significant difference in computer attitude of aided secondary school teachers with respect to gender.

4. There is significant difference in computer attitude of private secondary school teachers with respect to gender.

5. There is significant difference in computer attitude of secondary school teachers with respect to experience.

6. There is significant difference in computer attitude of government secondary school teachers with respect to experience.

7. There is significant difference in computer attitude of aided secondary school teachers with respect to experience.

8. There is significant difference in computer attitude of private secondary school teachers with respect to experience.

9. There is significant difference in computer attitude of secondary school teachers between highly experienced male and less experienced male.

10. There is significant difference in computer attitude of secondary school teachers between highly experienced female and less experienced female.

11. There is significant difference in computer attitude of secondary school teachers with respect to educational qualifications.
12. There is significant difference in computer attitude of government secondary school teachers with respect to educational qualifications.
13. There is significant difference in computer attitude of aided secondary school teachers with respect to educational qualifications.
14. There is significant difference in computer attitude of private secondary school teachers with respect to educational qualifications.
15. There is significant difference in computer attitude of secondary school teachers between doctorate male and graduate male.
16. There is significant difference in computer attitude of secondary school teachers between doctorate female and graduate female.
17. There is significant difference in computer attitude of secondary school teachers between graduate with less experience and graduate with high experience.
18. There is significant difference in computer attitude of secondary school teachers between doctorate with less experience and doctorate with high experience.

1.9 Justification of the Study

There has been a considerable increase in the number of secondary schools. Computer education has made compulsory up to the Intermediate classes in government secondary schools. Therefore, an appreciable amount of monetary expenditure is being incurred for computer education. Infrastructure, electricity
and computers are being provided for the implementation of computer education. Now the question arises whether the attitude of the secondary school teachers is favourable, whether there is any positive effect on the learning and behaviour of the secondary school teachers, whether the teachers prove themselves an asset for the nation.

Computer attitude of secondary school teachers so far have not adequately attracted the attention of researchers. Though a number of studies have been carried out in order to understand the computer attitude, but little attempt has been made to study the computer attitude of secondary school teachers in relation to gender, experience and educational qualifications. The areas of the measurement of computer attitude studied by any researcher were very restricted. Generally all the three factors (gender, experience and educational qualifications) of the present study were not correlated united. Earlier they were studied separately at different levels.

Since there is an appreciable dearth of researches attempting to computer attitude of secondary school teachers in relation to gender, experience and educational qualifications altogether, the investigator felt the need of the study.
1.10 Delimitations of the Study

The study was limited to:

I. The study is delimited to teachers teaching from grade nine to twelve.

II. The study is delimited to secondary school teachers of Lucknow Division only. Lucknow Division comprised of six districts namely Sitapur, Raibareilly, Unnao, Hardoi, Lakheempur Kheeri and Lucknow.
REFERENCES

2. Journal of Indian Education: Vol- 31, No. 1 May 2005; NCERT Publications.pg. no. 98.
10. NPE 1986 MHRD Publications: Govt. of India. pg. no. 55.


CHAPTER II

REVIEW OF RELATED LITERATURE

The review of related literature involves the systematic identification, location and analysis of documents containing information related to the research problem. Teaching is research and research is teaching. The term review means to organize the knowledge in the specific area of research. It shows the importance of the present study as an addition to the field. The best teachers are researchers, who are able to systematically reflect on their own teaching as knowledge expands from practice; and synthesize it with the available literature to develop fight perspective. Literature in any area is the foundation upon which all future work is built. A literature is a collective body of works done by earlier researches. It refers to the knowledge of a particular area of investigation of any discipline, which includes theoretical, practical and its research studies.

Review of related literature helps the researcher in a variety of background planning and functions preparatory to the actual fieldwork. It facilitates both the beginner as normal as the confirmed researcher in the guest of:-

a. Discovering new approaches
b. Chalking planned study
c. Avoiding duplication
d. Identifying problem of the study
e. Developing problem of the study
f. Developing knowledge and understanding in the chosen field

A great amount of research has been done to study the computer attitudes. But not much is known about the computer attitude of secondary school teachers in the Indian context. The present chapter discusses the innumerable researches being done in the field of computer attitude. For the sake of convenience the studies so far done in the area of computer attitude has been grouped under the following headings:

i. Studies Related to the measurement of Computer Attitude.

ii. Studies Related to the measurement of Computer Attitude with reference to Gender.

iii. Studies Related to the measurement of Computer Attitude with reference to Age or Experience.

iv. Studies Related to the measurement of Computer Attitude with reference to Educational Qualifications.

i. **Studies Related To The Measurement Of Computer Attitude:**

R.H.Kay (1989) conducted a study on “A Practical and Theoretical Approach to Assessing Computer Attitudes: The Computer Attitude Measure (CAM). In this study, the Computer Attitude Measure was administered to 383 student teachers to assess three relatively distinct dimensions of computer attitudes: Cognitive, Affective and Behavioural. The alpha coefficient for each subscale Cognitive (alpha= .87),
Affective (alpha= .89), Behavioural (alpha= .94) showed a high degree of internal reliability. The principal component factor analysis supported the a priori assumption that the three subscales were independent. Finally, significant positive correlation of all subscales with a high degree of computer literacy and experience, and an internal locus of control, supported the external validity of the Computer Attitude Measure. All correlations among cognitive, affective and behavioural attitudes, a high degree of computer literacy and computer experience, and an internal locus of control were positive and significant. The pattern of correlations for the affective subscale was similar to the cognitive subscale. Correlation coefficients for the behavioural subscale were consistently higher that the other two the Computer Attitude Measure subscales.

Tengku Faekah Tengku Ariffin, Hasniza Nordin and Abdul Malek Abdul Karim (1991)² from University Utara Malaysia had investigated on the topic “What Predicts Attitudes toward Computer?” The study was conducted to examine the status of computer use and attitudes among secondary school students. It also identifies the relationships among the variables and the predictors of computer attitudes. External variables (such as computer experience and frequency of use), perceived usefulness and confidence are included as potential antecedents of attitudes toward computer. Data was collected among 293 secondary school students in Kedah, Malaysia. It was found that there exist moderate to strong relationships between all the variables studied, with r-value ranging from .17 to .69.
Regression analyses have identified confidence in using computers as the strongest predictors of computer attitudes, with $R^2 = .48$. Other variables, computer experience, perceived usefulness and frequency of use also entered the equation, but turned out to be poor predictor of attitude toward computers. Discussion of findings and suggestions for future research are included in the text. Based on the findings, students indicated that they have an average of two years of experience in using computers. Considering their location and lack of access to computers, the two-year experience albeit brief is a positive start to familiarizing students with computer technologies. Hence, the experience gained by these students may not be sufficient to be considered as true experience in computer use.

Ibrahim M. Al-Jabri and Muhammad A. Al-Khaldi (1993) conducted a study titled “Effects of User Characteristics on Computer Attitudes among Undergraduate Business Students.” A study survey is used to investigate the computer attitudes of 238 business students attending a major university in Saudi Arabia. The findings show that computer experience, degree of access, and computer ownership has a significant effect on computer anxiety, computer confidence, computer liking, computer usefulness, and overall computer attitude. Age and class standing do not appear to be related to any of the computer attitude scales. The number of computer-using courses strongly affects computer confidence, usefulness, and overall attitude, but weakly affects computer anxiety and liking. The student Grade Point Average is associated with computer confidence, and overall attitude, but not with computer anxiety,
liking, or usefulness. There was a strong significant correlation between accessibility and the computer overall attitude and the individual components of the attitude. The results reveal that there are significant differences between the degree of access and the attitude components. In general, the higher the degree of access, the more favourable the attitude. Interestingly enough, the same pattern surfaced in anxiety, confidence, liking, usefulness, and overall attitude. The results of this study demonstrate that the respondents have positive attitudes toward computers and, therefore, have a general acceptance of computers as learning tools. At the component level, they tend to have a more positive attitude toward computer usefulness than toward computer anxiety, computer confidence, and computer liking. With regard to the association between computer attitudes and the study variables, the study shows that experience, accessibility of computer resources, and computer ownership tend to promote positive feelings toward computers whereas age and class standing have shown to be ineffective in developing favourable computer attitudes. The number of computer-using courses and GPA are found to be associated with computer confidence and overall attitude but not with computer anxiety or computer liking.

Allan H. K., Yuen & Will W. K., (1994) conducted a study on the topic “Teachers' Computer Attitudes: Factors Influencing the Instructional Use of Computers.” Both researchers and educators have been aware of teachers' attitudes toward computers is an important factor to the successful use of computers in instruction. This paper aims to describe the
development of a scale for measuring teachers' attitudes toward computers. A Chinese Computer Attitude Scale for Teachers (CAST), partly adopted from Selwyn (1997) and partly developed specifically to teachers’ perception on pedagogical use of computers which consisting of 20 items was administered to 216 secondary teachers. Factor analysis revealed four structurally independent attitude constructs. The scale was found to have a satisfactory internal reliability. Significant correlations were also found between computer experience/usage and the four subscales, suggesting a measure of construct validity for the scale. The results of regression analysis indicated that the set of variables contributed to the levels of computer use. It is hoped that the scale will be of use to researchers and educators in the educational setting. Affective and general usefulness were significant in influencing the usage, however, to a much lesser extent than expected. We believe that if an individual likes to use a computer more, he or she would have a higher usage; moreover, if an individual thinks that the more useful a computer is, a higher usage would expect. Although these two subscales have a direct and significant effect to usage, both of them only have a standardized coefficient beta of around 0.16 of the overall model. This suggests that the tremendous sum of resources invested in advertising the benefits of computers do not actually contribute much to the actual usage of computers. This may suggest that teachers tend not to focus too much on the general usefulness of computer itself in usage. A teacher’s liking of computer does not contribute much to the usage, either.
Cesáreo Morales (1999) conducted a study on the topic “Attitudes toward computers among students and teachers in Mexico.” In 1998 Likert scale questionnaires were administered to Mexican Teachers and 9th Graders from four States to measure attitudes toward computers and electronic mail. Results showed significant differences among States in both children and teachers. It is argued that a differential technological capacity and specific–to–state computer usage models are variables responsible for those differences. The student sample was composed of similar numbers of girls (50.7%) and boys (49.3%), while the teachers’ sample was predominately male (59.2%) rather than female (39.2%). The use of computer at home showed some differences between students and teachers, with lower numbers among children (yes=22%; no=77%) compared to teachers (yes=31.6%; no=67.1%). The majority of teachers were 36 years or older (67.1%), and have been teaching for 15 years or more (58.2%). They reported to have been using the computer for instruction (73.4%), on a weekly (25.3%) or occasional (38.0%) basis. Most of them appeared to have some computer training (65.8%), some have been trained in computer applications (40.5%), and a sizeable portion (46.8%) in integration of technology into the classroom.

Archana Kumari, (2000) from Lucknow University, Lucknow conducted a study titled "A study of impact of Computer Education on the Scientific Attitude of Students" and defined the following objectives. 1. To compare the scientific attitude of students studying computer education with that of those students not studying computer education. 2. To study the
role of gender in the development of scientific attitude of students. 3. To study the role of SES in the development of scientific attitude of students. 4. To study the role of Education of Mother in the development of scientific attitude of students. 5. To study the role of IQ in the development of scientific attitude of students. 6. To study the role of family structure in the development of scientific attitude of students. 7. To study the role of medium of instruction in the development of scientific attitude of students. 8. To study the role of anxiety level in the development of scientific attitude of students. 9. To study the role of adjustment in the development of scientific attitude of students. 10. To study the role of computer facilities in the development of scientific attitude of students. The findings were:

1. Computer Education has been found non-effective in the development of scientific attitude of the students. 2. Sex has not been found affecting the development of scientific attitude significantly. 3. SES has been found affecting the development of scientific attitude significantly. The average SES students have been found to develop scientific attitude at a significantly higher level. 4. The Education of mothers has been found to affect the development of scientific attitude among children significantly. 5. Positive correlation has been found between IQ and Scientific attitude. 6. The structure of family (Joint and Nuclear) and anxiety level have not been found affecting the development of scientific attitude. 7. The students of Hindi medium have been found to have higher scientific attitude than the English medium students. 8. The students of higher adjustment have been found to have higher scientific attitude.
The students with higher computer education facilities have been found with higher scientific attitude.

“A Study of Cognitive and affective Computer Attitude of Teachers” conducted by Kumaran, D., and Selavarju, K. (2001) aims at: 1. To validate the cognitive and affective Computer Attitude scale using factor analysis. 2. To study the Computer Attitude of Teachers. 3. To study the Cognitive Computer Attitude of Teachers. 4. To study the affective Computer Attitude of Teachers. 5. To study whether the teachers differ significantly in computer attitudes, with respect to sex, organization and experience background and contextual variables. In general, teachers had more favourable attitude towards computer; the gender of the teachers had significant influence on affective computer attitude and no significant influence on cognitive computer attitude.

A study of “Prospects and Applicability of Computer in Education in the Secondary Schools of Eastern UP” done by Deepak Kumar Shah, (2001) reveals that 24% of the secondary 45 schools have computer facilities. Majority of the schools have supplementary time-table and indicated two periods for theory and three periods for practical per week. Most of the schools have software, namely, BASIC, WS, DBASE, and MS Office. Most of the schools have installed COMPAQ computers. No financial support is provided by the government for maintenance of the computers. Course stream (Science/Non-Science), gender, family pattern, inhabitation and marital status have not been identified as determinants of the nature and extent
of the opinion of teachers with respect to the prospects and applicability of computer in education in the secondary schools.

William H. Burkett, David M. Compton and Gail G. Burkett (2001) collectively done a study titled “An Examination of Computer Attitudes, Anxieties, and Aversions among Diverse College Populations: Issues Central to Understanding Information Sciences in the New Millennium” Studying the impact of computer attitudes on the production of knowledge is central to the understanding of information sciences in the new millennium. The major results from a survey of diverse college populations suggest that Liberal Arts College (LAC) students, in this demographic, have somewhat more ambivalence toward computers than students in a Community College (CC) or a non-traditional Business College (BC) environment. The respondents generally agreed that computers were an important part of daily life and not particularly frustrating. In addition, it appears that today’s students like computers, know at least something about them, feel competent when using one, and are not tired of hearing about computers as a matter of daily discourse. The participants generally agreed, although not strongly so, that they would like to learn more about computers. The surveyed students generally expressed an interest in on-line courses, although students from the LAC were more neutral about on-line courses. On-line courses were generally considered somewhat inferior to traditional classes. Most of the respondents feel that they have a reasonable amount of computer-related experiences and, as a result, have considerable competence and success when using one, and
believed that they could successfully master new software. The majority of the students expressed at least some degree of enjoyment from computer and non-computer games. Last, students at the LAC and BC appeared to possess greater knowledge about computer operation, a fact that may in part be due to the age of the respondents. This study analysed students’ responses, at three campuses. Their academic disciplines were varied. The attitudes they manifested toward computers could be construed as an indicator of their degree of computer anxiety. This degree of computer anxiety, in turn, is of importance to those that will be overseeing or providing information to clients in the near future.

**Katyar Pramod Chandra** (2002)\(^1\) conducted a study on “The Status of Computer Education in the schools of Gwalior”. The study was conducted on 30 schools from Lashkar, Gwalior and Murar, ten schools at each of the primary, secondary, and higher secondary levels. Largely no compatible curricula and competent teachers were found at the primary level with respect to computers in education. At secondary school level no computer education was found to be offered in the Government schools, whereas, it was offered in 8% of the private schools. But the students find this subject very boring, being not implemented properly. Five of the government schools were found offering computer education at the Higher Secondary level under Vocational Education Program organized by the Bhoj Open University.
“Teacher’s Attitudes towards Computer Technology Use in Vocabulary Instruction”, a thesis by Erkan İsmail Arkin (June 2003). This study examined how teachers perceive the incorporation and use of computer technology resources in language teaching through investigation of teachers’ attitudes and approaches to using an online supplementary resource in vocabulary instruction in an EFL context. The program offers such tools as vocabulary level tests, a vocabulary frequency profiler, word and text concordance, and cloze text and hypertext builder. The aim of the study was to explore the factors that affect teachers’ use or non-use of the online program for teaching purposes. The study finally examined whether and to what extent opportunities, facilities, and training provided to teachers contribute to their acceptance and use of these resources. The data was collected through questionnaires distributed to 97 teachers in an English-medium university. Based on the results of the questionnaires, a stratified sample of 12 teachers was selected for follow-up interviews. The questionnaire results revealed statistically significant differences between teachers who have undergone computer technology training and those who have not in terms of their attitudes toward computers and the use of computer technology resources in language teaching. Follow-up interviews were used to determine whether positive attitudes or interests led people to undergo training or the reverse. The responses supported both cases for different individuals. The results also showed that simply introducing computer technology resources does not guarantee teachers’ use of these in practice. The provision of training is
seen as a key factor in both changing attitudes and encouraging teachers in incorporating technology into their instruction.

**Martin Graff** (2003)\(^{12}\) conducted a study titled “Cognitive Style and Attitudes towards Using Online Learning and Assessment Methods”. The studies described in this paper sought to investigate several forms of online learning and assessment methods in terms their efficacy in facilitating student learning. The studies also sought to investigate how participants rated each method. Attitudes toward computer-assisted learning were not related to performance on each of the online methods employed, whereas some relationships were noted between cognitive styles and online learning and assessment. Finally, evaluation feedback from participants indicated that each online task was rated positively. Implications of the findings for further implementation of online instructional methods are discussed.

**Irfan Shah** (2005)\(^{13}\), from CASE, MSU, Baroda conducted a study on “ICT awareness, use and need of secondary and higher secondary teachers of English Medium Schools of Vadodara city”. The objectives of the study were to study the ICT awareness of secondary and higher secondary teachers, to study the ICT use of secondary and higher secondary teachers, to study the ICT need of secondary and higher secondary teachers, and to study the variables related with the ICT awareness, use and need of secondary and higher secondary teachers. A scale was constructed to collect the data regarding ICT awareness, use and need of a teacher with respect to different components of ICT, like, computer, Internet, OHP,
LCD Projector, Radio, TV. 12 secondary and 10 higher secondary schools were selected using stratified random sampling technique. Further 60 secondary and 50 higher secondary teachers were selected @ 5 teachers from each selected school. A total of 90 teachers out of 110 responded. Data were analysed using frequency, percentage, mean, SD, SE of mean, ‘t’ value and ANOVA wherever necessary. There was found a low degree of ICT awareness, use and need of secondary and higher secondary teachers. The variables related to ICT awareness of teachers were teaching experience, age and total salary. The variables related with the ICT use of teachers were total salary and computer training. The variable related with the ICT need of teachers was the Degree Program which they attended at the University level.

Mr. Anil Tanaji Patil, (2006)\textsuperscript{14}, from Shivaji University, Kolhapur done a study on “Development of Multimedia Instructional System on Computer Education for B.Ed. Pupil Teachers.” The problem- “Development of Multimedia Instructional System on Computer Education for B.Ed. Pupil Teachers” has been normal identified by the investigator. The Study is based on a sound conceptual framework. The related literature has been reviewed comprehensively. All the seven objectives of the Study have been normal enunciated as follows: 1. To analyze the conventional approach of teaching Computer Education. 2. To plan multimedia instructional system for Computer Education. 3. To design and construct multimedia instructional system for Computer Education. 4. To test the effectiveness of the constructed multimedia instructional
system. 5. To compare the effectiveness of constructed multimedia instructional system with the conventional system of instruction. 6. To validate multimedia instructional system in terms of their effectiveness over conventional system of instruction. 7. To equip the pupil teachers and teacher-educators with reliable system to overcome the difficulties in theory course of Computer Education Instruction.

“Faculty Attitudes towards Computer Assisted Instruction at the University of Gaziantep”, a study conducted by Filiz Yalçın Tilfarlioglu İhsan Ünaldi (April 2006). The purpose of this study is (1) to improve an attitude scale and by using this scale, (2) determine faculty attitudes towards CAI of the University of Gaziantep. Determining the actors that outline these attitudes is also another concern of this study. This study aims at revealing faculty attitudes towards computer assisted instruction at University of Gaziantep, Turkey in a multifaceted way. Additionally, it tries to determine underlying factors that shape these attitudes. After a pilot study, the questionnaire was applied to a sample population of 145 faculties that were chosen randomly. The results revealed that faculty attitudes towards computer assisted instruction are positive. Age, sex, teaching experience, level of proficiency in English and computer usage skills have no or little effects over these attitudes. According to the results of the study, faculty who have prior knowledge on computers expose rather positive attitudes towards computers in education. Another important outcome of the study is the existence of a gender gap in terms of computer assisted instruction. Although there seems to be no difference between
male and female faculty concerning their background education regarding computers, male faculty feel confident about the matter, whereas female faculty feel uncomfortable about using computers in their lessons.

**Abdulkafi Albirini** (2006) had done a study on the topic “Teachers attitudes toward information and communication technologies: the case of Syrian EFL teachers.” Based on the new technology initiative in Syrian education, this study explored the attitudes of high school English as Foreign Language (EFL) teachers in Syria toward ICT. In addition, the study investigated the relationship between computer attitudes and five independent variables: computer attributes, cultural perceptions, computer competence, computer access, and personal characteristics (including computer training background). The findings suggest that teachers have positive attitudes toward ICT in education. Teachers’ attitudes were predicted by computer attributes, cultural perceptions and computer competence. The results point to the importance of teachers’ vision of technology itself, their experiences with it, and the cultural conditions that surround its introduction into schools in shaping their attitudes toward technology and its subsequent diffusion in their educational practice. The study investigated the attitudes of high school EFL teachers in a large Syrian province toward ICT and the relationship of teachers’ attitudes to a selected set of independent variables. Teachers’ attitudes toward ICT have been universally recognized as an important factor for the success of technology integration in education (Rogers, 1995; Watson, 1998; Woodrow, 1992).
Findings from this study suggest that participants had positive attitudes toward ICT in education. The respondents’ positive attitudes were evident within the affective, cognitive and behavioural domains. Such optimism cannot simply be attributed to the novelty of computers in Syrian education (Salaberry, 2001). The participants seemed to have totally accepted the rationale for introducing ICT into schools and were able to base their judgments on understandable reasons. Thus, the majority of respondents considered computers as a viable educational tool that has the potential to bring about different improvements to their schools and classrooms.

“Pre-service teachers’ attitudes towards computer use: A Singapore survey” by Timothy Teo from Nanyang Technological University (2008). The aim of this study is to examine the profile of a sample of pre-service teachers in Singapore. Specifically, the following questions will be answered: 1. What is the overall profile of pre-service teachers’ attitudes towards computer use? 2. Do computer attitudes differ by age, gender, subject domain, years of computer use, and perceived confidence? The aim of this study is to examine the attitudes towards use of computers among preservice teachers. A sample of 139 pre-service teachers was assessed for their computer attitudes using a Likert type questionnaire with four factors: affect (liking), perceived usefulness, perceived control, and behavioral intention to use the computer. The results of this study showed no gender or age differences among pre-service teachers on computer attitudes. However, there were significant differences for computer attitudes by the subject areas that pre-
service teachers had been trained during their university education: Humanities, Sciences, Languages and General (Primary). Correlation analyses revealed significant associations between years of computer use and level of confidence, and computer attitudes. Implications for teacher training and suggestions for further research are provided.

Salih Birişçi, Mustafa Metin and Mehmet Karakaş (2009) 18 from the Artvin Çoruh University, Turkey, conducted a research on the topic “Determining Prospective Elementary Teachers' Attitudes towards Computer: A Sample from Turkey.” The aim of this study is to determine prospective elementary teachers’ attitudes towards computers. This research was carried out in fall semester of 2007 at a small university in north-eastern Turkey with 248 prospective elementary teachers. In order to get general results about the sample survey methodology was used. Results show that computer attitudes of prospective elementary teachers are at medium level. No significant differences were found between gender, high school type and monthly family income independent variables and computer liking, computer anxiety and use of computers in education/instruction subscales. However, a significant difference was found between high school type and computer anxiety and computers in education/instruction subscales. The findings of this study indicate that prospective elementary teachers’ attitude towards computer is at medium level. Also findings reveal that their attitudes towards computer liking and use of computers in education/instruction were at mid-level and computer anxiety was at high-level.
Saroj Yadav (Lecturer, Department of Education CSJM University Kanpur U.P, India) and Shivveer Singh, Student, (Department of Education CSJM, Kanpur U.P, India) (2011) had done a study on the topic “A Comparative Study of Social Competence and Attitude towards Computer among Undergraduate Students.” The present investigation was undertaken to compare the social competence and attitude towards computer among undergraduate students. For this purpose, descriptive survey of research was used. Data was collected from randomly selected 320 undergraduate students from the urban and rural areas of Kanpur in Uttar Pradesh (U.P.). Social competence scale and Computer attitude scale were administered on the selected sample. The result showed that Social Competence of Undergraduate male students was more than that of undergraduate female students. Social Competence of Undergraduate urban students was more than that of Undergraduate Rural students. Significant difference was found in attitude towards computer between Undergraduate urban and rural students but there was no significant difference between male and female students. The findings of the study are as follows: There is significant difference between the Social Competence of Undergraduate male and female students. Social Competence of Undergraduate male students are more than Undergraduate female students. There is significant difference between the Social Competence of Undergraduate Urban and Rural students. Social Competence of Undergraduate Urban students are more than Undergraduate Rural students. There is no significant difference between the Attitude towards Computer of Undergraduate male and female students. There is significant
difference between the Attitudes towards Computer of Undergraduate Urban and Rural students. Computer Attitude of Undergraduate Urban students is more than Undergraduate Rural students.

Assist. Prof. Dr. Tamer Kutluca from Dicle University and Ziya Gokalp (2011) from Faculty of Education Primary Mathematics Education Diyarbakir, Turkey, had done an investigation titled “A Study on Computer Usage and Attitudes toward Computers of Prospective Preschool Teacher.” The purpose of this study is to determine the status of computer usage and the attitudes toward computers of prospective preschool teacher and to investigate of several variables on their attitudes. For this purpose, “Computer Usage Information Form” and “Computer Attitude Scale” was applied to 126 prospective preschool teachers. This study is conducted with survey methods. The data is analysed through standard deviation, mean value as well as t-test and one way ANOVA for group comparison, besides to find which group causes the difference in the group comparison, a Post Hoc Turkey HSD test is employed. At the end of the study it is determined that the prospective preschool teacher use computers more at home and internet cafes and their levels of using computer programme are intermediate or upper. It is also determined that there is a significant difference according to the variables of taking computer course, computer ownership, level of using computer program, frequency of computer usage, computer experience and class of the scores of attitudes toward computers. On the other hand, there is no significant difference according to the variables of
gender. It is recommended that future studies should focus on investigating academician’s level of usage of computer program and attitudes toward computer technologies. In this study found significant differences between frequency of computer usage, computer experience and attitudes toward computer of prospective class teachers. In this result that emerged prospective teachers who frequent used computers and computer experience had a more positive attitude toward computers than did those who did not frequent used computers and computer experience.

Shamsa Aziz and Hamid Hassan (2012)²¹ had done a study titled “Factors Affecting the Attitudes towards Computers: A Survey at Higher Secondary Level in Punjab, Pakistan”. This study is a part of Ph.D. research in which researcher attempted to explore the factors that affect student’s attitude towards computers. The study was delimited to the province of Punjab, Pakistan. The estimated population was more than 30,000. Total number of the students included in the study was 1068. “Computer Attitude Scale” (CAS) developed by Loyd and Gressard was used for measuring the students’ attitude towards computers. Effect of students’ gender, physical facilities for computer science available to them at colleges and the qualification of the teachers teaching them was analysed by applying t test and one way ANOVA. As the research findings indicated the positive affect of sufficient physical facilities and computer graduate teachers on students’ attitude towards computers so it is recommended that all the required and internationally recommended physical facilities along well qualified and properly certified teachers may be provided in all
colleges and schools where computer science/ studies are being offered to the students. There is a significant gender wise difference in students’ attitude towards computers. Female students have higher mean score on Computer Attitude Scale than the male students. There is a significant difference regarding attitude towards computers between the students who have sufficient physical facilities at colleges and those who have insufficient physical facilities at colleges. The mean score on Computer Attitude Scale was higher for the students who have sufficient physical facilities at colleges than those who have insufficient physical facilities at colleges. There is a significant difference regarding attitude towards computers among students taught by teachers with different qualifications. The students’ attitude towards computers is significantly affected by the teachers who are Science graduates + diploma in Computer studies or Computer graduates.

Josephine A. Larbi-Apau and James L. Moseley Wayne (2012)\textsuperscript{22} from the State University, Detroit, MI, USA conducted a study on the topic “Computer Attitude of Teaching Faculty: Implications for Technology-Based Performance in Higher Education.” This study examined the validity of Selwyn’s computer attitude scale (CAS) and its implication for technology-based performance of randomly sampled (n=167) multidiscipline teaching faculty in higher education in Ghana. Considered, computer attitude is a critical function of computer attitude and potential performance. Composed of four constructs, and using a five-point Likert rating scale, the CAS measured affective, perceived behavioural control, behaviour, and
perceived usefulness attitudes as multi-construct of computer attitude. The reliability of the overall computer attitude and all four constructs scales are positive with high internal consistencies (> .70) and significant construct validity (p < 0.001). Analysis of variance (ANOVA) showed significant mean differences across all four constructs at p = 0.001. Affective attitude was the highest contributor of computer attitude followed by perceived usefulness, behaviour, and perceived behavioural control attitudes. The teaching faculty has relatively high positive computer attitude; with purposeful practice and enabling environment, they can manage technology-oriented proficiencies and professional performances effectively. Further studies in private and public universities worldwide are proposed for practical and academic significance. In addition, relational and in-variance of CAS across demographic factors such as gender, age, academic status, and subject discipline are proposed for their differential influence. The results indicate teaching staff in these universities have relatively high and positive attitudes toward computer technology and ICT. The computer attitude was directly associated with affective, perceived usefulness, perceived behavioural control, and behavioural attitudes, and their means differed significantly on the different levels of computer attitude. For example, with a mean score of 22 (91%), affective computer attitude is rated the highest of the four constructs, suggesting high affinity towards the use of ICT by the majority of the teaching staff. Adequate knowledge and minimal technophobia (fear of advanced technology, Online Merriam-Webster Dictionary, 2011) can allay fears for technology use. Yaghi and Abu-Saba (1998) reported that
computer anxiety of teachers was reduced when they used computers for educational tasks. Stricker and Widiger (2003) asserted fear and anxiety could dominate one’s cognitive process to the point of interfering with daily functioning.

**Mustafa Doğan (2012)** had done a study on “Trainee Teachers’ Attitudes about Materials and Technology Use in Mathematics Education.” This study is planned to determine mathematics trainee teachers’ attitudes about technology and material use in mathematics education. The study is conducted with a self-developed questionnaire as a survey. The second part of the survey is a Likert Type Attitude Scale which contains 31 items. Sample is a total of 125 students from a primary teacher training department. This paper includes findings from the scale. Descriptive statistical techniques (f, %,) were used to analyse collected data for the sample. The results show that the trainee teachers’ attitudes are quite positive about materials and technology use in mathematics education. They stated that they are going to use the technology and materials in their professional mathematics teaching as well. The results show different aspects of primary mathematics trainee teachers’ attitudes to the use of materials and technology in mathematics education. First of all, they are very aware of the role of using technology in mathematics education. They recognized technology’s inspiration to learning, studying and teaching mathematics both for students and teachers. They appreciate possible enhancements to individual mathematics learning with the opportunities provided by the technology. Trainee teachers accept that materials and technology help to teach and learn
Tamer Kutluca and Halim Başkan (2013) collectively conducted a study titled “Vocational College Students’ Computer Usage Profiles and Attitudes toward Computers.” The purpose of this study is to determine the status of computer usage and the attitudes toward computers of vocational college students and to investigate of several variables on their attitudes. For this purpose, “Information form about using computer” and “Scale of the attitudes for computers” was applied to 137 vocational college students. This study was conducted with survey methods. The data is analysed through standard deviation and mean value as well as t-test and one way ANOVA for group comparison, besides to find which group causes the difference in the group comparison, a post hoc Turkey HSD test is employed. At the end of the study it is determined that the vocational college students use of text program, presentation program, email, multimedia and spread sheet program were scored as “medium high and above” level of use. It is also determined that there is a no significant difference according to the variables of taking frequency of using computer, computer ownership and gender of the scores of attitudes toward computers. This study of vocational students enrolled in the program according to their attitudes about computer-aided education vary not been identified. Physics, chemistry, biology and math program for
students enrolled in computer courses they considered to be close to one another if differences cannot quite as a result is acceptable. One of the other results was found for computer-assisted education vocational students to have their computer attitudes and computer use to the state was determined to vary by year. Positive attitudes expedite learning, student achievement and teacher raises and increased the effectiveness of the program; negative attitudes that prevent the learning, therefore, reduce the success of students and teachers and that it reduces the effectiveness of the program can be said. Successfully conduct computer-assisted training activities, will take on this role of the computer assisted education vocational students to have more positive attitudes and perceptions of self-efficacy is possible.

ii. Studies Related To The Measurement Of Computer Attitude With Reference To Gender:

A research “Gender Differences in Computer Attitudes, Interests, and Usage at an Elite High School” by Marilyn Joan Whinnerah Anderson (1990) has been done. A descriptive case study examined the gender differences concerning computer technology (IT) by a convenience sample (N = 180, 76%) of 11th and 12th graders at an elite public high school, recently named the “second best high school in America” in suburban Northern Virginia. The purpose of the study was to examine the apparent discrepancy in male and female differences in computer use, interests, and attitudes. The results were higher mean scores for the Strong Realistic General Occupational Theme (males)
and Artistic Theme (females); the Athletic and Mechanical Basic Interest Scales (males) and Music/Drama, Art, Culinary Arts, and Social Service Scales (females), and Risk-Taking Personal Style Scales (males) and Working Style with People (females). Females also had higher GPAs, levels of computer anxiety, resistance to technology, and avoidance of careers and study in computer fields. Females chose Pre-Medicine majors to help others and males chose Computer Science majors to gain financial rewards.

Tor Busch (1995) conducted a study on the topic “Gender differences in self-efficacy and attitudes toward computers.” This study is aimed to investigate gender differences regarding computer attitudes and perceived self-efficacy in the use of computers among 147 college students. At the end of a computer course, the students completed a questionnaire design to measure self-efficacy, computer anxiety, and computer liking and computer confidence. The results revealed gender differences in perceived self-efficacy regarding completion of complex tasks in both word processing and spreadsheet software. No gender differences were found in computer attitudes or self-efficacy regarding simple computer tasks. Male students had previously had more computer experience in programming and computer games and reported that they had previously had more encouragement from parents and friends.

Lily Shashaani (1997) conducted a study on “Gender Differences in Computer Attitudes and use among College students.” In this study researcher examined the gender gap in
computer attitudes and use based on a sample of 202 college students. Researcher surveyed the students’ attitudes in relation to gender, experience and parental encouragement. Students responded differently in regard to attitudes and experience. Females were less interested in computers and less confident than males: males were more experienced. Further analysis of the students’ responses showed that one semester of computer training improved their attitude toward computers. The results are discussed in terms of students’ precollege computer experience and parental behaviour. The results indicated that no significant differences between men and women in respect to the perceived usefulness of computers. Both genders were aware that knowledge of computers is important for obtaining a job, saves time and work, and is useful for data processing and problem solving.

“Men’s and Women’s Attitudes toward Computer Technology: A Comparison.” a comparative study collectively done by Charles M. Ray, Carolee Sormunen and Thomas M. Harris (2000). This study examined three research questions that compared the attitudes of men and women about (1) The value of technology in making users more productive,(2) The impact of computer technology on people and their work environments, and(3) The relative comfort of men and women when using computers. The study used an attitudes inventory constructed to identify attitudes associated with gender issues reflected in the literature. The inventory was administered to 62 subjects who were students in a university business communication course. Analyses of the findings indicate that,
contrary to earlier studies on these issues, women reflected more positive attitudes than men on all three scales. Females held more positive attitudes than males regarding the value of computers to make users more productive. Although neither men nor women in this group reflected concern about the impact of technology on people and their work environments, women were more positive than men in this regard. Women also reflected greater comfort in using computers than men. The results carry implications for both education and business. Educators, trainers, and managers should re-examine their behaviours as they make decisions regarding career choices, on-the-job training opportunities, and job placement. Previous indicators that men are more receptive to technology in learning and training environments appear to have changed.

iii. Studies Related To The Measurement Of Computer Attitude With Reference To Age Or Experience:

Gina M. Jay and Sherry L. Willis (1992)\textsuperscript{29} had done a study on the topic “Influence of Direct Computer Experience on Older Adults’ Attitudes toward Computers”. This research examined whether older adults’ attitudes toward computers became more positive as a function of computer experience. The sample comprised 101 community dwelling older adults aged 57 to 87. The intervention involved a two week computer training program in which subjects learned to use a desktop publishing software program. A multidimensional computer attitude measure was used to assess differential attitude change and maintenance of change following training. The results indicated
that older adults’ computer attitudes are modifiable and that direct computer experience is an effective means of change. Attitude change as a function of training was for the attitude dimensions targeted by the intervention program: computer comfort and efficacy. In addition, maintenance of attitude change was established for at least two weeks following training.

Denise Potosky and Philip Bobko (2001)\(^{30}\) conducted a study titled “A Model for Predicting Computer Experience from Attitudes toward Computers”. This study examined the relationship between locus of control, two sets of beliefs about computers as electronic performance monitors, general computer attitudes, and computer experience. Results support a model in which computer attitudes mediate the relationship between an individual’s locus of control and computer experience and between monitoring beliefs about computers and computer experience. The results of this study support the proposed conceptual model developed by the researcher. General attitudes toward computers appear to be a function of individuals’ relatively more specific beliefs about computers as well as individuals’ internal versus external locus of control. In turn, the relationship between attitudes and computer experience appears to be strong and positive. These results suggest patterns in the data that should be explored (and replicated) in future research.

Sabry M. Abd-El-Fattah (2005)\(^{31}\) conducted a study on the topic “The effect of prior experience with computers, statistical self-efficacy, and computer anxiety on students’ achievement in an introductory statistics course: A partial least
squares path analysis”. A Partial Least Squares Path Analysis technique was used to test the effect of students’ prior experience with computers, statistical self-efficacy, and computer anxiety on their achievement in an introductory statistics course. Computer Anxiety Rating Scale and Current Statistics Self-Efficacy Scale were administered to a sample of 64 first year university undergraduates (35 males and 29 females) enrolled in an introductory statistics course in a Faculty of Education. Achievement scores were obtained from students’ records. Results of the study revealed that statistical self-efficacy was the most important predictor of students’ achievement in statistics, followed by prior experience with computers and finally computer anxiety. In addition, statistical self-efficacy and prior experience with computers had an indirect effect on achievement in statistics through their effect on computer anxiety. Implications of these findings for teaching and learning statistics are discussed. Findings of the study have shown that among the many factors that might contribute to students’ achievement in statistics, statistical self-efficacy was the strongest. After considering students’ computer anxiety and prior experience with computers, statistical self-efficacy remained a critical factor that affected directly students’ achievement in statistics. Students who entered the statistics course with high levels of self-efficacy appeared to exhibit high scores on the overall course aggregate. These findings support Bandura’s social learning theory and are consistent with the body of research implicating self-efficacy as a significant factor influencing academic achievement (Bandura, 1977, 1986, 1997; Schunk, 1995; Schunk and Pajares, 2002).
Seyed Ebrahim Taghavi (2006) from the University of Arkansas Pine Bluff “The Effects of Age, Access to a Computer, and College Status on Computer Attitudes.” This study examined undergraduate college students’ (n=174), attitudes toward computers. Attention was given to the relationship between computer attitudes (anxiety, confidence, liking, and usefulness) and age, access to a home computer, and collegiate classification. Age was not found to be significantly related to computer attitudes on any of the four subscales. The findings showed that subjects with access to a home computer had higher positive attitudes toward learning and working with computers. The findings revealed that there was a small difference between students’ attitudes and their collegiate classification. Senior students significantly expressed more positive attitudes toward computers than sophomore, and junior students. Results of this study revealed that students with access to a home computer had lower anxiety, higher confidence, favoured more computers, and found computers to be more useful than the students without access to a home computer. Results revealed that students’ collegiate classification had very little influence on students’ attitudes toward learning and working with computers. There was a difference in liking level; senior students favoured working with computers more than sophomore, and junior students. This finding reinforced previous research that investigated computer attitude differences between underclassmen and graduating seniors that reported graduating seniors had higher positive attitudes toward computers.
L. Deniz (2007) conducted a study titled “Prospective Class Teachers’ Computer Experiences and Computer Attitudes.” The main purpose of the research is to investigate the computer experiences and computer attitudes of prospective class teachers. The research also investigated the differences between computer attitudes and computer experiences, computer competencies and the influence of genders. Ninety prospective class teachers participated in the research. Computer Attitude Scale-Marmara (CAS-M), and a questionnaire, about their computer experiences, and opinions toward the use of computers in the classroom setting, were administrated. The major findings are as follows: (1) 62% of prospective class teachers have computer at home; (2) 50% of the computer owners have computers less than three years; (3) No significant differences were found between computer attitudes and gender; (4) Differences were found between general computer attitudes and computer liking attitudes of prospective class teachers based on their computer competencies in favour of more competent ones.

This study found no significant differences between gender and computer attitudes of prospective class teachers. The results from the studies about the computer attitudes of prospective teachers in Turkey [11] [5] [6] show that there is no or in some cases little [10] gender gap toward computer attitudes. The results also showed that the majority of prospective class teachers have enough self-confidence to use a computer for instructional purposes. However, it is clear that only half of them reported that they have used computers for instructional purposes during their school practices. The major obstacles for not using computers have been identified as a lack of computers.
and insufficient computer efficacy. The other and important result basing on the prospective class teachers’ reflections is that teachers are not good enough to be role models for the integration of information technologies in to the curriculum.

**Min Shi and Barbara A. Bichelmeyer** (2007) conducted a study on the topic titled “Teachers’ experiences with computers: A comparative study”. Findings from two ethnographic studies regarding teachers’ uses of computers from 1991 and 2004 are compared to discover how teachers’ experiences of computer have changed since the proliferation of computers in schools and how teachers’ experiences of computers have remained the same. Despite the tremendous increase in availability of computers in schools and modest progress in teachers’ computer use, a comparison of data demonstrates continuing token integration of computers by teachers. Such factors as lack of effective training, and need for collaboration and involvement in planning for computer use which inhibited teachers’ computer use in 1991 continued to exist in 2004. Through the comparative data analysis process, six themes were found to have been identified by participants in both studies as having effects on teachers’ experiences with computers in the school environment. These six common themes included 1) accessibility of computers, 2) availability of technical support, 3) perceptions regarding usefulness of computers, 4) appropriate programs for teachers’ use, 5) factors facilitating teachers’ use of computers, and 6) factors inhibiting teachers’ use of computers.
Ruqiyabi Naz Awan (2012)\textsuperscript{35} from The British University in Dubai (United Arab Emirates) conducted a study on the topic “A Study of Students Opinions and Experiences on the Use of Computers and Laptops in Classrooms in Dubai”. Computer and laptop use in classrooms is now the perceived and desired educational norm. In order to assess the effect of computers/laptops on the dynamics of the teaching and learning environment a questionnaire was circulated to students in Dubai in order to gather their opinions and experiences regarding the use of computers/laptop in their classrooms. Results revealed that students did not use laptops/computers a great deal in educational settings but used them extensively outside of the educational setting for educational, social and information driven activities. The students were able to identify the advantages and disadvantages to the use of technology in their classrooms. Concerns regarding pedagogically driven teaching strategies are discussed.

iv. Studies Related To The Measurement Of Computer Attitude With Reference To Educational Qualifications:

The study “Effect of Qualification in ICT, Age and Income on Use of Computers among Postgraduate Students in Makerere University School of Education” had done by Bakkabulindi F. E. K., Sekabembe B., Shopi J. M. & Kiyungi G. (2002)\textsuperscript{36}. The purpose of this study was to establish the relationship between: qualification in using ICT, age and level of income; and use of computers among postgraduate students in
Makerere University School of Education. The study was carried out following a cross-sectional survey design and involved 69 students. Primary data, which were collected using a self-administered questionnaire, were analysed using summary statistics, t-test, analysis of variance, correlation and multiple regression analyses. The study found an insignificant relationship between possession of qualifications in using ICT and the use of computers; a significantly negative relationship between age and the use of computers; and a significantly positive relationship between level of income and the use of computers. It was, therefore, concluded that possession of qualifications in using ICT is not sufficient to enhance the use of computers; age can negatively affect the utilisation of computers; and income enhances the utilisation of computers. Thus, it is recommended that, to enhance the use of computers among the said students, relevant managers should give special ICT training to the older students; and provide access to computers, to ensure that students whose incomes do not enable them to acquire personal computers have access.

Sarah A Drummond (September 2009) had done a study on the topic “Investigating the Impact of Entry Qualifications on Student Performance in Computing Programmes at Undergraduate Level” This thesis investigates the impact of prior A-level study on students taking degree programmes within the Computing discipline. The focus of this work investigates opportunities to providing more-personalised learning which is based on students’ existing knowledge, for example, by providing additional learning support to those
students who had studied a particular topic at A-level. Although other studies have been carried out in this area, these studies have typically focused on outcomes across multiple programmes. Due to the variation of content taught, the researchers carrying out these prior studies have been unable to draw conclusions at the level of specific assignments. The aim of this work is to investigate the impact of A-level subject selection on the performance of those studying Computing programmes at Durham University. The results highlight some benefits in year one for students studying specific qualifications: largely Maths. However, the most significant result of this work is that, at the end of year two, any differences are insignificant. Therefore, while students with specific A-levels may gain benefits initially, at the point these student enter the final year of their programme, these differences no longer impact of their ability to study. The curriculum within Durham, therefore, already appears to address the needs of students, specifically by covering knowledge, or promoting individual study, of all topics necessary for successful progression. This research has, thereby, revalidated and added to the current body of knowledge in this research area.

2.1 General Conclusion

By going through the studies it can be concluded that majority of the researches have been conducted abroad. Very few studies related to the problem have been done in our country. The earliest research that examined attitudes toward computers was conducted by Lee (1970). He identified two dimensions of attitude :(1) Beliefs in the computer as a
beneficial tool and (2) Beliefs that the computers are autonomous entities. Lee (1970) hypothesized that lower autonomous entity attitude scores would result in an increase in computer use which would in turn result in higher beneficial attitudes. This finding can be extended to an explanation of the attitudinal processes involved in the introduction to all forms of technology. Individuals are likely to be apprehensive when they meet any new technology. As they familiarize themselves with it and adopt it, they realize its inherent utilitarian value.

Tor Busch conducted a study on the topic “Gender differences in self-efficacy and attitudes toward computers” (1995) and the results revealed gender differences in perceived self-efficacy regarding completion of complex tasks in both word processing and spread sheet software. Male students had previously had more computer experience in programming and computer games and reported that they had previously had more encouragement from parents and friends. On the other hand, M. Ray, Carolee Sormunen and Thomas M. Harris in their study, contrary to earlier studies on these issues, found that women reflected more positive attitudes than men on all three scales. Females held more positive attitudes than males regarding the value of computers to make users more productive. Previous indicators that men are more receptive to technology in learning and training environments appear to have changed. Gina M. Jay and Sherry L. Willis (1992) examined whether older adults’ attitudes toward computers became more positive as a function of computer experience. Denise Potosky and Philip Bobko examined the relationship between locus of control, two sets of
beliefs about computers as electronic performance monitors, general computer attitudes, and computer experience. Erkan İsmail Arkin (June 2003) examined how teachers perceive the incorporation and use of computer technology resources in language teaching through investigation of teachers’ attitudes and approaches to using an online supplementary resource in vocabulary instruction in an EFL context. These are some prominent studies mentioned in the chapter.

Computer attitude of secondary school teachers so far have not adequately attracted the attention of researchers. Though a number of studies have been carried out in order to understand the computer attitude, but little attempt has been made to study the computer attitude of secondary school teachers in relation to gender, experience and educational qualifications. The areas of the measurement of computer attitude studied by any researcher were very restricted. Generally all the three factors (gender, experience and educational qualifications) of the present study were not correlated united earlier. They were studied separately at different levels.

Since there is an appreciable dearth of researches attempting to computer attitude of secondary school teachers in relation to gender, experience and educational qualifications altogether, the investigator felt the need of the study.

The review of related literature exposes the following significant points:
1. Secondary school teachers’ computer attitude has not been studied.
2. The computer attitude of government secondary school teachers has not been examined.
3. The computer attitude of aided secondary school teachers has not been examined.
4. The computer attitude of private secondary school teachers has not been examined.
5. The computer attitude of secondary school teachers in relation to gender has not been measured.
6. The computer attitude of secondary school teachers in relation to experience has not been judged.
7. The computer attitude of secondary school teachers in relation to educational qualifications has not been considered.

2.2 Present Study

The present study is dissimilar from the previous surveys in the following points:

1. This study has tried to recognize computer attitude of Secondary school teachers.
2. This study has tried to identify the computer attitude of government secondary school teachers.
3. This study has tried to classify the computer attitude of aided secondary school teachers.
4. This study has tried to find the computer attitude of private secondary school teachers.
5. This study has tried to recognize the computer attitude of secondary school teachers in relation to gender.
6. This study has tried to recognize the computer attitude of secondary school teachers in relation to experience.
7. This study has tried to recognize the computer attitude of secondary school teachers in relation to educational qualifications.

By reviewing the related literature it becomes quite evident that educationists are paying equal attention to this dimension of education as well. As a result of vast and fast changes in technology, the interaction between education and technology has become deeper than ever. When the roles of computers in education are considered, this speed and vastness become crucial for education. Due to similar changes in computer technologies, it has now become more and more difficult to make predictions about the future of education. Nevertheless, taking the present conjunctures into account, it is now impossible to talk about contemporary education without mentioning computers. Computer technology, Internet and web-based resources are now in many schools and offer teachers and learners vast resources and opportunities for teaching and learning. Maximum benefit from these resources can only be achieved through teachers’ use of technology in developing materials for the classroom. Use of the Internet has become popular in recent years as the World Wide Web brings many useful resources and tools such as audio, video, text, and images that can be used for language teaching and learning purposes in many ways.
An attitude towards computers in education is the main point which shaped the main problem of the study. This study provides a glimpse of selected variables that touch the computer attitudes of secondary school teachers. Future studies could include a systematic examination of all aspects of school education and how these interact to impact on secondary school teachers ‘attitudes, acceptance, and usage of the computer as a tool for instructional purposes and professional development. Thus from the above review of the related literature, to the best of the knowledge of the researcher, it was found that no research was not directly related to the present study.
REFERENCES


13. Irfan Shah (2005), CASE, MSU, Baroda “ ICT awareness, use and need of secondary and higher secondary teachers of English Medium Schools of Vadodara city” p 58-60


15. Filiz Yalçın Tıfılarlıoğlu İhsan Ünaldi (April 2006) “Faculty Attitudes towards Computer Assisted Instruction at the University of Gaziantep.” p 152-158


18. Salih Birişçi, Mustafa Metin and Mehmet Karakaş (2009) from the Artvin Çoruh University, Turkey, “Determining Prospective Elementary Teachers' Attitudes towards Computer: A Sample
from Turkey.”: Bulgarian Journal of Science and Education Policy (BJSEP), Volume 3, and Number 1, 2009 p 109-126
24. Tamer Kutluca and Halim Başkan (2013) “Vocational College Students’ Computer Usage Profiles and Attitudes toward


37. Sarah A Drummond (September 2009) “Investigating the Impact of Entry Qualifications on Student Performance in Computing Programmes at Undergraduate Level” p 210-218

CHAPTER III

METHODOLOGY

The main objective of the study has been to investigate the computer attitude of secondary school teachers in relation to gender, experience and educational qualifications. In order to achieve these objectives of the study, the investigator has been adopted the following research strategy:

3.1 The Method And Procedure Followed

Researches conducted in the field of the computer attitude have used various research methods. It is difficult to say which one of them is more suitable, as each method has its own merits and demerits. The choice of the method is sometimes determined by the nature of the chosen topic, its objectives and the resources at the disposal of the investigator. The present piece of work is a type of descriptive research using quantitative approach. In which survey method of research has been used. The survey method collects data from a large number of cases at a specific time. It deals with the generalized statistics that result when data are distracted from a number of individual cases. Basically, it is cross-sectional. The simple normative survey approach is a ‘present-oriented’ research. The survey approach is intended to describe a specific set of phenomena in and of themselves; the rationale for this approach is the fact that the information provided is in itself the answer to the research question posed. These considerations have led the investigator to use the simple
normative survey method of research for the present investigation.

### 3.2 Population

The population is the group of interest of study on which the results can be generalized. All the secondary school teachers of Lucknow Educational division consisting of Lucknow, Unnao, Raibareili, Sitapur, Hardoi and Lakheempur- Kheri constitute the population of the present study. Both male and female secondary school teachers have been included in this study. Three types of schools, i.e., government, aided and private have been chosen as well.

### 3.3 Sample And Sampling Technique

It is not feasible, to study the whole population. In almost all educational research we study samples and not population. In order to obtain the desired data, the investigator has used stratified random sampling technique.

It is a type of probability sampling in which a population is divided into various strata and random samples are taken from each of these strata. Thus, in stratified random sampling the stratification of population is the first requirement. There are two major reasons for the stratification of the population:

1. Stratification tends to increase the precision in estimating the attributes of the whole population. If the whole population is divided into several internally homogenous units, the chances of
variations in the measurements from one unit to another are almost nil.

ii. Stratification gives some convenience in sampling.

In the present study the strata of the population is based upon the type of schools and gender of the secondary school teachers, yielding six types of strata-Male teachers from Government secondary schools, Female teachers from Government secondary schools, Male teachers from Aided Secondary Schools, Female teachers from Aided Secondary Schools and Male teachers from Private Secondary Schools, Female teachers from Private Secondary Schools.

Table 3.1

Structure Of Sample

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name Of The Districts</th>
<th>Govt. Sec. Schools</th>
<th>Aided Sec. Schools</th>
<th>Pvt. Sec. Schools</th>
<th>Total</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. Of Teachers Administered And Responses Found</td>
<td>No. Of Teachers Administered And Responses Found</td>
<td>No. Of Teachers Administered And Responses Found</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>1.</td>
<td>Hardoi</td>
<td>14</td>
<td>15</td>
<td>14</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>2.</td>
<td>Lakheempur</td>
<td>13</td>
<td>14</td>
<td>14</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>3.</td>
<td>Lucknow</td>
<td>14</td>
<td>13</td>
<td>14</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>4.</td>
<td>Raibarelli</td>
<td>14</td>
<td>14</td>
<td>13</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>5.</td>
<td>Sitapur</td>
<td>13</td>
<td>15</td>
<td>14</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>6.</td>
<td>Unnao</td>
<td>14</td>
<td>14</td>
<td>14</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>82</td>
<td>85</td>
<td>83</td>
<td>84</td>
<td>85</td>
<td>84</td>
</tr>
</tbody>
</table>
Table 3.1 shows that teachers from government secondary schools including 82 male and 85 female teachers were selected. From aided secondary schools including 83 male and 84 female teachers were selected. Likewise, from private secondary schools including 85 male and 84 female teachers were selected.

In all, there were 250 male and 253 female secondary school teachers, thus 503 teachers in all.

Table 3.1 further indicates that for the Hardoi district 85 secondary school teachers including 42 male and 43 female teachers were selected.

For the Lakheempur- Kheri district 84 secondary school teachers including 41 male 43 female teachers were selected.

For the Lucknow district 84 secondary school teachers including 43 male 41 female teachers were selected.

For the Raibareili district 84 secondary school teachers including 41 male 43 female teachers were selected.

For the Sitapur district 82 secondary school teachers including 41 male 41 female teachers were selected.

For the Unnao district 84 secondary school teachers including 42 male 42 female teachers were selected. The detail of the structure of sample has been given in the Appendix Table B1.
3.4 Tool Of The Research

The first and foremost need of the investigator is to select the valid and reliable tool. Tools are the means of acquiring knowledge, based on the objectives of the study. Present study is related with the computer attitude of secondary school teachers. Mostly researchers use some sort of standardised instruments. In the absence of any standard attitude scale the investigator has developed an attitude scale namely Computer Attitude Scale for Secondary School Teachers.

3.5 Construction Of Computer Attitude Scale For Secondary School Teachers

Today’s world is a computer world. Therefore, it becomes necessary to know the attitude towards computer. The teachers are very important aspect of the teaching learning process. So, their views about computer become necessary for any implementation of technology in schools.

The following steps have been used in developing the Computer Attitude Scale for Secondary School Teachers.

3.5.1 Planning
3.5.2 Collection and Selection of the Items
3.5.3 Item Analysis
3.5.4 Final Draft of the Tool
3.5.1 Planning

Planning is an important and first step in the construction of a test. At this stage the researcher has to classify the broad and specific objectives of the test. Further, the researcher has to decide the nature of the content or items to be included, the type of instructions, a detailed arrangement for the preliminary administration and the final administration, and probable length and time limit for the completion of the test etc. Some of the most important tasks to be done at this stage are defining the trait to be measured, deciding the area to be involved, specifying the applicability of the tests, types of items etc.

i. Defining The Problem

Objects, situations, conditions or experiences due to which one feels discomfort in using computers or technology has been termed as problem in constructing the Computer Attitude Scale for Secondary School Teachers.

ii. Areas Involved

After analysing the source material pertaining to the objectives of the construction of the scale, the dimensions or the areas involved were selected. The items regarding the following points were constructed:


b. The Impact of Computer Technology on Secondary School Teachers.
c. Teachers’ Comfort Level with Computers.

iii. **Applicability**

The present study aims at finding out the computer attitude of secondary school teachers; therefore, it was decided to prepare the Computer Attitude Scale for Secondary School Teachers in Hindi Language. It is applicable to the secondary school teachers.

iv. **Types And Number Of Items**

Keeping in view the objectives of the study it was decided to construct a non-disguised structured test. These tests attempt to measure attitude on the basis of direct statements regarding the object of the attitude. In the present study Likert’s method has been used. It was developed by Rensis Likert\(^2\). Here the respondents are asked to indicate a degree of arrangement and disagreement with each of a series of statement. Each item has five response categories ranging from strongly agree to strongly disagree. Each statement is assigned a numerical score ranging from 1 to 5. The teachers had to simply make a tick (✓) mark for the particular response of the statement on the attitude scale, which they feel as their answer.

The attitude scale for the administration on the secondary school teachers so it was decided to have not more than 50 items in the whole Computer Attitude Scale for Secondary School Teachers.
3.5.2 Collection And Selection Of Items

After scanning a lot of literature, internet articles on computer attitude and from some computer attitudes scales the items were selected. The following tools were also consulted for the purpose:

i. Attitude Scale by William H. Burkett, David M. Compton and Gail G. Burkett (2001)
ii. Attitude Scale by Mustafa Dogan
iii. Attitude Scale by Gina M. Jay and Sherry L. Willis (1992)

A large number of multiple-choice type statements with five alternatives such as strongly agree, agree, undecided, disagree and strongly disagree concerning the object of computer attitude were collected by the investigator. The items collected from previously stated sources were pooled together. Then these items were thoroughly screened and edited. The items which seemed to be overlapping with one another were critically examined. In some cases the items conveying the idea most clearly were retained. In other cases the language of the item was changed to make it suitable to express the same. A few items were slightly modified. The following criteria were formulated and followed in editing the statements:

i. The statement should be directly related to the variable under consideration.
ii. The statement should have only one meaning.
iii. The statement should be simple, clear and as short as possible.
iv. The statement should contain one complete thought.
After taking into consideration the above criteria 55 items were retained.

Selection of the items is the next phase after collecting the items. A list was prepared of the selected out 55 items. (Appendix- A1)

### 3.5.3 Item Analysis

Total 55 statements were prepared and necessary precautions were taken for language, content and appropriateness. Favourable and non-favourable, both the items were kept randomly in the scale. Experts comprising of renowned professors from the department of education were given the tool to judge the content of the items. A panel of four educators reviewed the items and made suggestions for revising the list and editing the wording. The keen interest of the experts in examining the tool helped the investigator in ascertaining the face validity and content validity of the tool.

After determining the content and face validity of the tool, the try-out of the tool has been done on 100 secondary school teachers (50 male and 50 female) from the Lucknow Urban area. Teachers were asked to answer all the statements in the attitude scale. There was no time limit to answer the attitude scale. Teachers’ responses obtained from the administration of the test were scored on the basis of Likert method. The data collected by the try out was used for item analysis. With the help of item analysis the items which were valid and suited to the purpose were selected and the rest were eliminated.
Finally, the selection of items is done through the procedure of item analysis. There are several methods of item analysis. Investigator has used the Edwards method\(^3\). Every responded item was scored with different weights. The weight ranged from 5 to 1. For favourable items a weight of 5 was given to ‘strongly agree’, 4 to ‘agree’, 3 to ‘undecided’, 2 to ‘disagree’ and 1 to strongly disagree and for the unfavourable statements the order of weights to be given was reversed so that ‘strongly agree’ received 1 and ‘strongly disagree’ received 5. After giving the weights to each item, a total score for each subject was found by adding the weights earned by him on each item. Each degree of agreement was given a numerical score and the respondents total score was computed by summing these scores. This total score of respondent revealed the particular opinion of a person. The total score was obtained after the weights were summated over all the statements.

Since a subject’s response to each item may be considered as his rating of own attitude, on a 5-point scale and his total score is obtained after all these weights were summated. The investigator had done the item analysis by setting of two extreme groups- high and low-on the basis of total score and finding out the significance of the difference between the two groups.
Procedure of Item Analysis

1. Each item was scored according to the scoring key which provides the correct answer and the correct answer was valued as 5, 4, 3, 2, 1 for positive items and reverse for the negative items.

2. The score given for each correct answer was added and a total score for each examinee on the test was determined.

3. The scored answer sheet was arranged from high to low total scores.

4. Following the suggestions of Kelley (1939), the upper 27% and the lower 27% of examinees were selected and the middle 46% were left intact. The total N was 100 so the upper 27% consist of 27 cases and the lower 27%, 27 cases.

5. The number of examinees in the upper 27% group who responded to each option (of item No. 1. & 2, for example) was counted and entered in column 1 of Table-A_2 of Appendix. Similarly, in column 2 the No. of examinees in the lower 27% group who responded to each item was entered.

6. The number of examinees in the lower group who selected the correct alternative was subtracted from the number of examinees selecting the correct alternatives in the upper group, and was entered in column 3. In Table-A_2 of Appendix the difference was 15-02= 13. This was for item No.1. The same value for item No.2 was 15.
7. The difference found in column 3 (which was found 13 in item No. 1) was divided by the number of examinees in upper 27% group (or lower 27%) which was 27 here. Thus 13/27=0.48 which was entered in column 4. The value of column 4 was called discrimination index, abbreviated as D or V. for item No. 2 the same value was -0.55.

8. The number of examinees who responded correctly in the middle group (that was 46% which were 14 in case of item No. 1) was counted and entered in column 5.

9. The number of examinees who responded correctly in the upper, lower and middle was added. The sum of these three values represents the total number of examinees who answered the item correctly. The sum was 15+02+14= 31 which was entered in column 6 for item No. 1. The same value for item No. 2 was 33.

10. The value entered in column 6 which was 31 in case of item No. 1, was divided by N, the total number of examinees taking the test. This was the proportion of the examinees in the total group who responded correctly (called difficulty value and often abbreviated as P). The formula for getting difficulty value was

\[ P = \frac{R}{N} \]

= where P is the index of difficulty;

= R is the number of examinees who correctly answer;

= N is the total number of examinees who take the test.
Thus P here is $31/100 = .31$. The same value for item No. 2 is .33.

* Items having discriminating value 25 or less than 25 were eliminated.

The detailed Item analysis table has been given in the Appendix Table A2.

### 3.5.4 Final Draft of the Tool

In view of the experience came through administering the Computer Attitude Scale for Secondary School Teachers, and comments and suggestions given by the experts some changes were made in the language of certain items, a few were reworded and some items were deleted. Thus 47 items were retained in the Computer Attitude Scale for Secondary School Teachers. The instructions were also finalised by coming through the experience while administering the Computer Attitude Scale for Secondary School Teachers. There are three areas of the statements in the attitude scale. The items in the final form have been arranged in a random manner. This randomisation has been done systematically. The number of statements in each area is as follows:
i. **Applicability**

Present Attitude Scale is applicable to the male and female secondary school teachers.

ii. **Administration**

The Computer Attitude Scale for Secondary School Teachers is very easy to administer. All the instructions are given on the front page. There is no time limit to answer the Computer Attitude Scale. It can be used on a group as well as on an individual.
iii. **Mode of Response**

The Secondary School Teachers, on whom it is administered, is required to make a tick mark to the block given in front of each statement.

iv. **Scoring**

Every responded item is scored with different weights. The weight ranges from 5 to 1. For favourable items a weight of 5 is given to ‘strongly agree’, 4 to ‘agree’, 3 to ‘undecided’, 2 to ‘disagree’ and 1 to strongly disagree and for the unfavourable statements the order of weights to be given is reversed so that ‘strongly agree’ receives 1 and ‘strongly disagree’ receives 5. The final draft of the tool has been given in the Appendix Table A.3.

**3.5.5 Data Collection And Organization**

Data collection is an important step in order to test and verify the formulated hypotheses. In the present study the data regarding computer attitude of secondary school teachers related to gender, experience and educational qualifications were collected with the help of the tool already been described earlier in this chapter. The collection of the data has been reported in the following paragraphs:
3.5.6 The Collection Of Data For Computer Attitude Of Secondary School Teachers

The investigator contacted the principals of the institutions in order to have their permission to administer the tool for collecting the data. Prior appointments from the teachers were taken and after describing the teachers about the topic of the study the data was collected. The teachers were very keenly involved in the process of giving responses. The research worker thanked them for taking out their precious time from the busy schedule and cooperating in the process of research.

3.5.7 The Organization Of Data

The data collected by using the previously described tools were systematized and organized i.e. edited and classified according to the objectives of the study. The gathered data have been checked to see the accuracy, utility and completeness. The response sheets of only those teachers who have filled the tool properly were included in the final data. After this process the data were scored and tabulated. The tabulated data are given in the Appendix C₁. To organize the data the investigator has developed some norms. On the basis of these norms the data will be interpreted in further chapter.
i. Norms For The Measurement Of Computer Attitude

The scores obtained by secondary school teachers on the attitude scale are presented here:

Minimum Score of present sample  =  137

Maximum Score of present sample  =  224

On the basis of the minimum and the maximum score obtained by the secondary school teachers on the attitude scale, the investigator has defined three categories of the computer attitude. As there was no teacher in present sample that was having either strongly negative or negative attitude towards computer, so, teachers in present sample were categorized under three categories of computer attitude, i.e.

**Table 3.2**

**Norms For The Measurement Of Computer Attitude**

<table>
<thead>
<tr>
<th>Norms for Computer Attitude</th>
<th>Slightly positive</th>
<th>Moderately Positive</th>
<th>Highly Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>137 to 165</td>
<td>166 to 195</td>
<td>196 to 224</td>
</tr>
</tbody>
</table>

Hence the three categories of the computer attitude were formed: Slightly Positive Computer Attitude, Moderately
Positive Computer Attitude and Highly Positive Computer Attitude.

**ii. Norms For Experience**

The minimum and the maximum experience found in the present sample are presented here:

Minimum experience of present sample = 4 yrs.

Maximum Experience of present sample = 25 yrs.

On the basis of the minimum and the maximum experience found in present sample, the investigator has defined three categories of the experience.

**Table 3.3**

**Norms For Experience**

<table>
<thead>
<tr>
<th>Norm for Experience</th>
<th>Less</th>
<th>Moderate</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years</td>
<td>4to 10</td>
<td>11 to 17</td>
<td>18 to 25</td>
</tr>
</tbody>
</table>

Hence the three categories of the experience were formed:
Less Experienced, Moderate Experienced and High Experienced.
iii. Norms For The Educational Qualifications

The educational qualification found in the present sample is presented here:

Table 3.4

Norms For The Educational Qualifications

<table>
<thead>
<tr>
<th>Category</th>
<th>Educational Qualifications</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctorate</td>
<td>Ph.D.</td>
<td>3</td>
</tr>
<tr>
<td>Post-Graduate</td>
<td>P.G.+ Professional Degree</td>
<td>2</td>
</tr>
<tr>
<td>Graduate</td>
<td>Graduation + Professional Degree</td>
<td>1</td>
</tr>
</tbody>
</table>

On the basis of the experience found in present sample, the investigator has defined three categories of the qualification i.e. Graduate, Post-Graduate and Doctorate.
3.5.8 Statistical Technique Used

Quantitative analysis was done on the basis of responses received from the secondary school teachers on the Computer Attitude Scale for Secondary School Teachers. T-Test was used to analyse the data regarding the responses of teachers. To calculate ‘t’ the investigator calculated mean and standard deviation. The following formulas were used:

**Calculation of Mean**

\[
\text{Mean} = \frac{\sum x}{N}
\]

Where,

\[\sum x = \text{Sum of Product}\]

\[N = \text{Total Number of Frequencies}\]

**Calculation of Standard Deviation**

\[
\text{S. D. } (\sigma) = i. \sqrt{\frac{\sum fx^2}{N} + \left(\frac{\sum fx}{N}\right)^2}
\]

Where,

\[i. = \text{class interval}\]

\[\sum fx = \text{Sum of product of Frequencies and Deviations}\]
\[ \sum f x'^2 = \text{Sum of the squared deviation of class interval} \]

\[ N = \text{Total Number of Frequencies} \]

**Calculation of Standard Error**

\[
\text{Standard Error} = \sigma m_1 \sim m_2 = \sqrt{\frac{\sigma_1^2}{N_1} + \frac{\sigma_2^2}{N_2}}
\]

Where,

\[ m_1 = \text{Mean of First Group} \]
\[ m_2 = \text{Mean of Second Group} \]
\[ \sigma_1 = \text{S.D. of First Group} \]
\[ \sigma_2 = \text{S.D. of Second Group} \]
\[ N_1 = \text{Number of Frequencies in First Group} \]
\[ N_2 = \text{Number of Frequencies in First Group} \]

**t- value**

\[ t = \frac{m_1 - m_2}{\sigma (m_1 \sim m_2)} \]

Where,
\( m_1 - m_2 = \text{Difference in Means} \)

\( \sigma (m_1 \sim m_2) = \text{Standard Error} \)
REFERENCES


CHAPTER IV

ANALYSIS AND INTERPRETATION

The objective of the study was to study the computer attitude of secondary school teachers. For this purpose, the data regarding gender, experience and educational qualifications were gathered. The statistical analysis of the data and obtained results has been reported in this chapter. Teachers’ response for each item regarding gender, experience and educational qualifications were tabulated and scored by assigning a point value ranging from one to five. Hence the computer attitude of secondary school teachers was obtained. The following Table reveals that maximum number of secondary school teachers agreed or strongly agreed the responses. It may be concluded that the whole group seemed to have moderate positive attitude towards the computer. The computer attitude of secondary school teachers related to gender, experience and educational qualifications compared and are presented in Table no.4.1.

4.1 Table Representing Frequency Of Responses For Each Item In The Attitude Scale:
<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>STRONGLY AGREE 5</th>
<th>AGREE 4</th>
<th>NEUTRAL 3</th>
<th>DISAGREE 2</th>
<th>STRONGLY DISAGREE 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>261</td>
<td>227</td>
<td>0</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>204</td>
<td>271</td>
<td>2</td>
<td>26</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>193</td>
<td>279</td>
<td>0</td>
<td>31</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>65</td>
<td>389</td>
<td>0</td>
<td>46</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>92</td>
<td>366</td>
<td>0</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>6</td>
<td>90</td>
<td>384</td>
<td>0</td>
<td>19</td>
<td>10</td>
</tr>
<tr>
<td>7</td>
<td>148</td>
<td>328</td>
<td>2</td>
<td>23</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>149</td>
<td>303</td>
<td>0</td>
<td>48</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>153</td>
<td>319</td>
<td>2</td>
<td>28</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>176</td>
<td>306</td>
<td>1</td>
<td>17</td>
<td>3</td>
</tr>
<tr>
<td>11 N</td>
<td>148</td>
<td>310</td>
<td>1</td>
<td>20</td>
<td>24</td>
</tr>
<tr>
<td>12</td>
<td>125</td>
<td>317</td>
<td>1</td>
<td>58</td>
<td>2</td>
</tr>
<tr>
<td>13</td>
<td>162</td>
<td>304</td>
<td>0</td>
<td>35</td>
<td>2</td>
</tr>
<tr>
<td>14</td>
<td>131</td>
<td>338</td>
<td>2</td>
<td>29</td>
<td>3</td>
</tr>
<tr>
<td>15</td>
<td>134</td>
<td>322</td>
<td>26</td>
<td>19</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>133</td>
<td>316</td>
<td>12</td>
<td>42</td>
</tr>
<tr>
<td>---</td>
<td>----</td>
<td>-----</td>
<td>-----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>17</td>
<td>67</td>
<td>375</td>
<td>0</td>
<td>36</td>
<td>25</td>
</tr>
<tr>
<td>18</td>
<td>97</td>
<td>378</td>
<td>1</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>19</td>
<td>79</td>
<td>390</td>
<td>3</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>76</td>
<td>377</td>
<td>25</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>21</td>
<td>83</td>
<td>366</td>
<td>0</td>
<td>53</td>
<td>1</td>
</tr>
<tr>
<td>22</td>
<td>87</td>
<td>269</td>
<td>1</td>
<td>120</td>
<td>26</td>
</tr>
<tr>
<td>23</td>
<td>118</td>
<td>261</td>
<td>0</td>
<td>117</td>
<td>7</td>
</tr>
<tr>
<td>24</td>
<td>102</td>
<td>349</td>
<td>0</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>25</td>
<td>145</td>
<td>228</td>
<td>0</td>
<td>130</td>
<td>0</td>
</tr>
<tr>
<td>26</td>
<td>98</td>
<td>274</td>
<td>1</td>
<td>129</td>
<td>1</td>
</tr>
<tr>
<td>27</td>
<td>108</td>
<td>325</td>
<td>0</td>
<td>70</td>
<td>0</td>
</tr>
<tr>
<td>28</td>
<td>61</td>
<td>330</td>
<td>1</td>
<td>84</td>
<td>27</td>
</tr>
<tr>
<td>29</td>
<td>79</td>
<td>319</td>
<td>26</td>
<td>78</td>
<td>1</td>
</tr>
<tr>
<td>30</td>
<td>62</td>
<td>335</td>
<td>25</td>
<td>81</td>
<td>0</td>
</tr>
<tr>
<td>31</td>
<td>100</td>
<td>299</td>
<td>0</td>
<td>103</td>
<td>10</td>
</tr>
<tr>
<td>32</td>
<td>133</td>
<td>263</td>
<td>2</td>
<td>104</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>33</td>
<td>147</td>
<td>242</td>
<td>12</td>
<td>101</td>
<td>1</td>
</tr>
<tr>
<td>34</td>
<td>114</td>
<td>232</td>
<td>24</td>
<td>132</td>
<td>1</td>
</tr>
<tr>
<td>35 N</td>
<td>140</td>
<td>214</td>
<td>14</td>
<td>135</td>
<td>0</td>
</tr>
<tr>
<td>36 N</td>
<td>148</td>
<td>210</td>
<td>7</td>
<td>110</td>
<td>28</td>
</tr>
<tr>
<td>37</td>
<td>124</td>
<td>253</td>
<td>35</td>
<td>90</td>
<td>1</td>
</tr>
<tr>
<td>38 N</td>
<td>177</td>
<td>233</td>
<td>17</td>
<td>69</td>
<td>7</td>
</tr>
<tr>
<td>39</td>
<td>152</td>
<td>279</td>
<td>0</td>
<td>63</td>
<td>9</td>
</tr>
<tr>
<td>40</td>
<td>143</td>
<td>272</td>
<td>26</td>
<td>55</td>
<td>7</td>
</tr>
<tr>
<td>41</td>
<td>146</td>
<td>243</td>
<td>1</td>
<td>112</td>
<td>1</td>
</tr>
<tr>
<td>42</td>
<td>141</td>
<td>251</td>
<td>16</td>
<td>95</td>
<td>0</td>
</tr>
<tr>
<td>43</td>
<td>99</td>
<td>324</td>
<td>2</td>
<td>75</td>
<td>3</td>
</tr>
<tr>
<td>44</td>
<td>115</td>
<td>267</td>
<td>5</td>
<td>115</td>
<td>1</td>
</tr>
<tr>
<td>45</td>
<td>106</td>
<td>320</td>
<td>2</td>
<td>74</td>
<td>1</td>
</tr>
<tr>
<td>46</td>
<td>111</td>
<td>300</td>
<td>8</td>
<td>83</td>
<td>1</td>
</tr>
<tr>
<td>47</td>
<td>212</td>
<td>198</td>
<td>19</td>
<td>73</td>
<td>1</td>
</tr>
</tbody>
</table>

Negative items: 11, 18, 21, 23, 24, 26, 28, 35, 36, 38

The analysis is discussed according to the hypotheses:-
4.1 Comparison Of Computer Attitude Of Secondary School Teachers With Respect To Gender

_Hypothesis No. 1- There is significant difference in computer attitude of secondary school teachers with respect to gender._

4.2a Table Representing Distribution Of Teachers As Per Comparison Of Computer Attitude Of Secondary School Teachers With Respect To Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Distribution of Teachers as per Computer Attitude</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Slightly positive</td>
</tr>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>Male</td>
<td></td>
</tr>
<tr>
<td></td>
<td>38</td>
</tr>
<tr>
<td>Female</td>
<td></td>
</tr>
<tr>
<td></td>
<td>34</td>
</tr>
<tr>
<td>Total</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the table, 15.20%, 54.40%, 30.40% male teachers reflected slightly positive, moderately positive and highly positive computer attitude respectively where as 13.44%, 56.13%, 30.43% female teachers reflected slightly positive, moderately positive and highly positive computer attitude respectively. The mean score of the male and female teachers were 185.45 and 185.48 respectively.
4.2b Table Representing The t-Value Of Teachers As Per Comparison Of Computer Attitude Of Secondary School Teachers With Respect To Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Mean</th>
<th>SD</th>
<th>Diff. in Mean</th>
<th>SD Error</th>
<th>t-value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>250</td>
<td>185.448</td>
<td>17.108</td>
<td>1.536</td>
<td>0.030</td>
<td>0.020</td>
<td>Not-Significant</td>
</tr>
<tr>
<td>Female</td>
<td>253</td>
<td>185.478</td>
<td>17.330</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The mean of male and female teachers is 185.45 and 185.48 respectively. In the table, SD being 17.108 and 17.330 for male and female teachers respectively and the difference in mean is 1.536. Standard Error is calculated as 0.030 and the t-value is 0.020, which is not significant at 0.05 levels. Therefore the hypothesis is rejected and the inference is that there is no significant difference in computer attitude of secondary school teachers with respect to gender.

4.2 Comparison Of Computer Attitude Of Government Secondary School Teachers With Respect To Gender

*Hypothesis No. 2* - *There is significant difference in computer attitude of government secondary school teachers with respect to gender.*
4.3a Table Representing Distribution Of Teachers As Per Comparison Of Computer Attitude Of Government Secondary School Teachers With Respect To Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Distribution of Teachers as per Computer Attitude</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Slightly positive</td>
</tr>
<tr>
<td>Male</td>
<td>No.</td>
</tr>
<tr>
<td></td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>186.51</td>
</tr>
<tr>
<td>Female</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>185.94</td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>186.22</td>
</tr>
</tbody>
</table>

In the table, 15.20%, 54.40%, 30.40% male teachers of government secondary schools reflected slightly positive, moderately positive and highly positive computer attitude respectively where as 13.60%, 56.80%, 30.80% female teachers of government secondary schools reflected slightly positive, moderately positive and highly positive computer attitude respectively. The mean score of the male and female teachers were 186.51 and 185.94 respectively.
4.3b Table Representing The t-Value Of Teachers As Per Comparison Of Computer Attitude Of Government Secondary School Teachers With Respect To Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Mean</th>
<th>SD</th>
<th>Diff. in Mean</th>
<th>SD Error</th>
<th>t-value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>82</td>
<td>186.51</td>
<td>18.146</td>
<td>0.571</td>
<td>2.901</td>
<td>0.197</td>
<td>Not - Significant</td>
</tr>
<tr>
<td>Female</td>
<td>85</td>
<td>185.94</td>
<td>19.338</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SD being 18.146 and 19.338 for male and female teachers respectively and the difference in mean is 0.571. Standard Error is calculated as 2.901 and the t-value is 0.197, which is not significant at 0.05 levels. Therefore the hypothesis is rejected and the inference is that there is no significant difference in computer attitude of government secondary school teachers with respect to gender.

4.3 Comparison Of Computer Attitude Of Aided Secondary School Teachers With Respect To Gender

Hypothesis No. 3- There is significant difference in computer attitude of aided secondary school teachers with respect to gender.

4.4a Table Representing Distribution Of Teachers As Per Comparison Of Computer Attitude Of Aided Secondary School Teachers With Respect To Gender

109
In the table, 16.87%, 49.40%, 33.73% male teachers of aided secondary schools reflected slightly positive, moderately positive and highly positive computer attitude respectively where as 14.29%, 52.38%, 33.33% female teachers of aided secondary schools reflected slightly positive, moderately positive and highly positive computer attitude respectively. The mean score of the male and female teachers were 185.25 and 185.71 respectively.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Distribution of Teachers as per Computer Attitude</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Slightly positive</td>
<td>Moderately Positive</td>
</tr>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Male</td>
<td>14</td>
<td>16.87</td>
</tr>
<tr>
<td>Female</td>
<td>12</td>
<td>14.29</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td>15.57</td>
</tr>
</tbody>
</table>

4.4b Table Representing The t- Value Of Teachers As Per Comparison Of Computer Attitude Of Aided Secondary School Teachers With Respect To Gender
<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Mean</th>
<th>SD</th>
<th>Diff. in Mean</th>
<th>SD Error</th>
<th>t-value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>83</td>
<td>185.253</td>
<td>17.533</td>
<td>0.461</td>
<td>2.673</td>
<td>0.173</td>
<td>Not Significant</td>
</tr>
<tr>
<td>Female</td>
<td>84</td>
<td>185.714</td>
<td>16.997</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SD being 17.533 and 16.997 for male and female teachers respectively and the difference in mean is 0.461. Standard Error is calculated as 2.673 and the t-value is 0.173, which is not significant at 0.05 levels. Therefore the hypothesis is rejected and the inference is that there is no significant difference in computer attitude of aided secondary school teachers with respect to gender.

4.4 Comparison Of Computer Attitude Of Private Secondary School Teachers With Respect To Gender

Hypothesis No. 4- There is significant difference in computer attitude of private secondary school teachers with respect to gender.
4.5a Table Representing Distribution Of Teachers As Per Comparison Of Computer Attitude Of Private Secondary School Teachers With Respect To Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Distribution of Teachers as per Computer Attitude</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Slightly positive</td>
<td>Moderately Positive</td>
</tr>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Male</td>
<td>11</td>
<td>12.94</td>
</tr>
<tr>
<td>Female</td>
<td>8</td>
<td>9.52</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>11.24</td>
</tr>
</tbody>
</table>

In the table, 12.94%, 62.35%, 24.71% male teachers of private secondary schools reflected slightly positive, moderately positive and highly positive computer attitude respectively where as 9.52%, 63.10%, 27.38% female teachers of private secondary schools reflected slightly positive, moderately positive and highly positive computer attitude respectively. The mean score of the male and female teachers were 184.61 and 184.77 respectively.
**4.5b Table Representing The t- Value Of Teachers As Per Comparison Of Computer Attitude Of Private Secondary School Teachers With Respect To Gender**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Mean</th>
<th>SD</th>
<th>Diff. in Mean</th>
<th>SD Error</th>
<th>t-value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>85</td>
<td>184.612</td>
<td>15.753</td>
<td>0.162</td>
<td>2.413</td>
<td>0.067</td>
<td>Not-Significant</td>
</tr>
<tr>
<td>Female</td>
<td>84</td>
<td>184.774</td>
<td>15.612</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SD being 15.753 and 15.612 for male and female teachers respectively and the difference in mean is 0.162. Standard Error is calculated as 2.413 and the t-value is 0.067, which is not significant at 0.05 level. Therefore the hypothesis is rejected and the inference is that there is no significant difference in computer attitude of Private secondary school teachers with respect to gender.

**4.5 Comparison Of Computer Attitude Of Secondary School Teachers With Respect To Experience**

*Hypothesis No.5- There is significant difference in computer attitude of secondary school teachers with respect to Experience.*
4.6a Table Representing Distribution Of Teachers As Per Comparison Of Computer Attitude Of Secondary School Teachers With Respect To Experience

<table>
<thead>
<tr>
<th>Categories of Experience</th>
<th>Distribution of Teachers as per Computer Attitude</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Slightly positive</td>
</tr>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>Less Exp.</td>
<td>0</td>
</tr>
<tr>
<td>Moderate Exp.</td>
<td>16</td>
</tr>
<tr>
<td>Highly Exp.</td>
<td>56</td>
</tr>
<tr>
<td>Total</td>
<td>72</td>
</tr>
</tbody>
</table>

In the table, 22.40% and 77.60% less experienced teachers reflected moderately positive and highly positive computer attitude respectively where as 8.12%, 90.36% and 1.52% moderate experienced teachers had slightly positive, moderately positive and highly positive computer attitude respectively and 49.12%, 50.00% and 0.88% highly experienced teachers reflected slightly positive, moderately positive and highly positive computer attitude respectively. There is no record found for the slightly positive computer attitude of less experienced secondary school teachers. The mean score of the
less, moderate and highly experienced teachers were 202.17, 180.00 and 166.77 respectively.

4.6b Table Representing The t-Value Of Teachers As Per Comparison Of Computer Attitude Of Secondary School Teachers With Respect To Experience

<table>
<thead>
<tr>
<th></th>
<th>Less Exp.</th>
<th>Moderate Exp.</th>
<th>Highly Exp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>192</td>
<td>197</td>
<td>114</td>
</tr>
<tr>
<td>Mean</td>
<td>202.167</td>
<td>180.000</td>
<td>166.772</td>
</tr>
<tr>
<td>SD</td>
<td>9.590</td>
<td>9.696</td>
<td>10.848</td>
</tr>
<tr>
<td>Comparison Group</td>
<td>Less_Moderate</td>
<td>Moderate_High</td>
<td>Less_High</td>
</tr>
<tr>
<td>Difference in Mean</td>
<td>22.167</td>
<td>13.228</td>
<td>35.395</td>
</tr>
<tr>
<td>Standard Error</td>
<td>0.978</td>
<td>1.229</td>
<td>1.229</td>
</tr>
<tr>
<td>t-value</td>
<td>22.668</td>
<td>10.766</td>
<td>28.792</td>
</tr>
</tbody>
</table>

SD being 9.590, 9.696 and 10.848 for less, and highly experienced secondary school teachers respectively and the difference in mean between less and moderate, moderate and highly and less and highly experienced secondary school teachers is 22.167, 13.228 and 35.395 respectively. Standard Error is calculated as 0.978, 1.229 and 1.229 for less and moderate, moderate and highly and less and highly experienced
secondary school teachers respectively and the t-value is 22.668, 10.766 and 28.792 for less and moderate, moderate and highly and less and highly experienced secondary school teachers which is significant at 0.05 level. Therefore the hypothesis is accepted and the inference is that there is significant difference in computer attitude of secondary school teachers with respect to Experience.

4.6 Comparison Of Computer Attitude Of Government Secondary School Teachers With Respect To Experience

*Hypothesis No. 6* - There is significant difference in computer attitude of government secondary school teachers with respect to experience.

4.7a Table Representing Distribution Of Teachers As Per Comparison Of Computer Attitude Of Government Secondary School Teachers With Respect To Experience
In the table, 20.00% and 80.00% less experienced teachers reflected moderately positive and highly positive computer attitude respectively where as 6.45%, 91.94% and 1.61% moderate experienced teachers had slightly positive, moderately positive and highly positive computer attitude respectively and 57.50% and 42.50% highly experienced teachers reflected slightly positive and moderately positive computer attitude respectively. There is no record found for the slightly positive computer attitude of less experienced government secondary school teachers and highly positive computer attitude of highly experienced government secondary school teachers. The mean score of the less, moderate and highly
experienced teachers were 204.06, 182.26 and 163.38 respectively.

**4.7b Table Representing The t- Value Of Teachers As Per Comparison Of Computer Attitude Of Government Secondary School Teachers With Respect To Experience**

<table>
<thead>
<tr>
<th></th>
<th>Less Exp.</th>
<th>Moderate Exp.</th>
<th>Highly Exp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>65</td>
<td>62</td>
<td>40</td>
</tr>
<tr>
<td>Mean</td>
<td>204.062</td>
<td>182.258</td>
<td>163.375</td>
</tr>
<tr>
<td>SD</td>
<td>9.578</td>
<td>8.889</td>
<td>11.172</td>
</tr>
<tr>
<td>Comparison Group</td>
<td>Less_Moderate</td>
<td>Moderate_High</td>
<td>Less_High</td>
</tr>
<tr>
<td>Difference in Mean</td>
<td>21.803</td>
<td>18.883</td>
<td>40.687</td>
</tr>
<tr>
<td>Standard Error</td>
<td>1.639</td>
<td>2.096</td>
<td>2.129</td>
</tr>
<tr>
<td>t-value</td>
<td>13.304</td>
<td>9.008</td>
<td>19.113</td>
</tr>
</tbody>
</table>

SD being 9.578, 8.889 and 11.172 for less, moderate and highly experienced secondary school teachers respectively and the difference in mean between less and moderate, moderate and highly and less and highly experienced secondary school teachers is 21.803, 18.883 and 40.687 respectively. Standard Error is calculated as 1.639, 2.096 and 2.129 for less and moderate, moderate and highly and less and highly experienced
secondary school teachers respectively and the t-value is 13.304, 9.008 and 19.113 for less and moderate, moderate and highly and less and highly experienced secondary school teachers which is significant at 0.05 level and the hypothesis is accepted and the inference is that there is significant difference in computer attitude of government secondary school teachers with respect to experience.

4.7 Comparison Of Computer Attitude Of Aided Secondary School Teachers With Respect To Experience

_Hypothesis No. 7- There is significant difference in computer attitude of aided secondary school teachers with respect to experience._

4.8a Table Representing Distribution Of Teachers As Per Comparison Of Computer Attitude Of Aided Secondary School Teachers With Respect To Experience
In the table, 20.90% and 79.10% less experienced teachers reflected moderately positive and highly positive computer attitude respectively where as 10.94%, 85.94% and 3.13% moderate experienced teachers had slightly positive, moderately positive and highly positive computer attitude respectively and 52.78%, 44.44% and 2.78% highly experienced teachers reflected slightly positive, moderately positive and highly positive computer attitude respectively. There is no record found for the slightly positive computer attitude of less experienced aided secondary school teachers. The mean score of the less, moderate and highly experienced teachers were 201.54, 178.53 and 167.97 respectively.
4.8b Table Representing The t- Value Of Teachers As Per Comparison Of Computer Attitude Of Aided Secondary School Teachers With Respect To Experience

<table>
<thead>
<tr>
<th></th>
<th>Less Experience</th>
<th>Moderate Exp.</th>
<th>Highly Exp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>67</td>
<td>64</td>
<td>36</td>
</tr>
<tr>
<td>Mean</td>
<td>201.537</td>
<td>178.531</td>
<td>167.972</td>
</tr>
<tr>
<td>SD</td>
<td>9.205</td>
<td>10.866</td>
<td>11.668</td>
</tr>
<tr>
<td>Comparison Group</td>
<td>Less_Moderate</td>
<td>Moderate_High</td>
<td>Less_High</td>
</tr>
<tr>
<td>Difference in Mean</td>
<td>23.006</td>
<td>10.559</td>
<td>33.565</td>
</tr>
<tr>
<td>Standard Error</td>
<td>1.763</td>
<td>2.372</td>
<td>2.246</td>
</tr>
<tr>
<td>t-value</td>
<td>13.047</td>
<td>4.452</td>
<td>14.942</td>
</tr>
</tbody>
</table>

SD being 9.205, 10.866 and 11.668 for less, moderate and highly experienced secondary school teachers respectively and the difference in mean between less and moderate, moderate and highly and less and highly experienced secondary school teachers is 23.006, 10.559 and 33.565 respectively. Standard Error is calculated as 1.763, 2.372 and 2.246 for less and moderate, moderate and highly and less and highly experienced secondary school teachers respectively and the t-value is 13.047, 4.452 and 14.942 for less and moderate, moderate and highly and less and highly experienced secondary school teachers which is significant at 0.05 level and the hypothesis is accepted.
and the inference is that there is significant difference in computer attitude of aided secondary school teachers with respect to experience.

4.8 Comparison Of Computer Attitude Of Private Secondary School Teachers With Respect To Experience

Hypothesis No. 8- There is significant difference in computer attitude of private secondary school teachers with respect to experience.

4.9a Table Representing Distribution Of Teachers As Per Comparison Of Computer Attitude Of Private Secondary School Teachers With Respect To Experience
In the table, 26.67% and 73.33% less experienced teachers reflected moderately positive and highly positive computer attitude respectively where as 7.04% and 92.96% moderate experienced teachers had slightly positive and moderately positive computer attitude respectively and 36.84% and 63.16% highly experienced teachers reflected slightly positive and moderately positive computer attitude respectively. There is no record found for the slightly positive computer attitude of less experienced private secondary school teachers and highly positive computer attitude highly experienced private secondary school teachers. The mean score of the less, moderate and highly experienced teachers were 200.82, 179.35 and 169.21 respectively.
4.9b Table Representing The t-Value Of Teachers As Per Comparison Of Computer Attitude Of Private Secondary School Teachers With Respect To Experience

<table>
<thead>
<tr>
<th>Comparison Group</th>
<th>Less Exp.</th>
<th>Moderate Exp.</th>
<th>Highly Exp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>60</td>
<td>71</td>
<td>38</td>
</tr>
<tr>
<td>Mean</td>
<td>200.817</td>
<td>179.352</td>
<td>169.211</td>
</tr>
<tr>
<td>SD</td>
<td>9.856</td>
<td>9.013</td>
<td>8.893</td>
</tr>
<tr>
<td>Difference in Mean</td>
<td>21.465</td>
<td>10.142</td>
<td>31.606</td>
</tr>
<tr>
<td>Standard Error</td>
<td>1.662</td>
<td>1.796</td>
<td>1.924</td>
</tr>
<tr>
<td>t-value</td>
<td>12.913</td>
<td>5.647</td>
<td>16.431</td>
</tr>
</tbody>
</table>

SD being 9.856, 9.013 and 8.893 for less, moderate and highly experienced secondary school teachers respectively and the difference in mean between less and moderate, moderate and highly and less and highly experienced secondary school teachers is 21.465, 10.142 and 31.606 respectively. Standard Error is calculated as 1.662, 1.796 and 1.924 for less and moderate, moderate and highly and less and highly experienced secondary school teachers respectively and the t-value is 12.913,
5.647 and 16.431 for less and moderate, moderate and highly and less and highly experienced secondary school teachers which is significant at 0.05 level and the hypothesis is accepted and the inference is that there is significant difference in computer attitude of private secondary school teachers with respect to experience.

4.9 Comparison Of Computer Attitude Of Highly Experienced Secondary School Teachers With Less Experienced Secondary School Teachers

*Hypothesis No. 9* - There is significant difference in computer attitude of secondary school teachers between highly experienced male and less experienced male.

4.10a Table Representing Distribution Of Teachers As Per Comparison Of Computer Attitude Of Highly Experienced Secondary School Teachers With Less Experienced Secondary School Teachers
In the table, 24.49% and 75.51% less experienced teachers reflected moderately positive and highly positive computer attitude respectively where as 50.88%, 49.12% highly experienced teachers reflected slightly positive and moderately positive computer attitude respectively. There is no record found for the slightly positive computer attitude of less experienced secondary school male teachers and highly positive computer attitude of highly experienced secondary school male teachers. The mean score of the less and highly experienced teachers were 201.83 and 166.32 respectively.

4.10b Table Representing The t- Value Of Teachers As Per Comparison Of Computer Attitude Of Highly Experienced Secondary School Teachers With Less Experienced Secondary School Teachers
SD being 8.803 and 10.017 for less and highly experienced secondary school teachers respectively and the difference in mean between less and highly experienced secondary school teachers is 35.511. Standard Error is calculated as 1.597 and the t-value is 22.233 which is significant at 0.05 level and the hypothesis is accepted and the inference is that there is significant difference in computer attitude of secondary school teachers between highly experienced male and less experienced male.

### 4.10 Comparison Of Computer Attitude Of Highly Experienced Female Teachers With Less Experienced Female Secondary School Teachers

*Hypothesis No.10- There is significant difference in computer attitude of secondary school teachers between highly experienced female and less experienced female.*

### 4.11a Table Representing Distribution Of Teachers As Per Comparison Of Computer Attitude Of Highly Experienced
Female Teachers With Less Experienced Female Secondary School Teachers

<table>
<thead>
<tr>
<th>Categories of Experience</th>
<th>Distribution of Female Teachers as per Computer Attitude</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Slightly positive</td>
<td>Moderately Positive</td>
</tr>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Less Exp.</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Highly Exp.</td>
<td>27</td>
<td>47.37</td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
<td>17.88</td>
</tr>
</tbody>
</table>

In the table, 20.21% and 79.79% less experienced teachers reflected moderately positive and highly positive computer attitude respectively where as 47.37%, 50.88% and 1.75% highly experienced teachers reflected slightly positive, moderately positive and highly positive computer attitude respectively. There is no record found for the slightly positive computer attitude of less experienced secondary school female teachers. The mean score of the less and highly experienced teachers were 202.52 and 167.23 respectively.

4.11b Table Representing The t- Value Of Teachers As Per Comparison Of Computer Attitude Of Highly Experienced
Female Teachers With Less Experienced Female Secondary School Teachers

<table>
<thead>
<tr>
<th>Experience</th>
<th>Freq.</th>
<th>Mean</th>
<th>SD</th>
<th>Diff. in Mean</th>
<th>SD Error</th>
<th>t-value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Les Exp.</td>
<td>94</td>
<td>202.521</td>
<td>10.383</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highly Exp.</td>
<td>57</td>
<td>167.228</td>
<td>11.495</td>
<td>35.29321</td>
<td>1.861</td>
<td>18.960</td>
<td>Significant</td>
</tr>
</tbody>
</table>

SD being 10.383 and 11.495 for less and highly experienced secondary school teachers respectively and the difference in mean between less and highly experienced secondary school teachers is 35.293. Standard Error is calculated as 1.861 and the t-value is 18.960 which is significant at 0.05 level and the hypothesis is accepted and the inference is that there is significant difference in computer attitude of secondary school teachers between highly experienced female and less experienced female.

4.11 Comparison Of Computer Attitude Of Secondary School Teachers With Respect To Educational Qualifications

Hypothesis No. 11- There is significant difference in computer attitude of secondary school teachers with respect to educational qualifications.
4.12a Table Representing Distribution Of Teachers As Per Comparison Of Computer Attitude Of Secondary School Teachers With Respect To Educational Qualifications

<table>
<thead>
<tr>
<th>Categories of Qualification</th>
<th>Distribution of Teachers as per Computer Attitude</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Slightly positive</td>
</tr>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>Graduate</td>
<td>23</td>
</tr>
<tr>
<td>Post-Graduate</td>
<td>46</td>
</tr>
<tr>
<td>Doctorate</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>72</td>
</tr>
</tbody>
</table>

In the table, 15.97%, 53.47% and 30.56% graduate teachers reflected slightly positive, moderately positive and highly positive computer attitude respectively where as 14.79%, 57.23% and 27.97% post-graduate teachers had slightly positive, moderately positive and highly positive computer attitude respectively and 6.25%, 47.92% and 45.83% doctorate teachers reflected slightly positive, moderately positive and highly positive computer attitude respectively. The mean score of the graduate, post-graduate and doctorate teachers were 184.08, 185.06 and 192.23 respectively.
4.12b Table Representing The t- Value Of Teachers As Per Comparison Of Computer Attitude Of Secondary School Teachers With Respect To Educational Qualifications

<table>
<thead>
<tr>
<th></th>
<th>Graduate</th>
<th>Post-Graduate</th>
<th>Doctorate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>144</td>
<td>311</td>
<td>48</td>
</tr>
<tr>
<td>Mean</td>
<td>184.076</td>
<td>185.061</td>
<td>192.229</td>
</tr>
<tr>
<td>SD</td>
<td>17.026</td>
<td>17.149</td>
<td>16.899</td>
</tr>
<tr>
<td>Categories</td>
<td>Graduate Post-Graduate</td>
<td>Post-Graduate Doctorate</td>
<td>Graduate Doctorate</td>
</tr>
<tr>
<td>Difference in Mean</td>
<td>0.985</td>
<td>7.168</td>
<td>8.153</td>
</tr>
<tr>
<td>Standard Error</td>
<td>1.720</td>
<td>2.626</td>
<td>2.822</td>
</tr>
<tr>
<td>t-value</td>
<td>0.572</td>
<td>2.730</td>
<td>2.889</td>
</tr>
</tbody>
</table>

SD being 17.026, 17.149 and 16.899 for graduate, post-graduate and doctorate secondary school teachers respectively and the difference in mean between 'Graduate and Post-Graduate', 'Post-Graduate and Doctorate' and 'Graduate and Doctorate' secondary school teachers is 0.985, 7.168 and 8.153 respectively. Standard Error is calculated as 1.720, 2.626 and 2.822 for 'Graduate and Post-Graduate', 'Post-Graduate and Doctorate' and 'Graduate and Doctorate' secondary school
teachers respectively and the t-value is 0.572 for 'Graduate and Post-Graduate' teachers which is not significant at 0.05 level and the hypothesis is rejected with reference to graduate and post-graduate teachers and the inference is that there is no significant difference in computer attitude of secondary school teachers with respect to graduate and post-graduate secondary school teachers.

The t-value of the 'Post-Graduate and Doctorate' and 'Graduate and Doctorate' secondary school teachers is 2.730 and 2.889, which is significant at 0.05 level and the hypothesis is accepted with reference to 'Post-Graduate and Doctorate' and 'Graduate and Doctorate' secondary school teachers and the inference is that there is significant difference in computer attitude of secondary school teachers with respect to ‘Post-Graduate and Doctorate’ and ‘Graduate and Doctorate’ secondary school teachers.

4.12 Comparison Of Computer Attitude Of Government Secondary School Teachers With Respect To Educational Qualifications

Hypothesis No. 12- There is significant difference in computer attitude of government secondary school teachers with respect to educational qualifications.

4.13a Table Representing Distribution Of Teachers As Per Comparison Of Computer Attitude Of Government Secondary School Teachers With Respect To Educational Qualifications
In the table, 16.67%, 56.25% and 27.08% graduate teachers reflected slightly positive, moderately positive and highly positive computer attitude respectively where as 16.83%, 53.47% and 29.70% post-graduate teachers had slightly positive, moderately positive and highly positive computer attitude respectively and 11.11%, 33.33% and 55.56% doctorate teachers reflected slightly positive, moderately positive and highly positive computer attitude respectively. The mean score of the graduate, post-graduate and doctorate teachers were 183.13, 186.00 and 195.72 respectively.

4.13b Table Representing The t- Value Of Teachers As Per Comparison Of Computer Attitude Of Government Secondary School Teachers With Respect To Educational Qualifications
<table>
<thead>
<tr>
<th></th>
<th>Graduate</th>
<th>Post-Graduate</th>
<th>Doctorate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>48</td>
<td>101</td>
<td>18</td>
</tr>
<tr>
<td>Mean</td>
<td>183.125</td>
<td>186.000</td>
<td>195.722</td>
</tr>
<tr>
<td>SD</td>
<td>16.840</td>
<td>19.239</td>
<td>18.259</td>
</tr>
<tr>
<td>Comparison Group</td>
<td>Graduate -Post-Graduate</td>
<td>Post-Graduate-Doctorate</td>
<td>Graduate – Doctorate</td>
</tr>
<tr>
<td>Difference in Mean</td>
<td>2.875</td>
<td>9.722</td>
<td>12.597</td>
</tr>
<tr>
<td>Standard Error</td>
<td>3.094</td>
<td>4.710</td>
<td>4.943</td>
</tr>
<tr>
<td>t-value</td>
<td>0.929</td>
<td>2.064</td>
<td>2.549</td>
</tr>
</tbody>
</table>

SD being 16.840, 19.239 and 18.259 for Graduate, Post-Graduate and Doctorate secondary school teachers respectively and the difference in mean between 'Graduate and Post-Graduate', 'Post-Graduate and Doctorate' and ‘Graduate and Doctorate’ secondary school teachers is 2.875, 9.722 and 12.597 respectively. Standard Error is calculated as 3.094, 4.710 and 4.943 for 'Graduate and Post-Graduate', 'Post-Graduate and Doctorate' and 'Graduate and Doctorate' secondary school teachers respectively and the t-value is 0.929 for 'Graduate and Post-Graduate' teachers which is not significant at 0.05 level and the hypothesis is rejected with reference to ‘Graduate and Post-
Graduate’ teachers and the inference is that there is no significant difference in computer attitude of government secondary school teachers with respect to ‘Graduate and Post-Graduate’ secondary school teachers.

The t-value of the 'Post-Graduate and Doctorate' and 'Graduate and Doctorate' secondary school teachers is 2.064 and 2.549, which is significant at 0.05 level and the hypothesis is accepted with reference to 'Post-Graduate and Doctorate' and 'Graduate and Doctorate' secondary school teachers and the inference is that there is significant difference in computer attitude of government secondary school teachers with respect to 'Post-Graduate and Doctorate' and 'Graduate and Doctorate' secondary school teachers.

4.13 Comparison Of Computer Attitude Of Aided Secondary School Teachers With Respect To Educational Qualifications

Hypothesis No. 13- There is significant difference in computer attitude of aided secondary school teachers with respect to educational qualifications.

4.14a Table Representing Distribution Of Teachers As Per Comparison Of Computer Attitude Of Aided Secondary School Teachers With Respect To Educational Qualifications
In the table, 20.83%, 45.83% and 33.33 % graduate teachers reflected slightly positive, moderately positive and highly positive computer attitude respectively where as 15.84%, 55.45% and 28.71% post-graduate teachers had slightly positive, moderately positive and highly positive computer attitude respectively and 38.89% and 61.11% doctorate teachers reflected moderately positive and highly positive computer attitude respectively. There is no record found for the slightly positive computer attitude of doctorate secondary school teachers. The mean score of the graduate, post-graduate and doctorate teachers were 183.58, 184.35 and 196.94 respectively.
### 4.14b Table Representing The t-Value Of Teachers As Per Comparison Of Computer Attitude Of Aided Secondary School Teachers With Respect To Educational Qualifications

<table>
<thead>
<tr>
<th>Comparison Group</th>
<th>Graduate</th>
<th>Post-Graduate</th>
<th>Doctorate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>48</td>
<td>101</td>
<td>18</td>
</tr>
<tr>
<td>Mean</td>
<td>183.583</td>
<td>184.347</td>
<td>196.944</td>
</tr>
<tr>
<td>SD</td>
<td>17.671</td>
<td>16.857</td>
<td>14.219</td>
</tr>
<tr>
<td>Difference in Mean</td>
<td>0.763</td>
<td>12.598</td>
<td>13.361</td>
</tr>
<tr>
<td>Standard Error</td>
<td>3.053</td>
<td>3.748</td>
<td>4.212</td>
</tr>
<tr>
<td>t-value</td>
<td>0.250</td>
<td>3.362</td>
<td>3.173</td>
</tr>
</tbody>
</table>

SD being 17.671, 16.857 and 14.219 for graduate, post-graduate and doctorate secondary school teachers respectively and the difference in mean between ‘Graduate and Post-Graduate', 'Post-Graduate and Doctorate' and 'Graduate and Doctorate' secondary school teachers is 0.763, 12.598 and 13.361 respectively. Standard Error is calculated as 3.053, 3.748
and 4.212 for ‘Graduate and Post-Graduate', 'Post-Graduate and Doctorate' and 'Graduate and Doctorate' secondary school teachers respectively and the t-value is 0.250 for 'Graduate and Post-Graduate' teachers which is not significant at 0.05 level and the hypothesis is rejected with reference to graduate and post-graduate teachers and the inference is that there is no significant difference in computer attitude of aided secondary school teachers with respect to graduate and post-graduate teachers.

The t-value of the 'Post-Graduate and Doctorate' and 'Graduate and Doctorate' secondary school teachers is 3.362 and 3.173, which is significant at 0.05 level and the hypothesis is accepted with reference to 'Post-Graduate and Doctorate' and 'Graduate and Doctorate' secondary school teachers and the inference is that there is significant difference in computer attitude of aided secondary school teachers with respect to 'Post-Graduate and Doctorate' and 'Graduate and Doctorate' secondary school teachers.

4.14 Comparison Of Computer Attitude Of Private Secondary School Teachers With Respect To Educational Qualifications

*Hypothesis No. 14- There is significant difference in computer attitude of private secondary school teachers with respect to educational qualifications.*
4.15a Table Representing Distribution Of Teachers As Per Comparison Of Computer Attitude Of Private Secondary School Teachers With Respect To Educational Qualifications

<table>
<thead>
<tr>
<th>Categories of Qualification</th>
<th>Distribution of Teachers as per Computer Attitude</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Slightly positive</td>
<td>Moderately Positive</td>
</tr>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Graduate</td>
<td>5</td>
<td>10.42</td>
</tr>
<tr>
<td>Post-Graduate</td>
<td>13</td>
<td>11.93</td>
</tr>
<tr>
<td>Doctorate</td>
<td>1</td>
<td>8.33</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>11.24</td>
</tr>
</tbody>
</table>

In the table, 10.42%, 58.33% and 31.25 % graduate teachers reflected slightly positive, moderately positive and highly positive computer attitude respectively where as 11.93%, 62.39% and 25.69% post-graduate teachers had slightly positive, moderately positive and highly positive computer attitude respectively and 8.33%, 83.33% and 8.33% doctorate teachers reflected slightly positive, moderately positive and highly positive computer attitude respectively. The mean score of the graduate, post-graduate and doctorate teachers were 185.52, 184.85 and 179.92 respectively.
### 4.15b Table Representing The t-Value Of Teachers As Per Comparison Of Computer Attitude Of Private Secondary School Teachers With Respect To Educational Qualifications

<table>
<thead>
<tr>
<th>Comparison Group</th>
<th>Graduate</th>
<th>Post-Graduate</th>
<th>Doctorate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>48</td>
<td>109</td>
<td>12</td>
</tr>
<tr>
<td>Mean</td>
<td>185.521</td>
<td>184.853</td>
<td>179.917</td>
</tr>
<tr>
<td>SD</td>
<td>16.817</td>
<td>15.395</td>
<td>13.069</td>
</tr>
</tbody>
</table>

SD being 16.817, 15.395 and 13.069 for graduate, post-graduate and doctorate secondary school teachers respectively and the difference in mean between 'Graduate and Post-Graduate', 'Post-Graduate and Doctorate' and 'Graduate and Doctorate' secondary school teachers is 0.668, 4.937 and 5.604 respectively. Standard Error is calculated as 2.840, 4.051 and 4.486 for 'Graduate and Post-Graduate', 'Post-Graduate and Doctorate' and 'Graduate and Doctorate' secondary school teachers respectively.
teachers respectively and the t-value is 0.235, 1.219 and 1.249 for 'Graduate and Post-Graduate', 'Post-Graduate and Doctorate' and 'Graduate and Doctorate' teachers respectively which is not significant at 0.05 level and the hypothesis is rejected and the inference is that there is no significant difference in computer attitude of private secondary school teachers with respect to 'Graduate and Post-Graduate', 'Post-Graduate and Doctorate' and 'Graduate and Doctorate' secondary school teachers.

4.15 Comparison Of Computer Attitude Between Doctorate Male And Graduate Male

*Hypothesis No. 15- There is significant difference in computer attitude of secondary school teachers between doctorate male and graduate male.*

4.16a Table Representing Distribution Of Teachers As Per Comparison Of Computer Attitude Between Doctorate Male And Graduate Male
In the table, 17.33%, 56.00% and 26.67% graduate male teachers had slightly positive, moderately positive and highly positive computer attitude respectively where as 7.69%, 42.31 and 50.00% doctorate male teachers reflected slightly positive, moderately positive and highly positive computer attitude respectively. The mean score of the graduate and highly experienced male teachers were 183.55 and 194.96 respectively.

**4.16b Table Representing The t- Value Of Teachers As Per Comparison Of Computer Attitude Between Doctorate Male And Graduate Male**
<table>
<thead>
<tr>
<th>Categories of Qualification</th>
<th>Freq</th>
<th>Mean</th>
<th>SD</th>
<th>Diff. in Mean</th>
<th>SD Error</th>
<th>t-value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate</td>
<td>75</td>
<td>183.547</td>
<td>16.771</td>
<td></td>
<td>11.415</td>
<td>3.929</td>
<td>2.905</td>
</tr>
<tr>
<td>Doctorate</td>
<td>26</td>
<td>194.962</td>
<td>17.434</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SD being 16.771 and 17.434 for graduate and doctorate secondary school teachers respectively and the difference in mean between graduate and doctorate secondary school teachers is 11.415. Standard Error is calculated as 3.929 and the t-value is 2.905 for graduate and doctorate secondary school teachers which are significant at 0.05 levels and the hypothesis is accepted and the inference is that there is significant difference in computer attitude of secondary school teachers between doctorate male and graduate male.

**4.16 Comparison Of Computer Attitude Between Doctorate Female And Graduate Female**

*Hypothesis No. 16- There is significant difference in computer attitude of secondary school teachers between doctorate female and graduate female.*

**4.17a Table Representing Distribution Of Teachers As Per Comparison Of Computer Attitude Between Doctorate Female And Graduate Female**
In the table, 14.49%, 50.72% and 34.78 % graduate female teachers had slightly positive, moderately positive and highly positive computer attitude respectively where as 4.55%, 54.55% and 40.91% doctorate female teachers reflected slightly positive, moderately positive and highly positive computer attitude respectively. The mean score of the graduate and highly experienced female teachers were 184.65 and 189.00 respectively.

4.17b Table Representing The t- Value Of Teachers As Per Comparison Of Computer Attitude Between Doctorate Female And Graduate Female
<table>
<thead>
<tr>
<th>Categories of Qualification</th>
<th>Freq</th>
<th>Mean</th>
<th>SD</th>
<th>Diff. in Mean</th>
<th>SD Error</th>
<th>t-value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate</td>
<td>69</td>
<td>184.652</td>
<td>17.403</td>
<td>4.348</td>
<td>4.010</td>
<td>1.084</td>
<td>Not Significant</td>
</tr>
<tr>
<td>Doctorate</td>
<td>22</td>
<td>189.000</td>
<td>16.036</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SD being 17.403 and 16.036 for graduate and doctorate female secondary school teachers respectively and the difference in mean between graduate and doctorate female secondary school teachers is 4.348. Standard Error is calculated as 4.010 and the t-value is 1.084 which is not significant at 0.05 level and the hypothesis is rejected and the inference is that there is no significant difference in computer attitude of secondary school teachers between doctorate female and graduate female.

4.17 Comparison Of Computer Attitude Between Graduate With Less Experience And Graduate With High Experience

_Hypothesis No. 17- There is significant difference in computer attitude of secondary school teachers between graduate with less experience and graduate with high experience._

4.18a Table Representing Distribution Of Teachers As Per Comparison Of Computer Attitude Between Graduate With Less Experience And Graduate With High Experience
In the table, 8.33% and 91.67% 'graduate less experienced' teachers had moderately positive and highly positive computer attitude respectively where as 54.55% and 45.45% 'graduate high experienced' teachers reflected slightly positive and moderately positive computer attitude respectively. The mean score of the 'Graduate less experienced' and 'Graduate high experienced' teachers were 203.04 and 165.67 respectively.

4.18b Table Representing The t- Value Of Teachers As Per Comparison Of Computer Attitude Between Graduate With Less Experience And Graduate With High Experience
SD being 7.562 and 10.043 for 'Graduate less experienced' and 'Graduate high experienced' school teachers respectively and the difference in mean between 'Graduate less experienced' and 'Graduate high experienced' secondary school teachers is 37.375. Standard Error is calculated as 2.061 and the t-value is 18.135 which is significant at 0.05 level and the hypothesis is accepted and the inference is that there is significant difference in computer attitude of secondary school teachers between graduate with less experience and graduate with high experience.

4.18 Comparison Of Computer Attitude Between Doctorate With Less Experience And Doctorate With High Experience

*Hypothesis No. 18- There is significant difference in computer attitude of secondary school teachers between doctorate with less experience and doctorate with high experience.*
4.19a Table Representing Distribution Of Teachers As Per Comparison Of Computer Attitude Between Doctorate With Less Experience And Doctorate With High Experience

<table>
<thead>
<tr>
<th>Experience of Teachers with Doctorate</th>
<th>Distribution of Teachers as per Computer Attitude</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Slightly positive</td>
<td>Moderately Positive</td>
</tr>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Less</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>High</td>
<td>3</td>
<td>30.00</td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>9.38</td>
</tr>
</tbody>
</table>

In the table, 13.64% and 86.36% 'doctorate less experienced' teachers had moderately positive and highly positive computer attitude respectively where as 30.00%, 60.00% and 10.00% 'doctorate highly experienced' teachers reflected slightly positive, moderately positive and highly positive computer attitude respectively. The mean score of the 'doctorate less experienced' and 'doctorate highly experienced' teachers were 204.95 and 173.70 respectively.

4.19b Table Representing The t- Value Of Teachers As Per Comparison Of Computer Attitude Between Doctorate With Less Experience And Doctorate With High Experience
SD being 11.235 and 14.507 for 'doctorate less experienced' and 'doctorate highly experienced' school teachers respectively and the difference in mean between 'doctorate less experienced' and 'doctorate highly experienced' secondary school teachers is 31.255. Standard Error is calculated as 5.175 and the t-value is 6.039 which is significant at 0.05 level and the hypothesis is accepted and the inference is that there is significant difference in computer attitude of secondary school teachers between doctorate with less experience and doctorate with high experience.
CHAPTER V

DISCUSSION OF RESULTS

The main focus of this study intended to investigate the computer attitude of the secondary school teachers in relation to gender, experience and educational qualifications. In the present chapter discussion of results, findings of the present study, educational implications and suggestions have been reported under the following sections:

5.1 Discussion of Results

5.2 Findings of the Study

5.3 Limitations

5.4 Educational Implications

5.5 Conclusion

5.6 Suggestions

5.1 Discussion Of Results

The results derived from the interpretation of data have been discussed as follows:
5.1.1 Discussion Related To The Comparison Of Computer Attitude Of Secondary School Teachers With Respect To Gender

The results related to gender difference have been discussed as follows:

As per table 4.2a and 4.2b it was found that there was no significant difference in Computer Attitude of secondary school teachers with respect to gender.

Earlier it was assumed that the males have been socialized by a society that encourages males to be proficient in all technological issues (Deniz, 19961; Hunt, 19932; Liu, 19923; Okebukola, 19934; Shashaani, 19935; Shashaani, 19946). Females, on the other hand, have not been so encouraged; but when they are provided with computer instruction and experience, their attitudes and behaviours were not found different from males (Coley, Comber7, Schumacher, and Morahan-Martin8). Males and females both secondary school teachers held positive attitude regarding the value of computers to make students more productive. Female secondary school teachers reflected great comfort in using computers similarly as male teachers. The result carries many implications for education. Teachers, educators and trainers should re-examine their behaviours as they make decisions regarding career choices, career guidance, on- the- job- training opportunities and job placement. Previous indicators, that men are more receptive
to technology in learning and training environments appear to have changed.

Hence it becomes clear that gender is not a major factor effecting attitude. A possible reason for this may be that widespread use of computers among a wider cross section of the population to perform ordinary things such as shopping, presentations and preparing notes etc. Early studies (Dambrot, Watkins-Malek, Silling, Marsh, & Garver, 1985) of elementary and high school students identified an apparent dominance of males with regard to computer use and positive attitudes about the computer. An explanation for this gender difference may have evolved because computers were identified with math and science; and females saw themselves as of lacking basic mental abilities necessary to succeed in such environments. Others attributed the difference to lack of access to computers by females (Kiesler, Sproull, & Eccles, 1983; Marshal & Brannon, 1986; and Miura, 1987). Over the years, gender issues related to various academic specialties have been debated in the literature as well. When computers were introduced to the classroom in the 1980s, investigators sought to determine whether the gender made a difference in performance on or preference for computers. Kiesler (1985) affirmed this finding when he indicated that men tended to be seduced by the technology, while women appreciated the practical application of computers and software for meeting needs. Greber (1990) suggested that females had opted out of the computer field for a variety of reasons: gender-inappropriate software, sex-role stereotyped games, games focused on violent examples, and a
lack of female protagonists. The present study found that the difference between genders disappeared.

5.1.2 Discussion Related To The Comparison Of Computer Attitude Of Government Secondary School Teachers With Respect To Gender

As per table 4.3a and 4.3b it was found that there was no significant difference in computer attitude of Government secondary school teachers with respect to gender.

Several studies have shown strong gender differences at different levels. The present study is contrary to the earlier studies. Clarke and Chambers (1989)\textsuperscript{14} could not find any gender difference in the amount of influence from significant others. The reason may be that the perceived amount of encouragement was equal. The results of present study indicate that both male and female teachers are part of a social network and both are equally concerned about computers in teaching. They know that the use of computer gives them a higher social status. Furthermore, the results seem to suggest that both the gender regard computers as a common domain. According to earlier studies males believed that computers were more appropriate for males (Voogt, (1987)\textsuperscript{15}; Kiesler, Sproull, & Eccles, 1983\textsuperscript{16}). Male secondary school teachers in the present sample, however, did not hold gender – typed views about computer uses; this finding is encouraging. Similarly, both male and female secondary school teachers in the present study tended to agree that the computer is valuable in daily life and both are equally
optimistic and interested in using computers in teaching. This result is inconsistent with those of Fetler\textsuperscript{17} and Wu and Morgan\textsuperscript{18}, who found that girls were more pessimistic than boys about the effect of computers on the individual and society. The results of the present study support the argument that familiarity and knowledge increase both male and female secondary school teachers’ interests in computers, and reduce their anxiety and lack of confidence in dealing with them.

5.1.3 Discussion Related To The Comparison Of Computer Attitude Of Aided Secondary School Teachers With Respect To Gender

As per table 4.4a and 4.4b it was found that there was no significant difference in computer attitude of aided secondary school teachers with respect to gender.

We can only speculate that female secondary school teacher’ perceptions of the usefulness and value of computers in their teaching and career, and their strong belief that women have as much ability as men, encouraged them to put more effort in their performance.
5.1.4 Discussion Related To The Comparison Of Computer Attitude Of Private Secondary School Teachers With Respect To Gender

As per table 4.5a and 4.5b it was found that there was no significant difference in computer attitude of private secondary school teachers with respect to gender.

This study found no significant relationship for age and gender, and computer attitudes with regard to different types of schools as mentioned earlier. This finding does not support past research which suggested significant differences in computer attitudes by gender (e.g. Margolis & Fisher\textsuperscript{19}, 2002; Markauskaite\textsuperscript{20}, 2006). For example, Houtz and Gupta\textsuperscript{21} (2001) found that males and female had rated themselves on their ability to use the computer in significantly different ways. Other studies have suggested that the masculine image of the computer has deterred females from benefiting from the technology and this has made them less confident or more anxious (Culley\textsuperscript{22}, 1988), resulting in females holding more negative attitudes to computers than males (Campbell\textsuperscript{23}, 1990). Consequently, female students tended to use computers less even when given equal access (Muir\textsuperscript{24}, 1987). The research on gender and computing has often reported, though not conclusively, that males have more experience and make more use of computers (Brosnan & Lee\textsuperscript{25}, 1998; Balka & Smith\textsuperscript{26}, 2000).
5.1.5 Discussion Related To The Comparison Of Computer Attitude Of Secondary School Teachers With Respect To Experience

On the basis of table 4.6a and 4.6b it was found that there was significant difference in computer attitude of secondary school teachers with respect to experience.

On the basis of the results it can be concluded that there was a significant difference found in computer attitude of secondary school teachers with respect to their experience. This has been proven by the application of t-test for which the researcher has developed three comparison groups i.e. less-Post-Graduate, moderate-high and less-high. Highly experienced secondary school teachers seemed to have negative computer attitude and less experienced secondary school teachers seemed to reflect highly positive attitude towards computer.

Chen and Chang\textsuperscript{27} (2006) indicate that attitudes, skills, and practice are interrelated variables. Their results also suggest that aspects of teacher technology competence vary according to number of teaching years, home computer access, and length of in-service training. In most cases, many of these factors interact with one another to impact on attitudes towards computers. In this study attention was given to the age. Age is often an indicator of general predisposition toward an area of study. Therefore, age was investigated because of the different development and socialization characteristics of various age groups which may play an important role in receptivity to
computer experience, age has been found to be a significant factor in the attitude one has toward computer use (Koohang, 1986; Morris, 1994; Taghavi, 2001). Another study concluded that older adults have more interest in learning about computers, greater confidence, and exhibit less computer anxiety than do younger adults.

Similarly some studies (Derscheid, 2003; Deniz, 2005) concluded that younger educators have more positive attitudes toward computer than older educators. Woodrow (1991) found that age was not a significant contributor toward the computer attitudes of student teachers while Nickell and Pinto (1986) found that age correlated negatively with computer attitudes. However, Marshal and Bannon (1986) reported a positive correlation between age and computer attitudes.

**5.1.6 Discussion Related To The Comparison Of Computer Attitude Of Government Secondary School Teachers With Respect To Experience**

As per table 4.7a and 4.7b it was found that there was significant difference in computer attitude of Government secondary school teachers with respect to experience.

Highly experienced secondary school teachers seemed to have negative computer attitude and less experienced secondary school teachers reflected highly positive attitude towards computer. The result of the study has proved that higher
the teaching experience lower the computer attitude. Many studies have shown the significant effect of age on attitude towards computers (Loyd and Gressard, 1984\textsuperscript{36}; Pope Davis and Twing, 1991\textsuperscript{37}). Table 4.6a indicates that the younger secondary school teachers seem to have higher means, indicating a more positive attitude as compared to older secondary school teachers. It makes clear that the younger secondary school teachers are more optimistic on the pedagogical usefulness of computers as compared to older secondary school teachers.

5.1.7 Discussion Related To The Comparison Of Computer Attitude Of Aided Secondary School Teachers With Respect To Experience

On the basis of the table 4.8a and 4.8b it was found that there was significant difference in computer attitude of Aided secondary school teachers with respect to experience.

Highly experienced secondary school teachers seemed to have Moderately Positive Computer Attitude and less experienced secondary school teachers reflected highly positive attitude towards computer. The results of the study prove that experience is a significant factor that effects to the attitude of the teachers. These findings of the study are similar to the Schiffman and Kanuk (2004)\textsuperscript{38} who observed that age is an important correlate of innovation adoption. It is, therefore, recommended that, to enhance the utilization of computers among secondary school teachers in the schools, relevant managers should give special ICT related support to the older secondary school...
teachers. Mostly highly experienced teachers do not wish to have their own computer because they do not have any interest towards computer. Similarly mostly highly experienced teachers avoid pursuing any course regarding computers because they feel that very soon they will be retired and then it will be of no use to learn computers. At the same time they also feel that it will take a lot of time to learn computers. Highly experienced teachers motivate students to use computers at the same time they feel that the use of computers in every sphere of life is making life mechanical. They also feel that computers are making students inactive. It is decreasing the mental activity of the students. Highly experienced teachers do not use computers frequently because they feel it problematic too. Most of the highly experienced teachers avoid use of computers in education. They feel that they are not very comfortable with the use of computers in education. They also feel that it takes more time to teach through computers. According to them computer assisted learning is very complex for early stage of students. According to them there is no reliability of technological equipment.

Most shocking results came when the investigator talked about internet. Highly experienced teachers felt internet as a very big problem for them because they find it very puzzling. The concept and the use of internet are not clear to the highly experienced secondary school teachers. They are unable to find out worthy subject matter on internet. They find that it takes a time to search any relevant matter on internet. Highly experienced teachers take computers as a formality. They are not eager towards the use of computers. They found their simple
method of lecture as the best as compared to computer assisted instruction. Some teachers feel that the use of computer is deteriorating the traditional role of the teachers.

Computers are replacing the teachers so there will be no need of the teachers in the computer age according to them. There are some teachers that are not aware of the different parts of the computer even. Personally they are not very strong supporter of computers in education. Highly experienced secondary school teachers use computers for their personal work, complex calculation and entertainment. Highly experienced secondary school teachers, theoretically support and promote use of computers in education. They agree that it increases the motivation level among students.

5.1.8 Discussion Related To The Comparison Of Computer Attitude Of Private Secondary School Teachers With Respect To Experience

As per table 4.9a and 4.9b it was found that there was significant difference in computer attitude of Private secondary school teachers with respect to experience.

The negative correlation between the computer attitudes and the length of the teaching experience revealed that secondary school teachers who were old, were disinterested in using computers in their teaching and young secondary school teachers were more interested in using computers in teaching and had more confidence in working with them.
5.1.9 Discussion Related To The Comparison Of Computer Attitude Of Highly Experienced Secondary School Teachers With Less Experienced Secondary School Teachers

On the basis of the table 4.10a and 4.10b it was noted that highly experienced secondary school teachers was found to have moderately positive computer attitude and less experienced secondary school teachers reflected highly positive attitude towards computer.

A significant difference was found in computer attitude of secondary school teachers between highly experienced male and less experienced male. Highly experienced male teachers of secondary schools have slightly positive computer attitude whereas less experienced male teachers of secondary schools reflects highly positive computer attitude.

5.1.10 Discussion Related To The Comparison Of Computer Attitude Of Highly Experienced Female Teachers With Less Experienced Female Secondary School Teachers

As per table 4.11a and 4.11b it was found that there was significant difference in computer attitude of secondary school teachers between highly experienced female and less experienced female.
Highly experienced female teachers of secondary schools were found to have moderately positive computer attitude whereas less experienced female teachers of secondary schools reflected highly positive computer attitude. The present study provided evidence that a significantly lower proportion of secondary school teachers aged 45 years and over, make use of computers in their teaching as compared to younger secondary school teachers.

Although computer is used and known as a useful medium for providing teachings, still a kind of fear was felt among the teachers about the control of computerized instruction. The teachers had initial shyness towards the computer. Gradually teachers found that however good the software package is there will always be need of teachers. These teachers gave their suggestions for the improvement of the computer education. They realized the need and importance of computers in teaching and learning.

5.1.11 Discussion Related To The Comparison Of Computer Attitude Of Secondary School Teachers With Respect To Educational Qualifications

As per table 4.12a and 4.12b it was found that there was no significant difference in computer attitude of secondary school teachers with respect to educational qualifications.

All the groups of educational qualifications reflected moderately positive attitude towards computer. This finding is
encouraging that every group of educational qualifications paying equal attention to the usefulness of computers in teaching.

5.1.12 Discussion Related To The Comparison Of Computer Attitude Of Government Secondary School Teachers With Respect To Educational Qualifications

On the basis of the table 4.13a and 4.13b it was found that there was significant difference in computer attitude of government secondary school teachers with respect to educational qualifications.

Doctorate teachers reflected highly positive attitude towards the computer. Teachers’ qualification also affected in a way that more qualified teachers can teach in a better and friendly way thus reducing phobia and fear which results in positive attitude.

5.1.13 Discussion Related To The Comparison Of Computer Attitude Of Aided Secondary School Teachers With Respect To Educational Qualifications

As per table 4.14a and 4.14b it was found that there was significant difference in computer attitude of aided secondary school teachers with respect to educational qualifications.
Doctorate teachers reflected highly positive attitude towards the computer. There is significant difference in computer attitude of aided secondary school teachers with respect to educational qualifications. Doctorate teachers reflected highly positive attitude towards the computer because their level of knowledge is high as compared to graduate teachers. It means educational qualifications are also an influencing factor in using computers in teaching. High qualification gives confidence in using computers and any technological equipment. Kadijevich (2002)\(^{39}\) observed that even when computers are available, teachers rarely use them in educational practice. The reason for this lukewarm attitude according to Kadijevich is because they do not have (enough) knowledge, skills and confidence related to the computer use. Therefore, to change the present practice, we need to innovate, promptly yet thoughtfully, both pre-service and in-service professional development for teachers. This professional development can be achieved through the well qualifications.

5.1.14 Discussion Related To The Comparison Of Computer Attitude Of Private Secondary School Teachers With Respect To Educational Qualifications

On the basis of the table 4.15a and 4.15b it was noted that no significant difference seemed to exist in computer attitude of private secondary school teachers with respect to educational qualifications.
All the groups reflected moderately positive attitude towards computer. This finding is encouraging as it has been realized that computer attitude influence not only the acceptance of computers, but also their use as professional tool or teaching or learning aids. Therefore, to have computers widely used in classrooms we should first help teachers to develop positive attitude toward the computer.

5.1.15 Discussion Related To The Comparison Of Computer Attitude Between Doctorate Male And Graduate Male

As per table 4.16a and 4.16b it was found that there was significant difference in computer attitude of secondary school teachers between doctorate male and graduate male.

Graduate secondary school teachers were found to have moderately positive computer attitude on the other hand doctorate secondary school teachers reflected highly positive computer attitude.

5.1.16 Discussion Related To The Comparison Of Computer Attitude Between Doctorate Female And Graduate Female

On the basis of the table 4.17a and 4.17b it was found that there was no significant difference in computer attitude of secondary school teachers between doctorate female and graduate female.
Both the group of secondary school teachers reflected moderately positive computer attitude. The success of any initiatives to implement technology in an educational program depends strongly upon the support and attitudes of teachers involved. It has been suggested that if teachers believed or perceived proposed computer programs as fulfilling neither their own or their students’ needs, they are not likely to attempt to introduce technology into their teaching and learning. Among the factors that affect the successful use of computers in the classroom are teachers’ attitudes towards computers. Attitude, in turn, constitutes various dimensions. Some examples of these are perceived usefulness, computer confidence, training, gender, knowledge about computers, anxiety, confidence, and liking.

5.1.17 Discussion Related To The Comparison Of Computer Attitude Between Graduate With Less Experience And Graduate With High Experience

As per table 4.18a and 4.18b it was found that there was significant difference in computer attitude of secondary school teachers between graduate with less experience and graduate with high experience.

Graduate with less experience secondary school teachers seemed to have highly positive computer attitude on the other hand graduate with high experience secondary school teachers was found to have slightly positive computer attitude.
5.1.18 Discussion Related To The Comparison Of Computer Attitude Between Doctorate With Less Experience And Doctorate With High Experience

On the basis of the table 4.19a and 4.19b it was found that there was significant difference in computer attitude of secondary school teachers between doctorate with less experience and doctorate with high experience.

Doctorate with less experience secondary school teachers was found to have highly positive computer attitude on the other hand doctorate with high experience secondary school teachers seemed to have moderately positive computer attitude.

Some other factors identified as the major reasons for the reluctance of teachers’ to integrate computers into their teaching include: the perception of the computer as an efficacy of the change, lack of a curricular imperative for this (Heywood and Norman, 1988)40 i.e. teachers need to see the reason behind any changes in their teaching methods (Robb, 199641, Fullan, 1982)42. Other reasons include: lack of time, tight schedules, too much material to be covered, a rigid syllabus to be followed, lack of knowledge of how to use computers in teaching, and possibly teachers’ perceptions of computers as being a tool for communication, information and research only and not as a teaching and learning tool.
5.2 Findings Of The Study

The study was conducted to investigate the computer attitude of the secondary school teachers in relation to gender, experience and educational qualifications. The findings of the present investigation have presented here according to the hypotheses.

The findings related to the gender issue in government, aided and private secondary schools have been reported here:

1. Both male and female secondary school teachers have moderately positive attitude towards computer.

2. Both male and female secondary school teachers seemed to have moderately positive attitude towards computer.

3. Both male and female secondary school teachers seemed to have moderately positive attitude towards computer.

4. Both male and female secondary school teachers seemed to have moderately positive attitude towards computer.

The findings related to the length of experience in government, aided and private secondary schools have been reported here:

5. Highly experienced secondary school teachers seemed to have slightly positive computer attitude and less experienced secondary school teachers seemed to reflect highly positive attitude towards computer.
6. Highly experienced secondary school teachers have slightly positive computer attitude and less experienced secondary school teachers reflects highly positive attitude towards computer.

7. Highly experienced secondary school teachers have moderately positive computer attitude and less experienced secondary school teachers reflects highly positive attitude towards computer.

8. Highly experienced secondary school teachers have moderately positive computer attitude and less experienced secondary school teachers reflects highly positive attitude towards computer.

9. Highly experienced male teachers of secondary schools have slightly positive computer attitude whereas less experienced male teachers of secondary schools reflects highly positive computer attitude.

10. Highly experienced female teachers of secondary schools have moderately positive computer attitude whereas less experienced female teachers of secondary schools reflects highly positive computer attitude.

The findings related to the educational qualifications in government, aided- government and private secondary schools have been reported here:

11. All the groups of educational qualifications reflects moderately positive attitude towards computer.

12. Doctorate teachers reflects highly positive attitude towards the computer.
13. Doctorate teachers reflects highly positive attitude towards the computer.

14. All the groups reflects moderately positive attitude towards computer.

15. Post-Graduate secondary school teachers have moderately positive computer attitude on the other hand doctorate secondary school teachers have highly positive computer attitude.

16. Both the group of secondary school teachers reflects moderately positive computer attitude.

17. Post-graduates with less experience secondary school teachers have highly positive computer attitude on the other hand post-graduates with high experience secondary school teachers have slightly positive computer attitude.

18. Doctorate with less experience secondary school teachers have highly positive computer attitude on the other hand doctorate with high experience secondary school teachers have moderately positive computer attitude.

5.3 Limitation Of The Study

The limitations of the study are as follows:

i. This study did not classified urban and rural schools of the Lucknow Division.

ii. The conclusions of the study can only be generalized for
5.4 Educational Implications Of The Study

The present study has attempted to study the computer attitude of secondary school teachers in relation to gender experience and educational qualifications. A few decade earlier, major attention was paid towards the understanding of teachers. But now-a-days the situation has changed considerably. Now student is the centre of the educational process. Therefore, lacks of the attention to the studies related to the teachers are being undertaken. The educationists and psychologists have now pointed out that the study of teachers is also very important, otherwise the attempt to educate students well may fail miserably which will in turn not be conducive towards the proper development of the computer education also. The present study is a humble attempt towards the upliftment of the status of the secondary education. However, a number of implications are drawn from the analysis, comparisons and findings of the present investigative study.

This study will be helpful in investigating the computer attitude of secondary school teachers in relation to gender, experience and educational qualifications. Findings of the present study report that the ideal method for developing teachers’ positive attitude for computer use would be to provide them with training and support to work successfully with computers. If anxiety is reduced and self-efficacy level is increased, teachers will be benefitted from their computer
training and subsequently can be expected to increase their commitment to and use of computers in education. So, teachers must be trained effectively about the use of computer, which will be fruitful in their professional life. The results also showed that simply introducing computer technology resources does not guarantee teachers’ use of these in practice. The provision of training is seen as a key factor in both changing attitudes and encouraging teachers in incorporating technology into their instruction.

Handler (1993) found that attitude towards computer usage were becoming more favourable as computers became more available in schools and colleges. Computer availability in the secondary schools is of utmost importance, without which no secondary school teacher can be able to increase his/her level of computer attitude. The governing bodies of secondary schools may monitor the computer facilities of the schools. To develop strongly positive computer attitude, teachers need to be introduced to computer technologies systematically and be engaged in activities that will provide them with positive experiences with regard to computer use. For this in-service training engaging teachers in computers may be helpful. Information and communication technology must be integrated into secondary education programme. Thus, secondary school teachers are expected to possess both skills in the use of computer technologies and positive belief in their capacity to integrate them into their teaching.
Clearly the results of this study have implications for both education and teaching, as Post-Graduate as for further research. Given the shift in attitudes by females from negative to positive, educators should recognize that females, as Post-Graduate as males, are suited for a full range of technology courses. Because females have a similar regard for the contribution of technology to productivity improvement and are comfortable with technology as men, they should be encouraged to pursue technology in teaching. In employment situations, managers should be encouraged to use both males and females teachers for technology assignments and teachers training activities. Their positive attitudes and comfort levels with technology may make women especially adept at creative applications of technology.

The findings of the study will further help the organizations, policy makers or managers to understand their teachers’ computer attitude individually as well as collectively. This will enable them to modify or change their approach in dealing with teachers in the implementation of any computer program or in preparing the dimensions of any in-service training.

The tool “Computer Attitude Scale for Secondary School Teachers” constructed during the course of this study will be of immense use to educational purposes and research workers.
Inclusion of different ages or experience levels would be insightful. Replication in the work education world may be particularly helpful in determining whether biases exist because of perceptions about gender and the use of technology.

Thus, the findings of the present study will help governments, managers and social workers towards the understanding of the teachers’ computer attitude which in turn will reduce difficulties of the implementation of the computer education at secondary level. Thus a forward looking and well balanced computer educational program may be developed for the secondary level.

5.5 Conclusion

Teachers are change agents in schools. They are key drivers who play crucial roles in technology integration in the schools and classrooms. It is important for them to possess positive computer attitudes. Since attitudes has been found to be linked to usage and intention to use, variables that determine successful technology integration in education. In other words, computer attitudes, whether positive or negative, affect how teachers respond to technology in an instructional setting or learning environment. This in turn affects the way students react to computers in schools and current and future computer usage. Despite the high level of technology in schools, the extent to which it is optimized depends upon teachers having a positive attitude towards it. This study suggests a need for secondary school teachers to provide a conducive and non-threatening
environment for in-service teachers to experience success in using the computers, with a view to allowing teachers to gain competence and confidence in using computers for teaching and learning.

There are many varied reasons for underutilization of the computers. One of prime reason is diffidence of the concerned teachers in the implementation of the computer education. We as teachers need to understand that the media are our extensions. Competing with media and having phobia for associating with them is not proper. Educational vision of optimum utilization of media such as computers in instruction can be realized not merely through financial and material support only, but adequate supportive inputs in the form of training are immediately required for integration of desired curricula.

This study provides a glimpse of selected variables that affect the computer attitudes of teachers. Future studies could include a systematic examination of all aspects of secondary school teachers and how these interact to impact on teachers’ attitudes, acceptance, and usage of the computer as a tool for instructional purposes and professional development.

5.6 Suggestions

5.6.1 Suggestions For Teachers

The following are the suggestions for teachers:

1. Teachers’ interest towards computer may be developed
through a relevant computer course.

2. Teachers may be encouraged to pursue any pre-service or in-service computer course.

### 5.6.2 Suggestions For Policy Makers

The following are the suggestions for policy makers:

1. Good infrastructure, like electricity supply, a techno-savy teacher, some computer sets may be provided for computer education. Infrastructure for computer education should be made stronger.

2. A proper computer course may be provided to all government, aided or private secondary school teachers.

3. More finance may be provided for computer education. More focus may be given to the computer education in the educational budget.

4. Continuous monitoring must be done to make sure that certified or trained teachers are teaching at school.

5. A good in-service and pre-service computer training program may be useful for the secondary school teachers.

6. Policy makers may be careful to provide at least one computer in each school.
5.6.3 Suggestions For Further Studies

The following are suggestions for further research:

1. This study was confined only to the Lucknow Division. Therefore, the study cannot claim to have comprehensiveness and its findings may not be universally applicable. It is, therefore, necessary to cross validate the reported results from other parts of the state and country.

2. The present study has been conducted on 503 secondary school teachers only. Therefore, it is suggested that this study may be conducted on a larger sample from the similar population somewhere else.

3. In the present study “Computer Attitude Scale for Secondary School Teachers” with 47 statements in three different areas, viz., items containing positive and negative statements about the value of computer technology, the impact of computer technology on teachers and teachers’ comfort level with computer technology have been used. However, an attitude scale with more areas and items may also be constructed and used for the purpose.

4. Further researches on the computer attitude at different levels can also be conducted.
REFERENCES


and computing in secondary schools. *British Journal of Counseling and Guidance*, 16, 72-82.


NPE 1987 MHRD Publications: Govt. of India.


Archana Kumari, (2000), Lucknow University, Lucknow, A study of impact of Computer Education on the Scientific Attitude of Students.


186

Martin Graff (2003), “Cognitive Style and Attitudes Towards Using Online Learning and Assessment Methods”

Irfan Shah (2005), CASE, MSU, Baroda “ICT awareness, use and need of secondary and higher secondary teachers of English Medium Schools of Vadodara city”

Mr. Anil Tanaji Patil (2006), Shivaji University, Kolhapur “Development of Multimedia Instructional System on Computer Education for B.Ed. Pupil Teachers.”

Filiz Yalçın Tilfarlioglu İhsan Ünaldi (April 2006) “Faculty Attitudes towards Computer Assisted Instruction at the University of Gaziantep.”


Timothy Teo from Nanyang Technological University (2008) “Pre-service teachers’ attitudes towards computer use: A Singapore survey.”

Salih Birişçi, Mustafa Metin and Mehmet Karakaş (2009) from the Artvin Çoruh University, Turkey, “Determining Prospective Elementary Teachers' Attitudes towards Computer: A Sample
from Turkey.”: Bulgarian Journal of Science and Education Policy (BJSEP), Volume 3, and Number 1, 2009.


Mustafa Doğan (2012) “Trainee Teachers’ Attitudes about Materials and Technology Use in Mathematics Education.”


Marilyn Joan Whinnerah Anderson (1990) “Gender Differences in Computer Attitudes, Interests, and Usage at an Elite High School.”


Sarah A Drummond (September 2009) “Investigating the Impact of Entry Qualifications on Student Performance in Computing Programmes at Undergraduate Level”.


