CHAPTER - I

INTRODUCTION

1.01. EDUCATION:

Education is a lifelong process of acquiring new knowledge and skills through formal and informal exposure to information, ideas and experiences. It plays an essential role in shaping the personality of an individual. Every society endeavours to make its citizens educated in the best possible manner. Education is an integral part of human life. It is a basic condition for the development of the ‘whole man’ and serves as a vital instrument for accelerating the well-being and prosperity of all in every direction.

The dictionary of education (Dash, B. N. 2002) defines education as, “the aggregate of all the processes by which a person develops ability, attitudes and other forms of behaviour of practical value in the society in which he lives, the social process by which people are subjected to the influence of a selects and controlled environment, especially that of the school, so that they may obtain social competence and optimum individuals development”. (p. 6).
1.02. TECHNOLOGY:

Technology is also closely associated with innovation, the transformation of ideas into new and useful products or processes. Innovation requires not only creative people and organizations, but also the availability of technology and science and engineering talent. Technology and innovation are synergistic. The development of gene sequencing machines, for example, has made the decoding of the human genome possible, and that knowledge is fuelling a revolution in diagnostic, therapeutic and other biomedical innovations.

1.03. EDUCATIONAL TECHNOLOGY:

Educational technology is a system of 5m’s. Educational technology is a system of education in which machines, materials, media, men and methods are interrelated and work together for the fulfilment of specific educational objectives.

Educational technology is an applied or practical study which aims at maximizing educational effects by ‘controlling’ such relevant factors as education purposes, educational content, teaching materials, educational environment conduct of student, behaviour of instructors and interrelations behaviour of instructors and interrelations between students and instructors it is a branch of study in which the results of engineering techniques, information science, natural sciences, behavioural
sciences and human technology are to be used to promote the efficiency of education. Educational technology is concerned with providing appropriately designed learning situations which holding in view the objectives of teaching or training, bring to bear the best means of instruction.

"Technology Explosion" has yielded several new machines, materials and media which have great potential for use in the educational enterprise. A judicious use of these together with new functions and roles of educational, personnel can bring about more efficient and effective teaching-learning. An adequate knowledge of theory and practices of educational technology and their proper use would enable the teacher to understand and effectively discharge his new roles in the educational system in an age of 'information explosion' 'knowledge explosion' 'population explosion' and 'expectation explosion'.

1.04. SCOPE OF EDUCATIONAL TECHNOLOGY:

Scope of educational technology is as wide as education. Its scope ranges from the concrete educational process to the most abstract and subtle one. It includes the use of hardware and software and systems analysis in various educational operations. The possibility of using educational technology in almost all areas of education has been and is being explored.
There are three major areas in education in which its scope is very wide. They are 1. Technology related to general education administration and management 2. Technology related to general education testing and 3. Technology related to the instructional process.

1.05. PEDAGOGY:

Pedagogy is derived from two Greek words “paid”, meaning child and “agogos”, meaning leading. So it literally means “to lead the child”. Thus pedagogy has been defined as the art and science of teaching children, which indicates the teacher-directed instruction. In English, the term pedagogy is used to refer to instructive theory. (Knowles, 1984).

Pedagogy is the art of teaching. Effective teachers use an array of teaching strategies because there is no single, universal approach that suits all situations. Different strategies used in different combinations with different groupings of students will improve learning outcomes. Some strategies are better suited to teaching certain skills and fields of knowledge than the others. Some strategies are better suited to certain student backgrounds, learning styles and abilities. (Notify-RSS, 2002).

Effective pedagogy, incorporating an array of teaching strategies that support intellectual engagement, connectedness
to the wider world, supportive classroom environments and recognition of difference, should be implemented across all key learning and subject areas. Effective pedagogical practice promotes the well being of students, teachers and the school community - it improves students’ and teachers’ confidence and contributes to their sense of purpose for being at school. It builds community confidence on the quality of learning and teaching of the school.

1.06. COMPETENCY:

Competency means adequacy and sufficiency. Teacher competency is the skills, Knowledge, values which a teacher possesses; they are the tools of teaching. Only the teacher who possesses all the skills, knowledge and values can function effectively in a teaching situation and is said to be competent to teach in that situation.

Competency ordinarily is defined as “adequate for the purpose, suitable or sufficient or as legally qualified, admissible, or as capable”. The Oxford advanced learner’s dictionary says the ability, skill, and legal authority as synonyms for the word competency.

Competency refers to a state of being well qualified to perform an activity, task or job function. When a person is
competent in doing something, he or she has achieved a state of competence that is recognizable and verifiable to a particular community of practitioners. A competency then refers to the way that a state of competence can be demonstrated to the relevant community.

Competency is the ability of an individual to do a job properly. A competency is a set of defined behaviours that provide a structured guide enabling the identification, evaluation and development of the behaviours in individual employees. (White, R.W. 1959).

1.07. PEDAGOGICAL COMPETENCY:

Pedagogical competency is the skill, ability and capabilities possessed by the teacher so as to make the teaching-learning environment effective and productive thereby realizing the full potential of teacher as well as students and in turn achieving the goals of education.

Pedagogical competency as defined is the ability of the learners understanding of the depth and organization of learning that educates.
1.08. TECHNO-PEDAGOGY AND SKILL IN TEACHER EDUCATION:

The aim of teacher education is to develop skills and appropriate knowledge among the teacher trainees for using and integrating the correct technology in a suitable manner. Every teacher should know how to use technology, pedagogy and subject area content effectively in their daily classroom teaching. “One must ensure technological integration since technology by itself will not lead to change. Rather; it is the way in which teachers integrate technology that has the potential to bring to the educational process”. (Anjali Khirwadkar, 2007).

1.09. TECHNO-PEDAGOGY:

Techno-Pedagogy is a collaborative, cross-college, cross-constituency effort that uses the advent and proliferation of new information technologies as an occasion to rethink all aspects of educational practice. Techno-Pedagogy takes collaboration on teaching and learning as its main goal. The term ‘pedagogy’ refers to the art-science of teaching and ‘techno’ refers to the art-skill in handcrafting, derived from the Latin ‘texere’. (Fischer, J. 1996). In other words, techno-pedagogy is nothing but the art and science of teaching with the help of technology.
1.10. TECHNO- PEDAGOGICAL COMPETENCY:

The techno-pedagogical competency is the ability and the expertise of the teachers to make use of necessary technology appropriately and effectively in teaching. If a teacher possesses this competency, it is possible for him/her to bring the entire world into the classroom and hence the class would be very interesting to the students, irrespective of the subjects taught.

1.11. ANXIETY:

“Anxiety is a psychic condition of heightened sensitivity to some perceived threat, risk, peril or danger. It is an emotion characterized by apprehension and anticipation of future danger or misfortune accompanied by a feeling of dysphoria or somatic symptoms of tension”. (American Psychological Association, 2000).

“Anxiety is a normal reaction to a situation where immediate danger exists and may result in physical harm”. (Goldstein, 1940).

“Anxiety is also a normal response to situation that poses a threat to self esteem or psychological well being”. (LeDoux, 2000).
“Anxiety may be defined as an unpleasant sensation that is usually experienced as feelings of apprehension and general irritability accompanied by restlessness, fatigue and various somatic symptoms such as headaches and stomachache”. (Travers et al., 1993).

1.12. ANXIETY TOWARDS THE USE OF INSTRUCTIONAL AIDS IN TEACHING:

Anxiety towards the use of instructional aids in teaching is an emotional response to make use of them in teaching characterised by the fear that many teachers exhibit. Because of this tendency, they rarely use instructional aids in teaching.

The students of today’s generation are having the ability to handle all kinds of technological gadgets viz., Tablets, PDAs, LCD Projectors, and Computers. Therefore, it is the need of the hour, for the teachers to familiarise themselves in handling modern technological equipment in teaching.

1.13. ATTITUDE:

An attitude is often defined as a tendency to react favourably or unfavourably toward a designated class of stimuli, such as a national or racial group, a custom or an institution. Thus defined, “attitudes cannot be directly observed but must be inferred from over behaviour, both verbal and non-verbal”. (Anastasi, A. 1982).
“Attitude denotes the sum-total of a man’s inclination and feelings, prejudice or bias, preconceived notions, ideas, fears, threats and convictions about any specific topic”. (Thurstone, 1929).

Allport G. W. (1935) defined attitude as “mental and neural state of readiness organized through experience exerting a directive or dynamic influence upon the individual’s response to all subjects and situations with which it is related”.

An attitude is enduring system that includes a cognitive component of a feeling component and an action tendency. Attitudes involve on emotional component.

1.14. ATTITUDE TOWARDS USING NEW TECHNOLOGY:

Technology was perceived by most teachers as a tool that may have some potential in terms of enhancing or simplifying a task but not all saw it as useful or necessary tool in their particular teaching context. Some did feel it could provide a supportive role in the classroom but definitely did not replace the teacher. Those who use technology did so for a variety of reasons including motivating students, providing additional sources of information and adding variety to their teaching.

Those who did not use technology sited a lack of knowledge as the primary reason. More specifically, many
teachers did not know-how using technology could relate to teaching. Others suggested a lack of access or lack of confidence as reasons for avoiding technology use.

It’s also important to note that the lack of proper professional development and administrative support are important factors influencing the teacher’s decision to use technology. An attitude can be understood as an emotional that has an influence on the behaviour of human beings. People’s reactions and response towards certain things largely depend on how they perceive them in this context, some teachers believes that using technology in teaching is necessary, they will therefore be more likely to be positive towards implementation of using new technology in teaching. Therefore attitude towards using new technology is a predisposition to respond to using new technology in teaching in a generally favourable or unfavourable way. In this investigation, teachers’ attitude towards using new technology has been chosen as one of the independent variables.

1.15. NEED AND IMPORTANCE OF THE STUDY:

The rapid development in Educational technology has redefined the teaching and learning process to a greater extent. It has given a new face lift to the traditional classroom and changed drastically the pedagogy. Therefore, it a must for the teachers to get acquaintance with the application of recent
technological principles and gadgets in their teaching and hence there is an urgent need to examine the techno-pedagogical competency possessed by the teachers. The techno-pedagogical competency is nothing but the ability of the teachers to make use of technology effectively in teaching. Since the Higher secondary stage of schooling is considered to be the feeder stage and only through which the students are going to enter into the higher education or colleges. So, teachers who are teaching higher secondary classes should possess techno-pedagogical competency in order to cater to the needs of a hi-tech classroom. Hence the investigator attempted to study the perceived techno-pedagogical competency of higher secondary school teachers.

The instructional aid plays a significant role in teaching and learning process. It facilitates quick learning, more learning and longer retention. Every teacher must know the appropriate use instructional aids with respect to the content. It makes the teaching process free from friction. Even though we have several instructional aids available in the schools, many of the teachers are hesitant to make use of them due to many reasons. One such reason is their anxiety towards the use of instructional aids, which prevents them from using the instructional aids in teaching to a greater extent. In a hi-tech classroom, teachers are expected to make use of so many modern instructional gadgets
while teaching. If teacher possesses anxiety towards the use of them, then he/she cannot discharge his/her duty in a full-fledged manner as a teacher. Therefore, it is very much needed to study the anxiety of teachers towards the use of instructional aids in teaching.

Technological tools have become a part and parcel of our life. The introduction of technology into the field of education has completely changed the conventional way of teaching and learning by modifying and making the enormous use of technology in the field of education. In order to make the best use of our resources, it is especially that all persons engaged in the educational enterprise and especially the teacher should understand adequately the dynamics and mechanism of educational technology and provide the best possible education to the students. Also the favourable attitude of teachers towards using new technology in teaching will certainly make teachers use them in appropriate situations in teaching.

In the present study the investigator has identified the teachers working in higher secondary schools situated in Tiruvannamalai district, Tamilnadu, India as the sample. Tiruvannamalai is one of the most venerated places in Tamil Nadu. In ancient times, the term "Annamalai" meant an inaccessible mountain. The word "Thiru" was prefixed to signify
its greatness, and coupled with the two terms. It is called Tiruvannamalai. Spiritual seekers from all over the world come to Tiruvannamalai, a pilgrimage city, filled with living enlightenment gurus. This ancient town has been built around the Arunachala hill (Annamalai hill), a mountain raising 4000 meters heavenly from the ground. Tiruvannamalai is famous for sprawling temple Arunachala temple, dedicated to Lord Shiva. Every full moon day people walk around the Annamalai hill and offer special prayers to Arunachala temple called Girivalam. Spiritual gurus Yogi Ramsuratkumar, Ramana Maharshi, Arabindo, Shesathiri Swamigal, Muniyandi Swamigal and many more saints and sadhus were lived and still living here to bring the divine close to people. The present Tiruvannamalai district which was formed on September 30th, 1989 has a long history. The lands were acquired from the Nawab of Arcot and a district by name North Arcot. The district lies in the northeastern coastal region of the Bay of Bengal (vide: Figure 1.1) with Tiruvannamalai as its district headquarters.

The districts consist of seven Taluks and 18 blocks (vide: Figure 1.2 and Figure 1.3). The Tiruvannamalai district encompasses the following institution which stands as a testimony to the growing educational standards in the district.
Arts and science colleges - 015
Engineering colleges - 012
Primary schools - 070
Secondary schools - 115
Higher secondary schools - 130
Teacher training colleges - 070
Polytechnic colleges - 012

The government has started supplying computer to higher secondary schools with suitable instructional aids and has started providing facilities to develop teachers' techno-pedagogical competency. The record of Tiruvannamalai district's profile with respect to education is indeed remarkable (www.thiruvannamalai.tn.nic.in) and hence the investigator has chosen this place as sample for the present study.

In the present investigation, an attempt has been made to study, The teachers' anxiety towards the use of instructional aids in teaching, and their attitude towards using new technology on their techno-pedagogical competency.

1.16. STATEMENT OF THE PROBLEM:

Techno-pedagogical competency in the hands of a competent teacher can ensure the better teaching-learning
process. Moreover, in a fast-developing world, where techno-pedagogical competency explosion is taking place in every sphere, it is unreasonable to expect that mere spoken or written word is enough to teach. So it is a felt need for the teachers to know about the use of techno-pedagogical competency in the teaching process. Realizing the importance of using the techno-pedagogical competency the present study has been undertaken, and it is stated as, “A STUDY ON TECHNO-PEDAGOGICAL COMPETENCIES OF TEACHERS AS RELATED TO CERTAIN VARIABLES”.

1.17. THE OPERATIONAL DEFINITIONS OF THE KEY TERMS

a) Higher secondary school teachers

The teachers working in higher secondary schools situated in Tiruvannamalai district, Tamilnadu, India. ([www.tn.gov.in](http://www.tn.gov.in))

b) Techno-pedagogical competency

The marks obtained by the selected sample of teachers working in higher secondary schools in the perceived Techno-pedagogical competency scale, constructed and validated by the investigator.

c) Anxiety towards the use of instructional aids in teaching

Anxiety towards the use of instructional aids in teaching of the selected sample of teachers working in
higher secondary schools, as revealed by the responses to the items in the Anxiety towards the use of instructional aids in teaching scale, constructed and validated by the investigator.

d) **Attitude towards using new technology**

Attitude towards using new technology of the selected sample of teachers working in the higher secondary schools, as revealed by the responses to the items in the Attitude towards using new technology scale, constructed and validated by Rajasekar, S. (2009).

In addition, the exogenous variables of the study are (i) the teachers’ gender, (ii) the locality of the schools, (iii) type of the schools, (iv) their marital status, (v) the subjects taught by the teachers, (vi) type of the family and (vii) their age limit have been considered in relation to the dependent variable viz., their techno-pedagogical competency besides their relation to the two endogenous independent variables viz., (i) anxiety towards the use of instructional aids in teaching and (ii) attitude towards using new technology.

e) **Urban schools:** Higher secondary schools located in areas controlled by not less than a municipality.

f) **Rural schools:** Higher secondary schools located in areas controlled by a Panchayat union.
g) Government schools: Higher secondary schools run by the government of Tamilnadu.

h) Private schools: Higher secondary schools run by the private management which receives grant-in-aid from the government of Tamilnadu.

i) Urban teachers: Male/Female teachers working in higher secondary schools located in urban areas.

j) Rural teachers: Male/Female teachers working in higher secondary schools located in rural areas.

1.18. VARIABLES USED IN THE PRESENT STUDY:

The following are the variables used for the present study.

I Dependent variable
   • Techno-pedagogical competency.

II Independent variables
   • Anxiety towards the use of instructional aids in teaching.
   • Attitude towards using new technology.

III Personal variables

Gender : Masculine / Feminine

Marital Status : Married / Unmarried

Type of the family: Joint / Nuclear

Age : Up to 30 years / above 30 years upto 50 years/above 50 years.
IV School related variables

Type of the School  :  Government / Private

Locality of the School:  Urban / Rural

Teaching Subject  :  Science / Arts / Language / Vocational

1.19. OBJECTIVES OF THE STUDY:

The following are the objectives formulated for the present study. To study:

i)  The level of perceived techno-pedagogical competency of teachers,

ii) The level of teachers’ anxiety towards the use of instructional aids in teaching,

iii) Teachers’ attitude towards using new technology,

iv) The significance of the difference if any, between the various categories of sub- samples divided on the basis of

a) Gender

b) Locality of the school

c) Type of the school

d) Marital status

e) Teaching subject

f) Type of the family and

g) Age

in respect of their perceived techno-pedagogical competency,
v) The significance of the difference if any, between the various categories of sub-samples divided on the basis of
a) Gender
b) Locality of the school
c) Type of the school
d) Marital status
e) Teaching subject
f) Type of the family and
g) Age
in respect of their anxiety towards the use of instructional aids in teaching,

vi) The significance of the difference if any, between the various categories of sub-samples divided on the basis of
a) Gender
b) Locality of the school
c) Type of the school
d) Marital status
e) Teaching subject
f) Type of the family and
g) Age
in respect of their attitude towards using new technology,
vii) The nature of the relationship existing between teachers’ perceived techno-pedagogical competency and their anxiety towards the use of instructional aids in teaching,

viii) The nature of the relationship existing between teachers’ perceived techno-pedagogical competency and their attitude towards using new technology,

ix) The Multiple correlation of personal, school related and research variables with techno-pedagogical competency and the regression of techno-pedagogical competency on personal, school related and research variables.

1.20. HYPOTHESES:

a) The level of perceived techno-pedagogical competency of teachers is high.

b) The level of teachers’ anxiety towards the use of instructional aids in teaching is low.

c) Teachers’ attitude towards using new technology is favorable,

d) There is a significant difference between the various categories of sub-samples divided on the basis of

   a) Gender

   b) Locality of the school

   c) Type of the school
d) Marital status

e) Teaching subject

f) Type of the family and

g) Age

in respect of teachers’ perceived techno-pedagogical competency.

e) There is a significant difference between the various categories of sub-samples divided on the basis of

a) Gender

b) Locality of the school

c) Type of the school

d) Marital status

e) Teaching subject

f) Type of the family and

g) Age

in respect of their anxiety towards the use of instructional aids in teaching,

f) There is a significant difference between the various categories of sub-samples divided on the basis of

a) Gender

b) Locality of the school

c) Type of the school

d) Marital status

e) Teaching subject
f) Type of the family and

g) Age

in respect of their attitude towards using new technology,

g) There is a significant relationship between teachers’ perceived techno-pedagogical competency and their anxiety towards the use of instructional aids in teaching,

h) The above relationship is positive too,

i) There is a significant relationship between teachers’ perceived techno-pedagogical competency and their attitude towards using new technology,

j) The above relationship is positive too,

k) The personal, school related and research variables are the significant determinants of perceived techno-pedagogical competency.

1.21. THE SAMPLE:

The random sampling technique has been used for the selection of sample of as many as 627 teachers working in higher secondary schools. The details of the sample are given in chapter – III of this dissertation.

1.22. TOOLS:

As many as three tools have been used in the present investigation. They are:

i) Techno pedagogical competency scale (TPCS): constructed and validated by the investigator.
ii) Anxiety towards the use of instructional aids in teaching scale (ATUIATS): constructed and validated by the investigator.


Copies of these three tools have been administered to the sample of as many as 627 teachers working in higher secondary schools chosen for the study. The detailed description of these three tools are given in chapter – III of this dissertation.

1.23. DELIMITATIONS:

The study is confined only to the teachers working in the higher secondary schools, situated in Tiruvannamalai district of Tamilnadu, India. Moreover, this study is delimited to the selected personal, school and research variables only.

1.24. A BRIEF RESUME OF THE SUCCEEDING CHAPTERS:

A review of related studies has been presented in chapter-II.

Chapter –III contains the description of the tools used, the sample selected and the statistical techniques employed in this study.

The analysis and interpretation of the data with relevant discussion there in are given in the chapter-IV.
Chapter-V contains the summary of the important findings, suggestions for further work, educational implications, recommendations and conclusions.

Bibliography and Webliography follow chapter-V.

Appendices (A to E) containing copies of the tools follow webliography.
THE MAP OF THE TIRUVANNAMALAI DISTRICT IN TAMILNADU

Source: www.Tamilnadugovernmentdistrictsmaponion.com

Figure 1.1
THE MAP OF THE TALUKS OF TIRUVANNAMALAI DISTRICT

Figure 1.2
THE MAP REPRESENTING THE BLOCKS OF TIRUVANNAMALAI DISTRICT

Figure 1.3