CHAPTER - V

FINDINGS, CONCLUSIONS, IMPLICATIONS, SUGGESTIONS, AND RECOMMENDATIONS

5.1 INTRODUCTION

Technology in education should not be considered as a replacement for face-to-face instruction but rather as a support to “attain objectives that have not been attained efficiently otherwise: expanding access, promoting equality, improving the internal efficiency of educational systems, enhancing the quality of education, and preparing new and old generations for a technology-driven market place” (Haddad and Jurich, 2002, p.47).

Distance education and ODL are currently important topics for educational planners, administrators, academics, and policymakers because of the growth of distance learning and technology-enhanced learning (Bishop & Spake, 2003; Levy, 2003; Pacey & Keough, 2003). According to Bishop and Spake (2003), policymakers are faced with an array of choices related to planning ODL, such as infrastructure, student support, support to academics for their changing role as distance educators, and costs, to name a few. To add to this, distance education delivery is faced with changes such as the movement from correspondence-type delivery to open access and technology-enhanced learning where technology is changing constantly (Bishop & Spake, 2003).

Technology such as Information and Communication Technology (ICT) is a potent force in driving economic, social, political and educational reformation. Countries, particularly developing countries cannot afford to stay passive to ICT if they are to compete and strive in the global economy. Education reform is occurring throughout the world and one of the tenets of the reform is the introduction and integration of ICT in the education system. The successful integration of any technology, thus ICT, into the
classroom warrants careful planning and depends largely on how well policy makers understand and appreciate the dynamics of such integration. Integration of ICT in education has been a contentious issue. At one extreme, there are some who are not convinced that ICT will bring the pedagogical benefits that have been so much touted about (Cuban, 1986; McRobbie and Thomas, 1998; Oppenheimer, 1997; Peat and Franklin, 2003; Postman, 1990, 1993, 1995; Stoll, 1995, cited in Vestich, 1997). Education is a very socially oriented activity and quality education has traditionally been associated with strong teachers having high degrees of personal contact with learners. The use of ICT in education lends itself to more student-centered learning settings and often this creates some tensions for some teachers and students. But, with the world moving rapidly into digital media and information, the role of ICT in education is becoming more and more important in general and in Open and Distance Education in particular and this importance will continue to grow and develop in the 21st century.

5.2 RESTATEMENT OF THE PROBLEM

Open Distance Learning (ODL) as a term that encompasses the “open” and “distance”. “Open” means,

- the removal of constraints of face to face conventional classroom method
- flexibility for students who need an alternative to the conventional system
- scale with equality

The term “Distance” means,

- teacher and student have a space and time division/distance
- involves e-learning, open learning, flexible learning, on-line learning, resource-based learning, technology-mediated learning etc.”

ODL is thought to be an effective way of educating people of all sections in society. The delivery system in ODL is different than that in the conventional on-campus teaching. However, open and distance
Learning/distance education is considered as a close substitute for the conventional on-campus teaching keeping in mind the premises that different types of media (print, audio, video, telephone, computer-based communication system, etc.) are synchronized in the delivery process in distance education and open learning system. In this age of information and communication technology, education can be offered through different types of modern media - without any real classroom. But in the case of Teacher Education Programmes of this mode of instruction, the role of information and communication technologies and its in-depth applications through the number of social media and the mobile technologies with us.

Before the effective application of these technologies applicable for them, it is in need to know the perception and attitude of the learners and the teacher-educators for the successful implementation of them. Hence, this study took and the investigator has attempted to study the level of perception and attitude of student-teachers with their respective teacher educators so as to integrate the techno-interactions among the samples of the study. Hence, the title of this study is stated as, “Distance Education Technologies in Open and Distance Learning with Specific Reference to Teacher Education Programmes in the State of Tamil Nadu”.

5.3 RESTATEMENT OF THE OBJECTIVES OF THE STUDY

i. **Macro-Level Study**

1. To study the level of perception of ODL student-teachers on Information and Communication Technology Enabled Learning Support System (ICT-ELSS) in the selected Universities of Tamil Nadu State.

2. To determine whether the ODL student-teachers’ level of perception on Information and Communication Technology Enabled Learning Support System (ICT-ELSS) is related to following variables:
i. **Personal variables:**
   - Gender
   - Age
   - Residential Background

ii. **Academic variables:**
   - Medium of Instruction
   - Types of School Studied
   - U.G. Discipline
   - Educational Qualification
   - Diploma in Teacher Education
   - Teaching Experience

iii. **Institutional variables:**
   - Working Locale
   - Types of Working School

3. To study the level of Attitude of ODL student-teachers towards Distance Education Technologies in the selected Universities of Tamil Nadu State.

4. To determine whether the attitude of ODL student-teachers towards Distance Education Technologies is related to following variables:

i. **Personal variables:**
   - Gender
   - Age
   - Residential Background

ii. **Academic variables:**
   - Medium of Instruction
   - Types of School Studied
   - U.G. Discipline
   - Educational Qualification
   - Diploma in Teacher Education
   - Teaching Experience
iii. Institutional variables:
   - Working Locale
   - Types of Working School

5. To study the level of perception of Teacher-Educators of ODL on Information and Communication Technology Enabled Learning Support System (ICT-ELSS) in the selected Universities of Tamil Nadu State.

6. To determine whether the Teacher-Educators of ODL level of perception on Information and Communication Technology Enabled Learning Support System (ICT-ELSS) is related to following variables:
   i. Personal variables:
      - Gender
      - Residential Background
   ii. Academic variables:
      - Handling Subject
      - Teaching Experience
      - Qualification in Educational Technology
   iii. Institutional variables:
      - Working Locale
      - Type of Working Institution

7. To offer suggestions and recommendations on the basis of the findings for the improvement in integration of Information and Communication Technology and its Learning Support System in Open and Distance Learning.

ii. Micro-Level Study
1. To analyze the required infrastructures to enhance the application of available technologies for ODL student-teacher at their study centre and for the further learning at their place.
2. To observe the innovative teaching-learning-evaluation strategies at their PCP centers that are required to enhance their level of perception to make their learning productive.
3. To analyze the study materials and syllabi of the ODL student-teachers along with the scheme of examinations so as to give suggestions and recommendations related to application of Information and Communication Technology Enabled Learning Support System in their curriculum.

5.4. **RESTATEMENT OF THE RESEARCH QUESTIONS**

1. To what extent do the ODL student-teachers of ODL in the selected Universities of Tamil Nadu State have perception on Information and Communication Technology Enabled Learning Support System?

2. Is the student-teachers level of perception on Information and Communication Technology Enabled Learning Support System related to the following variables?

   i. **Personal variables:**
      - Gender
      - Age
      - Residential Background

   ii. **Academic variables**
      - Medium of Instruction
      - Types of School Studied
      - U.G. Discipline
      - Educational Qualification
      - Diploma in Teacher Education
      - Teaching Experience

   iii. **Institutional variables**
      - Working Locale
      - Types of Working School

3. To what extent do the ODL student-teachers in the selected Universities in the of Tamil Nadu State have Attitude towards Distance Education Technologies?
4. Is the ODL student-teachers level of Attitude towards Distance Education Technologies related to the following variables?

i. **Personal variables:**
   - Gender
   - Age
   - Residential Background

ii. **Academic variables:**
   - Medium of instruction
   - Types of School Studied
   - U.G. Discipline
   - Educational Qualification
   - Diploma in Teacher Education
   - Teaching Experience

iii. **Institutional variables:**
   - Working Locale
   - Types of Working School

5. To what extent do the ODL teacher-educators in the selected Universities of Tamil Nadu state have perception on ICT-ELSS?

6. Is the ODL teacher-educators level of perception on Information and Communication Technology Enabled Learning Support System related to the following variables?

i. **Personal variables:**
   - Gender
   - Residential Background

ii. **Academic variables:**
   - Handling Subject
   - Teaching Experience
   - Qualification in Educational Technology
iii. **Institutional variables:**

- Working Locale
- Type of working Institution

7. What measures can be made by the policy makers and educational administrators to improve the level of application of Information and Communication Technology Enabled Learning Support System in ODL Teacher-Education Programme in the State of Tamil Nadu?

### 5.5 METHODOLOGY REVISITED IN BRIEF

#### i. Macro-Level Study

Present Study has adopted descriptive research method using Survey Technique. Population of this present study is ODL student-teachers of Open and Conventional Universities of Directorate of Distance Education and Centre for Distance Education. In this present study, the student-teachers of Bharathidasan University, Indira Gandhi National Open University, Madurai Kamaraj University, Tamil University, Tanjore and Tamil Nadu Open University. Among the selected population, there are 93 students-teachers from Tamil University, Tanjore, 199 student-teachers from Bharathidasan University, Tiruchirappalli, 102 student-teachers from Indira Gandhi National Open University - Madurai Region, 226 student-teachers from Madurai Kamaraj University, Madurai, 75 student-teachers from Tamil Nadu Open University of total sample 695 with their respective teacher educators (72) taken for this study.

#### ii. Micro-Level Study

Interview Guides, Site Visit and Observation towards Naturalistic Enquiry are also adopted. Documentary Analysis of ODL Student-teachers’ Study materials Records and Syllabi are also done at the end of the data analysis for this study.
5.6 INSTRUMENTATIONS

The following are the tools employed for the study;

- ICT-ELSS Questionnaire for ODL Student-Teachers with Information Schedule
- Attitude Scale to measure of the attitude of ODL student-teachers Distance Education Technologies
- ICT-ELSS Opinionnaire for ODL Teacher-Educators with Information Schedule
- Interview Guides
- Site Visit and Observation
- Documentary Analysis

i. Macro-Level Tools
   1. ICT-ELSS Questionnaire for ODL Student-teachers with Information Schedule
   2. Attitude Scale to measure Distance Education Technologies among ODL student-teachers
   3. ICT-ELSS Opinionnaire for ODL Teacher-Educators with Information Schedule

ii. Micro-Level Tools
   1. Interview Guides
   2. Site Visit and Observation
   3. Documentary Analysis

5.7 DATA ANALYSIS

The data collected from the sample of the study through the framed tools for this study were analyzed and are presented in this section. The data were analyzed by using Chi-square test in order to know the level of perception and attitude with respective variables among the Student-teachers and the findings are presented as:
i. **Level of Perception of ODL Student-Teachers on ICT-ELSS**

The level of perception of student-teachers on Information and Communication Technology Enabled Learning Support System is only 10% high among the selected sample of the study. Even though the average is more than 70% and low level is about 15% of them. It is found that it is not appreciable level of perception of selected sample on ICT-ELSS.

- Gender of the ODL student-teachers is not related to their level of perception on ICT-ELSS.
- Age of the ODL student-teachers is related to their level of perception on ICT-ELSS.
- Residential Background of the ODL student-teachers is related to their level of perception on ICT-ELSS.
- Medium of Instruction of the ODL student-teachers is not related to their level of perception on ICT-ELSS.
- Type of School Studied of the ODL student-teachers is not related to their level of perception on ICT-ELSS.
- U.G. Discipline of the ODL student-teachers is related to their level of perception on ICT-ELSS.
- Educational Qualification of the ODL student-teachers is not related to their level of perception on ICT-ELSS.
- Diploma in Teacher Education of the ODL student-teachers is not related to their level of perception on ICT-ELSS.
- Teaching Experience of the ODL student-teachers is related to their level of perception on ICT-ELSS.
- Working Locale of the ODL student-teachers is related to their level of perception on ICT-ELSS.
- Type of Working School of the ODL student-teachers is related to their level of perception on ICT-ELSS.
ii. Level of Attitude of ODL Student-Teachers towards Distance Education Technologies

The level of Attitude of ODL student-teachers towards Distance Education Technologies is only 9% high among the selected sample of the study. Even though the average is more than 80% and low level is about 6% of them. It is found that it is not up to the significant level of attitude of ODL student-teachers towards Distance Education Technologies.

- Gender of the ODL student-teachers is related to their level of attitude towards Distance Education Technologies.
- Age of the ODL student-teachers is related to their level of attitude towards Distance Education Technologies.
- Residential Background of the ODL student-teachers is not related to their level of attitude towards Distance Education Technologies.
- Medium of Instruction of the ODL student-teachers is related to their level of attitude towards Distance Education Technologies.
- Type of School Studied of the ODL student-teachers is related to their level of attitude towards Distance Education Technologies.
- U.G. Discipline of the ODL student-teachers is not related to their level of attitude towards Distance Education Technologies.
- Educational Qualification of the ODL student-teachers is related to their level of attitude towards Distance Education Technologies.
- Diploma in Teacher Education of the ODL student-teachers is not related to their level of attitude towards Distance Education Technologies.
- Teaching Experience of the ODL student-teachers is related to their level of attitude towards Distance Education Technologies.
- Working Locale of the ODL student-teachers is related to their level of attitude towards Distance Education Technologies.
- Type of Working School of the ODL student-teachers is related to their level of attitude towards Distance Education Technologies.
iii. Relationship between Perception on ICT-ELSS and Attitude towards Distance Education Technologies among ODL Student-Teachers

There is a significant relationship between the perception on ICT-ELSS and Attitude towards Distance Education Technologies of selected sample of the study.

- There is significant relationship between the perception on ICT-ELSS and Attitude towards Distance Education Technologies of Male ODL Student-Teachers.
- There is significant relationship between the perception on ICT-ELSS and Attitude towards Distance Education Technologies of Female ODL Student-Teachers.
- There is significant relationship between the perception on ICT-ELSS and Attitude towards Distance Education Technologies of ODL Student-Teachers of below 35 years old.
- There is no significant relationship between the perception on ICT-ELSS and Attitude towards Distance Education Technologies of ODL Student-Teachers of 35 and above 35 years old.
- There is significant relationship between the perception on ICT-ELSS and Attitude towards Distance Education Technologies of ODL Student-Teachers of Rural Residential Background.
- There is no significant relationship between the perception on ICT-ELSS and Attitude towards Distance Education Technologies of ODL Student-Teachers of Urban Residential Background.
- There is significant relationship between the perception on ICT-ELSS and Attitude towards Distance Education Technologies of Tamil Medium Studied ODL Student-Teachers.
- There is no significant relationship between the perception on ICT-ELSS and Attitude towards Distance Education Technologies of English Medium Studied ODL Student-Teachers.
There is significant relationship between the perception on ICT-ELSS and Attitude towards Distance Education Technologies of ODL Student-Teachers studied in State Board School.

There is significant relationship between the perception on ICT-ELSS and Attitude towards Distance Education Technologies of ODL Student-Teachers studied Matriculation School.

There is no significant relationship between the perception on ICT-ELSS and Attitude towards Distance Education Technologies of ODL Student-Teachers studied Arts U.G Discipline.

There is no significant relationship between the perception on ICT-ELSS and Attitude towards Distance Education Technologies of ODL Student-Teachers studied Science U.G Discipline.

There is significant relationship between the perception on ICT-ELSS and Attitude towards Distance Education Technologies of ODL Student-Teachers with U.G. qualification.

There is significant relationship between the perception on ICT-ELSS and Attitude towards Distance Education Technologies of ODL Student-Teachers with P.G qualification.

There is no significant relationship between the perception on ICT-ELSS and Attitude towards Distance Education Technologies of ODL Student-Teachers with M.Phil. Qualification.

There is significant relationship between the perception on ICT-ELSS and Attitude towards Distance Education Technologies of qualified ODL student-teachers in Diploma in Teacher Education.

There is significant relationship between the perception on ICT-ELSS and Attitude towards Distance Education Technologies of ODL student-teachers without qualification in Diploma in Teacher Education.

There is significant relationship between the perception on ICT-ELSS and Attitude towards Distance Education Technologies of ODL student-teachers of 2-10 years teaching experience.
• There is no significant relationship between the perception on ICT-ELSS and attitude towards distance education technologies of ODL student-teachers of 11-15 years teaching experience.

• There is significant relationship between the perception on ICT-ELSS and attitude towards distance education technologies of ODL student-teachers of above 15 years teaching experience.

• There is significant relationship between the perception on ICT-ELSS and attitude towards distance education technologies of ODL student-teachers working in rural locale.

• There is no significant relationship between the perception on ICT-ELSS and attitude towards distance education technologies of ODL student-teachers working in urban locale.

• There is significant relationship between the perception on ICT-ELSS and attitude towards distance education technologies of ODL student-teachers working in Government School.

• There is no significant relationship between the perception on ICT-ELSS and attitude towards distance education technologies of ODL student-teachers working in Private School.

iv. **Level of Perception of Teacher-Educators on ICT-ELSS**

The level of perception of Teacher-educators on Information and Communication Technology Enabled Learning Support System is only 19% high among the selected sample of the study. Even though the average is 69% and low level is about 11% of them. It is found that it is not significant level of perception of selected sample on ICT-ELSS. On considering the background variables associated with the teacher-educators who are handling class for the ODL Student-Teachers, the level of perception is presented as:

• Gender of the Teacher-Educators is not related to their Level of Perception on ICT-ELSS (Information and Communication Technology - Enabled Learning Support System).
• Residential Background of the Teacher-Educators is related to their Level of Perception on ICT-ELSS.
• Subject Handling of Teacher-Educators is not related to their Level of Perception on ICT-ELSS.
• Teaching Experience of Teacher-Educators is not related to their Level of Perception on ICT-ELSS.
• Qualification in Educational Technology of Teacher-Educators is related to their Level of Perception on ICT-ELSS.
• Working Locale of Teacher-Educators is not related to their level of perception on ICT-ELSS.
• Type of Working Institution of Teacher-Educators is not related to their Level of Perception on ICT-ELSS.

v. Interview Guides

Interview Guides helped in determining the expected and applied level of technologies in teaching-learning-evaluation process for ODL student-teachers from the teacher-educators and the resource persons.

vi. Site Visit and Observation

This micro-level study helps in determining the available resources at their study-centre (PCP) and its level of applicability during their course of study. Also, it helps in determining the teaching strategy to give the prescribed syllabus and the instructed assignments based on the application Information and Communication Technologies.

vii. Documentary analysis

It has helped in compare and contrast the syllabus associated with the completion of task both on theoretical and practical oriented examinations, assignments and workshops.
5.8. SUMMARY OF FINDINGS

i. Macro-Level Study

Perception is the process of receiving, interpreting and organizing sensory input in order to make sense of one’s environment. It is affected by the attributes of the target, the attributes of the perceiver and the context. An individual’s behaviour is based on their perception of reality, not on reality itself. It is important in communicating effectively, assessing situations, understanding behaviours, and selecting and evaluating the event or the process. Perception helps to understand differences in the behaviours of different people by showing us that their perceptions vary, even though the situation/context might be the same.

In this study, the perception of ODL student-teachers on Information and Communication Technology Enabled Learning Support System of selected Universities in the state of Tamil Nadu is taken for the initial step of the investigation. From the analysis drawn age, residential background, U.G. discipline, teaching experience, working locale and type of working school are related to their level of perception on Information and Communication Technology Enabled Learning Support System. On the other hand gender, medium of instruction, types of school studied, educational qualification and qualification in diploma in teacher education are not related to their level of perception on Information and Communication Technology Enabled Learning Support System.

“Educational systems around the world are under increasing pressure to use the new Information and Communication Technologies (ICTs) to teach students the knowledge and skills they need in the 21st century”(UNESCO 2002). The new technologies is seen as a cognitive instrument that has the prospective of encouraging inquiry based learning, reinforcing instructional concepts and fostering active and creative learning by engaging students in the process. If used effectively, these technologies have the potential to change the classroom dynamics and foster new pedagogical
approaches. Technology plays a critical role in information society. In the era of 21st century, there has been exponential growth in the use of Information and Communication Technology. ICT has become a vital tool of socio-economic and educational change. It helps to create, store, manage and converse information which is made more widely available. The improvement of education attainment helps us to prepare for such global technological change in the 21st century.

In this techno-need of the education, before adopting and availing any new technology for teaching-learning process, the feeling about those things to be adopted are to be studied properly then only, it is easy to integrate among the target in productive way further. Hence, this study aimed to study the level of attitude of ODL student-teacher towards the technologies using by the and it made effort to study the attitude towards the Technologies using for the open and distance learning under the name ‘Attitude of ODL student-teacher towards Distance Education Technologies’ in terms of five point rating scale in this regard. In studying the level of attitudes towards distance education technologies, gender, age, medium of Instruction, types of school studied, educational qualification, teaching experience, working locale and types of working school are related to their level of attitude towards Distance Education Technologies. But, residential background, U.G. Discipline and diploma in teacher education are not related to their level of attitude towards Distance Education Technologies.

A correlation study determines whether or not two variables are correlated. This means to study whether an increase or decrease in one variable corresponds to an increase or decrease in the other variable. It is very important to remember that correlation doesn't imply causation. In this present study, the investigation is done with correlation between the perception of ODL student-teachers on Information and Communication Technology Enabled Learning Support System and Attitude of ODL student-teacher towards Distance Education Technologies. From the analysis, it is found that there is significant relationship between the perception on
ICT-ELSS and attitude towards Distance Education Technologies among male and female student-teachers, student-teachers of below 35 years age group, student-teachers with rural residential background, student-teachers who studied Tamil medium, student-teachers studied in both State Board and Matriculation schools, student-teachers with U.G. and P.G. qualifications, student-teachers of both diploma in teacher education qualified and unqualified groups, student-teachers with 2-10 years and above 15 years teaching experience, student-teachers working in rural locale and student-teachers working in Government schools. On the other hand, there is no significant relationship between the perception on ICT-ELSS and attitude towards Distance Education Technologies among student-teachers of 35 and above 35 years age group, student-teachers residing at urban residential background, student-teacher studied in English medium, student-teachers of both arts and science U.G. discipline, and student-teachers with M.Phil., qualification in their major subject, student-teachers with 11-15 years teaching-experience, student-teachers working in urban locale and student-teachers working in Private schools.

It is found that ICT’s can assist in upholding more learner centered and interactive learning, but no amount of technological progression of educational institutions will change the performance of our students without the active participation and support of teachers who are capable of take advantage of the reflective possibilities that ICT can offer for the teaching learning process. Nevertheless, it is also necessary to create in the teachers an awareness of the possibilities of technology as an efficient assistant to knowledge and pedagogy. If the teacher will adopt the technologies for their classroom, it has to be practiced during their teacher education course of study itself. Then only, any teacher can use the available technologies to the level of their students in future effectively. Hence, the integration of all the available technologies such as for teaching, feedback, evaluation, interaction, etc through the techno-mode with less time are to be implemented during their
study. Hence, the integration of technologies is urgent need in teaching student-teachers in general and ODL student-teachers in particular. Therefore, this study made an attempt to study the perception of all technological support systems by providing opinionnaire to the teacher-educators of ODL student-teachers of this study. It is proved that residential background and qualification in Educational Technology of teacher-educators are related to their level of perception on Information and Communication Technology Enabled Learning Support System. On the other hand, gender, handling of subjects, teaching experience, working locale and types of working institutions of the teacher-educators are not related to their level of perception on Information and Communication Technology Enabled Learning Support System.

ii. Micro-Level Study

In this micro-level study, the interview-guides was prepared to inquiry the teacher-educators, campus coordinators and the resources persons who were taking class for ODL student-teachers of two Universities namely, Madurai Kamaraj University and Tamil Nadu Open University. From the output of all mentioned categories explained the following aspects since they are using and they are not using the technologies for teaching ODL student-teachers. Site Visit and Observation was done with the view of available infrastructures which includes physical and technological resources analysis by direct site visit and the observations for above two universities. In this site visit, the classroom atmosphere, effective utilization of library, utilization of different types of laboratories, sanitary facilities and drinking water facility and the effective administration both on academic and administrative sides. It was well and good, since the ODL teacher-education pragramme is structured programmes and the requirements needed are also requested to arrange before getting permission from the concern study centre and centre coordinators of the course. Hence, the said facilities and the resources are being effectively used for ODL student-teachers during their study since they are attending their class during week-end and holidays.
In observation aspect, teaching strategy and their involvement, students’ interest and interaction, effective use of time allotted for teaching both counseling and workshop sessions, theory and activity based assignment discussions, classroom management of the teacher-educators who handling ODL students were being observed. In these classes, the ICT orientation was also given to completion of their assignments during their counselling and workshop sessions. Even though the time is limited to complete the syllabus, the students are given opportunities to interact and feedback their view on their learning experiences of their study. The observation was also done with nature of follow-up activities and its evaluation and its feedback from the teacher-educators was being done periodically.

In documentary analysis, the study material based on the optional and elective papers selected are being delivered at the time of admission for the first year and at the commencement month of second year for second year materials. In addition to the study materials for the theoretical point of view, the records based on the activities given during the course, after the course and at the time of teaching practice are also asked the students to prepare for their practical evaluation process. The analysis and evaluation of those records are being done with the criteria formulated by the University and the weightages to the concern subjects of records are also done with the norms associated with the preparation and presentation by considering the time schedules for their submission and their explanations at their practical examinations.

5.9 MAJOR FINDINGS OF THE STUDY

Based on the results drawn from the analysis, the following are the major findings of the study:

I. Comparing the level of perception of ODL student-teacher (B.Ed.) on Information and Communication Technology Enabled Learning Support System (ICT-ELSS), there is only 10% of them are having high level perception. More than 15% of the selected samples are having low level perception.
II. Level of perception of ODL student-teachers on ICT-ELSS is found to be significantly related to the following variables:
- Age
- Residential Background
- U.G. Discipline
- Teaching Experience
- Working Locale
- Type of Working School

III. Level of perception of ODL student-teachers on ICT-ELSS is found to be significantly **not** related to the following variables:
- Gender
- Medium of Instruction
- Type of School Studied
- Educational Qualification
- Qualification in Diploma in Teacher Education

IV. Considering the level of attitude of ODL student-teacher (B.Ed.) towards Distance Education Technologies, only 8% of them are having high attitude. But considering the average level (85%), the low level attitude (6%) is acceptable.

V. Level of attitude of ODL student-teachers towards Distance Education Technologies is found to be significantly related to the following variables:
- Gender
- Age
- Medium of Instruction
- Type of School Studied
- Educational Qualification
- Teaching Experience
- Working Locale
- Type of Working School
VI. Level of attitude of ODL student-teachers towards Distance Education Technologies is found to be significantly not related to the following variables:

- Residential Background
- U.G. Discipline
- Qualification in Diploma in Teacher Education

VII. In the case of correlation between the perception on ICT-ELSS and attitude towards Distance Education Technologies of ODL student-teachers, there is a significant relationship between the perception on ICT-ELSS and attitude towards Distance Education Technologies of student-teacher of the study.

VIII. There is a significant relationship between the perception on ICT-ELSS and attitude towards Distance Education Technologies of ODL student-teachers for the following variables:

- Male ODL student-teachers
- Female ODL student-teachers
- ODL student-teachers of below 35 years old
- ODL student-teachers with Rural Residential Background
- ODL student-teachers studied in Tamil Medium
- ODL student-teachers studied in State Board type School
- ODL student-teachers studied in Matriculation type Schools
- ODL student-teachers with U.G. qualification
- ODL student-teachers with P.G. qualification
- ODL student-teachers with Diploma in Teacher Education
- ODL student-teachers without Diploma in Teacher Education
- ODL student-teachers with 2-10 years Teaching Experience
- ODL student-teachers with above 15 years Teaching Experience
- ODL student-teachers working in Rural Locale
- ODL student-teachers working in Government Schools
IX. There is no significant relationship between the perception on ICT-ELSS and attitude towards Distance Education Technologies of ODL student-teachers for the following variables:
- ODL student-teachers of 35 and above 35 years old
- ODL student-teachers with Urban Residential Background
- ODL student-teachers studied in English Medium
- ODL student-teachers with Arts U.G. Discipline
- ODL student-teachers with Science U.G. Discipline
- ODL student-teachers M.Phil., qualification
- ODL student-teachers with 11-15 years Teaching Experience
- ODL student-teachers working in Urban Locale
- ODL student-teachers working in Private Schools

X. Comparing the level of perception of teacher-educators of ODL on Information and Communication Technology Enabled Learning Support System (ICT-ELSS), there is only 19% of them are having high level perception. More than 10% of the selected samples are having low level perception.

XI. Level of perception of teacher-educators of ODL on ICT-ELSS is found to be significantly related to the following variables:
- Residential Background
- Qualification in Educational Technology

XII. Level of perception of teacher-educators of ODL on ICT-ELSS is found to be significantly not related to the following variables:
- Gender
- Handling of Subjects
- Teaching Experience
- Working Locale
- Type of Working Institutions

XIII. Interview Guides helped in explaining the availability of resources are given to the teacher-educators of the ODL student-teachers and how much they are being exposed with available technologies in the study centers. Also, the further requirements are also shown that there
should be more concentration on techno-pedagogy rather than the oral delivery of the content prescribed for their study.

XIV. In Site Visit and Observation, there is an appropriate man and material resources are being provided to the ODL student-teachers at appropriate level.

XV. Documentary analysis helped in explaining the numbers of study-materials are being delivered to the ODL student-teachers and they are well structured units to their level of expectations. But, due to the time constraints, it is taught in essence and it is not elaborately taught to the students as in the case of conventional mode students.

5.10 INTERPRETATIONS OF MAJOR FINDINGS

From the analysis drawn from the numerical data collected from the sample based on the perception of ODL student-teachers on Information and Communication Technology Enabled Learning Support System (ICT-ELSS), following are the interpretations based on the background related to the sample:

- It is found that gender of ODL student-teachers is not significantly related to their level of perception on Information and Communication Technology Enabled Learning Support System (ICT-ELSS). It shows that there is no disparity in perceiving the need of ICT-ELSS for their study.

- It is noted that Tamil and English medium studied ODL student-teachers are not significantly related to their level of perception on Information and Communication Technology Enabled Learning Support System (ICT-ELSS). It shows that medium is not the reason to hesitate in perceiving the need of Information and Communication Technology Enabled Learning Support System (ICT-ELSS) for their learning.
• It is shown that type of school studied of ODL student-teachers is not significantly related to their level of perception on Information and Communication Technology Enabled Learning Support System (ICT-ELSS). Need of adopting technology is not only for the students studying in Matriculation or State Board type school. It is the required need to update their knowledge and their learning better beyond the mark among the students of school level itself. Hence, type of school studied do not influence on their level of perception on Information and Communication Technology Enabled Learning Support System (ICT-ELSS).

• From the findings of the study, an educational qualification of ODL student-teachers is not significantly related to their level of perception on Information and Communication Technology Enabled Learning Support System (ICT-ELSS). Educational qualification is the basic need to upgrade their subject knowledge, but the importance of adopting the technologies is a compulsory need to equip them better understanding of their subjects and its applications effectively. Hence, educational qualification does not cause any impact on their level of perception on Information and Communication Technology Enabled Learning Support System (ICT-ELSS).

• The finding of the ODL student-teachers’ perception on ICT-ELSS based on the diploma in teacher education qualification proved that qualification of diploma in teacher education is not significantly related to their level of perception on Information and Communication Technology Enabled Learning Support System (ICT-ELSS). The finding shows that the Diploma in Teacher Education does not influenced level of perception on Information and Communication Technology Enabled Learning Support System (ICT-ELSS).
• It is obtained that age, residential background, U.G. discipline, teaching experience, working locale and type of working school of ODL student-teachers is significantly related to their level of perception on Information and Communication Technology Enabled Learning Support System (ICT-ELSS).

• ODL student-teachers of 35 and above 35 are having higher perception than the below 35 age group. It shows that even though the sample that uses technology more in below age group, they may not have concrete perception on the technologies they are using. On the other hand, the usage of technologies in different aspect in the 35 and above 35 years age group may be lesser; they are having more perception on ICT-ELSS. This result drawn may be the usage of technologies with knowing their depth of their role for their study.

• ODL student-teachers of urban residential background are having higher perception on Information and Communication Technology Enabled Learning Support System (ICT-ELSS). Due the availability of e-resources is easy at their place, the students of urban residential background are higher in their level of perception on ICT-ELSS. On the other hand, the facilities to adopt such technologies for their learning is very lesser among the students of rural residential background, they may have lower perception on ICT-ELSS.

• ODL student-teachers of Science U.G. discipline group are having higher perception than the Arts U.G. discipline students. This may be the reasons behind the compulsive use of browsing and technical technologies for the practical and activity oriented assignments are being given to the science group students at their U.G. level. The same level of utilizing technologies for their learning among the arts students at their U.G. level should be encouraged so as to compete with the science discipline students.
It is found that teaching experience of ODL student-teachers is significantly related to their level of perception on Information and Communication Technology Enabled Learning Support System (ICT-ELSS). Teaching experience of 2-10 years is having lesser perception on ICT-ELSS than the students of 11-15 years teaching experience. Also, above 15 years teaching experience group is lesser than the 11-15 years group, but they are not such deviation like 2-10 years teaching experience group ODL student-teachers. It is shown that 11-15 years teaching experienced ODL student-teachers are higher on perception than the other two groups. At the beginning stage of teaching, teachers may not know the deep importance of technologies for their teaching process and after 15 years of teaching experience, they may believe that traditional teaching is comfortable and they may not having interest in adopting any innovative technology for their teaching process.

It is noted that working locale of ODL student-teachers is significantly related to their level of perception on Information and Communication Technology Enabled Learning Support System (ICT-ELSS). Working locale provides opportunity to avail the technology for their class preparation and having sufficient infrastructure to accommodate the available technologies soon it comes to play. But it is not possible such extent in the case of student-teachers working in rural locale.

It is found that type of working school of ODL student-teachers is significantly related to their level of perception on Information and Communication Technology Enabled Learning Support System (ICT-ELSS). It is shown that the student-teachers working in private school are having higher perception than the student-teachers working in government schools. This may be the reason that maintenance of the resources and the technician are easily available to
utilize and to repair if it fails. In the case of government school working student-teachers may not have such provision to utilize and repair it immediately if it fails to work. Also, there may be due to the large number of provisions to provide facilities to use the technologies in government schools and it may not be happened in government schools in such extent since these schools may have very large populations to study.

The findings based on the data gathered from the same sample mentioned above in terms of attitude towards Distance Education Technologies among the ODL student-teachers are interpreted as:

- The ODL student-teachers of rural and urban residential background, Arts and Science U.G. disciplines and the student-teachers who completed and not completed Diploma in Teacher Education groups of are not related to their level of attitude towards Distance Education Technologies. It proved that residential background is not a barrier to have high level attitude towards Distance Education Technologies which are frequently using by them for their study. Also, the student-teachers with arts and science discipline in their U.G. level do not cause any changes in their level of attitude towards distance education technologies. It may be due to equal level of attitude towards technologies may be developed at their course of study. Considering the qualification of Diploma in teacher education, it may not be caused any significant changes in their attitude level towards distance education technologies. As discussed in the case of perception, the qualification in Teacher Education Diploma may make them teaching effective rather than their increased level of attitude towards Distance Education Technologies.
• It is found that gender of ODL student-teachers is significantly related to their level of attitude towards Distance Education Technologies. It proved that male ODL student-teachers are having greater level attitude towards than the female student-teachers. This may be due the utilization of electronic devices and are provided with many exposure based on their gender disparity in the society.

• Like the perception level on ICT-ELSS among the ODL student-teachers, it is obtained that age of ODL student-teachers is related to their level of attitude towards Distance Education Technologies. The student-teachers of 35 years old more than 35 years are having more level of attitude towards Distance Education Technologies. This may be due to the sustained level of application of available technologies for their study and for their work for personal.

• It is obtained that medium of Instruction of ODL student-teachers is related to their level of attitude towards Distance Education Technologies. Student-teachers studied in English medium are having greater level of attitude towards ODL student-teachers are related to their level of attitude towards Distance Education Technologies. English medium studied students may be adopted technologies for their study easily since there is no language barratry in utilizing the technologies.

• It is found that type of school studied of ODL student-teachers is related to their level of attitude towards Distance Education Technologies. Also, matriculation type school studies ODL student-teachers are having higher in their level of attitude towards Distance Education Technologies than the state board type school studied student-teachers. In matriculation type school, there may be additional technical support services in the computer science laboratory to provide opportunity from the lower level of their school education. On the other hand, the same type of input may not be given such extent among the student-teachers studied in state board type schools.
• It is found that educational qualification of ODL student-teachers is related to their level of attitude towards Distance Education Technologies. It shows that higher the educational qualification and higher will be level of attitude towards Distance Education Technologies. On comparing U.G., P.G. and M.Phil., qualified student-teachers are not having same level of attitudes towards Distance Education Technologies. If higher in qualification, the use of technologies for their study is a compulsive factor so as to enhance their level of utilization of technologies for their study.

• It is observed that teaching experience of ODL student-teachers is related to their level of attitude towards Distance Education Technologies. It is noted that 2-10 years teaching experienced student-teachers are having more attitude than 11-15 years experienced group in average level. On the other hand, more than 15 years teaching experienced sample are having better attitude than other two categories in the average level perception. But in the case of high level, the student-teacher of 11-15 years is having more attitude than the two groups. The sample in this state (11-15 years teaching experienced) may have realized the need of technologies and may be practiced technologies to some extent more than the two groups.

• It is found that working locale and type of working school of ODL student-teachers is related to their level of attitude towards Distance Education Technologies. It is observed that very large percentage of average level in the attitude towards distance education technologies among the students of urban locale working sample. It proved that majority of the sample are having appreciable amount of attitude towards required variables in order to make them use effectively. In the case of government institution working student-teachers are having greater level attitude but the average level is comparably low with the private school working student-teachers.
In these two cases, it is looking like the student-teachers working in rural and in government institution are having better attitude level towards distance education technologies. But the reality is true to the numeric output extent, but the majority of student-teachers of urban working locale and working in private school are having more average level than the other sides.

- The findings based on the correlation between the perception of ODL student-teachers on Information and Communication Technology Enabled Learning Support System (ICT-ELSS) and their attitude towards Distance Education Technologies elicited that there is a significant relationship between the perception of ODL student-teachers on Information and Communication Technology Enabled Learning Support System (ICT-ELSS) and their attitude towards Distance Education Technologies. Also, the significant relationship between the above mentioned variables based on the background variables associated with this study exposed its own output based on the significant factor associated with the variables.

The findings based on the opinionnaire given to the teacher-educators of ODL student-teachers are interpreted in the following part:

- It is found that gender of teacher-educators of ODL is not significantly related to their level of perception on Information and Communication Technology Enabled Learning Support System (ICT-ELSS). It shows that there is no disparity in perceiving the need of ICT-ELSS for their teaching and evaluation process. Hence, gender is the reason to hesitate to have different level perception in this present scenario.

- It is observed that nature of handling subject of teacher-educators of ODL is not significantly related to their level of perception on Information and Communication Technology Enabled Learning Support System (ICT-ELSS). It means that in teacher education programme,
the concentration is more on ‘how to teach’ rather than ‘what to teach’. Hence, there should be equal level of perception on their application components of available technologies for their teaching are not different among the different subject handling teacher-educators.

- It is noted that nature of teaching experience of teacher-educators of ODL is not significantly related to their level of perception on Information and Communication Technology Enabled Learning Support System (ICT-ELSS). In this present era, the competency is not assessed based on the content taught, it is based on the way in which the prescribed content is being facilitating by incorporating the techno-elements based on the requirements. Hence, teaching experience is not valued unless other the teaching is involved with technology oriented inputs.

- It is shown that working locale and Types of Institutions of teacher-educators of ODL are not significantly related to their level of perception on Information and Communication Technology Enabled Learning Support System (ICT-ELSS). It proved that locale of working and type of working institutions are not a barrier to adopt the technologies since they are all having smart phones with net connection at their pockets itself. The type of institutions do not cause any variations in their level of perception and this may be due the commitments of the teacher-educators towards their job and are having required techno-skills and applications of all available technologies for their class preparation without any disparities.

- Considering the residential background and qualification in educational technology of teacher-educators’ perception on ICT-ELSS, residential background and qualification in educational technology of teacher-educators is significantly related to their level of perception on Information and Communication
Technology Enabled Learning Support System (ICT-ELSS). It is observed 63% of urban residing teacher-educators are having high level and it shows that urban background provide many exposure with lesser cost and it may be easily adopted and applied for their academic and personal work. On the other hand, it may be given to the rural background sample and this may be a resistance in adopting level itself among them. In the case of more percentage level of perception among the teacher-educators with qualification in Education Technology and this qualification includes hardware and software approaches among them. Hence, it helps teacher-educators to handle their students effectively with less time without any hesitation in their progress of action.

- Interview guides helps in drawing the required details from the study centre coordinators and teacher-educators related to their involvement in handling the ODL student-teachers by incorporating all the available technologies for teaching and evaluation process and for their academic work further effectively.

- Site Visit and Observation of the study revealed the methodology adopted for physical accommodation with the required facilities are good to the expected level. The man and material resources were used effectively to the their level best and teacher-educators made their full efforts towards the usage of electronic resources and the Information and Communication Technology Enabled Learning Support System for their study and for their further assignments.

- Documentary analysis helped in knowing the curriculum framed by two universalities which was taken for micro-study for the specified learners including scheme of examinations. it also helped in knowing the details of study materials and its timely delivery to the
students without any disparities. Even though the total marks of two selected universities are different, the academic inputs and their practical activities during their teaching practice were same so as to make the programme success to the great extent.

5.11 EDUCATIONAL IMPLICATIONS

The educational implications of the present investigation suggest how the findings can be employed for an improved system in function. It is known that based on the use of the findings of this study, there should be in need of recommendations for further use of findings of the study effectively. The educational implications and the recommendations are as:

In this techno era, before adopting any technology it is important to know the perception and attitude level towards the adaptation and applications of all technologies. The study stated that there is in need of increase in perception on ICT-ELSS and the attitudes towards the technologies are being used and to be used among the ODL student-teachers. If these are increased appropriately among the students in general and ODL students in particular, there is no doubt that the next level, the adaptation of technology and application of all available technologies for their learning will be more effective.

Age, residential background, U.G. discipline, teaching experience, working locale and types of working school of the ODL student-teachers are play major roles in perceiving the need of Information and Communication Technology Enabled Learning Support System (ICT-ELSS) for their study in this Investigation. It shows that equal opportunities are to be given the students of above mentioned category so as to make them equal in their perception level on Information and Communication Technology Enabled Learning Support System (ICT-ELSS) and it will make them comfortable zone comparably with their other groups of the sample at the first step.
Gender, age, medium of instruction, types of school studied, teaching experience, working locale and the type of working school are playing vital role in having the appropriate level attitude towards the distance education technologies. By means providing the strong faith in makes use of all technologies not only for their teaching-learning process, and also for their personal and common applications, the level of attitude towards technologies are being used for distance education. Hence, it will promote their level of applications in all academic and personal achievement technologically.

In the case of teacher-educators handing classes for ODL student-teachers, the level of perception through opinionnaire was found to be moderate. Also, the residential background and qualification in Educational Technology are playing major role in perceiving the need of Information and Communication Technology Enabled Learning Support System (ICT-ELSS) for their teaching and evaluation process. The teacher-educators from urban residential background and the teacher-educators with qualification of Educational Technology are having high level perception. This shows that the availability of the e-resources at their residential place is more and the techno-knowledge through the qualification in Educational Technology are achieved high among the teacher-educators of ODL student-teachers. Hence, it is important to adopt at least to make their environment technologically and should have qualified in Educational Technology after getting into the job of teacher education.

5.12 SUGGESTIONS FOR THE FURTHER RESEARCH

The main objectives of this investigation is to study the level of perception on Information and Communication Technology Enabled Learning Support System and the level of attitude towards Distance Education Technologies among the ODL student-teachers in addition to study the level of perception of ODL teacher-educators on Information and Communication Technology Enabled
Learning Support System. The objectives of this study have completed up to the mark and the further part dealt with the suggestions for further research and they will helpful to the researchers for doing their further investigations deeper with different domains of the fields. They are:

i. Present study is done with the perception by considering knowledge and understanding level components of ICT-ELSS only. It may be extended with the perception of the sample with the application and appreciation level of ICT-ELSS further.

ii. In study of attitude towards Distance Education Technologies, the components are dealt with the application level with rating scale; it may be extended as the questionnaire so as to get the correct response from the selected sample of the study further.

iii. Present investigation is a cross-sectional in nature and it can also be done as longitudinal study by integrating the innovative technologies in teaching - learning – evaluation process progressively.

iv. The present study took ODL student-teachers of five selected Universities in the State of Tamil Nadu and the study was done with the level of perception on ICT-ELSS and attitude towards Distance Education Technologies among ODL student-teachers. These above selected variables can also be done with comparative study of different Universities of Tamil Nadu and other States of India.

v. Present study helped in study of perception of teacher-educators who are handling classes for ODL student-teachers of selected Universities by means of Opinionnaire with three point rating scale. The comparative study can also be done with the traditional mode teacher-educators and the teacher-educators handling classes for ODL student-teachers by considering the techno-skills, qualification in Educational Technology along with background variables associated with them.
vi. The effectiveness of the Technological oriented classes with the appropriate technological teaching and learning inputs given to them can also be done with same population of the study.

vii. The present investigation aimed at derived the level of perception on Information and Communication Technology Enabled Learning Support System and level of Attitude towards Distance Education Technologies with the selected five Universities of Tamil Nadu State, it can also be done with other states of India as comparative study.

viii. In micro-level study, the study materials and the syllabi of only two Universities were analyzed. In further, the analysis may also be done with by providing techno-components to each papers of the programmes associated with them.

ix. In addition to above said investigations, case study of each institutions based on origin and development of ODL programmes being provided can also be done and those are compared with their current development of teaching inputs to their students by incorporating the techno-components for their delivery of contents and administration technologically.

5.13 RECOMMENDATIONS

From the findings and the analysis of this study, the following are the some of the recommendations:

It is noted that age is considered as the one of the important factor in perceiving the need of Information and Communication Technology Enabled Learning Support System (ICT-ELSS), right from the beginning of the school curriculum, Information and Communication technology should be imparted and to make the learners to realize the role of ICT for their learning and for the further application in their real life situation. Hence, it is important to enhance the techno-oriented curriculum from the school education chronologically to their level of intelligence and to their level of applicability without deviating from their level of study.
Residential background is the important component in level of learning and the availability of resources. Hence, it is recommended that appropriate number of net café can established by government in different levels and different size based on the density of population of the background.

Discipline of U.G. should not determine the level of perception and attitude on and towards the Technologies associated with the learning. Hence, equal importance should be given in all disciplines at the tertiary level of learners in terms of applications of learning technologies in and out of the classrooms and institutions through the techno-curriculums related to their level of study. Working locale and the type of working school or the institutions are the important components both in students and teachers in this study concerned. With this digital era, living and working locale are not the reason to adopt the technologies to their field concerned. Hence, it is an urgent need to equip all the schools and the institutions technologically sound and should be globally connected. An appropriate in-service training to the teachers and teacher-educators in general and for the ODL-teacher-educators with the administrators of concerned areas in particular may be given based on the current trends of technology inputs for their teaching strategy and their learning styles.

Qualification in Educational Technology is the qualification to retain their role in teaching is the new phenomenon now. Hence, after getting job, it is important to undergo add-on course in addition to their orientation or refresher programmes among the teacher-educators in general and among the teacher-educators who are competent to take classes for ODL students in particular.

5.14 CONCLUSION

This investigation has sought to explore the role of Information and Communication Technologies and Information and Communication Enabled Learning Support System in ODL programmes with specific reference to Teacher Education programmes in the State of Tamil Nadu.
Since, the world is moving extremely towards digital era, it is in need of adoption of all available technologies in ODL programmes in general ODL Teacher- Education programmes in particular. Even though the curriculum of teacher-education is being updated with the techno-pedagogy, still now there is a lag behind the utility level. If the teacher-educators are competent enough to avail techno-pedagogy, the availability of technologies are not up to the mark of working and range of output. If both are not equivalent in applicability, ODL students may not adopt the providing technologies for their course of study and other related interactions. In-service teachers are in position to equip their educational qualification along with the development in their competency of technological skills and its applications in and out of their study. In this study, perception and attitude related to Information and Communication Technology Enabled learning Support System and Distance Education Technologies were mainly taken up to make them aware of technologies around them and they should move towards with think of its importance throughout their study and in their real life situation. If a man is called as educated one, he may be qualified in degrees before. But in this scenario, he is not educated until and otherwise he is technologically sound enough. The development of nation lies in the level of educational inputs to the people in all levels without any disparity. But, it cannot be achieved through only conventional mode, hence the role of Open and Distance Learning is comes to play an important and unavoidable. Hence, Information and Communication Technology make the process into great success with productive output. Therefore, in the case of Teacher-Education Programmes, the urgent need is in the application of all available technologies so as to make the system success and to make the nation technologically competent enough through effective Teacher Education programmes in general and Open and Distance Teacher Education Programme in particular to meet the challenge of the world productively.