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**PROFESSIONAL DEVELOPMENT OF TEACHER EDUCATORS WORKING**

**IN B.Ed COLLEGES**

**SOBISH.C**

*Dissertation
submitted to the University of Calicut
in partial fulfillment of the requirement*

 *for the Degree of***MASTER OF EDUCATION**

**FAROOK TRAINING COLLEGE**

**UNIVERSITY OF CALICUT**

**2010**

**DECLARATION**

 I, SOBISH.C, do hereby declare that this dissertation entitled “**PROFESSIONAL DEVELOPMENT OF TEACHER EDUCATORS WORKING IN B.Ed. COLLEGES**” has not been submitted by me for the award of any degree, diploma or recognition before.

FarookTraining College, **SOBISH**

 .12.2010.

**Mr. Abdul Basheer, U.**

Associate Professor

Farook Training College

Calicut

**CERTIFICATE**

 I, Mr. ABDUL BASHEER, U**.**, do hereby certify that this dissertation entitled “**PROFESSIONAL DEVELOPMENT OF TEACHER EDUCATORS WORKING IN B.Ed. COLLEGES**“ is a record of bonafide study and research carried out by **SOBISH.C** under my supervision and guidance and has not been submitted by him for the award of any degree, diploma, title or recognition before.

 **Mr. Abdul Basheer U.**

Farook Training College, *(Supervising Teacher)*

 .12.2010

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*Farook Training College,* **SOBISH**

 *.12.2010*

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# INTRODUCTION

Education is the mirror where one can see the reflection of the world. Education has been considered as the most important input for the development of an individual, society and nation. Education is the product of experience. Education enlightens man and society and is the integral part of whole life cycle.

Teacher is the most vital factor of influence in the system of education. It is the teacher who matters most as far as the quality of education is concerned. Unlike other professionals, teachers have to play a very important role in the society, and normally we expect much more from them as they are the torch bearers of the society. The well equipped teacher is supreme in education. Teachers have a great responsibility at a time when our society is undergoing tremendous transformation.

The Secondary Education Commission (1954) has rightly stated, “We are however convinced that the most important factor in the contemplated educational reconstruction is the teacher, his personal qualities, his educational qualifications, his professional training and the place that he occupies in the school as well as in the community”.

Teachers occupy a prominent place in any society and in any educational system. A teacher is the most accountable and responsible person of the society. He should feel the importance of the profession. He must be honest, devoted and dedicated to his profession.

The Indian Education Commission (1964-66) observed that, “The success of education depends on the quality of its teachers, who shape the classroom by sharpening younger generations. There is no exaggeration to say that any system of education can ever rise above the level of the quality of its teachers”. The commission also points out that, “Of all the different factors that influence the quality of education and its contribution to the national development, the quality, competence and character of teachers are undoubtedly the most significant”.

Quality is the key word today. Quality has become a dynamic concept that has constantly been adapted to a world undergoing profound social and economical transformation. Quality of life is the outcome of quality education, which reflects in the individual’s thoughts and actions in every sphere – home, society interaction and work too.

The quality of school education is dependent on the academic and professional competency of the teacher, the single major determinant factor that ensuring quality education. There is no denying of the fact that the quality of teachers depends to a large extent on the quality of training imparted to the teachers.

The present scenario in teacher education centres is astonishing. Each year thousands of teacher educators are coming out from different institutions. The role of teacher education colleges is crucial in this context i.e.; how they conduct the training programme, what emphasis is laid and most important of all, what type of teacher educators they have. The role of teacher educators gains paramount significance, as they are preparing teachers for the future. The quality of teacher preparation is closely related to the quality of teacher educators.

Since teacher educators are the most crucial component of the training programme, they must continuously conduct self evaluation to find out their flaws and weakness and take necessary action for modification and thus improving their competencies and standards. For improving the quality of teacher education professional development is inevitable.

**1.1. NEED AND SIGNIFICANCE**

 Educational scenario in the world is changing and as a whole is passing through a knowledge revolution. Education today is more than teaching and learning with great emphasis being laid on technology. In the age of a techno-scientific revolution, when the quantity of knowledge and information is expanding exponentially along with the increasingly varied student population, the quality of training for teachers and the quality of teaching in higher education institutions demand top priority.

It must be relevant to mention the fact that in the present scenario of education in our country, one comes across teachers with low or minimum qualifications getting entry into the teaching profession, which adversely affect the quality of prospective teachers who can shape the future citizens of our country. Professional Development implies that the teacher should continue to learn throughout the periods of his/her study, in the profession.

As a result of the adoption of low qualified teacher educators in to the teacher education system, the problem of deteriorating educational standards both qualitatively and quantitatively seems to be assuming alarming dimensions. Besides academic qualifications, one of the important determinants for enhancing the quality of teachers in the teacher education institute is the professional development of teacher educators.

Teachers are the role models to the students and when it comes to the teacher educators, they directly influence the prospective teachers and the future citizens in the long run. To ensure best performance talented teachers required to upgrade their skills and knowledge time to time.

The remarkable influence of information technology can never be denied in the field of education. Now the blackboards, chalks, dusters and other traditional teaching aids are being replaced by laptops, LCD projectors and such like modern instruments. But quite unfortunately, a sizable number of teacher educators are not familiar with the use of technology in their classrooms. A study conducted by Naseema (2006) on college teachers of University of Calicut and Kerala threw light to the weaknesses they had encountered. Many teachers admitted their weakness in using technologies in the class room, lack of adequate knowledge in the content area, new pedagogy and research methodology etc. If the teachers do not get re–trained and adapted to adopt the new system, any effort at educational innovation is bound to fail. The well qualified and knowledgeable teacher can contribute in fulfilling the aspirations of youth in accordance with the contemporary environment.

A professional, in any field always needs to sharpen their skills and find ways to improve the way they carry out their profession. Education gets practical shape through teaching–learning process and gets proper identification and placement when teaching is accepted as a profession.

In the era of modern knowledge we have to accept teaching as a profession and not just as a job. A job is one which can be achieved with skills and the ability to think quickly and effectively in different situations and fields of life. These skills are not exclusively confined to any particular field or situation. But a professional is that who has to work in a particular field or sector for which he is trained.

Professionalism among teachers is more important than in any other field because they are supposed to prepare the younger generation in a socially acceptable manner and as confident and competent personalities. Garret,*et al.(2001)* found that teachers were more likely to change their instructional practices and gain greater subject knowledge and improved teaching skills when their professional development linked directly to their daily experiences and aligned with standards and assessments.

Teacher educators bear a serious responsibility to lead the generations correctly and wisely. Education of teachers is of utmost importance to make teaching an interesting and effective process. No educational reconstruction can take place effectively without an adequate preparation of teachers depends upon the involvement of teacher educators in their profession.

Teacher educators get knowledge about new technologies and methods of teaching through continuing professional development programmes; it will increase knowledge and competence of teacher educators. The teacher educator influence the student or the teachers of new generation by what he says and even more what he does. So the professional development of teacher educators is a must.

Whatever may be the occupation, if the individual is engaged in it, without involvement will result in professional stagnation to the clients. An uninvolved teacher spells disaster to the country’s future. It is suicidal in the teaching profession (Indian Education Commission, 1964-66).

 As there are not much studies reported in this field of research and least studies in the sample of teacher educators, the present research is significant and attempts to develop a programme schedule for Professional Development of teacher educators working in B.Ed colleges

**1.2. STATEMENT OF THE PROBLEM**

 The present study is entitled as “PROFESSIONAL DEVELOPMENT OF TEACHER EDUCATORS WORKING IN B.Ed. COLLEGES”.

**1.3. DEFINITION OF KEY TERMS**

 The key terms in the statement of the problem are explained below so as to get operational definitions.

**1.3.1. Professional development**

 In the present study professional development is operationally defined as to grow in to more advanced state in one’s own profession or job.

**1.3.2. Teacher Educators**

 For the present study, the term ‘Teacher Educators’ is used to denote the teachers who are teaching student teachers in B.Ed. colleges.

**1.3.3. B.Ed. Colleges**

 For the present study, the term B.Ed. colleges is used to denote the colleges conducting Bachelor of Education Courses.

**1.4. VARIABLES OF THE STUDY**

The present study is designed with two types of variables, namely Independent Variables and Dependent Variable.

**1.4.1. Independent Variable**

 The independent variables are Gender, Type of management, Subjects of teaching, Qualification and Teaching Experience.

**1.4.2. Dependent Variable**

 The dependent variable is Professional Development of teacher educators.

**1.5. OBJECTIVES**

 The objectives set forth for the study are the following.

1. To find out the extent of Professional Development of teacher educators in the total sample and in the relevant sub samples based on
	1. Gender
	2. Type of Management
	3. Subjects of Teaching
	4. Qualification
	5. Teaching Experience
2. To find out whether there exists significant difference in the mean scores of Professional Development of teacher educators among the relevant sub samples based on
	1. Gender
	2. Type of management
	3. Subjects of Teaching
	4. Qualification
	5. Teaching Experience
3. To find out whether Type of Management, Gender and Teaching Experience have main and interaction effect on Professional Development of teacher educators.

**1.6. HYPOTHESES**

 The hypotheses formulated for the study are the following.

1. There exists significant difference in the mean scores of Professional Development of teacher educators among the relevant sub samples based on
2. Gender
3. Type of Management
4. Subjects of Teaching
5. Qualification
6. Teaching Experience
7. Main effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators will be significant.
8. Interaction effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators will be significant.

**1.7. METHODOLOGY**

 It deals with the precise description of the sample used for the study, tools employed and statistical techniques used.

**1.7.1. Sample**

 The study is proposed to be conducted on a sample of 200 Teacher Educators, drawn from different B.Ed. colleges, under University of Calicut by stratified sampling technique, giving due representation to the various strata viz., Gender, Type of Management, Subjects of Teaching, Qualification and Teaching Experience.

**1.7.2. Tools used for the study**

 For the present study, the investigator developed a Professional Development Scale to measure the Professional Development of Teacher Educators. It consists of 59 items under 5 dimensions.

**1.7.3. Statistical Techniques Used for Analysis of Data**

The main statistical techniques used for analysis of data are:

1. Preliminary Analysis
2. Arithmetic Mean
3. Test of significance of difference between the mean scores of relevant sub samples-‘t’ test for large independent sample.
4. Analysis of Variance -ANOVA

**1.8. SCOPE AND LIMITATIONS OF THE STUDY**

 The present study is intended to find out the extent of Professional Development of teacher educators working in B.Ed. colleges under University of Calicut. The sample selected for the study was 200 teacher educators working in B.Ed. colleges. The investigator hopes that such a study will help to understand the extent of Professional Development of teacher educators in a better way, which in turn will provide an insight into the various factors contributing the Professional Development. Thus the investigator hopes that the findings will help them to make a self evaluation and improve their qualities and effectiveness in the academic context.

Teaching is the important part of the process of education. It is the process by which teacher brings the student and the subject matter together. The teacher’s professional development is likely to have a significant influence on the student learning and prospects of individual students as well as over all prestige of the institution in the immediate future. As teacher educators prepare the future prospective teachers, this study itself has a wide scope. The investigator hops that the findings of the study will have a significant role in the professional empowerment of teacher’s community. It was also hoped that such an understanding will help to identify the various inputs having significant influence on professional development and performance of teachers and in turn the empowerment of the whole educational system.

The investigator also hopes that the findings of the study also help the teacher education institutions to organize various programmes for enhancing the Professional Development of teacher educators.

 To conduct the study, the investigator prepared a scale to assess the Professional Development of Teacher Educators. This scale can be used to find out the extent of Professional Development of Teacher Educators. This scale can be used further to find out the Professional Development of teachers in other types of institutions and various levels of education. The results of the study can give valid information, regarding the Professional Development, which will throw light on the nature and extent of Professional Development of teacher educators.

 Even though the present study was made with maximum possible attention and specificity, certain limitations which could hardly be avoided have crept into this study, they are.

1. Though the population of the study is the teacher educators of B.Ed. colleges under University of Calicut, the study was confined to a sample of 200 teacher educators drawn from 30 teacher training institutions, as the teacher educators were not available due to some administrative problems in several institutions.
2. The sample selected for the study was confined only to some of the teacher educators of Kozhikode, Malappuram, Palakkad, Thrissur, and Wayanad districts on the assumption that the sample will represent the whole population under study.
3. The sample of teacher educators selected for the study included only the teachers working in B.Ed. colleges.

**1.8. ORGANIZATION OF REPORT**

 The report has been presented in five chapters

 The **first chapter** presents a brief introduction of the Problem, Need and Significance of the study, Statement of the Problem, Definitions of key terms, Objectives, Hypotheses, Methodology, Scope and Limitations of the study.

 **Chapter two** describes a conceptual frame work for the study and a survey of the studies reviewed in relation to the present study is attempted.

 **Chapter three** gives an account of the Methodology in detail used in the present study. It contains the objectives, hypotheses, variables, tool employed for data collection, sample drawn, data collection procedure, scoring and the statistical techniques used for the study.

 **Chapter four** describes the Details of analysis, interpretation of the results and summaries etc.

 **Chapter five** summarizes the major findings of the study, conclusions, educational implications of the study and suggestions for further research in the area.

# REVIEW OF RELATED LITERATURE

 Review of related literature is an essential aspect of any research. It is necessary for a researcher to understand the problems that are already investigated and those that need further investigation.

As Best and Khan (2001) notes “Since effective research is based upon past knowledge, Review of related literature helps to eliminate the duplication of what has been done and provide useful hypotheses and helpful suggestions for significant investigation” .

 The review of literature serves a variety of background functions preparatory to the actual collection of data. Whatever be the kind of study, survey of the existing literature considered scientific to the research activity. The main purpose of the review of literature is to indicate the problems that are already investigated and those that need further investigation.

 The present study is an attempt to find out the extent of Professional Development of Teacher Educators working in B.Ed colleges. For this purpose, the investigator made an earnest effort to review almost all the available literature from different sources to get background information of the study.

The reviewed literature is described under the following headings.

* 1. CONCEPTUAL OVERVIEW
	2. REVIEW OF RELATED STUDIES
	3. CONCEPTUAL OVERVIEW

Education plays a key role in moulding, shaping, reforming and reconstructing the society from time to time. For this, education has been regarded as the most potent instrument of social reformation. It is therefore clearly visualized that education as the most potent instrument will never suffice until and unless we gave it a practical shape. This can be possible through teaching as a profession, where teachers will handle this teaching task by accepting teaching as their profession.

 Good defines profession as “An occupation usually involving relatively long and specialized preparation on the level of higher education and governed by its own code of ethics”.

Wolfgang and Glickman (1986) define a professional as one who gathers information about a problem , has a knowledge base of possible strategies , is aware of the consequences of employing each strategy and then chooses the strategy that is logically appropriate in their book ‘Solving Discipline Problems’.

 The definition of professional growth in the dictionary of education by C.V.Good is “professional growth means increase in subject matter knowledge , teaching skills and insight in to educational problems with a concomitant increase in success as a teacher “.

“Professional development implies a continuous process of learning about the teacher’s role. It is not imposed like training but something for which the professional takes personal responsibility for meeting thought out targets” (comprehensive dictionary of education).

For good professional development, the UGC established fifty one A.S.C’s (UGC report 2001-2002) conducting ‘orientation’ and ‘refresher’ courses. Following are the suggestions for the improvement of programmes conducted by ASC’s.

1. Teachers must be able to know the objectives of their subjects.
2. They must be able to select learning material according to their objectives.
3. They must be aware about different methods of teaching.
4. They must be practiced at least few very important teaching skills during ‘orientation’ or ‘refresher’ courses.
5. They must be able to create very healthy environment of teaching in such students work with rather than depend up on teachers.
6. They must be expert in research methodology.
7. They must be able to select the useful research problem.

Apart from the above mentioned suggestions lifelong learning needs to be a goal for professional development. Areas consider for professional development.

1. Regular reading of professional journals and periodicals.
2. Attending the workshops, conferences and lectures.
3. Regular reading of latest books of their areas.
4. Use of video tapes on effective teaching, learning styles and writing.
5. Regular use of internet.
6. Regular sharing of experiences and ideas by faculty members both formally and informally.
7. Visits to other university and colleges and observe other teachers.
8. Quarterly self evaluation of teaching effectiveness.
9. Habit to maintain a good personal library at their houses.

Garet,*et al* (1999) defines “The professional development as all activities that help education professionals , develop the skills and knowledge required to achieve their educational goals and meet the needs of students” .

Professional development activity is classified into two broad categories; traditional and integrated activity. Studies suggest that integrated professional development activities have a more positive impact on teacher skills and knowledge because they allow sustained, intensive and active learning and teachers tend to integrate such learning in to their daily professional lives ( Garet , *et al* 1999)

Traditional professional development activities are structured, occur outside the classroom and are not necessarily incorporated in to teachers’ daily professional life. The traditional professional development include

1. Conferences, both in and out of district.
2. College courses for credit.
3. Workshops or institutes both in and out of district.

Most traditional professional development Activities are short and involve less active learning and less collaborative interaction among peers. Although these type of activities can raise teacher awareness and deepen knowledge and skills, they have been criticized as being ineffective in providing teachers with the tools to foster meaningful changes in student practices ( Loucks –Horsley ,*et al* 1998)

Integrated professional development activities are more incorporated in to teachers daily professional lives than traditional professional development activities. Integrated activities involve more active learning and occur continually, allowing more sustained learning (Garet, *et al* 1999) that include

1. Study groups in which teachers engage in regular, collaborative discussion on specific topics to further their knowledge in disciplines or pedagogical approaches.
2. Collaborative networks for meeting other teachers and discussing topics of interest.
3. Participations in committees or task forces that focus on curriculum improvement, student assessment, or self-directed learning activities (for example reading professional journals or browsing the internet for information about content-related research).

 Professional development is a continuous process of individual and collective examination and improvement of practice. It should empower individual educators to make complex decisions, to identify and solve problems and to connect theory, practice and students outcomes. Professional development also should enable teachers to offer students the learning opportunities that will prepare them to meet world class standards is given content areas and to successfully assume adult responsibilities for citizenship and work ( Philip Adey, 1989) .

1. Professional development should deepen and broaden knowledge of content.
2. Professional development should provide a strong foundation in the pedagogy of particular disciplines.
3. Professional development should provide knowledge about teaching and learning process.
4. Professional development should be rooted in and reflect the best available research.
5. The content of professional development should be aligned with the standards and curriculum teachers use.
6. Professional development should contribute to measure the improvement in student achievement.
7. Professional development should be intellectually and address the complexity of teaching.
8. Professional development should provide sufficient time, support resources to enable teachers to master new content pedagogy and to integrate this knowledge and skill into their practice.
9. Professional development should be designed by teachers in co-operation with experts in the field.

 Professional development is expected to be a career long feature of teaching. Nodie describes teachers professional development is a life-long and continuous process in which teachers are expected to upgrade their knowledge, master new skills and change their practices since advancement in their teaching. Career is finally for their students and education reform. Besides, teachers and their professional development must be seen as an investment so it is necessary that schools not only apply appropriate professional development and human resources development policies but also ensure the means of their executions through efficient management and leadership.

 A national centre for research in vocational education study identified eight components of comprehensive professional development programmes for teachers (Hamilton,1985). These eight components were pre services programmes for individuals entering teaching without an under graduate education degree, Supervision of first and second year of teachers, pedagogy update, technology update, professional information update, teacher technical skill testing, curriculum updating programmes and research practices update.

 Effective teachers should understand both content and pedagogy and be able to make connections between them (shulman 1986).

The teacher is the single most important variable in school effectiveness. Maintaining an effective teaching force requires that qualified teachers regularly enter the ranks and that practicing teachers are kept abreast of changes in the profession. (Good lad 1983)

 **2.3. REVIEW OF RELATED STUDIES**

Lakda Wala (1977) tried to assess the professional growth of trained graduate lady teachers. The major findings were that almost all teachers were aware of the need of their professional growth. Lack of time and incentives were barriers for their growth.

Sinha (1980) assessed the impact of teacher education programmes on the professional efficiency of teachers. The major findings of the study revealed that in the sphere of professional efficiency, the trained teachers were better than the untrained teachers in possessing good knowledge of subjects, Voice modulation facial expression and in actual classroom teaching taken as a whole. The two categories of teachers do not differ significantly in maintaining good interpersonal relations, co-operating with principals, doing official work, guiding students etc.

Sengupta (1990) studied professionalization of teachers. A case study on men and women teachers of Calcutta university .The major finding of the study was that a larger proportion of male teachers had higher professional involvement in comparison to women teachers.

Prette and Rury (1991) opinioned that improving teachers professional status involve identifying salient professional characteristics. This paper compares teaching with other profession. Teacher education must produce skilled practitioners with a consciousness of craft to guide their work.

Porter conducted a three year study (1996 to 1999) on effects of professional development programmes instructions on high school teachers. The sample consists of 207 teachers in 5 states. The result of the study found out that professional development programmes focused on specific instructional practices increases teacher use of practices in the classroom. Furthermore it was found that specific features such as active learning opportunities increase the effect of professional development on teachers instruction.

Alexander, *et al.* (1997) conducted a study on towards an effective teachers professional development. The research findings revealed that teachers and their professional development is an investment through professional development policies, quality of leadership of teachers increased through in-service programmes.

Fresco and Ben (1997) studied about the impact of in-service teacher education on high school mathematic teachers subject matter confidence and competency. The study revealed that after in-service training teachers manifested greater self confidence in knowledge of curricular material, mathematical skills and high level of confidence in dealing with the curricular materials.

Narayana (1997) did a study of the impact of in-service training on teacher empowerment with special reference to professional skills of primary teachers. Findings revealed that in-service teacher training helped many teachers in acquiring seventeen professional skills out of twenty skills. But in-service training did not empower teachers in the professional skills viz comparison, observing and generating ideas through questioning.

Venkataiah (1997) made a study on impacts of inputs provided in DIETS on teaching competency. The study revealed that student teachers belonging to DIETS with adequate staff were superior in their teaching competency, compared to their counter parts in DIETS with in adequate staff. He identifies that if the academic facilities provided in DIETS is higher then the teaching competency of teachers were increased.

Lali (1998) conducted a study on initiation of secondary school teachers of Kerala by attending in-service course for professional improvement. The study compares the extent of this initiative with sample of 125 secondary school teachers. The study revealed that area of specification, age, teaching experience and locale of institution have influence over the teachers in attending in-service programmes for professional improvement.

The study conducted by Sajna (1998) on a sample of 100 school teachers revealed that the mean scores obtained on the scale of professionalism for male and female teachers differ significantly. Further the study revealed that the female teachers are superior than male teachers in their professionalism.

Robert, *et al.* (2000) made a study on professional development of teachers. Research findings revealed that in-service teacher’s professional development related to the trends in new learning process of students.

Gafoor and Ayishabi (2001) studied on the role of DIET in teacher empowerment. The objectives of the study were to evaluate the general nature of in-service programmes of DIET’s. This study revealed that the in-service programmes of DIET’s were not satisfactory. In-service courses were mostly theoretical and hence there was no classroom application. The study also suggested that the feed backs obtained after in-service courses should be utilized for strengthening the different aspects of training such as objectives, content, mode of delivery monitoring and evaluation.

Bawa, M.S (2001) conducted a study on professional development of teachers through modelling. The study revealed that demonstration lesson followed by discussion improves micro level teaching competencies and macro level teaching competencies better than conventional methods.

Garet and Desimone (2001) conducted a study on what makes professional development effective for teachers in higher secondary level. The sample consists of 1027 teachers. The result of the study indicate that structural features of professional development activities is significantly effect teachers that is (a) the form of activity (eg:- workshop Vs study group) (b) collective participation of teachers from same grade or subject (c) the duration of the activity respectively.

Egan, *et al.* (2002) conducted a study on the continuing professional development of teachers at Wales. Used interview as a technique for collection of data in many areas of Wales. The research finding shows that continuing professional development increases through the usage of internet search and literature study.

Koster (2002) conducted an extensive study among Dutch teacher educators indicated that teacher educators consider monitoring their own professional development fundamental to their profession.

Ming and Wang (2002) conducted a study on web based continuing professional development programmes for teachers. The interview was based as a tool. The result indicated that continuing professional development programme was effective, usable and feasible.

Flowers and Mertens (2003) made a study of continuing professional development of middle grades teachers. A sample of 8300 middle grade teachers in U.S were selected, the finding reveals that the frequency and depth of involvement in continuing professional development programmes affected teachers activities in the classroom.

Gabriel and Maggioli (2003) conducted a study of continuing professional development for language teachers. For effective continuing professional development adequate support structures and opportunities for teachers should be given, the language teachers should be given opportunity to select plan carry out and evaluate the course in which they attend.

Ramdas (2003) conducted a study of rethinking professional development of teachers. The findings of the study revealed that the goal of professional development is no longer to bring outside expertise to the school to increase teachers knowledge with regard to discrete new programme or approach.

Yadav (2003) conducted a study on quality of pre-service and in-service training. The finding of the study shows that the quality of teacher education programmes is essential for the professional development of teachers. The gap between pre-service and in-service needs to minimized by providing additional inputs, activities and also bridging the gaps at various stages.

Gabbriel (2004) conducted a study on fulfilling the promise of continuing professional development of teachers. A sample consisting of 187 teachers were selected and the finding revealed that continuing professional development is certainly instrumental in promoting quality changes in teachers learning. However, it will fulfil its promise only when the right conditions are provided.

Maheshwari, A (2004) conducted a study on professional commitment of secondary school teachers. The sample size was 400 teachers of secondary schools and the study revealed that secondary school teachers exhibited a tendency of moderate level of professional commitment.

Gordon, *et al.* (2005) conducted a study on how professional development affects teachers. The sample of the study consists of 98 teachers. The result of the study revealed that sustained professional development helped the teachers to analyse themselves. It also brings in teachers a new outlook towards their work.

 Rani, R. (2005) conducted a study on professional development of teachers. The study revealed that continuous professional development will help teachers to update and enhance all the prepositional knowledge and help them in translating them in to their styles and operations.

Venkatesh Murthy (2005) described a study on professional development of teachers what, why and how. The study explores in to the vistas of teacher education and proposes a new perspective for the professional development of teachers by raising the questions what, why and how. The study suggests ways to make teaching a complete professional activity. Findings revealed that teachers have a moral responsibility of being professional, develop professional perspectives in their profession and remain in their career.

Bressick (2006) conducted a study on teaching teachers, professional development helped to improve student achievement. Findings of the research showed that professional development should improve teacher’s knowledge of subject matter, they are teaching and it should enhance their understanding of student thinking in that subject matter.

Atay (2007) conducted on teacher research for professional development. The result of the study showed that teachers faced difficulties in conducting and reporting their research works. The professional development programme had a positive impact to on their professional development. Thus a research oriented programme may help to resolve the problems and difficulties of teachers.

Liljedahl (2007) studied professional development of mathematics teachers. The findings of the study revealed that the teacher’s professional growth can be seen in his interaction with his colleagues. By participating in professional development courses their mathematical skills were developed.

Ross, *et al.* (2007) made a study on effect of professional development on teacher efficacy. The research findings revealed that the potential of professional development as a stimulus for enhancing teacher efficacy about their ability to bring about the student learning.

Siddiqi (2009) made a study on need and significance of teachers training in higher education. The study reveals the importance of training in teaching profession. Council of teacher education believes that voluntary organization can play a constructive role in supplementing the efforts of government agencies and provide useful inputs in development of policy and programmes. CTE contributed in creating a healthy professional culture in education.

Mary.D.Burbank(2010) made a study on book clubs as Professional development Opportunities for pre service teacher candidates and Practicing teachers. Used qualitative methods to study the Professional Development. The study highlighted the utility of book clubs as a tool for professional development.

**TABLE 1**

**Summary of studies reviewed on Professional Development**

|  |  |  |
| --- | --- | --- |
| Name | Study | Result |
| Lakda Wala (1977)  | assess the professional growth of trained graduate lady teachers | Lack of time and incentives were barriers for their growth |
| Sinha (1980)  | impact of teacher education programmes on the professional efficiency of teachers | the trained teachers were better than the untrained teachers in possessing good knowledge of subjects |
| Sengupta (1990) | professionalization of teachers | male teachers had higher professional involvement in comparison to women teachers. |
| Prette and Rury (1991)  | improving teachers professional status involve identifying salient professional characteristics | Teacher education must produce skilled practitioners with a consciousness of craft to guide their work |
| Porter(1996)  | Effects of professional development programmes. | Increases teachers use of practices in the classroom and active learning opportunities. |
| Alexander, *et al.* (1997) | Towards an effective teachers professional development | Through professional development policies quality of teachers increased. |
| Fresco and Ben (1997) | Impact of in-service teacher education in mathematics teachers. | Greeters lf confidence in knowledge of curriculum and mathematical skills. |
| Narayana (1997) | Impact of in service training on teacher empowerment of professional skills. | In-service training helped acquiring skills. |
| Venkataiah (1997) | Impacts of input provided DIET’s on teaching competency | Competency of student teachers was increased. |
| Lali (1998) | Initiation of secondary school teachers of Kerala by attending in-service course for professional improvement. | Area of specification, age,teaching experience and locale of institution has influence for attending the programmes. |

|  |  |  |
| --- | --- | --- |
| Sajna (1998) | scale of professionalism for male and female teachers | the female teachers are superior than male teachers in their professionalism. |
| Robert, *et al.* (2000) | Study on professional development of teachers | In-service teacher’s professional development related to the trends in new learning process of students. |
| Gafoor and Ayishabi (2001) | Role of DIET in teacher empowerment | In-service programmes DIETS were not satisfactory. |
| Bawa, M.S (2001) | professional development of teachers through modelling | discussion improves micro level teaching competencies and macro level teaching competencies better than conventional methods |
| Garet and Desimone (2001) | What makes professional development effective | Form of activity, collective participation and duration of programme makes professional development effective. |
| Egan, *et al.* (2002) | Continuing professional development of teachers | Increases through the usage of internet search and literature study. |
| Koster (2002) | extensive study among Dutch teacher educators | teacher educators consider monitoring their own professional development fundamental to their profession |
| Ming and Wang (2002) | Web based continuing professional development programme for teachers | Continuous professional development programmes are effective, Usable and feasible |
| Flowers and mertons (2003) | professional development of middle grade teachers | Involvement of professional development programmes effected teachers activities |
| Gabriel and Maggioli (2003)  | professional development of language teachers. | professional development programmes given opportunity and support for language teachers |
| Ramdas (2003) | Rethinking professional development of teachers. | Continuous professional development programmes increase teachers’ knowledge with regard to discrete new programme or approach. |
| Yadav (2003) | Quality of pre-service and in-service training. | Quality of teacher education programme is essential for the professional development of teachers. |
| Gabbriel (2004) | Fulfilling the promise of professional development of teachers | Promoting quality changes in teachers learning. |
| Maheshwari, A (2004) | professional commitment of secondary school teachers | secondary school teachers exhibited a tendency of moderate level of professional commitment |

|  |  |  |
| --- | --- | --- |
| Gordon, *et al.* (2005) | How professional development effects teachers | Helped teachers to analyse themselves and give new outlook towards their work. |
| Rani, R. (2005) | Professional development of teachers. | Continuous professional development programmes will help teachers to update and enhance all the prepositional knowledge. |
| Venkatesh Murthy (2005) | Professional development of teachers what, why and how | Teachers have a moral responsibility of being professional, develop professional perspectives in their profession and remain tin their career. |
| Bressick (2006) | Teaching teachers professional development to improve student achievement | Increase teachers understanding of student thinking in the subject matter. |
| Atay (2007) | Teacher research for professional development | Teachers faced difficulties in conducting and reporting their research works. |
| Liljedahl (2007) | professional development of mathematics teachers | Professional development helped students achievement and Mathematical skill were developed |
| Ross, *et al.* (2007) | Effect of professional development on teacher efficacy | Enhancing teachers’ efficacy to bring about student learning. |
| Siddiqi (2009) | Need and significance of teachers training in higher education | Teacher training provide useful inputs in development of policy and programmes. |
| Mary.D.Burbank(2010) | book clubs as Professional development Opportunities for pre service teacher | The utility of book clubs as a tool for professional development |

**CONCLUSION**

 The above review of studies gave a wide perspective of the present study under investigation. While reviewing the related literature, the investigator found that a number of studies have been conducted in the area of Professional Development. Majority of the studies were connected with Professional Development of school teachers both in India (Ramdas,2003;Rani.R,2005;Venkatesh murthy,2005) and abroad (Gabriel and Maggioli,2003; Gabbriel 2004; Liljedahl 2007)

 Some studies were found to be related with Continuing Professional Development Programmes of primary, High School and Higher Secondary school teachers both in India (sinha,1980; Narayana,1997;Lali,1998) and abroad (Porter, 1996; Garet and Desimon,2001;egan,*et al*,2002; Ming and Wang ,2002).Some studies revealed that there is significant difference in Professional development between male and female teachers (sengupta,1990;Sajna,1998)

 The review also provides evidence about studies relating Professional commitment of teachers (Maheshwari,2004) Role of DIET in teacher empowerment (Venkataiah,1997;Gafoor and Ayishbi, 2001)Professional Development on student achievement (Bressick,2006)and effect of Professional development on teacher efficacy (Ross,*et al* 2005)

 It was found that most of the studies are conducted on the sample of teachers from primary to higher secondary level. Latest studies were focused on the effectiveness of professional development programmes (Porter,1996 ;Alexander,1997; Garret,2001; Gorden,2005; Ross,2007). Since limited studies were conducted in the area of Professional Development of college teachers, especially teacher educators, it was difficult to arrive at a conclusion regarding the extent of Professional Development of teacher educators. Keeping in view all these matters, the present study is an attempt to find out the extent of Professional Development of Teacher Educators. The investigator hopes that findings of the study will helpful for educationists to get a picture of Professional Development of teacher educators and help them to provide a supportive climate for their professional excellence.

# METHODOLOGY

 This chapter deals with the method of study which involves the systematic procedures by which the research starts from the initial identification of the problem to its final conclusion. Success of any research depends largely on the suitability of methods, tools and techniques followed by the researcher in collecting and processing the data. It includes all the procedure and techniques adopted by the investigator in order to achieve the objectives of the study.

 The present study is an attempt to find out the extent of Professional Development of teacher educators working in B.Ed colleges. The design of the study is described under the following major headings viz.

3.1 Variables

3.2 Objectives

3.3 Hypotheses

3.4 Tools used for data collection

3.5 Samples selected for the study

3.6 Data collection procedure,

3.7 Statistical techniques used for analysis of data.

The details of each of the above are given below:

**3.1 VARIABLES**

 The present study is designed with two types of variables, namely Independent Variables and Dependent Variable.

**3.1.1. Independent Variable**

 The independent variables are Gender, Type of management, Subjects of teaching, Qualification and Teaching Experience.

**3.1.2. Dependent Variable**

 The dependent variable is Professional Development of teacher educators.

**3.2. OBJECTIVES**

 The objectives set forth for the study are the following;

1. To find out the extent of Professional Development of teacher educators in the total sample and in the relevant sub samples based on

* 1. Gender
	2. Type of Management
	3. Subjects of Teaching
	4. Qualification
	5. Teaching Experience

2. To find out whether there exists significant difference in the mean scores of Professional Development of teacher educators among the relevant sub samples based on

1. Gender
2. Type of Management
3. Subjects of Teaching
4. Qualification
5. Teaching Experience

3. To find out whether Type of Management, Gender and Teaching Experience have main and interaction effect on Professional Development of teacher educators.

**3.3. HYPOTHESES**

 The hypotheses formulated for the study are the following.

1. There exists significant difference in the mean scores of Professional Development of teacher educators among the relevant sub samples based on

1. Gender
2. Type of Management
3. Subjects of Teaching
4. Qualification
5. Teaching Experience

2. Main effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators will be significant.

3. Interaction effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators will be significant.

**3.4. TOOL EMPLOYED FOR DATA COLLECTION**

 Collection of relevant data using a suitable tool is an important aspect of any research work. “Each tool is appropriate for the collection of certain type of evidence or information. The researcher has to select from the available tools, which will provide data, he required for testing the hypothesis. In some situation he may find that existing research tools do not suit his purpose and so he may modify them or constructs his own” (Koul). Quantity and quality of data depends upon the tools and techniques the researcher has made use of.

The present investigation is an attempt to find out the extent of professional development of teacher educators working in B.Ed colleges. For the present study, the tool “Professional Development scale for teacher educators” is constructed by the investigator for measuring the extent of professional development of teacher educators working in B.Ed colleges.

**3.4.1. PROFESSIONAL DEVELOPMENT SCALE**

 The tool Professional Development scale (Basheer and Sobish, 2010) is constructed by the investigator with the help of supervising teacher.

 Detailed description of the tool is given below:

**3.4.1.1. Planning of the Scale**

 The present study is an attempt to find out the extent of professional development of teacher educators, the investigator made an intensive search through the available tools. At present there is no appropriate tool available for this purpose. Hence the investigator attempts to develop a scale on professional development of teacher educators, on the basis of the objectives of the study by discussing and consulting with the supervising teacher, informal discussion with teachers, practitioners and experts in the field of Teacher education and after the analysis of review of related literature.

 In planning, it was decided to develop a Likert scale with five responses viz., Always, Often, Sometimes, Rarely and Never.

 Review of related literature helped the investigator to have an idea about the nature of the variable and its components.

Detailed description of each of these components is given below

1. **Technology update**

This component refers to the application of scientific knowledge for practical purpose.

Example: - I try to use new technologies in teaching (Item no. 2)

In this component there are 8 items (item no. 2, 8, 12, 15, 19, 26, 31, 46)

1. **Research update**

Research update concerned with the conduct of educational inquiry and the development and evaluation of its method and findings.

Example: - I am interested in conducting researches about the new changes in connection with the education field. (Item no. 36)

In the component there are 13 items (item no. 1, 7, 13, 17, 18, 25, 36, 37, 41, 42, 49, 54, 58)

1. **Content update**

Content update refers to the updating of teachers knowledge of new information related with teacher education.

Example: - I am able to impart knowledge from the reference books that are beyond the students reach. (Item no. 33)

In this component there are 14 items (Item no: 4, 11, 16, 22, 27, 29, 30, 33, 44, 48, 51, 52, 55, and 56).

1. **Pedagogy update**

Update teachers knowledge of new information related with teacher education and improve their skills pedagogically and technically through high quality Professional development programmes.

Example: - I am able to go ahead with the planned teaching process logically and clearly.(Item no.34)

In this component there are 13 items (item no: 5, 9, 20, 21, 23, 28, 32, 34, 38, 39, 45, 57, and 59).

1. **Curriculum update**

Updating to the curriculum knowledge of teacher.

Example: -I try to understand the changes that take place in the curriculum modification in different parts of the world. (Item no.43)

In this component there are 11 items (item no: 3, 6, 10, 14, 24, 35, 40, 43, 47, 50, and 53)

**3.4.1.2. Preparation of the final scale**

Based upon the above mentioned components, the investigator developed the Professional Development scale. Necessary changes and additions were made to the scale after discussing with the experts in the field of education.

The scale consists of 59 items, out of which 43 items are positive and 16 items are negative. Each statement carries five response columns viz, ‘Always’, ‘often’, ‘sometimes’, ‘rarely’ and ‘never’.

 A copy of the Professional Development scale (English and Malayalam) is given as Appendix I and II.

**Scoring Procedure**

 Each statement of the scale provides scores on a five point scale. A respondent has to respond to fifty nine items, by choosing any one of the five alternatives given. ‘Always’, ‘often’, ‘sometimes’, ‘rarely’ and ‘never’. The respondents have to mark the responses to each item in the appropriate columns corresponding to any of the five alternatives. For positive statement, the respective scores to the five responses are 5, 4, 3, 2, and 1. For negative statement, the scoring was done by the reverse order viz, 1, 2, 3, 4 and 5.

**3.4.1.3. Reliability**

 Reliability of the test is its ability to yield consistent result from one set of measures to another.” Reliability is the degree of consistency that the instrument or procedure demonstrates whatever it is measuring, it does so consistently” (Best & Kahn, 2001).

In the present investigation, the reliability of the scale was estimated by test-retest method. The scale was administered to a group of 30 teacher educators and again repeated in the same group with an interval of 3 weeks. The scores obtained from the first test were correlated with that of the re-test. The reliability co-efficient was found to be 0.73, which suggest that the scale is substantially reliable. Again to ensure reliability of the Professional Development scale, the data was cross checked by carrying out personal interview on the views of the teacher educators.

**3.4.1.4. Validity**

 “Validity is that quality of a data gathering instrument or procedure that enables it to measure what it is supposed to measure” ( Best & Kahn, 2001). It is essential to the effectiveness of any data gathering procedure.

In the present study, the validity of the scale is ensured through face validity. “ A test is said to have face validity when it appears to measure whatever the author had in mind, namely what he thought he was measuring”(Garret,1981). For this, the investigator consulted experts and teachers in the field of teacher education, discussed with teachers of different institutions and prepared the items in a least ambiguous way. So the subjects respond to the item without difficulty and misunderstanding. Hence the investigator claimed the face validity of the scale as the items in the scale relating to the professional development of teacher educators.

**3.5. SELECTION OF THE SAMPLE**

Selection of the sample is an important aspect of any research.“A sample is a small proportion of a population selected for observation and analysis. By observing the characteristics of the sample, one can make certain inferences about the characteristics of the population from which it is drawn” (Best & Kahn, 2001).

 The population of the study is Teacher Educators, working in B.Ed colleges under University of Calicut. The sample for the present study constitutes 200 Teacher Educators drawn from 30 training institutes, under University of Calicut, of Thrissur, Kozhikode, Malappuram, Wayanad and Palakkad districts. The samples were selected under stratified sampling technique by giving due representation to the factors like,

* + 1. Gender
		2. Type of Management
		3. Subjects of Teaching
		4. Qualification
		5. Teaching Experience
		6. **Gender**

 Gender has great influence on findings of the research. Review of literature indicates that gender difference exists in many of the studies. So the investigator gave due representation to male and female teacher educators in the present study.

**3.5.2. Type of Management**

 There are four types of teacher training institutions under University of Calicut viz., Government, Aided, Unaided colleges and University teacher education centres. So the investigator gave due representation to type of management while selecting the sample.

**3.5.3. Subjects of Teaching**

There are three types of teacher educators in the teacher training institutions on the basis of subjects of teaching, viz., General and Optional. While selecting the sample, the investigator gave due representation to subjects of teaching.

**3.5.4. Qualification**

In teacher training institutions, the teacher educators are differed on the basis of qualification. There are two types of teacher educators- those who possess only M.Ed degrees and others who possess NET, M.Phil or Doctoral Degrees. So the investigator gave due representation to two types while selecting the sample.

**3.5.5. Teaching Experience**

In our educational system, teachers differ in their teaching experience. The investigator has adopted the criterion for classifying the teacher educators into two grade levels based on their period of teaching experience in the teacher training institutions. Thus there are two subsamples of teacher educators ranging from between 0-5 and 5&above 5 years.

The break up of the first and final sample is given in table 2and 3.

TABLE 2

**Break up of the First Sample**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Gender | Type of Management | Subjects of Teaching  | Qualification  | Teaching Experience  |
| Male | Female | Govt. | Aided | Unaided | Uty Centre | General  | Optional  | High | Low | High  | Low |
| 96 | 111 | 19 | 36 | 116 | 36 | 89 | 118 | 52 | 155 | 95 | 112 |
| 207 | 207 | 207 | 207 | 207 |

TABLE 3

**Break up of the Final Sample**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Gender | Type of Management | Subjects of Teaching  | Qualification  | Teaching Experience  |
| Male | Female | Govt. | Aided | Unaided | Uty Centre | General  | Optional  | High | Low | High  | Low |
| 93 | 107 | 19 | 36 | 111 | 34 | 84 | 116 | 50 | 150 | 92 | 108 |
| 200 | 200 | 200 | 200 | 200 |

 The list of institutions from which the investigator collected the data needed for the study are given in Table 4.

**TABLE 4**

**List of Institution from where Data Collected**

|  |  |
| --- | --- |
| SI No. | **Government Colleges** |
| 1. | Government College of Teacher Education, Kozhikode. |
| 2. | Institute of Advanced Studies in Education, Thrissur. |
|  | **Aided Colleges** |
| 3. | Farook Training College, Calicut. |
| 4. | N.S.S Training College, Ottapalam. |
|  | **Unaided Colleges** |
| 5. | A W H College of Education, Kallai, Kozhikode |
| 6. | Bhavan's Ramakrishna Institute of Teacher Education, Ramanttukara |
| 7. | CICS College of Teacher Education, Mahatma Gandhi Nagar, Kozhikode |
| 8. | Darool Ulloom College of Teacher Education, Vazhakad. |
| 9. | Devaki Amma Memmorial Teacher Education College, Chelembra |
| 10. | EMEA Training College, Malappuram |
| 11. | Farook College of Teacher Education, Kottakkal |
| 12. | JPE Training College Koorkanchery, Thrissur |
| 13. | KM College of Teacher Education, Vaalilapuzha |
| 14. | Mar Osthatheos Training College, Akkikavu, Thrissur. |
| 15. | Mar Baselious B.Ed. College, Sulthan Bathery, Wayanad. |
| 16. | Mercy College of Teacher Education, Kozhikode |
| 17. | Meppayur Salafi College of Teacher Education, Kozhikode |
| 18. | Navajyothi College of Teacher Education, Thrissur |
| 19. | Salafiyya Training College, Karinganad, Palakkad |
| 20. | Sree Narayana College of Teacher Education, Kottapuram, Palakkad |
| 21. | Sree Vivekananda Centre of Teacher Education, Akkikavu, Thrissur. |
| 22. | Sree Swamy Vivekananda Centre of Teacher Education, Ottappalam, Palakkad |
| 23. | Sullamusalam College of Teacher Education, Areacode, Malappuram |
|  |  **University Centres** |
| 24. | University Teacher Education Centre, Kozhikode. |
| 25. | University Teacher Education Centre, Koottilangadi. |
| 26. | University Teacher Education Centre, Vatakara. |
| 27. | University Teacher Education Centre, Manjeri. |
| 28. | University Teacher Education Centre, Ollur. |
| 29. | University Teacher Education Centre, Nattika. |
| 30. | University Teacher Education Centre, Valappad. |

**3.6 DATA COLLECTION PROCEDURE AND CONSOLIDATION OF DATA**

* + 1. **Administration of the tool**

 As the first step of administration, the investigator collected the details of the teacher training institutions under University of Calicut. After collecting details of various teacher training institutions, the investigator contacted the heads of the concerned institutions and obtained their permission for collecting data.

 As the second step, all the participants were approached individually at their respective place of work. Participants were first briefed individually about the purpose of the study and clear information was given to area and their doubts were clarified. Every precaution was taken for making the study as reliable and valid as possible. The teacher educators were assured about the security of their responses. The investigator was able to secure full support of teacher educators.

* + 1. **Scoring and Consolidation of Data**

 A respondent has to respond to fifty nine items, by choosing any one of the five alternatives given, ‘Always’, ‘Often’, ’Sometimes’, ‘Rarely’ and ‘Never’. The respondents have to mark their responses to each item in the appropriate columns corresponding to any of the five alternatives. For positive items, the respective scores to the five responses are 5,4,3,2 and 1 respectively. For negative items, scoring was done in the reverse order.

 Before scoring, the incomplete response sheets were rejected and this resulted in a final sample of 200. All the response sheets which were complete in all aspects were scored according to the respective scoring procedure. The total score was calculated for each item and further statistical analysis was done after consolidation.

**3.7. STATISTICAL TECHNIQUES USED FOR ANALYSIS OF DATA**

 Based on the objectives and hypotheses, the data collected was analysed using appropriate statistical techniques of the following:

**3.7.1. Preliminary Analysis**

 The important statistical properties of the scores of the variable under study, Professional Development were calculated and analyzed as a preliminary step. For this, Mean, Median, Mode, Standard Deviation, Skewness and Kurtosis were calculated for the total sample and the relevant subsamples. From this we can predict or arrive at conclusion about the nature of the distribution.

**3.7.2. Estimation of Mean**

Arithmetic Mean = 

**3.7.3. Test of significance of difference between means for large independent Samples**

 “Since mean is probably the most satisfactory measure for characterizing a group, it is important to determine whether the difference between means of samples is significant” (Best and Kahn, 2001)

 The ‘t’ test was used to test the significance of difference in the mean scores of Professional Development in the subsamples. The formula is

Critical ratio, 

(Garrette, 2005)

Where,

  and  are the mean scores of the two groups

 σ1 and σ2 are the standard deviations of the scores of the two groups

and N1 and N2 are the number of cases in each group.

 If the obtained critical ratio, ’t’ is greater than the required table value for significance at 0.05 or 0.01 level of significance, the mean difference is considered to be significant.

**3.7.4. ANOVA**

 “The Analysis of Variance (ANOVA) is an effective way to determine whether the means of more than two samples are too different to attribute to sampling error” (Best and Kahn, 2001). In its simplest form, the Analysis of Variance is used to test the significance of the difference between the means of a number of different populations.

 ANOVA is an international statistical procedure by which a researcher can test the null hypotheses that two or more population means are equal. A ratio of 2 variance estimates is computed and their ratio has as its sampling distribution, the F distribution, determined by 2 degrees of freedom values.

 The major assumptions of ANOVA are,

1. The distribution of the dependent variable should be normal
2. Homogeneity of variance
3. The samples drawn should be random and independent.

 If there are three independent variables are included simultaneously in an ANOVA, the analysis is called a three way ANOVA.

 In this study, ANOVA is used to find out whether the variables Type of Management, Gender and Teaching Experience have any main or interaction effect on Professional Development of teacher educators working in B.Ed colleges.

# ANALYSIS AND INTERPRETATION

The main purpose of the study was to find out the extent of Professional Development of teacher educators working in B.Ed colleges, under University of Calicut. The collected data was analyzed statistically and the results have been presented and discussed in the chapter with reference to the objectives of the study.

**4.1. OBJECTIVES**

The objectives set forth for the study are the following.

1. To find out the extent of Professional Development of teacher educators in the total sample and in the relevant subsamples based on

1. Gender
2. Type of Management
3. Subjects of teaching
4. Qualification

vii. Teaching experience

2. To find out whether there exist significant difference in the mean scores of Professional Development of teacher educators among the relevant subsamples based on

1. Gender
2. Type of management
3. Subject of teaching
4. Qualification
5. Teaching experience

3. To find out whether Type of Management, Gender and Teaching Experience have main and interaction effect on Professional Development of teacher educators.

**4.2. HYPOTHESES**

The hypotheses formulated for the study are the following.

1. There exists significant difference in the mean scores of Professional Development of teacher educators among the relevant subsamples based on
2. Gender
3. Type of Management
4. Subjects of Teaching
5. Qualification
6. Teaching Experience
7. Main effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators will be significant.
8. Interaction effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators will be significant.

Discussion of the results obtained through statistical analysis of the collected data are presented under the following major headings,

1. Preliminary Analysis
2. Extent of Professional Development of teacher educators in the relevant subsamples
3. Comparison of Professional Development of teacher educators in the relevant subsamples
4. Three-way ANOVA(4x2x2 Factorial Design)

**4.3. PRELIMINARY ANALYSIS OF DATA**

The important statistical properties of the scores on the variable, Professional Development were analyzed as a preliminary step. The Mean, Median, Mode, Standard deviation, Skewness and Kurtosis were calculated for the whole sample.

The details of the obtained values are presented in the following
Table 5.

TABLE 5

**Descriptive statistics of the variable
‘Professional Development’ of Teacher Educators**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Variable | N | Mean | Median | Mode | SD | Skewness | Kurtosis |
| Professional Development | 200 | 230.49 | 230 | 231.47 | 23.08 | -0.017 | -0.366 |

**4.3.1. Discussion of Results**

The important statistical constants of the selected variable for the total and subsamples were analysed. Table 5 shows the values of Mean, Median and Mode for the variable Professional Development as 230.49, 230 and 231.47 respectively. These values are almost equal which shows the possibility of the variable to follow a normal distribution.

The obtained value for the skewness is -0.017, which shows slight negative skewness, but the value being very small, it can be considered as the distribution is not considerably deviating from the normal.

The value of kurtosis is -0.366, which suggests that the distribution is slightly platykurtic. The above discussion shows that the distribution of the variable, Professional Development is almost normal.

Graphical representation of the scores of the variable Professional Development of teacher educators for the total sample is presented in Figure .1.

 

Scale

On X axis: 1 cm = 20 divisions

On Y axis: 1 cm = 10 divisions

**Figure 1 : Smoothed Frequency Curve of Professional Development of Teacher Educators in the Total Sample**

The statistical constants and graphical representation of the variable Professional Development of teacher educators follows approximately a normal distribution.

The second basic assumption of Analysis of Variance is the homogeneity of variance. Since samples are drawn from a normal population and are considerably large, we can assume that there is homogeneity of variance.

 The third basic assumption of ANOVA is that the sample drawn should be random and independent. The design of the present study ensures that the sample should be random and independent.

**4.4.** **EXTENT OF PROFESSIONAL DEVELOPMENT OF TEACHER EDUCATORS IN THE TOTAL SAMPLE AND THE RELEVANT SUBSAMPLES**

 This section of the analysis was done to find out the extent of Professional Development of teacher educators in the total sample and in the relevant subsamples based on Gender, Type of Management, Subjects of teaching, Qualification and Teaching Experience.

 As the second step of analysis, in order to find out the extent of Professional Development of teacher educators, investigator calculated the mean scores of Professional Development of teacher educators in the total sample and in the relevant subsamples.

 The mean scores of Professional Development of teacher educators in the relevant subsamples are presented in Tables 6.1, 6.2, 6.3, 6.4, 6.5, 6.6 and 6.7.

TABLE 6.1

**Important Statistical Constants of
Distributions of Mean Scores of Professional
 Development of Teacher Educators based on Gender.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | Category | N | Mean | Median | Mode | S.D. |
| Professional Development | Male | 93 | 235.49 | 238 | 230.48 | 23.38 |
| Female | 107 | 226.14 | 227 | 224.42 | 22.02 |

 Graphical representation of the variable Professional Development for Gender is given in Figure 2.1.

 Figure 2.1 : Cumulative Frequency Curve of the Variable Professional Development for Gender

Scale

On X axis: 1 cm = 10 divisions

On Y axis: 1 cm = 20 divisions

 TABLE 6.2

**Important Statistical Constants of Distributions of Mean Scores of Professional Development of Teacher Educators based on Type of Management**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | Category | N | Mean | Median | Mode | S.D. |
| Professional Development | Govt. | 19 | 239 | 242 | 235 | 19.60 |
| Aided | 36 | 238 | 232 | 249 | 22.58 |
| Unaided | 111 | 227.57 | 227 | 228.7 | 23.17 |
| Uty. centre | 34 | 226.88 | 228.5 | 223.6 | 22.83 |

 Graphical representation of the variable Professional Development for Type of Management is given in Figure 2.2.

Scale:

On X axis: 1 cm =10 divisions

On Y axis : 1 cm = 20 divisions

**Figure 2.2 : Cumulative Frequency Curve of the Variable Professional Development for Type of Management**

TABLE 6.3

**Important Statistical Constants
of Distributions of Mean Scores of Professional Development of Teacher Educators based on Subjects of Teaching**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | Category | N | Mean | Median | Mode | S.D. |
| Professional Development | General | 84 | 230 | 229 | 232 | 22.59 |
| Optional | 116 | 230.84 | 230.5 | 231.53 | 23.52 |

 Graphical representation of the variable Professional Development for Subjects of Teaching is given in Figure 2.3

Scale:

On X axis: 1 cm =10 divisions

On Y axis: 1 cm = 20 divisions

**Figure 2.3 : Cumulative Frequency Curve of the Variable Professional Development for Subjects of Teaching**

TABLE 6.4

**Important Statistical Constants
of Distributions of Mean Scores of Professional Development of Teacher Educators based on Qualification**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | Category(Qualification) | N | Mean | Median | Mode | S.D. |
| Professional Development | High | 50 | 239.08 | 241.5 | 234.24 | 25.71 |
| Low | 150 | 227.62 | 227 | 228.88 | 21.47 |

 Graphical representation of the variable Professional Development for Qualification is given in Figure 2.4.

Scale

On X axis: 1 cm = 10 divisions

On Y axis: 1 cm = 20 divisions

**Figure 2.4 : Cumulative Frequency Curve of the Variable Professional Development for Qualification**

TABLE 6.5

**Important Statistical Constants
of Distributions of Mean Scores of Professional
Development** **of Teacher Educators based on Teaching Experience**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | Category(Experience) | N | Mean | Median | Mode | S.D. |
| Professional Development | 0-5 years | 108 | 226.19 | 226.5 | 225.58 | 22.32 |
| 5&above 5 years | 92 | 235.53 | 236 | 234.59 | 23.06 |

 Graphical representation of the variable Professional Development for Teaching Experience is given in Figure 2.5.

Scale

On X axis: 1 cm =10 divisions

On Y axis: 1 cm = 20 divisions

**Figure 2.5 : Cumulative Frequency Curve of the Variable Professional Development for Teaching Experience.**

 Table 6.1 shows that the mean scores obtained for the Professional Development of male and female teacher educators are 235.49 and 226.14 respectively.

 Table 6.2 shows that the means scores obtained for the Professional Development of teacher educators working in Government, Aided, Unaided colleges and University teacher education centres are 239, 238, 227.6 and 226.9 respectively.

 Table 6.3 shows that the mean scores of Professional Development for teacher educator handling General and Optional are 230 and 230.84 respectively

 Table 6.4 shows that the mean scores obtained for Professional Development of high and low qualified teacher educators are 239.08 and 227.62 respectively.

 Table 6.5 shows that the mean scores of Professional Development of 0-5 year experienced and 5 & above 5 years experienced teacher educators are 226.19 and 235.53 respectively.

* + 1. **Discussion**

 The means scores of Professional Development of teacher educators among the relevant subsamples were analysed. The table 6.1 shows that male teacher educators have a slightly high rate of Professional Development compared to female teachers.

 While considering the Type of Management, teacher educators from Aided and Government colleges are found to be high in their Professional Development compared that of unaided and University teacher education centres

 The teacher educators who handle General and Optional subjects simultaneously show a high rate of Professional Development. The Professional Development of General and Optional teacher educators were almost equal.

 The Professional Development of highly qualified teacher educators possess high Professional Development compared to low qualified teacher educators.

 While considering the teaching experience, the teacher educators having high experience are found to be slightly high in their Professional Development.

**4.5 COMPARISON OF THE MEAN SCORES OF PROFESSIONAL DEVELOPMENT OF TEACHER EDUCATORS BASED ON RELEVANT SUB SAMPLES.**

 The third step of analysis was to find out whether there exists any significant difference in the mean scores of Professional Development of teacher educators in the relevant subsamples. The mean scores of Professional Development of relevant subsamples were compared using the test of significance of mean difference between large independent samples.

 Results of comparison of Professional Development for each relevant subsample are discussed under separate heading.

* + 1. **Comparison of mean scores of Professional Development of Teacher Educators on the basis Type of Management.**

 To test whether Government, Aided, Unaided and University Centres teacher educators differ significantly in their Professional Development, test of significance of mean difference for large independent samples was done. The details of the values obtained for test of significance of difference between mean scores of Professional Development for the subsample based on Type of Management are given in Table 7.1,7.2,7.3,7.4,7.5 and 7.6 .

4.5.1.1. Comparison of mean scores of Professional Development between Government and Aided Teacher educators.

4.5.1.2. Comparison of mean scores of Professional Development between Government and Unaided Teacher educators.

4.5.1.3. Comparison of mean scores of Professional Development between Government and University teacher education centres Teacher educators.

4.5.1.4Comparison of mean scores of Professional Development between Aided and Unaided Teacher educators.

4.5.1.5Comparison of mean scores of Professional Development between Aided and University teacher education centres Teacher educators.

4.5.1.6 Comparison of mean scores of Professional Development between Unaided and University teacher education centres Teacher educators.

**4.5.1.1. Comparison of mean scores of Professional Development between Government and Aided Teacher educators.**

TABLE 7.1

**Data and results of the test of
significance of mean difference in Professional
Development between Government and Aided Teacher Educators.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SI No. | Variable | Category | N | Mean | SD | Critical Ratio |
| 1 | Type of Management | Govt | 19 | 239 | 19.60 | 0.283 |
| Aided | 36 | 238 | 22.58 |

 From the table 7.1, it was found that the mean scores of Professional Development obtained for Government and Aided teacher educators are 239 and 238 respectively. It can also be seen that the standard deviation for these subsamples are 19.6 and 22.6 respectively. The calculated ‘t’ value is 0.283, which is less than 1.96, the table value required for significance at 0.05 level of significance. Hence it can be interpreted as there is no significant difference in Professional Development between teacher educators of Govt and Aided colleges.

**4.5.1.2. Comparison of mean scores of Professional Development between Government and Unaided Teacher educators.**

TABLE 7.2

**Data and results of the test of significance of mean difference in Professional Development between Govt and Unaided Teacher Educators**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SI No. | Variable | Category | N | Mean | SD | Critical Ratio |
| 2 | Type of Management | Govt | 19 | 239 | 19.60 | 2.157\* |
| Unaided | 111 | 227.57 | 23.17 |

\*Significance at 0.05 level.

Table 7.2 shows that the mean scores obtained in Professional Development by Govt and Unaided teacher educators are 239 and 227.57 respectively. The standard deviations obtained are 19.60 and 23.17 respectively. The calculated ‘t’ value is 2.157, which is greater than 1.96, the table value required for significance at 0.05 level of significance. Hence it can be interpreted as there is significant difference between Govt and Unaided teacher educators in Professional Development.

**4.5.1.3. Comparison of mean scores of Professional Development between Teacher Educators of Government and University teacher education centres**

TABLE 7.3

**Data and results of the test of significance**

 **of mean difference in Professional Development between**

**Teacher Educators of Govt and University teacher education centres**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SI No. | Variable | Category | N | Mean | SD | Critical Ratio |
| 3. | Type of Management | Govt | 19 | 239 | 19.60 | 2.063\* |
| U-Tec | 34 | 226.88 | 22.83 |

\*Significance at 0.05 level.

Table 7.3 shows that the mean scores of Professional Development obtained by Govt and University teacher education centres teacher educators are 239 and 226.88 respectively. The standard deviations obtained are 19.60 and 22.83 respectively. The calculated ‘t’ value is 2.063 which is greater than the table value, 1.96 required for significance at 0.05 level of significance. This reveals that there is significant difference between Govt and University teacher education centres teacher educators in their Professional Development.

**4.5.1.4 Comparison of mean scores of Professional Development between Aided and Unaided Teacher educators.**

TABLE 7.4

**Data and results of the test of**

**significance of mean difference in Professional**

**Development between Aided and Unaided Teacher Educators**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SI No. | Variable | Category | N | Mean | SD | Critical Ratio |
| 4. | Type of Management | Aided | 36 | 238 | 22.58 | 2.36\* |
| Unaided | 111 | 227.57 | 23.17 |

\*Significance at 0.05 level.

 Table 7.4 shows that the mean scores of Professional Development obtained by Aided and Unaided teacher educators are 238 and 227.57respectively. The standard deviations obtained are 22.58 and 23.17 respectively. The calculated ‘t’ value is 2.36 which is greater than the table value, 1.96 required for significance at 0.05 level of significance. This means that there is significant difference between Aided and Unaided teacher educators in the professional development.

**4.5.1.5 Comparison of mean scores of Professional Development between Teacher Educators of Aided and University teacher education centres.**

TABLE 7.5

**Data and results of the test of significance of mean
difference in Professional Development between Teacher Educators of Aided and University teacher education centres**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SI No. | Variable | Category | N | Mean | SD | Critical Ratio |
| 5. | Type of Management | Aided | 36 | 238 | 22.58 | 2.04\* |
| U-Tec | 34 | 226.88 | 22.83 |

\*Significance at 0.05 level.

Table 7.5 shows that the mean scores of Professional Development obtained by Aided and University teacher education centres teacher educators are 238 and 226.88 respectively. The standard deviations obtained are 22.58 and 22.83 respectively. The calculated ‘t’ value is 2.04 which is greater than the table value, 1.96 required for significance at 0.05 level of significance. This reveals that there is significant difference between Aided and University teacher education centres teacher educators in their Professional Development.

**4.5.1.6 Comparison of mean scores of Professional Development between Teacher educators of Unaided and University teacher education centres**

**TABLE 7.6**

**Data and results of the test of significance**

 **of mean difference in Professional Development between Teacher Educators of Unaided and University teacher education centres**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SI No. | Variable | Category | N | Mean | SD | Critical Ratio |
| 6. | Type of Management | Unaided | 111 | 227.57 | 23.17 | 0.153 |
| U-Tec | 34 | 226.88 | 22.83 |

Table 7.6 shows that the mean scores of Professional Development obtained by Unaided and University teacher education centres teacher educators are227.57 and 226.88 respectively. The standard deviations obtained are 23.17 and 22.83 respectively. The calculated ‘t’ value is 0.153 which is less than the table value, 1.96 required for significance at 0.05 level of significance. This reveals that there is no significant difference between Teacher educators of Unaided and University teacher education centres in their Professional Development.

* + 1. **Comparison of mean scores of Professional Development of Teacher Educators on the basis of Gender.**

The values of mean, standard deviation and critical ratio obtained for test of significance of mean difference between Professional Development for subsamples based on Gender are presented in Table8

TABLE 8

**Data and results of the test of significance of mean difference in Professional Development between Male and Female Teacher Educators**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SI No. | Variable | Category | N | Mean | SD | Critical Ratio |
| 7 | Gender | Male | 93 | 235.49 | 23.38 | 2.91\* |
| Female | 107 | 226.14 | 22.02 |

\*Significance at 0.01 level.

From the table 8, it was found that the mean scores of Professional Development obtained for Male and Female teacher educators are 235.49 and 226.14 respectively. The standard deviations obtained are 23.38 and 22.02 respectively. The ‘t’ value obtained is 2.91 which is greater than 2.58, the table value required for significance at 0.01 level. It can be interpreted as the male and female teacher educators differ significantly in their professional development at 0.01 level of significance.

* + 1. **Comparison of mean scores of Professional Development of Teacher Educators on the basis Subjects of Teaching .**

The values of mean, standard deviation and critical ratio obtained for test of significance of mean difference between Professional Development for subsamples based on Subjects of Teaching are presented in Table 9.

TABLE 9

**Data and results of the test of significance**

**of mean difference in Professional Development**

**between General and Optional Teacher Educators**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SI No. | Variable | Category | N | Mean | SD | Critical Ratio |
| 8 | Subjects of Teaching | General | 84 | 230 | 22.59 | -0.255 |
| Optional | 116 | 230.84 | 23.52 |

From the table 9, it was found that the mean scores obtained for Professional Development of teacher educators handling Optional and General are 230 and 230.84 respectively. The standard deviations obtained are 22.59 and 23.52 respectively. The ‘t’ value obtained is -0.255 which is far less than 1.96, the table value required for significance at 0.05 level. Hence it was inferred that there is no significant difference in the Professional Development of teacher educators handling Optional and General subjects.

* + 1. **Comparison of mean scores of Professional Development of Teacher Educators on the basis of Qualification.**

TABLE 10

**Data and results of the test of significance**

 **of mean difference in Professional Development**

**between High and Low Qualified Teacher Educators**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SI No. | Variable | Category | N | Mean | SD | Critical Ratio |
| 9 | Qualification | High | 50 | 239.08 | 25.71 | 3.103\* |
| Low | 150 | 227.62 | 21.48 |

\*Significance at 0.01 level.

Table 10 shows that the mean scores of Professional Development of High and Low Qualified teacher educators are 239.08 and 227.62 respectively. The standard deviations obtained are 25.71 and 21.48 respectively. The ‘t’ value calculated is 3.103, which is greater than the table value, 2.58 required for significance at 0.01 level of significance. Hence it was interpreted that there is significant difference in the Professional Development of High and Low Qualified teacher educators.

* + 1. **Comparison of mean scores of Professional Development of teacher educators on the basis of Teaching Experience.**

To test whether teacher educators having 0-5 years of experience and 5& above 5 years of experience differ significantly in their Professional Development, the test of significance of mean difference for large independent samples are done, the details of which are given below as Table11.

TABLE 11

**Data and results of the test of significance**

**of mean difference in Professional Development**

**between High and Low Experienced Teacher Educators**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SI No. | Variable | Category | N | Mean | SD | Critical Ratio |
| 10 | Teaching Experience | 0-5 Years | 108 | 226.19 | 22.32 | 2.904\* |
| 5 &above 5 Years | 92 | 235.53 | 23.06 |

\*Significance at 0.01 level.

Table 11 shows that the mean scores of Professional Development of High and Low Experienced teacher educators are 226.19 and 235.53 respectively. The standard deviations obtained are 22.32 and 23.06 respectively. The ‘t’ value calculated is 2.904, which is greater than the table value, 2.58 required for significance at 0.01 level of significance. Hence it was interpreted that there is significant difference in the Professional Development of High and Low Experienced teacher educators.

**4.6. EXTENT OF MAIN AND INTERACTION EFFECTS OF TYPE OF MANAGEMENT, GENDER AND QUALIFICATION ON PROFESSIONAL DEVELOPMENT OF TEACHER EDUCATORS**

 To find out whether Type of Management, Gender and Teaching Experience have any main or interaction effects on Professional Development of teacher educators, three way ANOVA was used with 4×2×2 factorial design.

**3- Way ANOVA (4×2×2 Factorial Design)**

 The analysis and discussion of results with regard to this technique are described under the following sections.

4.6.1. Main effect of Type of Management on Professional Development of Teacher Educators.

4.6.2. Main effect of Gender on Professional Development of Teacher Educators.

4.6.3. Main effect of Teaching Experience on Professional Development of Teacher Educators.

4.6.4. Interaction effect of Type of Management and Gender on Professional Development of Teacher Educators.

4.6.5. Interaction effect of Gender and Teaching Experience on Professional Development of Teacher Educators.

4.6.6. Interaction effect of Type of Management and Teaching Experience on Professional Development of Teacher Educators.

4.6.7. Interaction effect of Type of Management, Gender and Teaching Experience on Professional Development of Teacher Educators.

The results of 3-way ANOVA (4×2×2 factorial design) are summarized in Table 12.

TABLE 12

**Results of ANOVA (4×2×2) on Professional Development of
Teacher Educators by Type of Management, Gender and Teaching Experience.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Source of Variation | Sum of Squares | Degrees of Freedom | Mean Squares | F- Value |
| Type of Management | 2557.529 | 3 | 852.509 | 1.762 |
| Gender | 1499.564 | 1 | 1499.564 | 3.09 |
| Teaching Experience | 1105.261 | 1 | 1105.261 | 2.284 |
| Type of Management× Gender | 4010.051 | 3 | 1336.683 | 2.762\* |
| Gender × Teaching Experience | 516.437 | 1 | 516.437 | 1.067 |
| Type of Management× Teaching Experience | 886.758 | 3 | 295.586 | 0.610 |
| Type of Management×Gender× Teaching Experience | 2809.642 | 3 | 936.547 | 1.935 |

\*p<0.05

**DISCUSSION OF RESULTS**

**4.6.1. Main effect of Type of Management on Professional Development of Teacher Educators**

 Table 12 shows that F- value obtained for Type of Management on Professional Development of teacher educators is 1.76. This value is lesser than 2.65, the table value of F for (3,184) degrees of freedom at 0.05 level of significance. This indicates that main effect of Type of Management on Professional Development of teacher educators is not significant at 0.05 level of significance.

**4.6.2. Main effect of Gender on Professional Development of Teacher Educators**

 Table 12 shows that F- value obtained for Gender on Professional Development of teacher educators is 3.09. This value is lesser than 3.89, the table value of F for (1,184) degrees of freedom at 0.05 level of significance. It reveals that the main effect of Gender on Professional Development of teacher educators is not significant, even at 0.05 level of significance.

**4.6.3. Main effect of Teaching Experience on Professional Development of Teacher Educators**

 The table 12 shows that the F- value obtained is 2.28, which is lesser than 3.89, the table value of F for (1,184) degrees of freedom at 0.05 level of significance. This indicates that the main effect of Teaching Experience on Professional Development of teacher educators is not significant at 0.05 level of significance.

**4.6.4. Interaction effect of Type of Management and Gender on Professional Development of Teacher Educators.**

 While considering the Type of Management and Gender, the F- value obtained is 2.76, which is greater than 2.65, the tabled value required for significance at 0.05 level, for (3,184) degrees of freedom. This indicates that the interaction effect of Type of Management and Gender on Professional Development of teacher educators is significant at 0.05 level of significance.

4.6.4.1. Mean scores of Professional Development for different Types of Management and Gender are given in Table 13.

TABLE 13

**Mean scores of Professional
 Development for different Types of Management and Gender**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Government | Aided | Unaided | University Centre |
| Sex I (Male) |  234.44 | 244.33 | 232.96 | 234.06 |
| Sex II(Female) | 244.5 | 231.66 | 223.16 | 220.5 |

 Graphical representation of the interaction effect of Type of Management and Gender on Professional Development of teacher educators is given as Figure 3.

**SCALE**

Y axis : 1cm = 5 divisions

**Figure 3 : Interaction effect of types of Management and sex on Professional Development of Teacher Educators**

From the figure 3, it is clear that Female teacher educators in the Government training colleges show a higher Professional Development while Male teacher educators show a lesser rate. But in case of aided, unaided teacher education colleges and University centres, the Male teacher educators show a higher Professional Development compared to Female teacher educators in such institutions.

 Though there is significant Gender difference exists in the Professional Development of teacher educators in the total sample, the interaction effect of Gender on relevant subsample, Type of Management shows significant gender difference on Professional Development of teacher educators.

**4.6.5. Interaction effect of Gender and Teaching Experience on Professional Development of Teacher Educators**

 Table 12 shows that the F- value obtained for Gender and Teaching Experience on Professional Development of teacher educators is 1.07, which is less than 3.89, the table value of F for (1,184) degrees of freedom at 0.05 level of significance. This indicates that the interaction effect of Gender and Teaching Experience on Professional Development of teacher educators is not significant at 0.05 level of significance.

**4.6.6. Interaction effect of Type of Management and Teaching Experience on Professional Development of Teacher Educators**

 Table 12 shows that F- value obtained for Type of Management and Teaching Experience on Professional Development of teacher educators is 0.61, which is less than 2.65, the table value of F for (3,184) degrees of freedom at 0.05 level of significance. It was revealed that the interaction effect of Type of Management and Teaching Experience on Professional Development of teacher educators is not significant at 0.05 level of significance.

**4.6.7. Interaction effect of Type of Management, Gender and Teaching Experience on Professional Development of Teacher Educators**

 Table 12 shows that the F- value obtained for Type of Management, Gender and Teaching Experience on Professional Development of teacher educators is 1.93, which is less than 2.65, the table value of F for (3,184) degrees of freedom at 0.05 level of significance. It was revealed that the interaction effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators is not significant at 0.05 level of significance.

**4.7. MAJOR FINDINGS**

 Following are the major findings obtained after analysis of the collected data.

1. The mean scores of Professional Development obtained for the total sample is 230.49
2. The mean scores of Professional Development obtained for Male and Female teacher educators are 235.49 and 226.14 respectively. The male teacher educators have slightly high rate of Professional Development compared to female teachers.
3. The mean scores obtained for teacher educators working in Government, Aided, Unaided colleges and University centres are 239,238,227.57 and 226.88 respectively. Govt and Aided college teacher educators have high rate of Professional Development compare to that of teacher educators from unaided colleges and University centres. Unaided colleges and University centres are almost equal in their Professional Development.
4. The mean scores in Professional Development of teacher educators handling General and Optional subjects are 230 and 230.84 respectively. The two groups are almost equal in Professional Development .
5. The mean scores obtained for High and Low Qualified teacher educators are 239.08 and 227.62 respectively. The Professional Development of highly qualified teacher educators have a high rate of Professional Development compared to that of low qualified teachers.
6. The mean scores obtained for Professional Development of 0-5 years and 5 & above 5 years experienced teacher educators are 235.53 and 226.19 respectively. The high experienced teacher educators show higher Professional Development than low experienced teacher educators.
7. There exists no significant difference in the mean scores of Professional Development between Govt and Aided teacher educators (‘t’ value=0.283).
8. There exists significant difference in the mean scores of Professional Development of Govt and Unaided teacher educators (‘t’ value=2.157).
9. There exists significant difference in the mean scores of Professional Development between Govt and University centres teacher educators (‘t’ value=2.063).
10. There exists significant difference in the mean scores of Professional Development between Aided and Unaided teacher educators (‘t’ value=2.36).
11. There exists significant difference in the mean scores of Professional Development between Aided and University centres teacher educators at 0.05 level (‘t’ value=2.047).
12. There exists no significant difference in the mean scores of Professional Development between Unaided and University centres teacher educators. (‘t’ value=0.153).
13. There exists significant difference in the mean scores of Professional Development between male and female teacher educators at 0.01 level of significance (‘t’ value=2.91).
14. There exists no significant difference in the mean scores of Professional Development of general and optional teacher educators. (‘t’ value=-0.255).
15. There exists significant difference in the mean scores of Professional Development of below 5 year experienced and 5&above 5 year experienced teacher educators (‘t’ value=2.904).
16. There exists significant difference in the mean scores of Professional Development of High and Low qualified teacher educators. (‘t’ value=3.103).
17. Type of Management do not have a main effect on Professional Development of teacher educators (F=1.76,p>0.05 for (3,184) degrees of freedom).
18. Gender do not have a main effect on Professional Development of teacher educators (F=3.09, p>0.05 for (1,184) degrees of freedom).
19. Teaching Experience do not have a main effect on Professional Development of teacher educators (F=2.28, p>0.05 for (1,184) degrees of freedom).
20. Interaction effect of Type of Management and Gender on Professional Development of teacher educators was significant at 0.05 level of significance (F=2.76, p<0.05 for (3,184) degrees of freedom).
21. Interaction effect of Gender and Teaching Experience on Professional Development of teacher educators was not significant (F=1.07, p>0.05 for (1,184) degrees of freedom).
22. Interaction effect of Type of Management and Teaching Experience on Professional Development of teacher educators was not significant (F=0.61, p>0.05 for (3,184) degrees of freedom).
23. Interaction effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators was not significant (F=1.93, p>0.05 for (3,184) degrees of freedom).

**4.8.** **TENABILITY OF HYPOTHESES**

Hypothesis I states that there exists significant difference in the mean scores of Professional Development of teacher educators among the relevant subsamples based on (i) Gender (ii) Type of Management (iii)Subjects of Teaching(iv) Qualification (v) Teaching Experience.

 The first part of the hypothesis states that ‘there exists significant difference between the mean scores of Professional Development of Male and Female teacher educators’. The results of the comparison of the mean scores of Professional Development of Male and Female teacher educators show significant difference at 0.01 level of significance. Hence hypothesis I (i) is substantiated.

The second part of the hypothesis I states that ‘there exists significant difference in the mean scores of Professional Development of teacher educators on the basis of Type of management. In this study, the finding suggests that there exist no significant difference between teacher educators of Govt and Aided colleges and between Unaided and University centres in their Professional Development. The findings also suggest that there exist significant difference between teacher educators of Govt and Unaided, Govt and University centres, Aided and Unaided, Aided and University centres. Hence hypothesis I (ii) is partially substantiated.

 The third part of the hypothesis I states that ‘there exists significant difference in the mean scores of Professional Development of teacher educators on the basis of Subjects of Teaching’. In this study, the finding suggests that there exist no significant difference between teacher educators handling General and Optional subjects in their Professional Development. Hence hypothesis I (iii) is not substantiated.

 The fourth part of the hypothesis I states that ‘there exists significant difference in the mean scores of Professional Development of teacher educators on the basis of Qualification. In this study, it was found that there is significant difference in the Professional Development of High and Low qualified teacher educators. Hence hypothesis I (iv) is substantiated.

The fifth part of the hypothesis I states that ‘there exists significant difference in the mean scores of Professional Development of teacher educators on the basis of Teaching experience. In this study, it was found that there is significant difference in the Professional Development of High and Low experienced teacher educators. Hence hypothesis I (v) is substantiated.

Hypothesis II states that ‘the main effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators will be significant’. In this study, the findings suggest that Type of Management, Gender and Teaching Experience has no significant main effect on Professional Development of teacher educators. Hence hypothesis II is not substantiated.

 Hypothesis III states that ‘interaction effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators will be significant’. The findings of the present study reveal the following: (i) Type of Management and Gender have a significant effect on Professional Development of teacher educators at 0.05 level of significance (ii) Gender and Teaching Experience do not have any significant effect on Professional Development of teacher educators (iii) Type of Management and Teaching Experience do not have any significant effect on Professional Development of teacher educators and (iv) Type of Management, Gender and Teaching Experience do not have any significant effect on Professional Development of teacher educators. Hence hypothesis III is partially substantiated.

# SUMMARY OF PROCEDURE FINDINGS AND SUGGESTIONS

 This chapter provides an over view of the significant aspects of the various stages of the study. This includes the summary of procedures, important findings of the study, educational implications and suggestions for further research.

**5.1. STUDY IN RETROSPECT**

 Various aspects of the present study like the Problem, Variables, Objectives, Hypotheses and Methodology are reviewed retrospectively.

# 5.1.1. RESTATEMENT OF THE PROBLEM

 The study was entitled as “PROFESSIONAL DEVELOPMENT OF TEACHER EDUCATORS WORKING IN B.Ed. COLLEGES”.

**5.2. VARIABLES**

 The present study is designed with two types of variables, namely Independent Variables and Dependent Variable.

**5.2.1. Independent Variable**

 The independent variables are Gender, Type of management, Subjects of teaching, Qualification and Teaching Experience.

**5.2.2. Dependent Variable**

 The dependent variable is Professional Development of teacher educators.

**5.3. OBJECTIVES**

 The objectives set forth for the study are the following.

1. To find out the extent of Professional Development of teacher educators in the total sample and in the relevant sub samples based on

1. Gender
2. Type of Management
3. Subjects of Teaching
4. Qualification
5. Teaching Experience

2. To find out whether there exist significant difference in the mean scores of Professional Development of teacher educators among the relevant sub samples based on

1. Type of Management
2. Gender
3. Subjects of Teaching
4. Qualification
5. Teaching Experience.

3. To find out whether Type of Management, Gender and Teaching Experience have main and interaction effect on Professional Development of teacher educators.

**5.4. HYPOTHESES**

 The hypotheses formulated for the study are the following.

1. There exists significant difference in the mean scores of Professional Development of teacher educators among the relevant sub samples based on

1. Gender
2. Type of Management
3. Subjects of Teaching
4. Qualification
5. Teaching Experience.

2. Main effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators will be significant.

3. Interaction effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators will be significant

**5.5. METHODOLOGY**

**5.5.1. Sample**

 The study was conducted on a sample of 200 teacher educators working in B.Ed. colleges under University of Calicut, drawn from training colleges of Thrissur, Kozhikode, Malappuram, Wayanad and Palakkad districts. The sample selection was done using stratified random sampling technique giving due representation to factors like Gender, Type of Management, Subjects of Teaching, Qualification and Teaching Experience.

**5.5.2. Tool Used**

 The investigator developed an Professional Development scale to measure the Professional Development of teacher educators -Professional Development Scale ( Basheer and sobish, 2010).

**5.5.3. Statistical Techniques Use**

 The collected data was analyzed using the following techniques.

1. Preliminary Analysis
2. Estimation of Mean
3. Test of Significance of Mean difference for large Independent Samples
4. 3-Way ANOVA (4x2x2 Factorial Design)

**5.6. MAJOR FINDINGS**

 Following are the major findings obtained after analysis of the collected data.

1. The mean scores of Professional Development obtained for the total sample is 230.49
2. The mean scores of Professional Development obtained for Male and Female teacher educators are 235.49 and 226.14 respectively. The male teacher educators have slightly high rate of Professional Development compared to female teachers.
3. The mean scores obtained for teacher educators working in Government, Aided, Unaided colleges and University centres are 239,238,227.57 and 226.88 respectively. Govt and Aided college teacher educators have high rate of Professional Development compare to that of teacher educators from unaided colleges and University centres. Unaided colleges and University centres are almost equal in their Professional Development.
4. The mean scores in Professional Development of teacher educators handling General and Optional subjects are 230 and 230.84 respectively. The two groups are almost equal in Professional Development.
5. The mean scores obtained for High and Low Qualified teacher educators are 239.08 and 227.62 respectively. The Professional Development of highly qualified teacher educators has a high rate of Professional Development compared to that of low qualified teachers.
6. The mean scores obtained for Professional Development of 0-5 years and 5 & above 5 years experienced teacher educators are 235.53 and 226.19 respectively. The high experienced teacher educators show higher Professional Development than low experienced teacher educators.
7. There exists no significant difference in the mean scores of Professional Development between Govt and Aided teacher educators (‘t’ value=0.283).
8. There exists significant difference in the mean scores of Professional Development of Govt and Unaided teacher educators (‘t’ value=2.157).
9. There exists significant difference in the mean scores of Professional Development between Govt and University centres teacher educators (‘t’ value=2.063).
10. There exists significant difference in the mean scores of Professional Development between Aided and Unaided teacher educators (‘t’ value=2.36).
11. There exists significant difference in the mean scores of Professional Development between Aided and University centres teacher educators at 0.05 level (‘t’ value=2.047).
12. There exists no significant difference in the mean scores of Professional Development between Unaided and University centres teacher educators. (‘t’ value=0.153).
13. There exists significant difference in the mean scores of Professional Development between male and female teacher educators at 0.01 level of significance (‘t’ value=2.91).
14. There exists no significant difference in the mean scores of Professional Development of general and optional teacher educators. (‘t’ value=-0.255).
15. There exists significant difference in the mean scores of Professional Development of below 5 year experienced and 5&above 5 year experienced teacher educators (‘t’ value=2.904).
16. There exists significant difference in the mean scores of Professional Development of High and Low qualified teacher educators. (‘t’ value=3.103).
17. Type of Management do not have a main effect on Professional Development of teacher educators (F=1.76, p>0.05 for (3,184) degrees of freedom).
18. Gender do not have a main effect on Professional Development of teacher educators (F=3.09, p>0.05 for (1,184) degrees of freedom).
19. Teaching Experience do not have a main effect on Professional Development of teacher educators (F=2.28, p>0.05 for (1,184) degrees of freedom).
20. Interaction effect of Type of Management and Gender on Professional Development of teacher educators was significant at 0.05 level of significance (F=2.76, p<0.05 for (3,184) degrees of freedom).
21. Interaction effect of Gender and Teaching Experience on Professional Development of teacher educators was not significant (F=1.07, p>0.05 for (1,184) degrees of freedom).
22. Interaction effect of Type of Management and Teaching Experience on Professional Development of teacher educators was not significant (F=0.61, p>0.05 for (3,184) degrees of freedom).
23. Interaction effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators was not significant (F=1.93, p>0.05 for (3,184) degrees of freedom).

**5.7. CONCLUSION**

 Major findings of the study helped the investigator to arrive at the following conclusions.

 Most of the sub samples were differed in their extent of Professional Development. In the case of Male and Female teacher educators, the male teacher educators show slightly higher Professional Development than female teacher educators.

 There is difference in the extent of Professional Development of teacher educators based on their Type of Management of Institution. Govt college teachers show the highest Professional Development than Aided, Unaided and University centres.

 Teacher educators handling General and Optional subjects, the extent of professional Development is almost equal. The Professional Development of high and low qualified teacher educators, the high qualified teacher educators show high Professional Development than the low qualified teacher educators. In the case of Teaching Experience, the Professional Development of teacher educators between 0-5 and 5 and above 5 years of Teaching Experience, high experienced teacher educators show high Professional Development than the low experienced teacher educators.

 Type of Management, Sex and Teaching Experience has no main effect on Professional Development of teacher educators. The analysis revealed that Type of Management and Sex have significant interaction effect on Professional Development of teacher educators. It was also revealed that Sex and Teaching Experience, Type of Management and Teaching Experience and Type of Management, Sex and Teaching Experience do not have significant interaction effect on Professional Development of teacher educators.

**5.8. EDUCATIONAL IMPLICATIONS**

 The present study helped to find out the extent of Professional Development of teacher educators. The value of research in education lies in its implications.

The various items in the Professional Development Scale will give an idea to the teachers about the qualities expected to a teacher who is a professional. As one gets an idea of a professional teacher and the extent of professional development in him/her, it will enable him/her to improve in his own or her own by seeking help from experts.

The mean scores of teacher educators in the total sample lies in an average score. Hence it was advisable to adopt various programmes for uplifting the Professional Development of teacher educators.

So necessary steps should be taken to increase the participation of teacher educators in maximum number of Continuing Professional Development Programmes. Teacher educators should get opportunities to participate in programmes like orientation courses, refresher courses, training courses, symposia, conference etc.

The findings of the study revealed that male teacher educators are superior to female teacher educators in their professional development. Therefore, for the professional improvement of female teacher educators requires immediate attention. So the administrators and other authorities in the field of teacher education should create suitable environment and conduct special programmes such as quality improvement programmes, in-service courses, seminars, workshops etc. especially for the female teacher educators The female teacher educators need to be given immense exposure to academic affairs so as to excel in their performance.

It is obvious from the study that there is significant difference between teacher educators on the basis of their type of management of institution. Teacher educators working in Aided and Government colleges had higher professional development than the teacher educators working in Unaided and University teacher education centres. Teachers of unaided and University teacher education centres do not get access to the U.G.C. sponsored refresher courses, orientation programmes, seminars, research projects, teacher fellowships etc for professional development. So UGC and other agencies like RIE, NCTE should take initiative to conduct such programmes to unaided and university centres teacher educators.

The level of professional development varies according to the qualification of teacher educators. Those who are highly qualified is being highly developed professionally, than that of the low qualified teacher educators. So an immediate attention is required to improve the professional qualities of low qualified teacher educators. Provide opportunities to them to acquire new degrees, and continuous awareness and updating is needed for their professional development. Implementation of research cells in colleges can contribute to professional development of teacher educators.

The experienced teacher educators have higher professional development than low experienced teacher educators. So necessary action plan is needed for the development of low experienced teachers. The number of freshers exceeds the number of inexperienced in various teacher education colleges. It implies the urgency of some additional professional development programmes for the low experienced teacher educators for their improvement and the overall improvement of the educational system. Training programmes should be provided at the early period of their service and thorough revisions should be made to improve the effectiveness of pre-service courses.

Provide a proper organizational climate in the institutions that motivates the teacher educators towards their profession. Ensure the service of a Quality Assurance Director in the educational institutions to enhance and to provide guidance to those teachers having low Professional Development.

Make provision for the periodical evaluation of the performance of teacher educators. The authorities should ensure the proper functioning of the research cells, faculty improvement programmes etc.

**5.9. SUGGESTIONS FOR FURTHER RESEARCH**

 The findings of the present study and the limitations involved made the investigator to suggest the following for further research in this area.

1. Achievement of student teachers in relation with professional development of teacher educators.
2. A study can be done to find out the relationship between Professional Development and occupational stress.
3. The Same study can be replicated on teacher educators of different types of teacher training institutions.
4. Professional development of teachers working in colleges other than teacher education institutions can be studied
5. Same study can be conducted on teachers working in Arts and Science colleges, primary, secondary and higher secondary level.

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PROFESSIONAL DEVELOPMENT OF TEACHER EDUCATORS WORKING IN
B.Ed. COLLEGES

**SOBISH.C**

Dissertation
submitted to the University of Calicut
in partial fulfillment of the requirement for the Degree of
**MASTER OF EDUCATION**

**FAROOK TRAINING COLLEGE**

**UNIVERSITY OF CALICUT**

**2010**

**DECLARATION**

 I, SOBISH.C, do hereby declare that this dissertation entitled “**PROFESSIONAL DEVELOPMENT OF TEACHER EDUCATORS WORKING IN B.Ed. COLLEGES**” has not been submitted by me for the award of any degree, diploma or recognition before.

FarookTraining College, **SOBISH**

 .12.2010.

**Mr. Abdul Basheer, U.**

Associate Professor

Farook Training College

Calicut

**CERTIFICATE**

 I, Mr. ABDUL BASHEER, U**.**, do hereby certify that this dissertation entitled “**PROFESSIONAL DEVELOPMENT OF TEACHER EDUCATORS WORKING IN B.Ed. COLLEGES**“ is a record of bonafide study and research carried out by **SOBISH.C** under my supervision and guidance and has not been submitted by him for the award of any degree, diploma, title or recognition before.

 **Mr. Abdul Basheer U.**

Farook Training College, *(Supervising Teacher)*

 .12.2010

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*Farook Training College,* ***SOBISH***

 *.12.2010*

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**CHAPTER I**

INTRODUCTION

* **Need and Significance of the Study**
* **Statement of the Problem**
* **Definition of Key Terms**
* **Objectives**
* **Hypotheses**
* **Methodology**
* **Scope and Limitations**
* **Organization of the Report**

# INTRODUCTION

Education is the mirror where one can see the reflection of the world. Education has been considered as the most important input for the development of an individual, society and nation. Education is the product of experience. Education enlightens man and society and is the integral part of whole life cycle.

Teacher is the most vital factor of influence in the system of education. It is the teacher who matters most as far as the quality of education is concerned. Unlike other professionals, teachers have to play a very important role in the society, and normally we expect much more from them as they are the torch bearers of the society. The well equipped teacher is supreme in education. Teachers have a great responsibility at a time when our society is undergoing tremendous transformation.

The Secondary Education Commission (1954) has rightly stated, “We are however convinced that the most important factor in the contemplated educational reconstruction is the teacher, his personal qualities, his educational qualifications, his professional training and the place that he occupies in the school as well as in the community”.

Teachers occupy a prominent place in any society and in any educational system. A teacher is the most accountable and responsible person of the society. He should feel the importance of the profession. He must be honest, devoted and dedicated to his profession.

The Indian Education Commission (1964-66) observed that, “The success of education depends on the quality of its teachers, who shape the classroom by sharpening younger generations. There is no exaggeration to say that any system of education can ever rise above the level of the quality of its teachers”. The commission also points out that, “Of all the different factors that influence the quality of education and its contribution to the national development, the quality, competence and character of teachers are undoubtedly the most significant”.

Quality is the key word today. Quality has become a dynamic concept that has constantly been adapted to a world undergoing profound social and economical transformation. Quality of life is the outcome of quality education, which reflects in the individual’s thoughts and actions in every sphere – home, society interaction and work too.

The quality of school education is dependent on the academic and professional competency of the teacher, the single major determinant factor that ensuring quality education. There is no denying of the fact that the quality of teachers depends to a large extent on the quality of training imparted to the teachers.

The present scenario in teacher education centres is astonishing. Each year thousands of teacher educators are coming out from different institutions. The role of teacher education colleges is crucial in this context i.e.; how they conduct the training programme, what emphasis is laid and most important of all, what type of teacher educators they have. The role of teacher educators gains paramount significance, as they are preparing teachers for the future. The quality of teacher preparation is closely related to the quality of teacher educators.

Since teacher educators are the most crucial component of the training programme, they must continuously conduct self evaluation to find out their flaws and weakness and take necessary action for modification and thus improving their competencies and standards. For improving the quality of teacher education professional development is inevitable.

**1.1. NEED AND SIGNIFICANCE**

 Educational scenario in the world is changing and as a whole is passing through a knowledge revolution. Education today is more than teaching and learning with great emphasis being laid on technology. In the age of a techno-scientific revolution, when the quantity of knowledge and information is expanding exponentially along with the increasingly varied student population, the quality of training for teachers and the quality of teaching in higher education institutions demand top priority.

It must be relevant to mention the fact that in the present scenario of education in our country, one comes across teachers with low or minimum qualifications getting entry into the teaching profession, which adversely affect the quality of prospective teachers who can shape the future citizens of our country. Professional Development implies that the teacher should continue to learn throughout the periods of his/her study, in the profession.

As a result of the adoption of low qualified teacher educators in to the teacher education system, the problem of deteriorating educational standards both qualitatively and quantitatively seems to be assuming alarming dimensions. Besides academic qualifications, one of the important determinants for enhancing the quality of teachers in the teacher education institute is the professional development of teacher educators.

Teachers are the role models to the students and when it comes to the teacher educators, they directly influence the prospective teachers and the future citizens in the long run. To ensure best performance talented teachers required to upgrade their skills and knowledge time to time.

The remarkable influence of information technology can never be denied in the field of education. Now the blackboards, chalks, dusters and other traditional teaching aids are being replaced by laptops, LCD projectors and such like modern instruments. But quite unfortunately, a sizable number of teacher educators are not familiar with the use of technology in their classrooms. A study conducted by Naseema (2006) on college teachers of University of Calicut and Kerala threw light to the weaknesses they had encountered. Many teachers admitted their weakness in using technologies in the class room, lack of adequate knowledge in the content area, new pedagogy and research methodology etc. If the teachers do not get re–trained and adapted to adopt the new system, any effort at educational innovation is bound to fail. The well qualified and knowledgeable teacher can contribute in fulfilling the aspirations of youth in accordance with the contemporary environment.

A professional, in any field always needs to sharpen their skills and find ways to improve the way they carry out their profession. Education gets practical shape through teaching–learning process and gets proper identification and placement when teaching is accepted as a profession.

In the era of modern knowledge we have to accept teaching as a profession and not just as a job. A job is one which can be achieved with skills and the ability to think quickly and effectively in different situations and fields of life. These skills are not exclusively confined to any particular field or situation. But a professional is that who has to work in a particular field or sector for which he is trained.

Professionalism among teachers is more important than in any other field because they are supposed to prepare the younger generation in a socially acceptable manner and as confident and competent personalities. Garret ,*et al.(2001)* found that teachers were more likely to change their instructional practices and gain greater subject knowledge and improved teaching skills when their professional development linked directly to their daily experiences and aligned with standards and assessments.

Teacher educators bear a serious responsibility to lead the generations correctly and wisely. Education of teachers is of utmost importance to make teaching an interesting and effective process. No educational reconstruction can take place effectively without an adequate preparation of teachers depends upon the involvement of teacher educators in their profession.

Teacher educators get knowledge about new technologies and methods of teaching through continuing professional development programmes; it will increase knowledge and competence of teacher educators. The teacher educator influence the student or the teachers of new generation by what he says and even more what he does. So the professional development of teacher educators is a must.

Whatever may be the occupation, if the individual is engaged in it, without involvement will result in professional stagnation to the clients. An uninvolved teacher spells disaster to the country’s future. It is suicidal in the teaching profession (Indian Education Commission, 1964-66).

 As there are not much studies reported in this field of research and least studies in the sample of teacher educators, the present research is significant and attempts to develop a programme schedule for Professional Development of teacher educators working in B.Ed colleges

**1.2. STATEMENT OF THE PROBLEM**

 The present study is entitled as “PROFESSIONAL DEVELOPMENT OF TEACHER EDUCATORS WORKING IN B.Ed. COLLEGES”.

**1.3. DEFINITION OF KEY TERMS**

 The key terms in the statement of the problem are explained below so as to get operational definitions.

**1.3.1. Professional development**

 In the present study professional development is operationally defined as to grow in to more advanced state in one’s own profession or job.

**1.3.2. Teacher Educators**

 For the present study, the term ‘Teacher Educators’ is used to denote the teachers who are teaching student teachers in B.Ed. colleges.

**1.3.3. B.Ed. Colleges**

 For the present study, the term B.Ed. colleges is used to denote the colleges conducting Bachelor of Education Courses.

**1.4. VARIABLES OF THE STUDY**

The present study is designed with two types of variables, namely Independent Variables and Dependent Variable.

**1.4.1. Independent Variable**

 The independent variables are Gender, Type of management, Subjects of teaching, Qualification and Teaching Experience.

**1.4.2. Dependent Variable**

 The dependent variable is Professional Development of teacher educators.

**1.5. OBJECTIVES**

 The objectives set forth for the study are the following.

1. To find out the extent of Professional Development of teacher educators in the total sample and in the relevant sub samples based on
	1. Gender
	2. Type of Management
	3. Subjects of Teaching
	4. Qualification
	5. Teaching Experience
2. To find out whether there exists significant difference in the mean scores of Professional Development of teacher educators among the relevant sub samples based on
	1. Gender
	2. Type of management
	3. Subjects of Teaching
	4. Qualification
	5. Teaching Experience
3. To find out whether Type of Management, Gender and Teaching Experience have main and interaction effect on Professional Development of teacher educators.

**1.6. HYPOTHESES**

 The hypotheses formulated for the study are the following.

1. There exists significant difference in the mean scores of Professional Development of teacher educators among the relevant sub samples based on
2. Gender
3. Type of Management
4. Subjects of Teaching
5. Qualification
6. Teaching Experience
7. Main effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators will be significant.
8. Interaction effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators will be significant.

**1.7. METHODOLOGY**

 It deals with the precise description of the sample used for the study, tools employed and statistical techniques used.

**1.7.1. Sample**

 The study is proposed to be conducted on a sample of 200 Teacher Educators, drawn from different B.Ed. colleges, under University of Calicut by stratified sampling technique, giving due representation to the various strata viz., Gender, Type of Management, Subjects of Teaching, Qualification and Teaching Experience.

**1.7.2. Tools used for the study**

 For the present study, the investigator developed a Professional Development Scale to measure the Professional Development of Teacher Educators. It consists of 59 items under 5 dimensions.

**1.7.3. Statistical Techniques Used for Analysis of Data**

The main statistical techniques used for analysis of data are:

1. Preliminary Analysis
2. Arithmetic Mean
3. Test of significance of difference between the mean scores of relevant sub samples-‘t’ test for large independent sample.
4. Analysis of Variance -ANOVA

**1.8. SCOPE AND LIMITATIONS OF THE STUDY**

 The present study is intended to find out the extent of Professional Development of teacher educators working in B.Ed. colleges under University of Calicut. The sample selected for the study was 200 teacher educators working in B.Ed. colleges. The investigator hopes that such a study will help to understand the extent of Professional Development of teacher educators in a better way, which in turn will provide an insight into the various factors contributing the Professional Development. Thus the investigator hopes that the findings will help them to make a self evaluation and improve their qualities and effectiveness in the academic context.

Teaching is the important part of the process of education. It is the process by which teacher brings the student and the subject matter together. The teacher’s professional development is likely to have a significant influence on the student learning and prospects of individual students as well as over all prestige of the institution in the immediate future. As teacher educators prepare the future prospective teachers, this study itself has a wide scope. The investigator hops that the findings of the study will have a significant role in the professional empowerment of teacher’s community. It was also hoped that such an understanding will help to identify the various inputs having significant influence on professional development and performance of teachers and in turn the empowerment of the whole educational system.

The investigator also hopes that the findings of the study also help the teacher education institutions to organize various programmes for enhancing the Professional Development of teacher educators.

 To conduct the study, the investigator prepared a scale to assess the Professional Development of Teacher Educators. This scale can be used to find out the extent of Professional Development of Teacher Educators. This scale can be used further to find out the Professional Development of teachers in other types of institutions and various levels of education. The results of the study can give valid information, regarding the Professional Development, which will throw light on the nature and extent of Professional Development of teacher educators.

 Even though the present study was made with maximum possible attention and specificity, certain limitations which could hardly be avoided have crept into this study, they are.

1. Though the population of the study is the teacher educators of B.Ed. colleges under University of Calicut, the study was confined to a sample of 200 teacher educators drawn from 30 teacher training institutions, as the teacher educators were not available due to some administrative problems in several institutions.
2. The sample selected for the study was confined only to some of the teacher educators of Kozhikode, Malappuram, Palakkad, Thrissur, and Wayanad districts on the assumption that the sample will represent the whole population under study.
3. The sample of teacher educators selected for the study included only the teachers working in B.Ed. colleges.

**1.8. ORGANIZATION OF REPORT**

 The report has been presented in five chapters

The first chapter presents a brief introduction of the Problem, Need and Significance of the study, Statement of the Problem, Definitions of key terms, Objectives, Hypotheses, Methodology, Scope and Limitations of the study.

Chapter two describes a conceptual frame work for the study and a survey of the studies reviewed in relation to the present study is attempted.

Chapter three gives an account of the Methodology in detail used in the present study. It contains the objectives, hypotheses, variables, tool employed for data collection, sample drawn, data collection procedure, scoring and the statistical techniques used for the study.

Chapter four describes the Details of analysis, interpretation of the results and summaries etc.

Chapter five summarizes the major findings of the study, conclusions, educational implications of the study and suggestions for further research in the area.

**CHAPTER II**

REVIEW OF RELATED LITERATURE

* **Conceptual Overview**
* **Studies Related with Professional Development**

# REVIEW OF RELATED LITERATURE

 Review of related literature is an essential aspect of any research. It is necessary for a researcher to understand the problems that are already investigated and those that need further investigation.

As Best and Khan (2001) notes “Since effective research is based upon past knowledge, Review of related literature helps to eliminate the duplication of what has been done and provide useful hypotheses and helpful suggestions for significant investigation” .

 The review of literature serves a variety of background functions preparatory to the actual collection of data. Whatever be the kind of study, survey of the existing literature considered scientific to the research activity. The main purpose of the review of literature is to indicate the problems that are already investigated and those that need further investigation.

 The present study is an attempt to find out the extent of Professional Development of Teacher Educators working in B.Ed colleges. For this purpose, the investigator made an earnest effort to review almost all the available literature from different sources to get background information of the study.

The reviewed literature is described under the following headings.

* 1. CONCEPTUAL OVERVIEW
	2. REVIEW OF RELATED STUDIES
	3. CONCEPTUAL OVERVIEW

Education plays a key role in moulding, shaping, reforming and reconstructing the society from time to time. For this, education has been regarded as the most potent instrument of social reformation. It is therefore clearly visualized that education as the most potent instrument will never suffice until and unless we gave it a practical shape. This can be possible through teaching as a profession, where teachers will handle this teaching task by accepting teaching as their profession.

 Good defines profession as “An occupation usually involving relatively long and specialized preparation on the level of higher education and governed by its own code of ethics”.

Wolfgang and Glickman (1986) define a professional as one who gathers information about a problem , has a knowledge base of possible strategies , is aware of the consequences of employing each strategy and then chooses the strategy that is logically appropriate in their book ‘Solving Discipline Problems’.

 The definition of professional growth in the dictionary of education by C.V.Good is “professional growth means increase in subject matter knowledge , teaching skills and insight in to educational problems with a concomitant increase in success as a teacher “.

“Professional development implies a continuous process of learning about the teacher’s role. It is not imposed like training but something for which the professional takes personal responsibility for meeting thought out targets” (comprehensive dictionary of education).

For good professional development, the UGC established fifty one A.S.C’s (UGC report 2001-2002) conducting ‘orientation’ and ‘refresher’ courses. Following are the suggestions for the improvement of programmes conducted by ASC’s.

1. Teachers must be able to know the objectives of their subjects.
2. They must be able to select learning material according to their objectives.
3. They must be aware about different methods of teaching.
4. They must be practiced at least few very important teaching skills during ‘orientation’ or ‘refresher’ courses.
5. They must be able to create very healthy environment of teaching in such students work with rather than depend up on teachers.
6. They must be expert in research methodology.
7. They must be able to select the useful research problem.

Apart from the above mentioned suggestions lifelong learning needs to be a goal for professional development. Areas consider for professional development.

1. Regular reading of professional journals and periodicals.
2. Attending the workshops, conferences and lectures.
3. Regular reading of latest books of their areas.
4. Use of video tapes on effective teaching, learning styles and writing.
5. Regular use of internet.
6. Regular sharing of experiences and ideas by faculty members both formally and informally.
7. Visits to other university and colleges and observe other teachers.
8. Quarterly self evaluation of teaching effectiveness.
9. Habit to maintain a good personal library at their houses.

Garet,*et al* (1999) defines “The professional development as all activities that help education professionals , develop the skills and knowledge required to achieve their educational goals and meet the needs of students” .

Professional development activity is classified into two broad categories; traditional and integrated activity. Studies suggest that integrated professional development activities have a more positive impact on teacher skills and knowledge because they allow sustained, intensive and active learning and teachers tend to integrate such learning in to their daily professional lives ( Garet , *et al* 1999)

Traditional professional development activities are structured, occur outside the classroom and are not necessarily incorporated in to teachers’ daily professional life. The traditional professional development include

1. Conferences, both in and out of district.
2. College courses for credit.
3. Workshops or institutes both in and out of district.

Most traditional professional development Activities are short and involve less active learning and less collaborative interaction among peers. Although these type of activities can raise teacher awareness and deepen knowledge and skills, they have been criticized as being ineffective in providing teachers with the tools to foster meaningful changes in student practices ( Loucks –Horsley ,*et al* 1998)

Integrated professional development activities are more incorporated in to teachers daily professional lives than traditional professional development activities. Integrated activities involve more active learning and occur continually, allowing more sustained learning (Garet, *et al* 1999) that include

1. Study groups in which teachers engage in regular, collaborative discussion on specific topics to further their knowledge in disciplines or pedagogical approaches.
2. Collaborative networks for meeting other teachers and discussing topics of interest.
3. Participations in committees or task forces that focus on curriculum improvement, student assessment, or self-directed learning activities (for example reading professional journals or browsing the internet for information about content-related research).

 Professional development is a continuous process of individual and collective examination and improvement of practice. It should empower individual educators to make complex decisions, to identify and solve problems and to connect theory, practice and students outcomes. Professional development also should enable teachers to offer students the learning opportunities that will prepare them to meet world class standards is given content areas and to successfully assume adult responsibilities for citizenship and work ( Philip Adey, 1989) .

1. Professional development should deepen and broaden knowledge of content.
2. Professional development should provide a strong foundation in the pedagogy of particular disciplines.
3. Professional development should provide knowledge about teaching and learning process.
4. Professional development should be rooted in and reflect the best available research.
5. The content of professional development should be aligned with the standards and curriculum teachers use.
6. Professional development should contribute to measure the improvement in student achievement.
7. Professional development should be intellectually and address the complexity of teaching.
8. Professional development should provide sufficient time, support resources to enable teachers to master new content pedagogy and to integrate this knowledge and skill into their practice.
9. Professional development should be designed by teachers in co-operation with experts in the field.

 Professional development is expected to be a career long feature of teaching. Nodie describes teachers professional development is a life-long and continuous process in which teachers are expected to upgrade their knowledge, master new skills and change their practices since advancement in their teaching. Career is finally for their students and education reform. Besides, teachers and their professional development must be seen as an investment so it is necessary that schools not only apply appropriate professional development and human resources development policies but also ensure the means of their executions through efficient management and leadership.

 A national centre for research in vocational education study identified eight components of comprehensive professional development programmes for teachers (Hamilton,1985). These eight components were pre services programmes for individuals entering teaching without an under graduate education degree, Supervision of first and second year of teachers, pedagogy update, technology update, professional information update, teacher technical skill testing, curriculum updating programmes and research practices update.

 Effective teachers should understand both content and pedagogy and be able to make connections between them (shulman 1986).

The teacher is the single most important variable in school effectiveness. Maintaining an effective teaching force requires that qualified teachers regularly enter the ranks and that practicing teachers are kept abreast of changes in the profession. (Good lad 1983)

 **2.3. REVIEW OF RELATED STUDIES**

Lakda Wala (1977) tried to assess the professional growth of trained graduate lady teachers. The major findings were that almost all teachers were aware of the need of their professional growth. Lack of time and incentives were barriers for their growth.

Sinha (1980) assessed the impact of teacher education programmes on the professional efficiency of teachers. The major findings of the study revealed that in the sphere of professional efficiency, the trained teachers were better than the untrained teachers in possessing good knowledge of subjects, Voice modulation facial expression and in actual classroom teaching taken as a whole. The two categories of teachers do not differ significantly in maintaining good interpersonal relations, co-operating with principals, doing official work, guiding students etc.

Sengupta (1990) studied professionalization of teachers. A case study on men and women teachers of Calcutta university .The major finding of the study was that a larger proportion of male teachers had higher professional involvement in comparison to women teachers.

Prette and Rury (1991) opinioned that improving teachers professional status involve identifying salient professional characteristics. This paper compares teaching with other profession. Teacher education must produce skilled practitioners with a consciousness of craft to guide their work.

Porter conducted a three year study (1996 to 1999) on effects of professional development programmes instructions on high school teachers. The sample consists of 207 teachers in 5 states. The result of the study found out that professional development programmes focused on specific instructional practices increases teacher use of practices in the classroom. Furthermore it was found that specific features such as active learning opportunities increase the effect of professional development on teachers instruction.

Alexander, *et al.* (1997) conducted a study on towards an effective teachers professional development. The research findings revealed that teachers and their professional development is an investment through professional development policies, quality of leadership of teachers increased through in-service programmes.

Fresco and Ben (1997) studied about the impact of in-service teacher education on high school mathematic teachers subject matter confidence and competency. The study revealed that after in-service training teachers manifested greater self confidence in knowledge of curricular material, mathematical skills and high level of confidence in dealing with the curricular materials.

Narayana (1997) did a study of the impact of in-service training on teacher empowerment with special reference to professional skills of primary teachers. Findings revealed that in-service teacher training helped many teachers in acquiring seventeen professional skills out of twenty skills. But in-service training did not empower teachers in the professional skills viz comparison, observing and generating ideas through questioning.

Venkataiah (1997) made a study on impacts of inputs provided in DIETS on teaching competency. The study revealed that student teachers belonging to DIETS with adequate staff were superior in their teaching competency, compared to their counter parts in DIETS with in adequate staff. He identifies that if the academic facilities provided in DIETS is higher then the teaching competency of teachers were increased.

Lali (1998) conducted a study on initiation of secondary school teachers of Kerala by attending in-service course for professional improvement. The study compares the extent of this initiative with sample of 125 secondary school teachers. The study revealed that area of specification, age, teaching experience and locale of institution have influence over the teachers in attending in-service programmes for professional improvement.

The study conducted by Sajna (1998) on a sample of 100 school teachers revealed that the mean scores obtained on the scale of professionalism for male and female teachers differ significantly. Further the study revealed that the female teachers are superior than male teachers in their professionalism.

Robert, *et al.* (2000) made a study on professional development of teachers. Research findings revealed that in-service teacher’s professional development related to the trends in new learning process of students.

Gafoor and Ayishabi (2001) studied on the role of DIET in teacher empowerment. The objectives of the study were to evaluate the general nature of in-service programmes of DIET’s. This study revealed that the in-service programmes of DIET’s were not satisfactory. In-service courses were mostly theoretical and hence there was no classroom application. The study also suggested that the feed backs obtained after in-service courses should be utilized for strengthening the different aspects of training such as objectives, content, mode of delivery monitoring and evaluation.

Bawa, M.S (2001) conducted a study on professional development of teachers through modelling. The study revealed that demonstration lesson followed by discussion improves micro level teaching competencies and macro level teaching competencies better than conventional methods.

Garet and Desimone (2001) conducted a study on what makes professional development effective for teachers in higher secondary level. The sample consists of 1027 teachers. The result of the study indicate that structural features of professional development activities is significantly effect teachers that is (a) the form of activity (eg:- workshop Vs study group) (b) collective participation of teachers from same grade or subject (c) the duration of the activity respectively.

Egan, *et al.* (2002) conducted a study on the continuing professional development of teachers at Wales. Used interview as a technique for collection of data in many areas of Wales. The research finding shows that continuing professional development increases through the usage of internet search and literature study.

Koster (2002) conducted an extensive study among Dutch teacher educators indicated that teacher educators consider monitoring their own professional development fundamental to their profession.

Ming and Wang (2002) conducted a study on web based continuing professional development programmes for teachers. The interview was based as a tool. The result indicated that continuing professional development programme was effective, usable and feasible.

Flowers and Mertens (2003) made a study of continuing professional development of middle grades teachers. A sample of 8300 middle grade teachers in U.S were selected, the finding reveals that the frequency and depth of involvement in continuing professional development programmes affected teachers activities in the classroom.

Gabriel and Maggioli (2003) conducted a study of continuing professional development for language teachers. For effective continuing professional development adequate support structures and opportunities for teachers should be given, the language teachers should be given opportunity to select plan carry out and evaluate the course in which they attend.

Ramdas (2003) conducted a study of rethinking professional development of teachers. The findings of the study revealed that the goal of professional development is no longer to bring outside expertise to the school to increase teachers knowledge with regard to discrete new programme or approach.

Yadav (2003) conducted a study on quality of pre-service and in-service training. The finding of the study shows that the quality of teacher education programmes is essential for the professional development of teachers. The gap between pre-service and in-service needs to minimized by providing additional inputs, activities and also bridging the gaps at various stages.

Gabbriel (2004) conducted a study on fulfilling the promise of continuing professional development of teachers. A sample consisting of 187 teachers were selected and the finding revealed that continuing professional development is certainly instrumental in promoting quality changes in teachers learning. However, it will fulfil its promise only when the right conditions are provided.

Maheshwari, A (2004) conducted a study on professional commitment of secondary school teachers. The sample size was 400 teachers of secondary schools and the study revealed that secondary school teachers exhibited a tendency of moderate level of professional commitment.

Gordon, *et al.* (2005) conducted a study on how professional development affects teachers. The sample of the study consists of 98 teachers. The result of the study revealed that sustained professional development helped the teachers to analyse themselves. It also brings in teachers a new outlook towards their work.

 Rani, R. (2005) conducted a study on professional development of teachers. The study revealed that continuous professional development will help teachers to update and enhance all the prepositional knowledge and help them in translating them in to their styles and operations.

Venkatesh Murthy (2005) described a study on professional development of teachers what, why and how. The study explores in to the vistas of teacher education and proposes a new perspective for the professional development of teachers by raising the questions what, why and how. The study suggests ways to make teaching a complete professional activity. Findings revealed that teachers have a moral responsibility of being professional, develop professional perspectives in their profession and remain in their career.

Bressick (2006) conducted a study on teaching teachers, professional development helped to improve student achievement. Findings of the research showed that professional development should improve teacher’s knowledge of subject matter, they are teaching and it should enhance their understanding of student thinking in that subject matter.

Atay (2007) conducted on teacher research for professional development. The result of the study showed that teachers faced difficulties in conducting and reporting their research works. The professional development programme had a positive impact to on their professional development. Thus a research oriented programme may help to resolve the problems and difficulties of teachers.

Liljedahl (2007) studied professional development of mathematics teachers. The findings of the study revealed that the teacher’s professional growth can be seen in his interaction with his colleagues. By participating in professional development courses their mathematical skills were developed.

Ross, *et al.* (2007) made a study on effect of professional development on teacher efficacy. The research findings revealed that the potential of professional development as a stimulus for enhancing teacher efficacy about their ability to bring about the student learning.

Siddiqi (2009) made a study on need and significance of teachers training in higher education. The study reveals the importance of training in teaching profession. Council of teacher education believes that voluntary organization can play a constructive role in supplementing the efforts of government agencies and provide useful inputs in development of policy and programmes. CTE contributed in creating a healthy professional culture in education.

Mary.D.Burbank(2010) made a study on book clubs as Professional development Opportunities for pre service teacher candidates and Practicing teachers. Used qualitative methods to study the Professional Development. The study highlighted the utility of book clubs as a tool for professional development.

**TABLE 1**

**Summary of studies reviewed on Professional Development**

|  |  |  |
| --- | --- | --- |
| Name | Study | Result |
| Lakda Wala (1977)  | assess the professional growth of trained graduate lady teachers | Lack of time and incentives were barriers for their growth |
| Sinha (1980)  | impact of teacher education programmes on the professional efficiency of teachers | the trained teachers were better than the untrained teachers in possessing good knowledge of subjects |
| Sengupta (1990) | professionalization of teachers | male teachers had higher professional involvement in comparison to women teachers. |
| Prette and Rury (1991)  | improving teachers professional status involve identifying salient professional characteristics | Teacher education must produce skilled practitioners with a consciousness of craft to guide their work |
| Porter(1996)  | Effects of professional development programmes. | Increases teachers use of practices in the classroom and active learning opportunities. |
| Alexander, *et al.* (1997) | Towards an effective teachers professional development | Through professional development policies quality of teachers increased. |
| Fresco and Ben (1997) | Impact of in-service teacher education in mathematics teachers. | Greater self confidence in knowledge of curriculum and mathematical skills. |
| Narayana (1997) | Impact of in service training on teacher empowerment of professional skills. | In-service training helped acquiring skills. |
| Venkataiah (1997) | Impacts of input provided DIET’s on teaching competency | Competency of student teachers was increased. |
| Lali (1998) | Initiation of secondary school teachers of Kerala by attending in-service course for professional improvement. | Area of specification, age, teaching experience and locale of institution has influence for attending the programmes. |

|  |  |  |
| --- | --- | --- |
| Sajna (1998) | scale of professionalism for male and female teachers | the female teachers are superior than male teachers in their professionalism. |
| Robert, *et al.* (2000) | Study on professional development of teachers | In-service teacher’s professional development related to the trends in new learning process of students. |
| Gafoor and Ayishabi (2001) | Role of DIET in teacher empowerment | In-service programmes DIETS were not satisfactory. |
| Bawa, M.S (2001) | professional development of teachers through modelling | discussion improves micro level teaching competencies and macro level teaching competencies better than conventional methods |
| Garet and Desimone (2001) | What makes professional development effective | Form of activity, collective participation and duration of programme makes professional development effective. |
| Egan, *et al.* (2002) | Continuing professional development of teachers | Increases through the usage of internet search and literature study. |
| Koster (2002) | extensive study among Dutch teacher educators | teacher educators consider monitoring their own professional development fundamental to their profession |
| Ming and Wang (2002) | Web based continuing professional development programme for teachers | Continuous professional development programmes are effective, Usable and feasible |
| Flowers and mertons (2003) | professional development of middle grade teachers | Involvement of professional development programmes effected teachers activities |
| Gabriel and Maggioli (2003)  | professional development of language teachers. | professional development programmes given opportunity and support for language teachers |
| Ramdas (2003) | Rethinking professional development of teachers. | Continuous professional development programmes increase teachers’ knowledge with regard to discrete new programme or approach. |
| Yadav (2003) | Quality of pre-service and in-service training. | Quality of teacher education programme is essential for the professional development of teachers. |
| Gabbriel (2004) | Fulfilling the promise of professional development of teachers | Promoting quality changes in teachers learning. |
| Maheshwari, A (2004) | professional commitment of secondary school teachers | secondary school teachers exhibited a tendency of moderate level of professional commitment |
| Gordon, *et al.* (2005) | How professional development effects teachers | Helped teachers to analyse themselves and give new outlook towards their work. |
| Rani, R. (2005) | Professional development of teachers. | Continuous professional development programmes will help teachers to update and enhance all the prepositional knowledge. |
| Venkatesh Murthy (2005) | Professional development of teachers what, why and how | Teachers have a moral responsibility of being professional, develop professional perspectives in their profession and remain tin their career. |
| Bressick (2006) | Teaching teachers professional development to improve student achievement | Increase teachers understanding of student thinking in the subject matter. |
| Atay (2007) | Teacher research for professional development | Teachers faced difficulties in conducting and reporting their research works. |
| Liljedahl (2007) | professional development of mathematics teachers | Professional development helped students achievement and Mathematical skill were developed |
| Ross, *et al.* (2007) | Effect of professional development on teacher efficacy | Enhancing teachers’ efficacy to bring about student learning. |

|  |  |  |
| --- | --- | --- |
| Siddiqi (2009) | Need and significance of teachers training in higher education | Teacher training provide useful inputs in development of policy and programmes. |
| Mary.D.Burbank(2010) | book clubs as Professional development Opportunities for pre service teacher | The utility of book clubs as a tool for professional development |

**CONCLUSION**

 The above review of studies gave a wide perspective of the present study under investigation. While reviewing the related literature, the investigator found that a number of studies have been conducted in the area of Professional Development. Majority of the studies were connected with Professional Development of school teachers both in India (Ramdas,2003;Rani.R,2005;Venkatesh murthy,2005) and abroad (Gabriel and Maggioli,2003; Gabbriel 2004; Liljedahl 2007)

 Some studies were found to be related with Continuing Professional Development Programmes of primary, High School and Higher Secondary school teachers both in India (sinha,1980; Narayana,1997;Lali,1998) and abroad (Porter, 1996; Garet and Desimon,2001;egan,*et al*,2002; Ming and Wang ,2002).Some studies revealed that there is significant difference in Professional development between male and female teachers (sengupta,1990;Sajna,1998)

 The review also provides evidence about studies relating Professional commitment of teachers (Maheshwari,2004) Role of DIET in teacher empowerment (Venkataiah,1997;Gafoor and Ayishbi, 2001)Professional Development on student achievement (Bressick,2006)and effect of Professional development on teacher efficacy (Ross,*et al* 2005)

 It was found that most of the studies are conducted on the sample of teachers from primary to higher secondary level. Latest studies were focused on the effectiveness of professional development programmes (Porter,1996 ;Alexander,1997; Garret,2001; Gorden,2005; Ross,2007). Since limited studies were conducted in the area of Professional Development of college teachers, especially teacher educators, it was difficult to arrive at a conclusion regarding the extent of Professional Development of teacher educators. Keeping in view all these matters, the present study is an attempt to find out the extent of Professional Development of Teacher Educators. The investigator hopes that findings of the study will helpful for educationists to get a picture of Professional Development of teacher educators and help them to provide a supportive climate for their professional excellence.

**CHAPTER III**

METHODOLOGY

* **Variables**
* **Objectives**
* **Hypotheses**
* **Tools used for Data Collection**
* **Sample used for the Study**
* **Data Collection Procedure, Scoring and Consolidation of Data**
* **Statistical Techniques used for Analysis of Data**

# METHODOLOGY

 This chapter deals with the method of study which involves the systematic procedures by which the research starts from the initial identification of the problem to its final conclusion. Success of any research depends largely on the suitability of methods, tools and techniques followed by the researcher in collecting and processing the data. It includes all the procedure and techniques adopted by the investigator in order to achieve the objectives of the study.

 The present study is an attempt to find out the extent of Professional Development of teacher educators working in B.Ed colleges. The design of the study is described under the following major headings viz.

3.1 Variables

3.2 Objectives

3.3 Hypotheses

3.4 Tools used for data collection

3.5 Samples selected for the study

3.6 Data collection procedure,

3.7 Statistical techniques used for analysis of data.

The details of each of the above are given below:

**3.1 VARIABLES**

 The present study is designed with two types of variables, namely Independent Variables and Dependent Variable.

**3.1.1. Independent Variable**

 The independent variables are Gender, Type of management, Subjects of teaching, Qualification and Teaching Experience.

**3.1.2. Dependent Variable**

 The dependent variable is Professional Development of teacher educators.

**3.2. OBJECTIVES**

 The objectives set forth for the study are the following;

1. To find out the extent of Professional Development of teacher educators in the total sample and in the relevant sub samples based on

* 1. Gender
	2. Type of Management
	3. Subjects of Teaching
	4. Qualification
	5. Teaching Experience

2. To find out whether there exists significant difference in the mean scores of Professional Development of teacher educators among the relevant sub samples based on

1. Gender
2. Type of Management
3. Subjects of Teaching
4. Qualification
5. Teaching Experience

3. To find out whether Type of Management, Gender and Teaching Experience have main and interaction effect on Professional Development of teacher educators.

**3.3. HYPOTHESES**

 The hypotheses formulated for the study are the following.

1. There exists significant difference in the mean scores of Professional Development of teacher educators among the relevant sub samples based on

1. Gender
2. Type of Management
3. Subjects of Teaching
4. Qualification
5. Teaching Experience

2. Main effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators will be significant.

3. Interaction effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators will be significant.

**3.4. TOOL EMPLOYED FOR DATA COLLECTION**

 Collection of relevant data using a suitable tool is an important aspect of any research work. “Each tool is appropriate for the collection of certain type of evidence or information. The researcher has to select from the available tools, which will provide data, he required for testing the hypothesis. In some situation he may find that existing research tools do not suit his purpose and so he may modify them or constructs his own” (Koul). Quantity and quality of data depends upon the tools and techniques the researcher has made use of.

The present investigation is an attempt to find out the extent of professional development of teacher educators working in B.Ed colleges. For the present study, the tool “Professional Development scale for teacher educators” is constructed by the investigator for measuring the extent of professional development of teacher educators working in B.Ed colleges.

**3.4.1. PROFESSIONAL DEVELOPMENT SCALE**

 The tool Professional Development scale (Basheer and Sobish, 2010) is constructed by the investigator with the help of supervising teacher.

 Detailed description of the tool is given below:

**3.4.1.1. Planning of the Scale**

 The present study is an attempt to find out the extent of professional development of teacher educators, the investigator made an intensive search through the available tools. At present there is no appropriate tool available for this purpose. Hence the investigator attempts to develop a scale on professional development of teacher educators, on the basis of the objectives of the study by discussing and consulting with the supervising teacher, informal discussion with teachers, practitioners and experts in the field of Teacher education and after the analysis of review of related literature.

 In planning, it was decided to develop a Likert scale with five responses viz., Always, Often, Sometimes, Rarely and Never.

 Review of related literature helped the investigator to have an idea about the nature of the variable and its components.

Detailed description of each of these components is given below

1. **Technology update**

This component refers to the application of scientific knowledge for practical purpose.

Example: - Try to use new technologies while teaching. (Item no. 2)

In this component there are 8 items (item no. 2, 8, 12, 15, 19, 26, 31, 46)

1. **Research update**

Research update concerned with the conduct of educational inquiry and the development and evaluation of its method and findings.

Example: - I am interested in making researches about the new changes in connection with the education field. (Item no. 36)

In the component there are 13 items (item no. 1, 7, 13, 17, 18, 25, 36, 37, 41, 42, 49, 54, 58)

1. **Content update**

Content update refers to the updating of teachers knowledge of new information related with teacher education.

Example: - I am able to impart knowledge from the reference books that are beyond the students reach. (Item no. 33)

In this component there are 14 items (Item no: 4, 11, 16, 22, 27, 29, 30, 33, 44, 48, 51, 52, 55, and 56).

1. **Pedagogy update**

Update teachers knowledge of new information related with teacher education and improve their skills pedagogically and technically through high quality Professional development programmes.

Example: - I am able to go ahead with the planned teaching process logically and clearly.(Item no.34)

In this component there are 13 items (item no: 5, 9, 20, 21, 23, 28, 32, 34, 38, 39, 45, 57, and 59).

1. **Curriculum update**

Updating to the curriculum knowledge of teacher.

Example: - I try to understand the changes in the curriculum modification in different parts of the world. (Item no.43)

In this component there are 11 items (item no: 3, 6, 10, 14, 24, 35, 40, 43, 47, 50, and 53)

**3.4.1.2. Preparation of the final scale**

Based upon the above mentioned components, the investigator developed the Professional Development scale. Necessary changes and additions were made to the scale after discussing with the experts in the field of education.

 The scale consists of 59 items, out of which 43 items are positive and 16 items are negative. Each statement carries five response columns viz, ‘Always’, ‘often’, ‘sometimes’, ‘rarely’ and ‘never’.

 A copy of the Professional Development scale (English and Malayalam) is given as Appendix I and II.

**Scoring Procedure**

 Each statement of the scale provides scores on a five point scale. A respondent has to respond to fifty nine items, by choosing any one of the five alternatives given. ‘Always’, ‘often’, ‘sometimes’, ‘rarely’ and ‘never’. The respondents have to mark the responses to each item in the appropriate columns corresponding to any of the five alternatives. For positive statement, the respective scores to the five responses are 5, 4, 3, 2, and 1. For negative statement, the scoring was done by the reverse order viz, 1, 2, 3, 4 and 5.

**3.4.1.3. Reliability**

 Reliability of the test is its ability to yield consistent result from one set of measures to another.” Reliability is the degree of consistency that the instrument or procedure demonstrates whatever it is measuring, it does so consistently” (Best & Kahn, 2001).

 In the present investigation, the reliability of the scale was estimated by test-retest method. The scale was administered to a group of 30 teacher educators and again repeated in the same group with an interval of 3 weeks. The scores obtained from the first test were correlated with that of the re-test. The reliability co-efficient was found to be 0.73, which suggest that the scale is substantially reliable. Again to ensure reliability of the Professional Development scale, the data was cross checked by carrying out personal interview on the views of the teacher educators.

**3.4.1.4. Validity**

 “Validity is that quality of a data gathering instrument or procedure that enables it to measure what it is supposed to measure” ( Best & Kahn, 2001). It is essential to the effectiveness of any data gathering procedure.

In the present study, the validity of the scale is ensured through face validity. “ A test is said to have face validity when it appears to measure whatever the author had in mind, namely what he thought he was measuring”(Garret,1981). For this, the investigator consulted experts and teachers in the field of teacher education, discussed with teachers of different institutions and prepared the items in a least ambiguous way. So the subjects respond to the item without difficulty and misunderstanding. Hence the investigator claimed the face validity of the scale as the items in the scale relating to the professional development of teacher educators.

**3.5. SELECTION OF THE SAMPLE**

Selection of the sample is an important aspect of any research.“A sample is a small proportion of a population selected for observation and analysis. By observing the characteristics of the sample, one can make certain inferences about the characteristics of the population from which it is drawn” (Best & Kahn, 2001).

 The population of the study is Teacher Educators, working in B.Ed colleges under University of Calicut. The sample for the present study constitutes 200 Teacher Educators drawn from 30 training institutes, under University of Calicut, of Thrissur, Kozhikode, Malappuram, Wayanad and Palakkad districts. The samples were selected under stratified sampling technique by giving due representation to the factors like,

* + 1. Gender
		2. Type of Management
		3. Subjects of Teaching
		4. Qualification
		5. Teaching Experience
		6. **Gender**

 Gender has great influence on findings of the research. Review of literature indicates that gender difference exists in many of the studies. So the investigator gave due representation to male and female teacher educators in the present study.

**3.5.2. Type of Management**

 There are four types of teacher training institutions under University of Calicut viz., Government, Aided, Unaided colleges and University teacher education centres. So the investigator gave due representation to type of management while selecting the sample.

**3.5.3. Subjects of Teaching**

There are three types of teacher educators in the teacher training institutions on the basis of subjects of teaching, viz., General and Optional. While selecting the sample, the investigator gave due representation to subjects of teaching.

**3.5.4. Qualification**

In teacher training institutions, the teacher educators are differed on the basis of qualification. There are two types of teacher educators- those who possess only M.Ed degrees and others who possess NET, M.Phil or Doctoral Degrees. So the investigator gave due representation to two types while selecting the sample.

**3.5.5. Teaching Experience**

In our educational system, teachers differ in their teaching experience. The investigator has adopted the criterion for classifying the teacher educators into two grade levels based on their period of teaching experience in the teacher training institutions. Thus there are two subsamples of teacher educators ranging from between 0-5 and 5&above 5 years.

The break up of the first and final sample is given in table 2and 3.

TABLE 2

**Break up of the First Sample**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Gender | Type of Management | Subjects of Teaching  | Qualification  | Teaching Experience  |
| Male | Female | Govt. | Aided | Unaided | Uty Centre | General  | Optional  | High | Low | High  | Low |
| 96 | 111 | 19 | 36 | 116 | 36 | 89 | 118 | 52 | 155 | 95 | 112 |
| 207 | 207 | 207 | 207 | 207 |

TABLE 3

**Break up of the Final Sample**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Gender | Type of Management | Subjects of Teaching  | Qualification  | Teaching Experience  |
| Male | Female | Govt. | Aided | Unaided | Uty Centre | General  | Optional  | High | Low | High  | Low |
| 93 | 107 | 19 | 36 | 111 | 34 | 84 | 116 | 50 | 150 | 92 | 108 |
| 200 | 200 | 200 | 200 | 200 |

 The list of institutions from which the investigator collected the data needed for the study are given in Table 4.

**TABLE 4**

**List of Institution from where Data Collected**

|  |  |
| --- | --- |
| SI No. | **Government Colleges** |
| 1. | Government College of Teacher Education, Kozhikode. |
| 2. | Institute of Advanced Studies in Education, Thrissur. |
|  | **Aided Colleges** |
| 3. | Farook Training College, Calicut. |
| 4. | N.S.S Training College, Ottapalam. |
|  | **Unaided Colleges** |
| 5. | A W H College of Education, Kallai, Kozhikode |
| 6. | Bhavan's Ramakrishna Institute of Teacher Education, Ramanttukara |
| 7. | CICS College of Teacher Education, Mahatma Gandhi Nagar, Kozhikode |
| 8. | Darool Ulloom College of Teacher Education, Vazhakad. |
| 9. | Devaki Amma Memmorial Teacher Education College, Chelembra |
| 10. | EMEA Training College, Malappuram |
| 11. | Farook College of Teacher Education, Kottakkal |
| 12. | JPE Training College Koorkanchery, Thrissur |
| 13. | KM College of Teacher Education, Vaalilapuzha |
| 14. | Mar Osthatheos Training College, Akkikavu, Thrissur. |
| 15. | Mar Baselious B.Ed. College, Sulthan Bathery, Wayanad. |
| 16. | Mercy College of Teacher Education, Kozhikode |
| 17. | Meppayur Salafi College of Teacher Education, Kozhikode |
| 18. | Navajyothi College of Teacher Education, Thrissur |
| 19. | Salafiyya Training College, Karinganad, Palakkad |
| 20. | Sree Narayana College of Teacher Education, Kottapuram, Palakkad |
| 21. | Sree Vivekananda Centre of Teacher Education, Akkikavu, Thrissur. |
| 22. | Sree Swamy Vivekananda Centre of Teacher Education, Ottappalam, Palakkad |
| 23. | Sullamusalam College of Teacher Education, Areacode, Malappuram |
|  |  **University Centres** |
| 24. | University Teacher Education Centre, Kozhikode. |
| 25. | University Teacher Education Centre, Koottilangadi. |
| 26. | University Teacher Education Centre, Vatakara. |
| 27. | University Teacher Education Centre, Manjeri. |
| 28. | University Teacher Education Centre, Ollur. |
| 29. | University Teacher Education Centre, Nattika. |
| 30. | University Teacher Education Centre, Valappad. |

**3.6 DATA COLLECTION PROCEDURE AND CONSOLIDATION OF DATA**

* + 1. **Administration of the tool**

 As the first step of administration, the investigator collected the details of the teacher training institutions under University of Calicut. After collecting details of various teacher training institutions, the investigator contacted the heads of the concerned institutions and obtained their permission for collecting data.

 As the second step, all the participants were approached individually at their respective place of work. Participants were first briefed individually about the purpose of the study and clear information was given to area and their doubts were clarified. Every precaution was taken for making the study as reliable and valid as possible. The teacher educators were assured about the security of their responses. The investigator was able to secure full support of teacher educators.

* + 1. **Scoring and Consolidation of Data**

 A respondent has to respond to fifty nine items, by choosing any one of the five alternatives given, ‘Always’, ‘Often’, ’Sometimes’, ‘Rarely’ and ‘Never’. The respondents have to mark their responses to each item in the appropriate columns corresponding to any of the five alternatives. For positive items, the respective scores to the five responses are 5,4,3,2 and 1 respectively. For negative items, scoring was done in the reverse order.

 Before scoring, the incomplete response sheets were rejected and this resulted in a final sample of 200. All the response sheets which were complete in all aspects were scored according to the respective scoring procedure. The total score was calculated for each item and further statistical analysis was done after consolidation.

**3.7. STATISTICAL TECHNIQUES USED FOR ANALYSIS OF DATA**

 Based on the objectives and hypotheses, the data collected was analysed using appropriate statistical techniques of the following:

**3.7.1. Preliminary Analysis**

 The important statistical properties of the scores of the variable under study, Professional Development were calculated and analyzed as a preliminary step. For this, Mean, Median, Mode, Standard Deviation, Skewness and Kurtosis were calculated for the total sample and the relevant subsamples. From this we can predict or arrive at conclusion about the nature of the distribution.

**3.7.2. Estimation of Mean**

Arithmetic Mean = 

**3.7.3. Test of significance of difference between means for large independent Samples**

 “Since mean is probably the most satisfactory measure for characterizing a group, it is important to determine whether the difference between means of samples is significant” (Best and Kahn, 2001)

 The ‘t’ test was used to test the significance of difference in the mean scores of Professional Development in the subsamples. The formula is

Critical ratio, 

(Garrette, 2005)

Where,

  and  are the mean scores of the two groups

 σ1 and σ2 are the standard deviations of the scores of the two groups

and N1 and N2 are the number of cases in each group.

 If the obtained critical ratio, ’t’ is greater than the required table value for significance at 0.05 or 0.01 level of significance, the mean difference is considered to be significant.

**3.7.4. ANOVA**

 “The Analysis of Variance (ANOVA) is an effective way to determine whether the means of more than two samples are too different to attribute to sampling error” (Best and Kahn, 2001). In its simplest form, the Analysis of Variance is used to test the significance of the difference between the means of a number of different populations.

 ANOVA is an international statistical procedure by which a researcher can test the null hypotheses that two or more population means are equal. A ratio of 2 variance estimates is computed and their ratio has as its sampling distribution, the F distribution, determined by 2 degrees of freedom values.

 The major assumptions of ANOVA are,

1. The distribution of the dependent variable should be normal
2. Homogeneity of variance
3. The samples drawn should be random and independent.

 If there are three independent variables are included simultaneously in an ANOVA, the analysis is called a three way ANOVA.

 In this study, ANOVA is used to find out whether the variables Type of Management, Gender and Teaching Experience have any main or interaction effect on Professional Development of teacher educators working in B.Ed colleges.

**CHAPTER IV**

ANALYSIS AND INTERPRETATION

* **Preliminary Analysis**
* **Test of Significance of mean difference in large independent samples**
* **Three-way ANOVA (4x2x2 factorial design)**

# ANALYSIS AND INTERPRETATION

The main purpose of the study was to find out the extent of Professional Development of teacher educators working in B.Ed colleges, under University of Calicut. The collected data was analyzed statistically and the results have been presented and discussed in the chapter with reference to the objectives of the study.

**4.1. OBJECTIVES**

The objectives set forth for the study are the following.

1. To find out the extent of Professional Development of teacher educators in the total sample and in the relevant subsamples based on

1. Gender
2. Type of Management
3. Subjects of teaching
4. Qualification

vii. Teaching experience

2. To find out whether there exist significant difference in the mean scores of Professional Development of teacher educators among the relevant subsamples based on

1. Gender
2. Type of management
3. Subject of teaching
4. Qualification
5. Teaching experience

3. To find out whether Type of Management, Gender and Teaching Experience have main and interaction effect on Professional Development of teacher educators.

**4.2. HYPOTHESES**

The hypotheses formulated for the study are the following.

1. There exists significant difference in the mean scores of Professional Development of teacher educators among the relevant subsamples based on
2. Gender
3. Type of Management
4. Subjects of Teaching
5. Qualification
6. Teaching Experience
7. Main effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators will be significant.
8. Interaction effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators will be significant.

Discussion of the results obtained through statistical analysis of the collected data are presented under the following major headings,

1. Preliminary Analysis
2. Extent of Professional Development of teacher educators in the relevant subsamples
3. Comparison of Professional Development of teacher educators in the relevant subsamples
4. Three-way ANOVA(4x2x2 Factorial Design)

**4.3. PRELIMINARY ANALYSIS OF DATA**

The important statistical properties of the scores on the variable, Professional Development were analyzed as a preliminary step. The Mean, Median, Mode, Standard deviation, Skewness and Kurtosis were calculated for the whole sample.

The details of the obtained values are presented in the following
Table 5.

TABLE 5

**Descriptive statistics of the variable
‘Professional Development’ of teacher educators**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Variable | N | Mean | Median | Mode | SD | Skewness | Kurtosis |
| Professional Development | 200 | 230.49 | 230 | 231.47 | 23.08 | -0.017 | -0.366 |

**4.3.1. Discussion of Results**

The important statistical constants of the selected variable for the total and subsamples were analysed. Table 5 shows the values of Mean, Median and Mode for the variable Professional Development as 230.49, 230 and 231.47 respectively. These values are almost equal which shows the possibility of the variable to follow a normal distribution.

The obtained value for the skewness is -0.017, which shows slight negative skewness, but the value being very small, it can be considered as the distribution is not considerably deviating from the normal.

The value of kurtosis is -0.366, which suggests that the distribution is slightly platykurtic. The above discussion shows that the distribution of the variable, Professional Development is almost normal.

Graphical representation of the scores of the variable Professional Development of teacher educators for the total sample is presented in Figure .1.

Scale

On X axis: 1 cm = 20 divisions

On Y axis: 1 cm = 10 divisions

**Figure 1 : Smoothed Frequency Curve of Professional Development of Teacher Educators in the Total Sample**

The statistical constants and graphical representation of the variable Professional Development of teacher educators follows approximately a normal distribution.

The second basic assumption of Analysis of Variance is the homogeneity of variance. Since samples are drawn from a normal population and are considerably large, we can assume that there is homogeneity of variance.

 The third basic assumption of ANOVA is that the sample drawn should be random and independent. The design of the present study ensures that the sample should be random and independent.

**4.4.** **EXTENT OF PROFESSIONAL DEVELOPMENT OF TEACHER EDUCATORS IN THE TOTAL SAMPLE AND THE RELEVANT SUBSAMPLES**

 This section of the analysis was done to find out the extent of Professional Development of teacher educators in the total sample and in the relevant subsamples based on Gender, Type of Management, Subjects of teaching, Qualification and Teaching Experience.

 As the second step of analysis, in order to find out the extent of Professional Development of teacher educators, investigator calculated the mean scores of Professional Development of teacher educators in the total sample and in the relevant subsamples.

 The mean scores of Professional Development of teacher educators in the relevant subsamples are presented in Tables 6.1, 6.2, 6.3, 6.4, 6.5, 6.6 and 6.7.

TABLE 6.1

**Important Statistical Constants of Distributions of Mean
Scores of Professional Development of Teacher Educators based on Gender.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | Category | N | Mean | Median | Mode | S.D. |
| Professional Development | Male | 93 | 235.49 | 238 | 230.48 | 23.38 |
| Female | 107 | 226.14 | 227 | 224.42 | 22.02 |

 Graphical representation of the variable Professional Development for Gender is given in Figure 2.1.

Scale

On X axis: 1 cm = 10 divisions

On Y axis: 1 cm = 20 divisions

**Figure 2.1 : Cumulative Frequency Curve of the Variable Professional Development for Gender**

 TABLE 6.2

**Important Statistical Constants of Distributions of Mean Scores of Professional Development of Teacher Educators based on Type of Management**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | Category | N | Mean | Median | Mode | S.D. |
| Professional Development | Govt. | 19 | 239 | 242 | 235 | 19.60 |
| Aided | 36 | 238 | 232 | 249 | 22.58 |
| Unaided | 111 | 227.57 | 227 | 228.7 | 23.17 |
| Uty. centre | 34 | 226.88 | 228.5 | 223.6 | 22.83 |

 Graphical representation of the variable Professional Development for Type of Management is given in Figure 2.2.

Scale:

On X axis: 1 cm =10 divisions

On Y axis : 1 cm = 20 divisions

**Figure 2.2 : Cumulative Frequency Curve of the Variable Professional Development for Type of Management**

TABLE 6.3

**Important Statistical Constants
of Distributions of Mean Scores of Professional Development of Teacher Educators based on Subjects of Teaching**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | Category | N | Mean | Median | Mode | S.D. |
| Professional Development | General | 84 | 230 | 229 | 232 | 22.59 |
| Optional | 116 | 230.84 | 230.5 | 231.53 | 23.52 |

 Graphical representation of the variable Professional Development for Subjects of Teaching is given in Figure 2.3

Scale:

On X axis: 1 cm =10 divisions

On Y axis: 1 cm = 20 divisions

**Figure 2.3 : Cumulative Frequency Curve of the Variable Professional Development for Subjects of Teaching**

TABLE 6.4

**Important Statistical Constants
of Distributions of Mean Scores of Professional Development of Teacher Educators based on Qualification**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | Category(Qualification) | N | Mean | Median | Mode | S.D. |
| Professional Development | High | 50 | 239.08 | 241.5 | 234.24 | 25.71 |
| Low | 150 | 227.62 | 227 | 228.88 | 21.47 |

 Graphical representation of the variable Professional Development for Qualification is given in Figure 2.4.

Scale

On X axis: 1 cm = 10 divisions

On Y axis: 1 cm = 20 divisions

**Figure 2.4 : Cumulative Frequency Curve of the Variable Professional Development for Qualification**

TABLE 6.5

**Important Statistical Constants
of Distributions of Mean Scores of Professional Development** **of Teacher Educators based on Teaching Experience**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | Category(Experience) | N | Mean | Median | Mode | S.D. |
| Professional Development | 0-5 years | 108 | 226.19 | 226.5 | 225.58 | 22.32 |
| 5&above 5 years | 92 | 235.53 | 236 | 234.59 | 23.06 |

 Graphical representation of the variable Professional Development for Teaching Experience is given in Figure 2.5.

Scale

On X axis: 1 cm =10 divisions

On Y axis: 1 cm = 20 divisions

**Figure 2.5 : Cumulative Frequency Curve of the Variable Professional Development for Teaching Experience.**

Table 6.1 shows that the mean scores obtained for the Professional Development of male and female teacher educators are 235.49 and 226.14 respectively.

 Table 6.2 shows that the means scores obtained for the Professional Development of teacher educators working in Government, Aided, Unaided colleges and University teacher education centres are 239, 238, 227.6 and 226.9 respectively.

 Table 6.3 shows that the mean scores of Professional Development for teacher educator handling General and Optional are 230 and 230.84 respectively

 Table 6.4 shows that the mean scores obtained for Professional Development of high and low qualified teacher educators are 239.08 and 227.62 respectively.

 Table 6.5 shows that the mean scores of Professional Development of 0-5 year experienced and 5 & above 5 years experienced teacher educators are 226.19 and 235.53 respectively.

* + 1. **Discussion**

 The means scores of Professional Development of teacher educators among the relevant subsamples were analysed. The table 6.1 shows that male teacher educators have a slightly high rate of Professional Development compared to female teachers.

 While considering the Type of Management, teacher educators from Aided and Government colleges are found to be high in their Professional Development compared that of unaided and University teacher education centres

 The teacher educators who handle General and Optional subjects simultaneously show a high rate of Professional Development. The Professional Development of General and Optional teacher educators were almost equal.

 The Professional Development of highly qualified teacher educators possess high Professional Development compared to low qualified teacher educators.

 While considering the teaching experience, the teacher educators having high experience are found to be slightly high in their Professional Development.

**4.5 COMPARISON OF THE MEAN SCORES OF PROFESSIONAL DEVELOPMENT OF TEACHER EDUCATORS BASED ON RELEVANT SUB SAMPLES.**

 The third step of analysis was to find out whether there exists any significant difference in the mean scores of Professional Development of teacher educators in the relevant subsamples. The mean scores of Professional Development of relevant subsamples were compared using the test of significance of mean difference between large independent samples.

 Results of comparison of Professional Development for each relevant subsample are discussed under separate heading.

* + 1. **Comparison of mean scores of Professional Development of teacher educators on the basis Type of Management.**

 To test whether Government, Aided, Unaided and University Centres teacher educators differ significantly in their Professional Development, test of significance of mean difference for large independent samples was done. The details of the values obtained for test of significance of difference between mean scores of Professional Development for the subsample based on Type of Management are given in Table 7.1,7.2,7.3,7.4,7.5 and 7.6 .

4.5.1.1. Comparison of mean scores of Professional Development between Government and Aided Teacher educators.

4.5.1.2. Comparison of mean scores of Professional Development between Government and Unaided Teacher educators.

4.5.1.3. Comparison of mean scores of Professional Development between Government and University teacher education centres Teacher educators.

4.5.1.4Comparison of mean scores of Professional Development between Aided and Unaided Teacher educators.

4.5.1.5Comparison of mean scores of Professional Development between Aided and University teacher education centres Teacher educators.

4.5.1.6 Comparison of mean scores of Professional Development between Unaided and University teacher education centres Teacher educators.

**4.5.1.1. Comparison of mean scores of Professional Development between Government and Aided Teacher educators.**

TABLE7.1

**Date and results of the test of
significance of mean difference in Professional Development between Government and Aided teacher educators.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SI No. | Variable | Category | N | Mean | SD | Critical Ratio |
| 1 | Type of Management | Govt | 19 | 239 | 19.60 | 0.283 |
| Aided | 36 | 238 | 22.58 |

 From the table 7.1, it was found that the mean scores of Professional Development obtained for Government and Aided teacher educators are 239 and 238 respectively. It can also be seen that the standard deviation for these subsamples are 19.6 and 22.6 respectively. The calculated ‘t’ value is 0.283, which is less than 1.96, the table value required for significance at 0.05 level of significance. Hence it can be interpreted as there is no significant difference in Professional Development between teacher educators of Govt and Aided colleges.

**4.5.1.2.** Comparison of mean scores of Professional Development between Government and Unaided Teacher educators.

TABLE 7.2

**Data and results of the test of significance of mean difference in Professional Development between Govt and Unaided Teacher Educators**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SI No. | Variable | Category | N | Mean | SD | Critical Ratio |
| 2 | Type of Management | Govt | 19 | 239 | 19.60 | 2.157\* |
| Unaided | 111 | 227.57 | 23.17 |

\*Significance at 0.05 level.

Table 7.2 shows that the mean scores obtained in Professional Development by Govt and Unaided teacher educators are 239 and 227.57 respectively. The standard deviations obtained are 19.60 and 23.17 respectively. The calculated ‘t’ value is 2.157, which is greater than 1.96, the table value required for significance at 0.05 level of significance. Hence it can be interpreted as there is significant difference between Govt and Unaided teacher educators in Professional Development.

**4.5.1.3. Comparison of mean scores of Professional Development between Government and University teacher education centres Teacher educators.**

TABLE 7.3

**Data and results of the test of significance of mean**

 **difference in Professional Development between**

**Govt and University teacher education centres Teacher Educators**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SI No. | Variable | Category | N | Mean | SD | Critical Ratio |
| 3. | Type of Management | Govt | 19 | 239 | 19.60 | 2.063\* |
| U-Tec | 34 | 226.88 | 22.83 |

\*Significance at 0.05 level.

Table 7.3 shows that the mean scores of Professional Development obtained by Govt and University teacher education centres teacher educators are 239 and 226.88 respectively. The standard deviations obtained are 19.60 and 22.83 respectively. The calculated ‘t’ value is 2.063 which is greater than the table value, 1.96 required for significance at 0.05 level of significance. This reveals that there is significant difference between Govt and University teacher education centres teacher educators in their Professional Development.

**4.5.1.4 Comparison of mean scores of Professional Development between Aided and Unaided Teacher educators.**

TABLE 7.4

**Data and results of the test of**

**significance of mean difference in Professional**

**Development between Aided and Unaided Teacher Educators**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SI No. | Variable | Category | N | Mean | SD | Critical Ratio |
| 4. | Type of Management | Aided | 36 | 238 | 22.58 | 2.36\* |
| Unaided | 111 | 227.57 | 23.17 |

\*Significance at 0.05 level.

 Table 7.4 shows that the mean scores of Professional Development obtained by Aided and Unaided teacher educators are 238 and 227.57respectively. The standard deviations obtained are 22.58 and 23.17 respectively. The calculated ‘t’ value is 2.36 which is greater than the table value, 1.96 required for significance at 0.05 level of significance. This means that there is significant difference between Aided and Unaided teacher educators in the professional development.

**4.5.1.5 Comparison of mean scores of Professional Development between Aided and University teacher education centres Teacher educators.**

TABLE 7.5

**Data and results of the test of significance of mean difference in Professional Development between Aided and University teacher education centres**

**Teacher Educators**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SI No. | Variable | Category | N | Mean | SD | Critical Ratio |
| 5. | Type of Management | Aided | 36 | 238 | 22.58 | 2.04\* |
| U-Tec | 34 | 226.88 | 22.83 |

\*Significance at 0.05 level.

 Table 7.5 shows that the mean scores of Professional Development obtained by Aided and University teacher education centres teacher educators are 238 and 226.88 respectively. The standard deviations obtained are 22.58 and 22.83 respectively. The calculated ‘t’ value is 2.04 which is greater than the table value, 1.96 required for significance at 0.05 level of significance. This reveals that there is significant difference between Aided and University teacher education centres teacher educators in their Professional Development.

**4.5.1.6 Comparison of mean scores of Professional Development between Unaided and University teacher education centres Teacher educators.**

TABLE 7.6

**Data and results of the test of significance of mean difference in Professional Development between Aided and University teacher education centres Teacher Educators**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SI No. | Variable | Category | N | Mean | SD | Critical Ratio |
| 5. | Type of Management | Unaided | 111 | 227.57 | 23.17 | 0.153 |
| U-Tec | 34 | 226.88 | 22.83 |

\*Significance at 0.05 level.

Table 7.6 shows that the mean scores of Professional Development obtained by Unaided and University teacher education centres teacher educators are227.57 and 226.88 respectively. The standard deviations obtained are 23.17 and 22.83 respectively. The calculated ‘t’ value is 0.153 which is less than the table value, 1.96 required for significance at 0.05 level of significance. This reveals that there is no significant difference between Unaided and University teacher education centres teacher educators in their Professional Development.

* + 1. **Comparison of mean scores of Professional Development of teacher educators on the basis of Gender.**

The values of mean, standard deviation and critical ratio obtained for test of significance of mean difference between Professional Development for subsamples based on Gender are presented in Table8

TABLE 8

**Data and results of the test of significance of mean difference in Professional Development between Male and Female Teacher Educators**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SI No. | Variable | Category | N | Mean | SD | Critical Ratio |
| 5. | Gender | Male | 93 | 235.49 | 23.38 | 2.91\* |
| Female | 107 | 226.14 | 22.02 |

\*Significance at 0.01 level.

From the table 8, it was found that the mean scores of Professional Development obtained for Male and Female teacher educators are 235.49 and 226.14 respectively. The standard deviations obtained are 23.38 and 22.02 respectively. The ‘t’ value obtained is 2.91 which is greater than 2.58, the table value required for significance at 0.01 level. It can be interpreted as the male and female teacher educators differ significantly in their professional development at 0.01 level of significance.

* + 1. **Comparison of mean scores of Professional Development of teacher educators on the basis Subjects of Teaching .**

The values of mean, standard deviation and critical ratio obtained for test of significance of mean difference between Professional Development for subsamples based on Subjects of Teaching are presented in Table 9.

TABLE 9

**Data and results of the test of significance of mean difference in Professional Development between General and Optional Teacher Educators**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SI No. | Variable | Category | N | Mean | SD | Critical Ratio |
| 2 | Subjects of Teaching | General | 84 | 230 | 22.59 | -0.255 |
| Optional | 116 | 230.84 | 23.52 |

From the table 9, it was found that the mean scores obtained for Professional Development of teacher educators handling Optional and General are 230 and 230.84 respectively. The standard deviations obtained are 22.59 and 23.52 respectively. The ‘t’ value obtained is -0.255 which is far less than 1.96, the table value required for significance at 0.05 level. Hence it was inferred that there is no significant difference in the Professional Development of teacher educators handling Optional and General subjects.

* + 1. **Comparison of mean scores of Professional Development of teacher educators on the basis of Qualification.**

TABLE 10

**Data and results of the test of significance of mean difference in Professional Development between High and Low Qualified Teacher Educators**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SI No. | Variable | Category | N | Mean | SD | Critical Ratio |
| 2 | Qualification | High | 50 | 239.08 | 25.71 | 3.103\* |
| Low | 150 | 227.62 | 21.48 |

\*Significance at 0.01 level.

Table 10 shows that the mean scores of Professional Development of High and Low Qualified teacher educators are 239.08 and 227.62 respectively. The standard deviations obtained are 25.71 and 21.48 respectively. The ‘t’ value calculated is 3.103, which is greater than the table value, 2.58 required for significance at 0.01 level of significance. Hence it was interpreted that there is significant difference in the Professional Development of High and Low Qualified teacher educators.

* + 1. **Comparison of mean scores of Professional Development of teacher educators on the basis of Teaching Experience.**

To test whether teacher educators having 0-5 years of experience and 5& above 5 years of experience differ significantly in their Professional Development, the test of significance of mean difference for large independent samples are done, the details of which are given below as Table11.

TABLE 10

**Data and results of the test of significance of mean difference in Professional Development between High and Low Experienced Teacher Educators**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SI No. | Variable | Category | N | Mean | SD | Critical Ratio |
| 2 | Teaching Experience | 0-5 Years | 108 | 226.19 | 22.32 | 2.904\* |
| 5 &above 5 Years | 92 | 235.53 | 23.06 |

\*Significance at 0.01 level.

Table 11 shows that the mean scores of Professional Development of High and Low Experienced teacher educators are 226.19 and 235.53 respectively. The standard deviations obtained are 22.32 and 23.06 respectively. The ‘t’ value calculated is 2.904, which is greater than the table value, 2.58 required for significance at 0.01 level of significance. Hence it was interpreted that there is significant difference in the Professional Development of High and Low Experienced teacher educators.

**4.6. EXTENT OF MAIN AND INTERACTION EFFECTS OF TYPE OF MANAGEMENT, GENDER AND QUALIFICATION ON PROFESSIONAL DEVELOPMENT OF TEACHER EDUCATORS**

 To find out whether Type of Management, Gender and Teaching Experience have any main or interaction effects on Professional Development of teacher educators, three way ANOVA was used with 4×2×2 factorial design.

**3- Way ANOVA (4×2×2 Factorial Design)**

 The analysis and discussion of results with regard to this technique are described under the following sections.

4.6.1. Main effect of Type of Management on Professional Development of Teacher Educators.

4.6.2. Main effect of Gender on Professional Development of Teacher Educators.

4.6.3. Main effect of Teaching Experience on Professional Development of Teacher Educators.

4.6.4. Interaction effect of Type of Management and Gender on Professional Development of Teacher Educators.

4.6.5. Interaction effect of Gender and Teaching Experience on Professional Development of Teacher Educators.

4.6.6. Interaction effect of Type of Management and Teaching Experience on Professional Development of Teacher Educators.

4.6.7. Interaction effect of Type of Management, Gender and Teaching Experience on Professional Development of Teacher Educators.

The results of 3-way ANOVA (4×2×2 factorial design) are summarized in Table 12.

TABLE 12

**Results of ANOVA (4×2×2) on Professional Development of
Teacher Educators by Type of Management, Gender and Teaching Experience.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Source of Variation | Sum of Squares | Degrees of Freedom | Mean Squares | F- Value |
| Type of Management | 2557.529 | 3 | 852.509 | 1.762 |
| Gender | 1499.564 | 1 | 1499.564 | 3.09 |
| Teaching Experience | 1105.261 | 1 | 1105.261 | 2.284 |
| Type of Management× Gender | 4010.051 | 3 | 1336.683 | 2.762\* |
| Gender × Teaching Experience | 516.437 | 1 | 516.437 | 1.067 |
| Type of Management× Teaching Experience | 886.758 | 3 | 295.586 | 0.610 |
| Type Of Management×Gender× Teaching Experience | 2809.642 | 3 | 936.547 | 1.935 |

\*p<0.05

**Discussion of Results**

**4.6.1. Main effect of Type of Management on Professional Development of Teacher Educators**

 Table 12 shows that F- value obtained for Type of Management on Professional Development of teacher educators is 1.76. This value is lesser than 2.65, the table value of F for (3,184) degrees of freedom at 0.05 level of significance. This indicates that main effect of Type of Management on Professional Development of teacher educators is not significant at 0.05 level of significance.

**4.6.2. Main effect of Gender on Professional Development of Teacher Educators**

 Table 12 shows that F- value obtained for Gender on Professional Development of teacher educators is 3.09. This value is lesser than 3.89, the table value of F for (1,184) degrees of freedom at 0.05 level of significance. It reveals that the main effect of Gender on Professional Development of teacher educators is not significant, even at 0.05 level of significance.

**4.6.3. Main effect of Teaching Experience on Professional Development of Teacher Educators**

 The table 12 shows that the F- value obtained is 2.28, which is lesser than 3.89, the table value of F for (1,184) degrees of freedom at 0.05 level of significance. This indicates that the main effect of Teaching Experience on Professional Development of teacher educators is not significant at 0.05 level of significance.

**4.6.4. Interaction effect of Type of Management and Gender on Professional Development of Teacher Educators.**

 While considering the Type of Management and Gender, the F- value obtained is 2.76, which is greater than 2.65, the tabled value required for significance at 0.05 level, for (3,184) degrees of freedom. This indicates that the interaction effect of Type of Management and Gender on Professional Development of teacher educators is significant at 0.05 level of significance.

4.6.4.1. Mean scores of Professional Development for different Types of Management and Gender are given in Table 13.

TABLE 13

**Mean scores of Professional Development
for different Types of Management and Gender**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Government | Aided | Unaided | University Centre |
| Sex I (Male) |  234.44 | 244.33 | 232.96 | 234.06 |
| Sex II(Female) | 244.5 | 231.66 | 223.16 | 220.5 |

 Graphical representation of the interaction effect of Type of Management and Gender on Professional Development of teacher educators is given as Figure 3.

**SCALE**

Y axis : 1cm = 5 divisions

**Figure 4 : Interaction effect of types of Management and sex on Professional Development of Teacher Educators**

From the figure 4, it is clear that Male teacher educators in the Government Aided training colleges show a higher Professional Development while Female teacher educators show a lesser rate. But in case of unaided teacher education colleges and University centres, the Female teacher educators show a higher Professional Development compared to Male teacher educators in such institutions.

 Though there is significant Gender difference exists in the Professional Development of teacher educators in the total sample, the interaction effect of Gender on relevant subsample, Type of Management shows significant gender difference on Professional Development of teacher educators.

**4.6.5. Interaction effect of Gender and Teaching Experience on Professional Development of teacher educators**

 Table 12 shows that the F- value obtained for Gender and Teaching Experience on Professional Development of teacher educators is 1.07, which is less than 3.89, the table value of F for (1,184) degrees of freedom at 0.05 level of significance. This indicates that the interaction effect of Gender and Teaching Experience on Professional Development of teacher educators is not significant at 0.05 level of significance.

**4.6.6. Interaction effect of Type of Management and Teaching Experience on Professional Development of teacher educators**

 Table 12 shows that F- value obtained for Type of Management and Teaching Experience on Professional Development of teacher educators is 0.61, which is less than 2.65, the table value of F for (3,184) degrees of freedom at 0.05 level of significance. It was revealed that the interaction effect of Type of Management and Teaching Experience on Professional Development of teacher educators is not significant at 0.05 level of significance.

**4.6.7. Interaction effect of Type of Management, Gender and Teaching Experience on Professional Development of Teacher Educators**

 Table 12 shows that the F- value obtained for Type of Management, Gender and Teaching Experience on Professional Development of teacher educators is 1.93, which is less than 2.65, the table value of F for (3,184) degrees of freedom at 0.05 level of significance. It was revealed that the interaction effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators is not significant at 0.05 level of significance.

**4.7. MAJOR FINDINGS**

 Following are the major findings obtained after analysis of the collected data.

1. The mean scores of Professional Development obtained for the total sample is 230.49
2. The mean scores of Professional Development obtained for Male and Female teacher educators are 235.49 and 226.14 respectively. The male teacher educators have slightly high rate of Professional Development compared to female teachers.
3. The mean scores obtained for teacher educators working in Government, Aided, Unaided colleges and University centres are 239,238,227.57 and 226.88 respectively. Govt and Aided college teacher educators have high rate of Professional Development compare to that of teacher educators from unaided colleges and University centres. Unaided colleges and University centres are almost equal in their Professional Development.
4. The mean scores in Professional Development of teacher educators handling General and Optional subjects are 230 and 230.84 respectively. The two groups are almost equal in Professional Development .
5. The mean scores obtained for High and Low Qualified teacher educators are 239.08 and 227.62 respectively. The Professional Development of highly qualified teacher educators have a high rate of Professional Development compared to that of low qualified teachers.
6. The mean scores obtained for Professional Development of 0-5 years and 5 & above 5 years experienced teacher educators are 235.53 and 226.19 respectively. The high experienced teacher educators show higher Professional Development than low experienced teacher educators.
7. There exists no significant difference in the mean scores of Professional Development between Govt and Aided teacher educators (‘t’ value=0.283).
8. There exists significant difference in the mean scores of Professional Development of Govt and Unaided teacher educators (‘t’ value=2.157).
9. There exists significant difference in the mean scores of Professional Development between Govt and University centres teacher educators (‘t’ value=2.063).
10. There exists significant difference in the mean scores of Professional Development between Aided and Unaided teacher educators(‘t’ value=2.36).
11. There exists significant difference in the mean scores of Professional Development between Aided and University centres teacher educators at 0.05 level (‘t’ value=2.047).
12. There exists no significant difference in the mean scores of Professional Development between Unaided and University centres teacher educators. (‘t’ value=0.153).
13. There exists no significant difference in the mean scores of Professional Development between male and female teacher educators at 0.01 level of significance (‘t’ value=2.91).
14. There exists no significant difference in the mean scores of Professional Development of general and optional teacher educators. (‘t’ value=-0.255).
15. There exists significant difference in the mean scores of Professional Development of below 5 year experienced and 5&above 5 year experienced teacher educators (‘t’ value=2.904).
16. There exists significant difference in the mean scores of Professional Development of High and Low qualified teacher educators. (‘t’ value=3.103).
17. Type of Management do not have a main effect on Professional Development of teacher educators (F=1.76,p>0.05 for (3,184) degrees of freedom).
18. Gender do not have a main effect on Professional Development of teacher educators (F=3.09, p>0.05 for (1,184) degrees of freedom).
19. Teaching Experience do not have a main effect on Professional Development of teacher educators (F=2.28, p>0.05 for (1,184) degrees of freedom).
20. Interaction effect of Type of Management and Gender on Professional Development of teacher educators was significant at 0.05 level of significance (F=2.76, p<0.05 for (3,184) degrees of freedom).
21. Interaction effect of Gender and Teaching Experience on Professional Development of teacher educators was not significant (F=1.07, p>0.05 for (1,184) degrees of freedom).
22. Interaction effect of Type of Management and Teaching Experience on Professional Development of teacher educators was not significant (F=0.61, p>0.05 for (3,184) degrees of freedom).
23. Interaction effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators was not significant (F=1.93, p>0.05 for (3,184) degrees of freedom).

**4.8.** **TENABILITY OF HYPOTHESES**

1. Hypothesis I states that there exists significant difference in the mean scores of Professional Development of teacher educators among the relevant subsamples based on (i) Gender (ii) Type of Management (iii)Subjects of Teaching(iv) Qualification (v) Teaching Experience.

 The first part of the hypothesis states that ‘there exists significant difference between the mean scores of Professional Development of Male and Female teacher educators’. The results of the comparison of the mean scores of Professional Development of Male and Female teacher educators show significant difference at 0.01 level of significance. Hence hypothesis I (i) is substantiated.

The second part of the hypothesis I states that ‘there exists significant difference in the mean scores of Professional Development of teacher educators on the basis of Type of management. In this study, the finding suggests that there exist no significant difference between teacher educators of Govt and Aided, Unaided and University centres in their Professional Development. The findings also suggest that there exist significant difference between teacher educators of Govt and Unaided, Govt and University centres, Aided and Unaided, Aided and University centres. Hence hypothesis I (ii) is partially substantiated.

 The third part of the hypothesis I states that ‘there exists significant difference in the mean scores of Professional Development of teacher educators on the basis of Subjects of Teaching’. In this study, the finding suggests that there exist no significant difference between teacher educators handling General and Optional subjects in their Professional Development. Hence hypothesis I (iii) is not substantiated.

 The fourth part of the hypothesis I states that ‘there exists significant difference in the mean scores of Professional Development of teacher educators on the basis of Qualification. In this study, it was found that there is significant difference in the Professional Development of High and Low qualified teacher educators. Hence hypothesis I (iv) is substantiated.

The fifth part of the hypothesis I states that ‘there exists significant difference in the mean scores of Professional Development of teacher educators on the basis of Teaching experience. In this study, it was found that there is significant difference in the Professional Development of High and Low experienced teacher educators. Hence hypothesis I (v) is substantiated.

Hypothesis II states that ‘the main effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators will be significant’. In this study, the findings suggest that Type of Management, Gender and Teaching Experience has no significant main effect on Professional Development of teacher educators. Hence hypothesis II is not substantiated.

 Hypothesis III states that ‘interaction effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators will be significant’. The findings of the present study reveal the following: (i) Type of Management and Gender have a significant effect on Professional Development of teacher educators at 0.05 level of significance (ii) Gender and Teaching Experience do not have any significant effect on Professional Development of teacher educators (iii) Type of Management and Teaching Experience do not have any significant effect on Professional Development of teacher educators and (iv) Type of Management, Gender and Teaching Experience do not have any significant effect on Professional Development of teacher educators. Hence hypothesis III is partially substantiated.

**CHAPTER V**

SUMMARY, CONCLUSION AND SUGGESTIONS

* **Study in Retrospect**
* **Variables**
* **Objectives**
* **Hypotheses**
* **Methodology**
* **Major Findings of the Study**
* **Conclusion**
* **Educational Implications**
* **Suggestions for Further Research**

# SUMMARY OF PROCEDURE FINDINGS AND SUGGESTIONS

 This chapter provides an over view of the significant aspects of the various stages of the study. This includes the summary of procedures, important findings of the study, educational implications and suggestions for further research.

**5.1. STUDY IN RETROSPECT**

 Various aspects of the present study like the Problem, Variables, Objectives, Hypotheses and Methodology are reviewed retrospectively.

# 5.1.1. RESTATEMENT OF THE PROBLEM

 The study was entitled as “PROFESSIONAL DEVELOPMENT OF TEACHER EDUCATORS WORKING IN B.Ed. COLLEGES”.

**5.2. VARIABLES**

 The present study is designed with two types of variables, namely Independent Variables and Dependent Variable.

**5.2.1. Independent Variable**

 The independent variables are Gender, Type of management, Subjects of teaching, Qualification and Teaching Experience.

**5.2.2. Dependent Variable**

 The dependent variable is Professional Development of teacher educators.

**5.3. OBJECTIVES**

 The objectives set forth for the study are the following.

1. To find out the extent of Professional Development of teacher educators in the total sample and in the relevant sub samples based on

1. Gender
2. Type of Management
3. Subjects of Teaching
4. Qualification
5. Teaching Experience

2. To find out whether there exist significant difference in the mean scores of Professional Development of teacher educators among the relevant sub samples based on

1. Type of Management
2. Gender
3. Subjects of Teaching
4. Qualification
5. Teaching Experience.

3. To find out whether Type of Management, Gender and Teaching Experience have main and interaction effect on Professional Development of teacher educators.

**5.4. HYPOTHESES**

 The hypotheses formulated for the study are the following.

1. There exists significant difference in the mean scores of Professional Development of teacher educators among the relevant sub samples based on

1. Gender
2. Type of Management
3. Subjects of Teaching
4. Qualification
5. Teaching Experience.

2. Main effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators will be significant.

3. Interaction effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators will be significant

**5.5. METHODOLOGY**

**5.5.1. Sample**

 The study was conducted on a sample of 200 teacher educators working in B.Ed. colleges under University of Calicut, drawn from training colleges of Thrissur, Kozhikode, Malappuram, Wayanad and Palakkad districts. The sample selection was done using stratified random sampling technique giving due representation to factors like Gender, Type of Management, Subjects of Teaching, Qualification and Teaching Experience.

**5.5.2. Tool Used**

 The investigator developed an Professional Development scale to measure the Professional Development of teacher educators -Professional Development Scale ( Basheer and sobish, 2010).

**5.5.3. Statistical Techniques Use**

 The collected data was analyzed using the following techniques.

1. Preliminary Analysis
2. Estimation of Mean
3. Test of Significance of Mean difference for large Independent Samples
4. 3-Way ANOVA (4x2x2 Factorial Design)

**5.6. MAJOR FINDINGS**

 Following are the major findings obtained after analysis of the collected data.

1. The mean scores of Professional Development obtained for the total sample is 230.49
2. The mean scores of Professional Development obtained for Male and Female teacher educators are 235.49 and 226.14 respectively. The male teacher educators have slightly high rate of Professional Development compared to female teachers.
3. The mean scores obtained for teacher educators working in Government, Aided, Unaided colleges and University centres are 239,238,227.57 and 226.88 respectively. Govt and Aided college teacher educators have high rate of Professional Development compare to that of teacher educators from unaided colleges and University centres. Unaided colleges and University centres are almost equal in their Professional Development.
4. The mean scores in Professional Development of teacher educators handling General and Optional subjects are 230 and 230.84 respectively. The two groups are almost equal in Professional Development.
5. The mean scores obtained for High and Low Qualified teacher educators are 239.08 and 227.62 respectively. The Professional Development of highly qualified teacher educators has a high rate of Professional Development compared to that of low qualified teachers.
6. The mean scores obtained for Professional Development of 0-5 years and 5 & above 5 years experienced teacher educators are 235.53 and 226.19 respectively. The high experienced teacher educators show higher Professional Development than low experienced teacher educators.
7. There exists no significant difference in the mean scores of Professional Development between Govt and Aided teacher educators (‘t’ value=0.283).
8. There exists significant difference in the mean scores of Professional Development of Govt and Unaided teacher educators (‘t’ value=2.157).
9. There exists significant difference in the mean scores of Professional Development between Govt and University centres teacher educators (‘t’ value=2.063).
10. There exists significant difference in the mean scores of Professional Development between Aided and Unaided teacher educators (‘t’ value=2.36).
11. There exists significant difference in the mean scores of Professional Development between Aided and University centres teacher educators at 0.05 level (‘t’ value=2.047).
12. There exists no significant difference in the mean scores of Professional Development between Unaided and University centres teacher educators. (‘t’ value=0.153).
13. There exists no significant difference in the mean scores of Professional Development between male and female teacher educators at 0.01 level of significance (‘t’ value=2.91).
14. There exists no significant difference in the mean scores of Professional Development of general and optional teacher educators. (‘t’ value=-0.255).
15. There exists significant difference in the mean scores of Professional Development of below 5 year experienced and 5&above 5 year experienced teacher educators (‘t’ value=2.904).
16. There exists significant difference in the mean scores of Professional Development of High and Low qualified teacher educators. (‘t’ value=3.103).
17. Type of Management do not have a main effect on Professional Development of teacher educators (F=1.76, p>0.05 for (3,184) degrees of freedom).
18. Gender do not have a main effect on Professional Development of teacher educators (F=3.09, p>0.05 for (1,184) degrees of freedom).
19. Teaching Experience do not have a main effect on Professional Development of teacher educators (F=2.28, p>0.05 for (1,184) degrees of freedom).
20. Interaction effect of Type of Management and Gender on Professional Development of teacher educators was significant at 0.05 level of significance (F=2.76, p<0.05 for (3,184) degrees of freedom).
21. Interaction effect of Gender and Teaching Experience on Professional Development of teacher educators was not significant (F=1.07, p>0.05 for (1,184) degrees of freedom).
22. Interaction effect of Type of Management and Teaching Experience on Professional Development of teacher educators was not significant (F=0.61, p>0.05 for (3,184) degrees of freedom).
23. Interaction effect of Type of Management, Gender and Teaching Experience on Professional Development of teacher educators was not significant (F=1.93, p>0.05 for (3,184) degrees of freedom).

**5.7. CONCLUSION**

 Major findings of the study helped the investigator to arrive at the following conclusions.

 Most of the sub samples were differed in their extent of Professional Development. In the case of Male and Female teacher educators, the male teacher educators show slightly higher Professional Development than female teacher educators.

 There is difference in the extent of Professional Development of teacher educators based on their Type of Management of Institution. Aided college teachers show the highest Professional Development than Unaided and University centres.

 Teacher educators handling General and Optional subjects, the extent of professional Development is almost equal. The Professional Development of high and low qualified teacher educators, the high qualified teacher educators show high Professional Development than the low qualified teacher educators. In the case of Teaching Experience, the Professional Development of teacher educators between 0-5 and 5 and above 5 years of Teaching Experience, high experienced teacher educators show high Professional Development than the low experienced teacher educators.

 Type of Management, Sex and Teaching Experience has no main effect on Professional Development of teacher educators. The analysis revealed that Type of Management and Sex have significant interaction effect on Professional Development of teacher educators. It was also revealed that Sex and Teaching Experience, Type of Management and Teaching Experience and Type of Management, Sex and Teaching Experience do not have significant interaction effect on Professional Development of teacher educators.

**5.8. EDUCATIONAL IMPLICATIONS**

 The present study helped to find out the extent of Professional Development of teacher educators. The value of research in education lies in its implications.

The various items in the Professional Development Scale will give an idea to the teachers about the qualities expected to a teacher who is a professional. As one gets an idea of a professional teacher and the extent of professional development in him/her, it will enable him/her to improve in his own or her own by seeking help from experts

The mean scores of teacher educators in the total sample lies in an average score. Hence it was advisable to adopt various programmes for uplifting the Professional Development of teacher educators.

So necessary steps should be taken to increase the participation of teacher educators in maximum number of Continuing Professional Development Programmes. Teacher educators should get opportunities to participate in programmes like orientation courses, refresher courses, training courses, symposia, conference etc.

The findings of the study revealed that male teacher educators are superior to female teacher educators in their professional development. Therefore, for the professional improvement of female teacher educators requires immediate attention. So the administrators and other authorities in the field of teacher education should create suitable environment and conduct special programmes such as quality improvement programmes, in-service courses, seminars, workshops etc. especially for the female teacher educators.

It is obvious from the study that there is significant difference between teacher educators on the basis of their type of management of institution. Teacher educators working in Aided and Government colleges had higher professional development than the teacher educators working in Unaided and University teacher education centres unaided and University teacher education centres do not get access to continuation of U.G.C. sponsored refresher courses, orientation programmes, seminars, research projects, teacher fellowships etc. for professional development of teachers is urgently needed. So UGC should take initiative to conduct such programmes to unaided and university teacher educators.

The level of professional development varies according to the qualification of teacher educators. Those who are highly qualified is being highly developed professionally, and those with the low qualification have on significant development at all. So an immediate attention should be require to improve the professional qualities of low qualified teacher educators. Provide opportunities to them to acquire new degrees, and continuous awareness and updating is needed for their professional development. Implementation of research cells in colleges can contribute to professional development of teacher educators.

The experienced teacher educators have higher professional development than low experienced teacher educators. So necessary action plan is needed for the development of low experienced teachers. The number of freshers exceeds the number of inexperienced in various teacher education colleges. It implies the urgency of some additional professional development programmes for the low experienced teacher educators for their improvement and the overall improvement of the educational system. Training programmes should be provided at the early period of their service and thorough revisions should be made to improve the effectiveness of pre-service courses.

Provide a proper organizational climate in the institutions that motivates the teacher educators towards their profession. Ensure the service of a Quality Assurance Director in the educational institutions to enhance and to provide guidance to those teachers having low Professional Development.

Personal and institutional problems should be balanced by teacher educators for the betterment of professional qualities and institutional heads must take more care in providing opportunities to the teacher educators.

Make provision for the periodical evaluation of the performance of teacher educators. The authorities should ensure the proper functioning of the research cells, faculty improvement programmes etc.

**5.9. SUGGESTIONS FOR FURTHER RESEARCH**

 The findings of the present study and the limitations involved made the investigator to suggest the following for further research in this area.

1. Achievement of student teachers in relation with professional development of teacher educators.
2. A study can be done to find out the relationship between Professional Development and occupational stress.
3. Same study can be replicated on teacher educators of different types of teacher training institutions.
4. Same study can be conducted on teachers working in Arts and Science colleges, primary, secondary and higher secondary level.

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**APPENDIX I**

**FAROOK TRAINING COLLEGE**

**CALICUT**

**PROFESSIONAL DEVELOPMENT SCALE**

**Mr. ABDUL BASHEER.U SOBISH C.**

Associate Professor M.Ed. Student

Farook Training College Farook Training College

**\nÀt±-i-§Ä**

 A[ym]I-cpsS sXmgnÂ]-c-amb hfÀ¨/ hnI-k-\s¯ kqNn-¸n-¡p¶ Nne {]kvXm-h-\IÄ Xmsg sImSp-¯n-cn-¡p-¶p. Hmtcm {]kvXm-h-\-IÄ¡pw t\sc **FÃm-bvt¸m-gpw, an¡-t¸m-gpw, Nne-t¸mÄ am{Xw, A]qÀÆ-am-bn, Hcn-¡-ep-anÃ** F¶n-§s\ A©v {]Xn-I-c-W-§Ä hoXw \ÂIn-bn-«p-­v. Hmtcm {]kvXm-h-\bpw {i²m-]qÀÆw hmbn-¨-Xn\p tijw AXnÂ ]d-bp¶ Imcy-§Ä \n§sf kw\_-Ôn-¨n-S-t¯mfw F{X-am{Xw icn-bm-sW¶v Xocp-am-\n¨v A\p-tbm-Py-amb {]Xn-I-c-W-¯n\v t\sc  NnÓw tcJ-s¸-Sp-¯p-I. \n§-fpsS {]Xn-I-c-W-§Ä hfsc cl-ky-ambn kq£n-¡p-¶-Xm-sW¶pw Kth-j-Wm-h-iy-¯n\v am{Xta D]-tbm-Kn-¡p-I-bp-Åq-sh¶pw Dd¸p \ÂIp-¶p.

1. hnZym`ymk Kth-j-W-§-fpambn \_Ô-s¸-«pÅ hnh-c-§Ä tiJ-cn-¡m-dp-­v.

2. ]mT-`m-K-§Ä ¢mÊnÂ Ah-X-cn-¸n-¡p-t¼mÄ ]pXnb kmt¦-XnI hnZy-IÄ D]-tbm-K-s¸-Sp-¯m³ {ian-¡m-dp-­v.

3. ]pXnb ]mTy ]²-Xn-sb-¡p-dn¨v F\n¡v hyà-amb [mc-W-bp-­v.

4. Fsâ hnj-b-hp-ambn \_Ô-s¸« ]pXnb Imcy-§-sf-¡p-dn¨v Adnhv t\Sm³ {ian-¡m-dp­v.

5. Fsâ A²ym-]-\s¯¡pdn¨v kl A²ym-]-I-cnÂ \n¶pw Ip«n-I-fnÂ \n¶pw A`n-{]m-b-§Ä tiJ-cn-¡m-dn-Ã.

6. ]mTy-]-²Xn hnI-k-\-hp-ambn \_Ô-s¸« {]hÀ¯-\-§-fnÂ kPo-h-ambn ]s¦-Sp-¡p-Ibpw A`n-{]m-b-§Ä {]I-Sn-¸n-¡p-Ibpw sN¿m-dp-­v.

7. Kth-j-W -{]-\_-Ô-§-fnse ]pXp-a-bpÅ hnh-c-§Ä hnZymÀ°n-I-fn-se-¯n-¡m³ {ian-¡m-dn-Ã.

8. CâÀs\-än-eq-sS-bpÅ Bib hn\n-ab kwhn-[m-\-§Ä Fsâ sXmgnÂ]-c-amb taJ-e-bnÂ ^e-{]-Z-ambn D]-tbm-Ks¸-Sp-¯mdp-­v.

9. Fsâ Ign-hn-\-\p-tbm-Py-a-Ãm¯ ]T-\-{]-hÀ¯-\-§Ä¡v Rm³ {ian-¡m-dn-Ã.

10. ]mTy ]²-Xn-bnse ]cn-an-Xn-IÄ Is­¯n ]cn-lm-c-§Ä \nÀt±-in-¡m-dp-­v.

11. skan-\mÀ, knt\_m-kn-b-§Ä F¶n-h-bnÂ Kth-jW {]\_-Ô-§Ä Ah-X-cn-¸n-¡m³ {ian-¡m-dn-Ã.

12. ]mT-`m-K-¯nse hnh-c-§sf ]än-bpÅ IqSp-XÂ Adn-hp-IÄ e`y-am-hp-¶-Xn\v Rm³ CâÀs\äv kuI-cy-§Ä D]-tbm-K-s¸-Sp-¯m-dp-­v.

13. ]mTy hkvXp--hp-ambn \_Ô-s¸«v \S-¡m-dpÅ Kth-j-W-§Ä a\-Ên-em-¡m\pw AXn-eqsS Adn-hns\ ]cn-t]m-jn-¸n-¡m\pw Rm³ {ian-¡m-dp-­v.

14. kmaq-lnI amä-§Ä¡-\p-k-cn¨v ]mTy ]²-Xn-bnÂ hcp-t¯­ amä-§-sf-¡p-dn¨v hyà-am-b- t\_m[w F\n-¡n-Ã.

15. Zriy {imhy am[y-a-§-fnÂ hcm-dpÅ hnZym-`ymk kw\_-Ô-amb ]cn-]m-Sn-IÄ Rm³ AXoh +XmÂ]-cy-t¯msS {i²n-¡m-dp-­v.

16. ]mTy hnj-b-§-fnepw ]mtTy-Xc hnj-b-§-fn-ep-apÅ B\p-Im-en-I-amb Adnhv hÀ²n-¸n-¡m-dp-­v.

17. tkh-\-¯n-en-cns¡ D¶X Kth-jW \_ncpZ-§Ä t\Sn-sb-Sp-¡m³ Rm³ {ian-¡m-dn-Ã.

18. A[ym-]\ {]hÀ¯-\-§-fnse Imcy-£-aX hÀ²n-¸n-¡p-¶-Xn\v Kth-j-W-§-fpsS Bh-iy-IX F\n¡v t\_m[y-s¸-«n-«p-­v.

19. hnhc kmt¦-XnI cwK-¯pÅ {]kn-²o-I-c-W-§Ä, amkn-I-IÄ, ]pkvX-I-§Ä F¶nh hmbn-¡m-dn-Ã.

20. ]T-\-Im-cy-§-fnÂ hnZymÀ°n-IÄ hcp-¯m-hp¶ sXäp-IÄ Is­-¯p-hm\pw Ah Xncp-¯p-hm\pw Ign-bm-d-­v.

21. ¢mÊv apdn-bnÂ D­m-¡m-dpÅ hnZymÀ°n kw\_-Ô-amb GXp {]iv\-s¯bpw a\x-im-kv{X-]-c-ambn ssIImcyw sN¿m³- Ign-bm-d-­v.

22. t\_m[\-ta-J-e-bp-ambn \_Ô-s¸« Adn-hp-IÄ hÀ²n-¸n-¡p-¶-Xn\p th­n D¶X \_ncp-Z-§Ä Ic-Ø-am-¡m³ Rm³ {ian-¡m-dn-Ã.

23. A[ym-]\ ss\]p-Wn-IÄ hÀ²n-¸n-¡p-¶-Xn-\p-X-Ip¶ Imcy-§sf kw\_-Ôn¨v aäv A[ym-]-I-cp-ambn Rm³ A`n-{]mbw ]¦n-Sm-dp-­v.

24. ]mT ]pkvXI \nÀ½mW {]hÀ¯-\-§-fnÂ kPo-h-ambn ]s¦-Sp-¡p-hm-\pÅ Ah-kcw F\n¡v e`n-¨n-«p-­v.

25. hnZym-`ymk Kth-jW taJ-e-bp-ambn \_Ô-s¸-«n-«pÅ ]pXnb amä-§Ä Adn-bp-hm³ Rm³ {ian-¡m-dp­v.

26. t\_m[\ {]{In-b-bnÂ \qX-\-amb kmt¦-XnI hnZy-IÄ D]-tbm-K-s¸-Sp-¯p-¶-Xn\v th­n kl A[ym-]-I-cpsS klmbw Rm³ tXSm-dp-­v.

27. hnZymÀ°n-IÄ kwi-b-hp-ambn Fs¶ kao-]n¡pt¼mÄ ^e-h-¯mb coXn-bnÂ kwi-b-\n-hm-cWw \S-¯n-sImSp¡p-hm³ F\n¡v km[n-¡m-dn-Ã.

28. Fsâ t\_m[\ {]hÀ¯-\-§Ä ^e-{]-Z-am¡n amäp-hm³ Rm³ \Ã-Xp-t]mse ]cn-io-en-¡m-dp-­v.

29. Fsâ {]tXyI hnj-b-¯nÂ am{Xta Rm³ {i²n-¡m-dp-Åq.

30. ]T\m\p-`-h-§Ä hymJym-\n-¡p-¶-Xn\pw AXv Ip«n-IÄ¡v hni-Zo-I-cn¨v sImSp-¡p-hm\pw km[n-¡m-dp-­v.

31. Hm¬sse³ kmt¦-XnI hnZy-I-sf-¸än Adn-bp-¶-Xn\pw Ah t\_m[-\-¯nÂ {]-tbm-K--n-¡p¶-Xn\pw {ian-¡m-dp-­v.

32. hyàn hyXym-k-¯n-\-\p-k-cn¨v ]pXnb t\_m[\ coXn-I-fnÂ amäw-sIm-­p-h-cm³ {ian-¡m-dn-Ã.

33. Ip«n-IÄ¡v e`y-a-Ãm¯ d^³kv ]pkvX-I-¯nÂ \n¶pÅ Adn-hp-IÄ ]IÀ¶p \ÂIm³ F\n¡p km[n-¡m-dp­v.

34. Bkq-{Xn-X-amb t\_m[\ {]hÀ¯-\-§-Ä bpàn-]qÀÆpw hyà-hp-ambpw apt¶m-«p-sIm-­p-t]m-Im³ F\n¡p Ign-bm-dp-­v.

35. ]mTy-]-²-Xn-bp-ambn \_Ô-s¸« ]pXnb Imcy-§Ä hnhn[ {]kn-²o-I-c-W-§-fnÂ \n¶v tiJ-cn-¡m-dp-­v.

36. hnZym-`ymk taJ-e-bp-ambn \_Ôs¸«n-«pÅ ]pXnb amä-§sf Ipdn¨v Kth-j-W-§Ä \S-¯p-hm³ F\n¡p XmXv]-cy-am-Wv.

37. Kh¬saâv / Kh¬saân-Xc kwL-S-\-I-fpsS Kth-jW t{]mP-IvSp-IÄ¡pth­n Rm³ {ian-¡m-dn-Ã.

38. \qX-\-amb t\_m[\ X{´-§Ä Rm³ D]-tbm-Kn-¡m-dp-­v.

39. amdp¶ ]mTy-]-²-Xn-IÄ¡-\p-k-cn¨v ]pXnb coXn-bnÂ ]mT-`m-K-§Ä Bkq-{XWw sN¿m³ F\n¡v Ign-bm-dp-­v.

40. hyàn hyXym-k-§Ä¡-\p-k-cn¨v ]T\ hkvXp-¡Ä X¿m-sd-Sp-¡p-¶-XnÂ F\n¡v Ah-Km-l-ap-­v.

41. sXmgnÂ]-c-amb Imcy£aX hÀ²n-¸n-¡p-¶-Xn\v th­n {Inbm-K-th-j-W-§Ä \S-¯m-dp-­v.

42. Kth-jW {]kn-²o-I-c-W-§Ä hmbn-¡p¶ ioew F\n-¡p-­v.

43. temI-¯n-sâ hnhn[ `mK-§-fnÂ ]mTy-]-²Xn ]cn-jvI-c-W-hp-ambn \_Ô-s¸«v \S-¡p¶ amä-§Ä a\-Ên-em-¡m-dp-­v.

44. t\_m[\ Bh-iy-§Ä¡v D]-cn-bm-bpÅ ]T\ {]hÀ¯-\-§-fnÂ Rm³ GÀs¸-Sm-dn-Ã.

45. ]mT--`m-K-¯nsâ e£y-§-fp-sSbpw DÅ-S-¡-¯n-sâbpw cq]tcJ Rm³ ap³Iq«n X¿m-dm-¡m-dp-­v.

46. t\_m[\ {]{In-b¡v klm-b-I-amb I¼yq-«À kt¦-X-§Ä (power point, simulation etc)\nÀ½n¨v {]tbm-K-¯nÂ hcp-¯m-dp-­v.

47. ]mTy ]²-Xn-bnse \qX-\-amb kao-]-\-§-sf-¸än hyàamb Adnhv F\n-¡p-­v.

48. hnZym-`ym-kcwKs¯ {]apJ hyàn-I-fp-ambn kwhm-Z-¯nÂ GÀs¸-Sm³ Rm³ kabw Is­-¯m-dp-­v.

49. Kth-jW taJ-e-bnse ]pXnb {]h-W-X-IÄ ]cn-N-b-s¸-Sm³ {ian-¡m-dp-­v.

50. ]mTy ]²-Xn-bp-ambn \_Ô-s¸«v \S-¯p¶ Kth-j-W-§Ä a\-kn-em¡n t\Snb Adn-hns\ ]cn-t]m-jn-¸n-¡p-hm³ {iaw \S-¯m-dn-Ã.

51. A[ym-]-\-¯nÂ ImenI {]k-àhpw B\p-Im-en-I-hp-amb kw`-h-§Ä Ah-X-cn-¸n-¡m-dp-­v.

52. sXmgnÂ ]c-amb hnI-k-hp-ambn \_Ô-s¸«v tImtf-PnÂ kwL-Sn-¸n-¡m-dpÅ hÀ¡v tjm¸p-I-fn-epw, skan-\m-dp-I-fnepw Rm³ kPo-h-ambn ]s¦-Sp-¡mdp­v.

53. t\_m[-\w, ]T-\w, aqey-\nÀ®bw F¶nh sa¨-s¸-Sp-¯m³ klm-bn-¡p¶ ]cn-]m-Sn-I-fnÂ ]s¦-Sp-¡m-dn-Ã.

54. Kth-jW {]kn-²o-I-c-W-§-fnÂ Fâ kPoh ]¦m-fn¯w Dd¸p hcp-¯m³ {ian-¡m-dp-­v.

55. hnZym-`ymk cwKs¯ ]pXnb Is­-¯-ep-I-sf-¡p-dn¨v kl-{]-hÀ¯-I-cp-ambn NÀ¨ sN¿m-dn-Ã.

56. ]mTy hnj-b-hp-ambn \_Ô-s¸« ]pkvX-I-§Ä Fgp-Xm-dp-­v.

57. t\_m[\ coXn-bnÂ Ftâ-Xmb Nne ]co-£-W-§Ä DÄs¸-Sp-¯m³ {ian-¡m-dp-­v.

58. hnZym-`ymk Kth-j-W-hp-ambn \_Ô-s¸« teJ-\-§Ä Fgp-Xm-dp-­v

59. A[ym-]\ ss\]p-Wn-IÄ hnI-kn-¡p-¶-Xn-\pÅ ]cn-io-e\ ]cn-]m-Sn-I-fnÂ ]s¦-Sp-¡m-dp-­v.