RELATIONSHIP BETWEEN EPISTEMOLOGICAL BELIEFS AND TEACHING LEARNING CONCEPTIONS OF PROSPECTIVE TEACHERS

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Reg.No 20PED001

A THESIS SUBMITTED TO

AVINASHILINGAM INSTITUTE FOR HOME SCIENCE AND

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COIMBATORE- 641043.

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF EDUCATION

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CERTIFIED AS BONAFIDE RESEARCH WORK

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Signature of Guide

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INTRODUCTION

CHAPTER I

INTRODUCTION

Teachers are one of the major stake holders in the process of teaching and learning. They influence students' learning in more than one way. Their pedagogies and behavior in the classroom is not only affected by their knowledge of the subject matter but also their conception about the subject, about the students, about learning or in other words their belief systems as a whole. The teaching and learning processes are influenced by different cognitive variables. An important one of them are epistemological beliefs and teaching and learning conceptions. Epistemological beliefs express the beliefs on the nature of knowledge and gaining knowledge (learning). According to Schommer, personal epistemology is a system which includes five independent dimensions and they can also be together (knowledge organization, certainty of knowledge, source of knowledge, and the control and the speed of knowledge acquisition). Personal epistemological beliefs have an important influence on person's cognitive and meta-cognitive processes. These beliefs also influence learning not only individually but also as a whole . Findings in the literature indicated that epistemological beliefs were related to variables such as achievement motivation, learning approaches, motivation and learning, study strategies and problem solving, learning styles and reflective thinking, academic performance (Schommer, 1993).Recent studies argued that epistemological beliefs were related to teaching and learning conceptions and these conceptions were influenced by epistemological beliefs (Chan and Elliot, 2004; Cheng, Chan, Tang, and Cheng, 2009).

1.1 Conceptual Framework

1.1.1. Concept of Epistemological Beliefs

Epistemological Beliefs are referred to as the beliefs about knowledge and knowing. Schommer (1990) identified five dimensions of epistemological beliefs, described and defined as the following; (a) "Knowledge is simple rather than complex" (Simple Knowledge), (b) "Knowledge is handed down by authority rather than derived from reason (Omniscient Authority), (c) "Knowledge is certain rather than tentative" (Certain Knowledge), (d) "The ability to learn is

innate rather than acquired" (Innate Ability or Fixed Knowledge), and (e) "Learning is quick or not at all" (Quick Learning).

In the year 1994, Schommer developed a questionnaire and redefined the components of epistemological beliefs in terms of 'naive' and 'sophisticated' beliefs. Sophisticated learners, Schommer elaborates, might think that a large body of knowledge is evolving, some knowledge is yet to be produced, and a small body of knowledge is stable and hence unchanging. Naive learners, on the other hand, might think that a large body of information is unchanging, some knowledge should be produced in the future, and a small body of knowledge is being evolved. (Personal) epistemology or epistemic beliefs have become a target of increased research interest in developmental and educational psychology. The term "epistemic beliefs" shall be consistently used to refer to a person's beliefs about the nature of human knowledge, like its certainty and how it is conceptualized, and a person's beliefs about the criteria for and the process of knowing. While acknowledging the different notions in the literature for either the whole construct or special facets of it (e.g., epistemic cognition, epistemic resources, epistemological reflection, personal epistemology, reflective judgment), these shall be subsumed under the widely used label "epistemic beliefs" for reasons of readability. Empirical investigations of epistemic beliefs began in the late 1960s, and previously epistemology was solely a topic of philosophy but not of empirical psychological research. The increased research interest in epistemic beliefs can not only be ascribed to empirical evidence for a relation between epistemic beliefs and academic performance, cognition, or the learning process but also to the need for advanced epistemic beliefs in a knowledge-based society. Epistemic beliefs are a rather complex construct, and researchers have not yet reached consensus or clarity about many issues.

1.1.2. Concept of Learning

Learning is about the change brought about by developing a new skill, understanding an information, changing an attitude. The change is not merely incidental or natural in the way that our appearance changes as we get older. Learning is a relatively permanent change, usually brought about intentionally. When we attend a course, search through a book, or read a discussion paper, we set out to learn. Other learning can take place without planning, for example by experience. Generally with all learning there is an element within us of wishing to remember and understand why something happens and to do it better next time. In common

parlance the word 'learning' carries at least two meanings. There is a general one of some kind of change, often in knowledge but also in behavior. However, learning cannot be defined merely in terms of changes in behavior. But there is also a more intense sense of the verb 'to learn' meaning to memorize, to learn by heart (Roger, 2003, p.86).

To say that 'learning is change' is too simple. Not all change is learning. What we usually mean by 'learning' are those more or less permanent changes and reinforcements brought about voluntarily in one's patterns of acting, thinking and/or feeling (Roger, 2003, p.86). According to Ambrose et al. (2010, p.3): Learning is a process, not a product Learning is a change in knowledge, beliefs, behaviors or attitudes. Learning is not something done to students, but something that students themselves do.

Kurst Lewin (1935) suggested that learning changes occur in skills, in cognitive patterns (knowledge and understanding),in motivation and interest, and in ideology (fundamental beliefs).Robert M.Gagné (1972) identified the following five domains or types of learning outcomes: motor skills which require practice, verbal information - facts, principles and generalizations which when organized into larger entities become knowledge, intellectual skills - the 'discriminations, concepts and rules' that help in using knowledge, cognitive strategies - the way the individuals learns, remembers and thinks, the self-managed skills needed to define and solve problems, and attitudes.

1.1.3. Concept of Teaching

Teaching is regarded as both an art and science. As an art, it lays stress on the imaginative and artistic abilities of the teacher in creating a worthwhile situation in the classroom to enable students to learn. As a science, it sheds light on the logical, mechanical, or procedural steps to be followed to attain an effective achievement of goals. Different educationists hold different ideas regarding the concept of teaching. “Teaching is intimate contact between a more mature personality and a less mature one which designed to further the education of the latter”. Dewey expressed this concept of teaching by an equation. “Teaching is learning as selling is to buying”. In the words of John Brubacher (1939), “Teaching is arrangement and manipulation of a situation in which there are gaps or obstructions which an individual will seek to overcome and from which he will learn in the course of doing so”. B.O. Smith defined teaching as “Teaching is

a system of actions intended to induce learning". According to Gagne (1963), "Teaching is a form interpersonal influence aimed at changing the behaviour potential another person". Smith in 1963 further extended the definition of teaching .Teaching is a system of actions involving an agent, an end in view and a situation including two sets of factors those over which the agent has no control (class size, characteristics of pupils, physical facilities, etc.) and those which he can modify (such as techniques and strategies of teaching.

Teaching can be conceptualized as a form of problem-solving and decision - making which has many properties in common with the work of physicians. This conceptualization has led to a body of research which has investigated the decision - making of teaching focusing in particular on the information about pupils that teachers use to make decisions and the way they tailor instruction to individual pupil needs (Calderhead, 1995).

1.1.4. Conceptions of Teaching and Learning refer to the beliefs that the teachers have regarding the methods of teaching and learning that they prefer. These beliefs include the meaning of teaching and learning, and the roles of teachers and students. There are two main approaches towards teaching and learning: namely, traditional and constructivist (Chan and Elliott, 2004).In the traditional approach, the teacher-student interaction is limited, transfer of knowledge is one-way from the teacher to the student, and it includes the use of teacher-centered teaching strategies. The traditional approach takes the teacher as the source of knowledge, and students as passive recipients. This approach particularly emphasizes the acquisition of knowledge from the teacher and textbook (Chan and Elliott, 2004; Cheng et al., 2009). Learning in teaching-learning environments with a traditional approach is encouraged by the use of such factors as reward, punishment, repetition etc. An environment is created where everything is determined, presented and controlled by the teacher. Constructivism is a learning approach in which students acquire the necessary knowledge on their own, as part of active learning that the teacher establishes and under the guidance of the teacher, and in which they construct and interpret this knowledge based on their previous experiences.

1.2. Need and importance of the study

The aim of the present study was to explore the relationship between students' Epistemological beliefs and conceptions of teaching and learning. Epistemological beliefs are viewed as socially constructed and students' epistemological beliefs are said to be shaped by the way they interact with peers, instructors and the world. Research has also indicated that epistemological beliefs are associated with reading comprehension, academic goal setting, and attitudes toward school. Studies on the relationship between epistemological beliefs and conceptions of teaching and learning revealed a significant relationship between them in non-language disciplines. Teachers' beliefs and conceptions play an important role in classroom decisions and teaching approaches. Investigating epistemological beliefs and conceptions of teaching and learning can lead to predicting teachers' practice and performance in the classroom. Educational administrators who are in charge of holding pre-service and in-service programs can benefit from the results of this study in order to accommodate the results to their programs to educate teachers and student teachers. It can help administrators to understand that teachers and student-teachers have their own beliefs and they do not participate in pre-service and in-service programs with an empty mind.

1.3. Statement of the Problem

The present study is designed to find out the Relationship between Epistemological beliefs and Teaching Learning Conceptions of Prospective Teachers.

The study is entitled as **"Relationship between Epistemological beliefs and Teaching Learning Conceptions Prospective Teachers".**

1.4. Operational definition of Key terms

Epistemological Beliefs

Epistemological Beliefs have been defined as the beliefs pertaining to what is knowledge and how the knowing and learning occurs (Schommer, 1990).

Teaching and Learning Conceptions

Conceptions of teaching and learning, referred to as "the beliefs held by teachers about their preferred ways of teaching and learning" (Chan and Elliot, 2004).

Prospective Teachers

Prospective teachers are the forthcoming or future teachers who opted teaching as a profession and are engaged in the training course related to teaching.

1.5. Variables

The two main variables for the study namely Epistemological Beliefs and Teaching and Learning Conceptions of prospective teachers are studied to know the relation between the and also the background variables like Educational qualification, stream of study, Medium of Instruction, locality of residence, Reading habit &academic achievement.

1.6. Objectives of the study

- To find out the level of Epistemological Belief of Prospective teachers
- To find out the Teaching and Learning Conceptions of Prospective teachers
- To find out whether prospective teachers' Epistemological beliefs differ in relation to selected variables
- To find out whether prospective teachers' Teaching-Learning Conceptions differ in relation to selected variables
- To determine the relationship between Epistemological beliefs and Academic Achievement of Prospective teachers
- To determine the relationship between Teaching and Learning Conceptions
- and Academic Achievement of Prospective teachers
- To determine the relationship between Epistemological beliefs and Teaching and Learning Conceptions of Prospective teachers.

1.7. Hypotheses

- There is no significant difference between Epistemological Belief and selected variables.
- There is no significant difference between Teaching and Learning Conceptions and selected variables.
- There is no significant relationship between Epistemological beliefs and Academic Achievement of Prospective teachers
- There is no significant relationship between Teaching and Learning Conceptions and Academic Achievement of Prospective teachers
- There is no significant relationship between Epistemological Belief and Teaching and Learning Conceptions of Prospective teachers.

1.8. Delimitation of the study

- This study is limited to two B.Ed colleges situated in Coimbatore
- Sample size is restricted to 200 only.

1.9. Organization of the Thesis

This study **Epistemological belief and teaching and learning conceptions of Prospective teachers** is presented in five chapters.

- **First Chapter**- deals with the introduction, scope of the study, need, objectives, hypothesis and advantages and limitations.
- **Second Chapter**- gives the account of the review of the literature connected with the topic.
- **Third Chapter**- deals with the methodology, samples, and tools, method of administration and collection of data.
- **Fourth Chapter**- deals with the classification, analysis and interpretation of data.
- **Fifth Chapter**- presents the summary of the findings, discussion, recommendations, suggestions for further study and conclusion.

REVIEW OF LITERATURE

CHAPTER 2

REVIEW OF LITERATURE

A review of related literature in the area of investigation is of prominent significance, and its importance cannot be denied in any research. The review of related studies is an exacting piece of work calling for a deep insight to provide clear-cut perspective of the overall field. The term ‘Review' means to organize, to envelope an edifice of knowledge, to show the present study would be an addition to a particular field. The term ‘Literature' refers to the knowledge of a particular area of any discipline, which includes theoretical, practical and research studies. In tracing roots of problems, preparing outlines of the study, discussion and interpretation of the results and writing the research report, review of literature is of utmost importance.

The study of related literature is useful to search the update and latest information already available and to define the limits of the specific problem. Research takes advantage of the knowledge that has accumulated in the past as a result of constant human endeavours. A review is not only important from the theoretical point of view but it also provides guidelines to decide procedure and tools to be used. The keys to the vast store house of published literature may open new doors to a source of significant problems and explanatory hypothesis which provides helpful orientation for the definition of the problem and background for the selection of procedure. Thus, the study of related literature helps the investigator to acquire comprehensive information about what has already been done in a certain field. It helps in the formulation of hypotheses and provides necessary knowledge regarding the methodology to be followed. For worthwhile study in any field of knowledge, the research worker needs adequate familiarity with the work which has already been done in a particular area. The search for related material is a time consuming but a fruitful phase of the research programme. With this background in view, the investigator tapped various sources of available literature like surveys of research, research journals, magazines, dissertations, encyclopaedias and educational research centres of the country as well as studies available on various websites and other sources of information related to the present study.

2.1.Purpose of Review Literature

Conducting a literature review is a means of demonstrating the **author's knowledge** about a particular field of study, including vocabulary, theories, key variables and phenomena, and its methods and history.

Randolph(2009)

Conducting a literature review also informs the student of the **influential researchers and research groups** in the field

- Report on **knowledge and ideas** that have been established on a particular topic, including their **strengths and weaknesses** while they allow you to discover the agreed academic opinion on the topic while at the same time letting you find out the disagreements on the same subject.
- Position your research project within the body of literature and thereby **provide perspective** for the reader.
- Demonstrate **your knowledge** of the subject area.
- Determine what each source contributes to the topic.
- Understand the **relationship between the various contributions**, identify and (if possible) resolve contradictions, and determine gaps or unanswered questions.
- Justify your **choice of research design**; for instance, your choice of qualitative over quantitative approaches, or your method of data analysis.
- Clarify how your work fills a **gap** in the scholarly literature.

2.2.Theoretical Overview of Epistemological Beliefs

Schommer's Theory of Epistemological Beliefs Schommer (1990) conceptualized personal epistemology as a belief system comprised of multiple dimensions of beliefs about nature of knowledge and the nature of knowledge acquisition i.e. learning. Schommer has systematically studied epistemological beliefs in relationship with different aspects of learning and conceptualized epistemological beliefs as a set of relatively independent beliefs about the structure, source, and certainty of knowledge as well as the control and speed of knowledge

acquisition. Five dimensions of epistemological beliefs are proposed by Schommer (1990, 1994). The dimensions of epistemological beliefs are:

• Certainty of knowledge

• Structure of knowledge

• Source of knowledge

• Control of knowledge acquisition

• Speed of knowledge acquisition.

The five dimensions are clustered into three areas such as beliefs about nature of knowledge, beliefs about the process of knowing, and beliefs about nature of learning. Certainty of knowledge and structure of knowledge describes about the individuals beliefs about the nature of knowledge. The source of knowledge explains the beliefs about the process of knowing. Control of knowledge acquisition and speed of knowledge acquisition describes about the nature of learning. The certainty of knowledge refers to belief that knowledge is more likely to be certain and unchanging rather than tentative and unpredictable. A belief in how certain knowledge is ranging from highly certain to highly uncertain. It refers to the extent to which the respondent thinks that knowledge is certain versus imperfect and subject to change. In short, it deals with the belief that knowledge is absolute or certain to knowledge is tentative and evolving (Schommer, 1990,1994).

The structure of knowledge is the extent to which a person sees knowledge as a group of individual facts or as concepts that are related to each other. If a student believes knowledge as series of unrelated facts, he tries to memorize the concepts and key terms in the subject. The student who believes knowledge consists of interrelated ideas tries to understand the information and concepts and make connections with real life situations. In structure of knowledge, the belief of individual extends from knowledge is simple and organized as isolated facts to knowledge is complex and organized as interrelated concepts (Schommer, 1990, 1994). The source of knowledge refers to the belief that knowledge is handed down by teachers and other experts rather than formed by independent reasoning. This belief references whether the knowledge comes from oneself and one's own experience or from authorities such as teachers, text books or

experts in the field. The belief of the learner ranges from knowledge is handed down by authority to knowledge as a product of reasoning (Schommer, 1990, 1994). The dimension, control of knowledge acquisition refers to the ability to learn extending from fixed or uncontrollable and cannot be changed to improved and controlled over time. The people views ability to learn as innate ability or can be changed. Some students believe that the ability to learn is fixed at birth while others believe that people can learn how to learn and their ability can be developed (Schommer, 1990, 1994). The quick learning relates to the speed of learning which ranges from learning as an immediate rather than a slow process of accumulating knowledge. Some students believe that learning happens quickly while others believe that learning happens gradually (Schommer, 1990).

The re-conceptualization of epistemological beliefs by Schommer (1990) analyzed the epistemological beliefs of first year and sophomore college students proposed that the beliefs of learners ranging from naïve beliefs to sophisticated beliefs as they proceed in their grade level. The research shows that learning beliefs affect the degree of students' active involvement and persistence in learning, and play an important role in reading comprehension, mathematical problem solving, formation of conceptual understanding, and coping with ill-structured questions or tasks (Schommer, 1994).

Measuring Epistemological Beliefs by reviewing the literature in epistemological beliefs the investigator identified various tools used to measure epistemological beliefs of students at different levels. Some of the tools used to measure epistemological beliefs of students are described below. Schommer's Epistemological Questionnaire (SEQ) developed by Schommer (1990) is one of the popular tools used to assess the dimensions of epistemological beliefs. Schommer developed and validated the questionnaire to measure the five dimensions of personal epistemology such as source of knowledge, structure of knowledge, certainty of knowledge, control of knowledge, and speed of knowledge acquisition of first year and sophomore college students. The initial version of questionnaire consists of 63 items divided into 12 subsets and the factor analysis loaded four factors which tested the predictive validity of the questionnaire. The questionnaire was validated in various studies (Schommer, 1992; Schommer& Walker, 1997; Schommer, Crouse, & Rhodes, 1992; Schommer-Atkins, 1994).

2.3.Theoretical Overview of Conceptions about Teaching and Learning

Teachers' conceptions of teaching and learning are defined by Chan and Elliott (2004) as "the beliefs held by teachers about their preferred ways of teaching and learning" including what teaching and learning actually mean, and the teacher-pupil relationship. The two distinct and opposing conceptions in teaching and learning are known as the traditional and the constructive, the traditional conception being based on teacher-centered methods where he/she is the knowledge source and the student merely the passive recipient. The theories propounded by Piaget and Vygotsky form the basis of the Constructivist conception, which is diametrically opposed to the Traditional, in stressing the significance and value of active, practical experience and participation by the learner in his/her knowledge-building, and the positive impact of a child's interaction with peers or adults is stressed by both Vogostsky and Miller (1997). Therefore, the basic tenets of constructivism are as follows: the child is not a passive recipient of knowledge, but an active participant in his/her knowledge-building, physically and intellectually, contributing meaningfully and positively by assimilating and incorporating new knowledge with that already held.

2.4.Review of related studies

Uyangor(2020)in his study analyzed the predictive relationships among pre-service teachers' epistemological beliefs, their educational philosophy tendencies and their teaching-learning conceptions. A relational screening model and predictive correlational design were used in this study. The sample of this study consisted of 1621 pre-service teachers from the faculty of education in a state university in Turkey. The Epistemological Beliefs Scale adapted by Deryakulu&**Büyüköztürk (2005)**examinedthe Teaching-Learning Conceptions Scale adapted by Aypay (2011), and the Educational Philosophy Tendency Scale developed by researchers were all used as data collection tools. Path analysis was used to calculate predictive relationships among pre-service teachers' epistemological beliefs, their educational philosophy tendencies, and their teaching-learning conceptions. Study findings indicate that pre-service teachers' epistemological beliefs and their educational philosophy tendencies are statistically significant predictors of their teaching-learning conceptions. The findings also indicated that pre-service

teachers' epistemological beliefs are statistically significant predictors of their educational philosophy tendencies.

Aypaya(2011)in his study on Teacher Education student's Epistemological Beliefs and their conceptions about Teaching and Learningstudied whether teaching-learning conceptions differ based on gender and class-levels. Results indicated that there were significant relationships between epistemological beliefs and teaching-learning conceptions; the student-teachers preferred constructivist approach over the traditional approach, and student-teacher views different based on gender and class-level. Finally, significant correlations were found among epistemological beliefs (Innate/Fixed Ability, Learning Effort, Learning Process - Casting Doubt on Authority/ Expert Knowledge, and Certainty of Knowledge) and approaches to teaching and learning.

Structural Equation Modeling was used by **Sadi (2015)** to examine the relation of epistemological beliefs, conceptions of learning, and self efficacy for biology learning of high school students. The sample consisted of 384 high school students who are learning biology. The results indicated that there exist direct and positive relation between the students' epistemological beliefs in biology knowledge and factors of conceptions of learning. Furthermore the results revealed that the students self efficacy for learning is directly and positively related to students' epistemological beliefs about justification and development and their conceptions of learning. But the dimension of source and certainty of knowledge is having negative relation to the students' self efficacy.

Ekinci(2017)conducted a study for examining the relationships between Epistemological Beliefs and Teaching and Learning Conceptions of Lower-Secondary Education Teachersto.The findings of the study revealed that the teachers' level of beliefs about the sub-dimensions of Authority/Expert Knowledge and Learning Effort/Process was found to be high, their level of beliefs about the sub-dimension named as Innate/Fixed Ability was found to be medium and their level of beliefs about the sub-dimension of Certainty of Knowledge is low. Though the teachers mostly prefer constructivist conception to shape their instructional practices, they also have a considerable orientation towards the adoption of traditional conception. Moreover, it was concluded that the teachers' epistemological beliefs are a significant predictor of their preferences for constructivist and traditional teaching and learning conceptions.

Gu (2016) investigated the contribution of epistemological beliefs in students problem solving process and scientific inquiry. The results of the study indicated that there exist difference in students' self-reported epistemic beliefs and beliefs revealed from practices. Students who hold sophisticated epistemic beliefs of the nature of knowing engaged actively in acquiring information from multiple sources and used it to support their claims than those who hold less sophisticated beliefs. The evidences also supports that engaging in problem based learning unit helps the students to develop more sophisticated epistemic beliefs and scientific inquiry practice.

The relation between epistemological beliefs and academic achievement was explored by **Arslantaş (2015)**.Epistemological Belief Scale was used to collect data from the sample of 353 teacher candidates. The dimensions of epistemological beliefs such as belief of learning depending on effort, belief of learning depending on talent, and belief of the existence of only one truth were analyzed. The results of the study revealed that there exists no difference in the mean scores for the factors of epistemological beliefs of male and female teacher candidates. Furthermore, the results indicated that there exist significant positive relation between the factors of epistemological beliefs and academic achievement of teacher candidates.

Structural Equation Modeling was used by **Sadi (2015)** to examine the relation of epistemological beliefs, conceptions of learning, and self efficacy for biology learning of high school students. The sample consisted of 384 high school students who are learning biology. The results indicated that there exist direct and positive relation between the students' epistemological beliefs in biology knowledge and factors of conceptions of learning. Furthermore the results revealed that the students self efficacy for learning is directly and positively related to students' epistemological beliefs about justification and development and their conceptions of learning. But the dimension of source and certainty of knowledge is having negative relation to the students' self efficacy.

Chhabra and Baveja (2014)investigated the epistemological beliefs of university teachers in India. Amongst the given participant teachers, notions of learning were varied and most of them viewed it as cognitive process varied interpretations of the same concept or diversity in cognition were not acknowledged by most of the teachers. most of the teachers seemed to be unaware of the process of knowledge construction among students. This has direct implication on their pedagogical approaches. This gap can be bridged, when teachers reflect on their own

epistemological beliefs about the nature of knowledge (science in this case), the process of learning and the pedagogical techniques to be used in the class to achieve desired learning. As beliefs are assumed to be affecting teachers' planning, decision-making and classroom interaction, it is worthwhile to explicate and reflect upon such beliefs.

Manu (2014) studied the relationship between Epistemological Beliefs and Instructional Practice of Pre-service and In-service Teachers. The current study indicated that both pre-service and in-service teachers were not likely to revert to the use of more traditional learning pedagogies. the constructivist in-service teachers' epistemological beliefs did not have a correlational relationship with instructional practice due to some factors like workload, mandated testing, Common Core Standards, among others. There was a correlational relationship between epistemological beliefs and instructional practice of behaviorist in-service teachers. Thus, the significant positive correlational relationship between the overall epistemological beliefs and instructional practice was as a result of the impact of the behaviorist in-service teachers. This study found that both pre-service and in-service teachers had somewhat average epistemological beliefs with slightly above average constructivist instructional practice. As a result of some challenges facing in-service teachers, which are yet to be experienced by pre-service teachers after their teacher education program, constructivist in-service teachers are more likely to face difficulties in their attempt to teach, based on their educational philosophy.

Ketabi and Zabihi(2013) in their study examined the relationship between pre-service EFL teachers' epistemological beliefs and their conceptions of teaching and learning the findings demonstrated significant positive relationships between traditional teaching/learning conceptions and some categories of epistemological beliefs such as 'innate/fixed ability' and 'certainty knowledge'. Moreover, the results indicated significant correlations between constructivist conceptions and pre-service teachers' 'learning effort/process' beliefs. Finally, certain implications for the English education of Iran were discussed in the context of postmodernism in English language teaching.

Zhonghuaand Huang(2013)found the relationship between Epistemological Beliefs, Conceptions of Teaching and Learning and Instructional Practices of Teachers: A Chinese Perspective. This study examines how the beliefs of Chinese in-service teachers regarding knowledge and knowledge acquisition influence their instructional classroom practices in junior

secondary schools directly or indirectly through their conceptions of teaching and learning. The results indicate that the factor of learning effort/process is highly valued by Chinese in-service teachers in their epistemological beliefs, and that the constructivist approach is the dominant conception on teaching and learning for junior secondary school teachers.. In addition, the constructivist conception of teaching and learning is found to be positively related to three types of classroom instructional practices, whereas the traditional conception about teaching and learning is found to be only significantly and negatively linked to standard contemporary practices.

Oğuz(2013) analysed the Epistemological Beliefs of Teacher Candidates in terms of various variables. It was concluded that the epistemological beliefs of teacher candidates had matured moderately and they believed that learning was more related with ability rather than effort. Determining the levels of epistemological beliefs of teacher candidates at the faculties of education is important in terms of improving their beliefs positively and getting to know these students better. Moreover, it is thought-provoking to discover the high level of maturation of teacher candidates' beliefs that learning is dependent upon ability and that there is only a single truth. Qualitative research should be carried out especially to understand why the level of belief in a single truth is so high.

Tanriverdi(2012) conducted a study on Pre-Service Teachers' Epistemological Beliefs and Approaches to Learning This quantitative study sets out to explore the beliefs students hold about knowledge and learning and the ways they approach their learning. Participants were 632 pre-service teachers at Faculty of Education. Turkish version of Schommer's Epistemological Belief Questionnaire (EBQ) and Turkish version of Biggs' Revised Two Factor Learning Approaches Scale (R-SPQ-2F) were used as data collection tool. One of the results shows that students who believe that learning depends on innate ability were likely to be surface motivated and utilize a surface strategy in their studying while students who believe in learning depends on effort would be deep-motivated and adopt a deep study strategy.

Sahin(2011)investigated Pre-Service teachers' Epistemological beliefs and Conceptions of Teaching This study aimed to investigate pre-service teachers' views about teaching and the relation of those views to epistemological beliefs, gender, and subject areas. The data collection tool was adapted from "The Traditional Teaching (TT) and Constructivist Teaching (CT) Scale,"

developed by Chan and Elliot (2004). Participants consisted of 490 pre-service teachers from different teacher education programs in Turkey. Principal component analysis was carried out, and nine items were removed from the adapted questionnaire because of low loadings. The data analysis showed that pre-service teachers preferred constructivist teaching views more than traditional teaching views, and this correlated with their epistemological beliefs. Male participants preferred constructivist teaching views significantly more than female participants did. Freshmen, sophomores, and those from English language programs preferred traditional teaching significantly more than others did. The results of our study provide an empirical contribution to the existing literature on teachers' beliefs about teaching and learning by examining pre-service teachers' views about teaching and the relation of those views to personal beliefs (on learning, multiple intelligence, and the nature of reality) and characteristics (gender, subject area, and class level). We found that teachers' conceptions of teaching can be examined under two major categories of teaching practice, traditional and constructivist. We saw that teachers prefer the constructivist way of teaching rather than the traditional way. Our findings suggest that personal characteristics are factors in pre-service teachers' conceptions of teaching. Our results also indicate that pre-service teachers' beliefs affect their views of teaching. We recommend that teacher education programs evaluate their programs and take action to enhance teaching students' epistemological beliefs and conceptions of teaching. We further recommend that researchers carry out similar studies with different samples and in different countries. Cross-cultural studies will be useful to understand how culture affects teachers' beliefs and practices.

Chan(2010) examined the role of epistemological beliefs in Hong Kong pre-service teachers' learning. Research has shown that epistemological beliefs have significant relations with cognitive and metacognitive variables such as reading comprehension, learning and teaching approaches, learning conceptions and motivation. However, there are few theoretical frameworks or models informing how epistemological beliefs function in the learning process and outcomes. Therefore, this paper attempts to review literature on epistemological beliefs and learning research and apply the findings to Biggs' 3P model of classroom learning to exemplify the role that epistemological beliefs play in the conceptions of learning of pre-service teachers in Hong Kong. The actions and effects of the pre-service teachers' epistemological beliefs on their learning conceptions, approaches to learning and the product of learning to teach are discussed

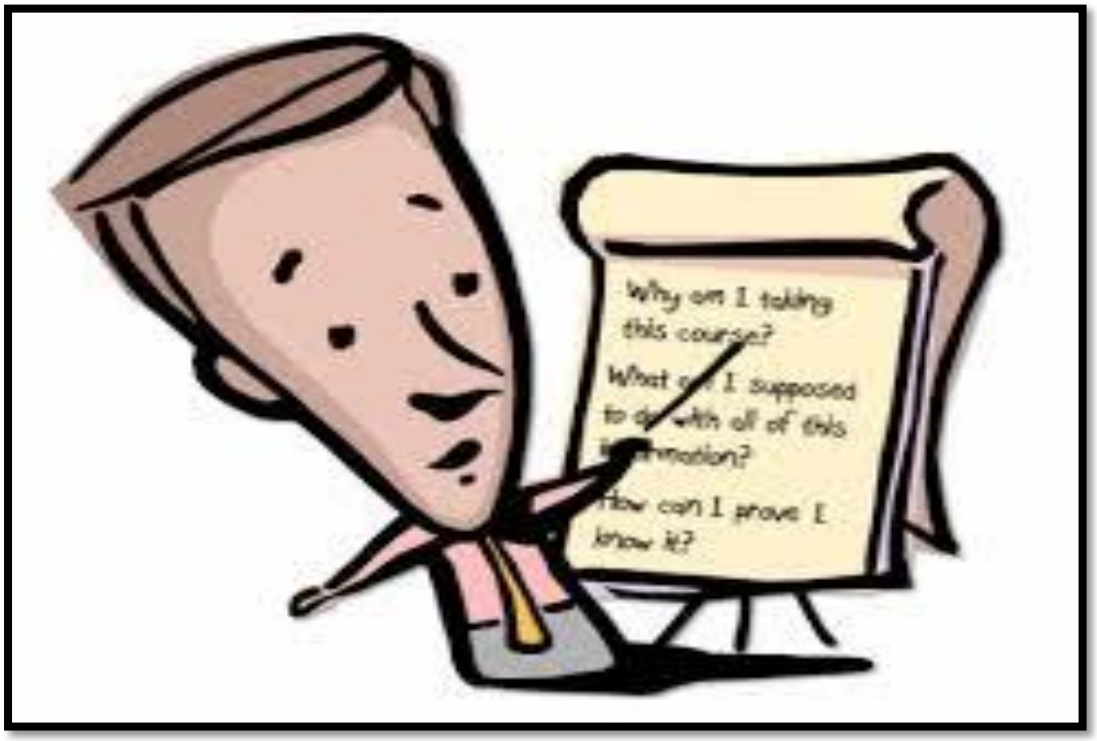
within the cultural context. The paper will conclude with comments about the implications of this study for the future direction of research in the area of teacher education development.

Cheng et.al (2008) conducted a study on Pre-service teacher education students' epistemological beliefs and their conceptions of teaching using both quantitative and qualitative methods to examine the student-teachers' epistemological beliefs and conceptions of teaching. The results showed that most of the student-teachers (i) strongly believed that learning effort was more important than innate ability, (ii) strongly believed that knowledge changes, and (iii) were inclined to question the authority of knowledge. Although student-teachers who had sophisticated or mixed epistemological beliefs tended to believe in constructivist or mixed conceptions of teaching as predicted, inconsistent cases were identified. Implications for teacher education programs are discussed.

Chan(2004)studied Pre-service Teachers' Epistemological Beliefs and Conceptions about Teaching and Learning : Cultural Implications for Research in Teacher Education stated that four Epistemological belief and two teaching/learning conception dimensions were identified from a questionnaire study of a sample of Hong Kong pre-service teacher education students. The epistemological belief dimensions were labeled Innate/Fixed Ability, Learning Effort/Process, Authority/Expert Knowledge and Certainty Knowledge. The somewhat different results on epistemological beliefs from Schommer's findings with North American college students suggested the possible influence of cultural contexts. The teaching/learning conceptions were labeled Traditional and Constructivist Conceptions. MANOVA indicated no significant statistical differences across age, gender and elective groups in their epistemological beliefs and conceptions. Canonical Correlation Analysis showed significant relations between epistemological beliefs and conceptions about teaching and learning. Implications were drawn for future research in teacher education with respect to the relations of epistemological beliefs and teaching/learning conceptions in different cultures.

Brownlee(2001) investigated teacher education students' epistemological beliefs: by developing a relational model of teaching, teaching program based on relational pedagogy (Baxter Magolda, 1993a) was implemented to foster the development of epistemological beliefs in 29 pre-service teacher education students at a large metropolitan university in Australia. Epistemological beliefs are those personally held beliefs about the nature and structure of knowing. The students were

interviewed in relation to their epistemological beliefs at the beginning (Time 1) and conclusion (Time 2) of the teaching program. The results of the qualitative data analysis indicated that students described more sophisticated relational epistemological beliefs over time. This finding is important given that teachers with relativistic epistemological beliefs are more likely to conceive of teaching as a transformative (constructivist) rather than transmissive. The perceived success of the teaching program has implications for the development of a relational teaching model in teacher education courses.



METHODOLOGY

CHAPTER III

METHODOLOGY

Research is important both in scientific and non-scientific fields. In our life new problems, events, phenomena and processes occur every day. Practically, implementable solutions and suggestions are required for tackling new problems that arise. Scientists have to undertake research on them and find their causes, solutions, explanations and applications. Precisely, research assists us to understand nature and natural phenomena. In research methodology is very much important. Research methods are the various procedures, schemes and algorithms used in research. All the methods used by a researcher during a research study are termed as research methods. They are essentially planned, scientific and value-neutral. They include theoretical procedures, experimental studies, numerical schemes, statistical approaches, etc. Research methods help us collect samples, data and find a solution to a problem. Particularly, scientific research methods call for explanations based on collected facts, measurements and observations and not on reasoning alone. They accept only those explanations which can be verified by experiments. Research methodology is a systematic way to solve a problem. It is a science of studying how research is to be carried out. Essentially, the procedures by which researchers go about their work of describing, explaining and predicting phenomena are called research methodology. It is also defined as the study of methods by which knowledge is gained. Its aim is to give the work plan of research.

- Which is a suitable method for the chosen problem?
- What is the order of accuracy of the result of a method?
- What is the efficiency of the method? And so on. Consideration of these aspects constitute a research methodology

The methodology for the study on "Epistemological beliefs and teaching and learning conceptions of Prospective teachers." is discussed the following heads:

3.1 Method used for study

3.2 Population and sample

3.3 Tool used for the study

3.4 Administration of the tool

3.5 Statistical technique used in the study

3.1 METHOD USED FOR THE STUDY

The investigator has adopted survey method for the study. The term survey is used for the technique of investigation by a direct observation of a phenomena or systematic gathering of data from population by applying personal contact and interviews when adequate information about a certain problems is not available in records, files and other sources. It is used in those investigations also where published data is used. Survey can be applicable only when a direct contact is made and does not include any study from the libraries. A survey is a process of collecting data from existing population units with no particular control over factors that may affect population characteristics of interest in the study.Survey suggests the gathering of evidence relating to current conditions. The survey method gathers data from a relatively large number of cases at a particular time. It is not concerned with characteristics of individuals as individuals. It is concerned with the generalized statistics that result when data are abstracted from a number of individual cases (Best and Khan, 2007).

The area selected for the study was Coimbatore district of Tamil Nadu. Student teachers from one Government, one Government Aided colleges of Coimbatore were selected for the study.

Sampling is the process by which relatively small number of individuals, objects or events is selected and analyzed in order to find out something about the entire population from which it was selected. It helps to reduce expenditure, save time, energy, permit measurement of

greater scope or produce precision and accuracy. Sampling procedures provide generalizations on the basis of relatively small portion of the population.

The investigator has selected sample from government, government aided B. Ed colleges in Coimbatore.

3.2 POPULATION AND SAMPLE

POPULATION

A population is any group of individuals that have one or more characteristics in common by population, the researcher means the aggregate or totality of objects or individuals regarding which in some reference are made to be made sampling study.

In this study, the population refers to student teachers studying in College of Education/ University Department of Education of Coimbatore city.

SAMPLE

A sample is a small portion of the population selected for observation and analysis. Here the sample consists of 200 Prospective teachers studying in Colleges of Education/University Department of Education of Coimbatore city using Simple Random sampling technique.

3.3 TOOLS USED FOR THE PRESENT STUDY

The selection of relevant tool is another major consideration in an educational research.

The following tools were used for the study.

1. Personal data sheet
2. Epistemic Belief Inventory(Schraw, Bendixen, &Dunkle, 2002)
3. Teaching and Learning Conception Questionnaire (Chan K.W,Elliott R.G, 2004)

1. Personal data sheet

The self made personal data sheet is used to collect necessary variables need for the study. The variables includes Name, Educational qualification, Type of college, Locality of Residence, Experience in Teaching, Nature of the College, Medium of Instruction, Major Subject, Reading Habit, Reference resource.

2. Epistemic Belief Inventory (Schraw, Bendixen, &Dunkle, 2002)

The Epistemic Belief Inventory (EBI) is a 28-item questionnaire that employs Schommer's five factors. There are seven items measuring simple knowledge, five items measuring certain knowledge, five items measuring omniscient authority, six items measuring innate ability, and five items measuring quick learning.

3. Teaching and Learning Conception Questionnaire (TLCQ) (Chan &Eliot,2004)

TLCQ consists of 30 items in which the first 18 items measures **Traditional conception** whereas the remaining 12 items measures **Constructivist conception** The reliability of the instrument overall was Cronbach Alpha = .86 and for the reliability for both constructivist and traditional conceptions were .84.

SCORING OF THE ITEMS OF EBI and TLCQ

Responses	**Score**
Strongly Disagree-	1
Agree-	2
Undecided-	3
Disagree-	4
Strongly Agree-	5

3.4 ADMINISTRATION OF THE TOOL

A Google form was made with scaling questions and the link was circulated for data collection. Below is the link of the form.

https://forms.gle/pQXphNbU6EbnnAbk9

3.5 STATISTICAL TECHNIQUES USED IN THE STUDY

The data were analyzed and interpreted using following techniques.

Selection of Sample

- Percentage Analysis
- 't' test
- F test
- Correlation Analysis

Percentage Analysis

Percentage analysis is the method to represent raw streams of data as a **percentage** (a part in 100 - **percent**) for better understanding of collected data. **Percentage Analysis** is applied to create a contingency table from the frequency distribution and represent the collected data for better understanding.

't' test

The't' **test** is one type of inferential statistics. It is used to determine whether there is a significant difference between the means of two groups. With all inferential statistics, we assume the dependent variable fits a normal distribution

't' test is used to find out the significant difference between the mean of two variables

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

Where,

$\bar{x1}$ = Mean of first set of values

$\bar{x2}$ = Mean of second set of values

S1 = Standard deviation of first set of values

S2 = Standard deviation of second set of values

n1 = Total number of values in first set

n2 = Total number of values in second set.

F test

An **F-test** is any statistical **test** in which the **test statistic** has an **F**-distribution under the null hypothesis. It is most often used when comparing statistical models that have been fitted to a data set, in order to identify the model that best fits the population from which the data were sampled.

f=Sun of Squares of between variable Sum of Squares of within variable

Product Moment Correlation

Correlation analysis is a method of statistical evaluation used to study the strength of a relationship between two, numerically measured, continuous variables (e.g. height and weight).

$$r = \frac{n(\Sigma xy) - (\Sigma x)(\Sigma y)}{\sqrt{[\, n\Sigma x^2 - (\Sigma x)^2 \,][\, n\Sigma y^2 - (\Sigma y)^2 \,]}}$$

CONCLUSION

In this chapter the methodology of the present investigation is enumerated. A clear cut view about the method selected, administration of the tool and data collections are discussed.

ANALYSIS AND INTERPRETATION

CHAPTER-IV
ANALYSIS AND INTERPRETATION OF DATA

1.Introduction

After collecting and analyzing the data, the researcher has to accomplish the task of drawing inferences followed by report writing. This has to be done very carefully .Otherwise, misleading conclusion may be drawn and the whole purpose of doing research may get visited. It is only through interpretation and analysis that the researcher can expose the processes that underlines his findings. “interpretation means an adequate exposition of the true meaning of the material presented in terms of the purpose of the study reported and of the chapter and selection of topic involved”(whitney,2005).

In the present study, data were collected from 200 prospective teachers from Coimbatore district. The information gathered from the sample through the rating scale and questionnaire are quantified and interpreted here.

The process by which sense and meaning are made of the data gathered in qualitative research, and by which the emergent knowledge is applied to clients' problems. This data often takes the form of records of group discussions and interviews, but is not limited to this. Through processes of revisiting and immersion in the data, and through complex activities of structuring, re-framing or otherwise exploring it, the researcher looks for patterns and insights relevant to the key research issues and uses these to address the client's brief.

SECTION I

DESCRIPTIVE ANALYSIS

Descriptive analysis was conducted to analyze the data and draw conclusion about the population. Measures of central tendency (mean), measures of dispersion (variability, standard deviation) and measures of divergence from normality (Skewness and Kurtosis) were calculated for the sample.

Table 1

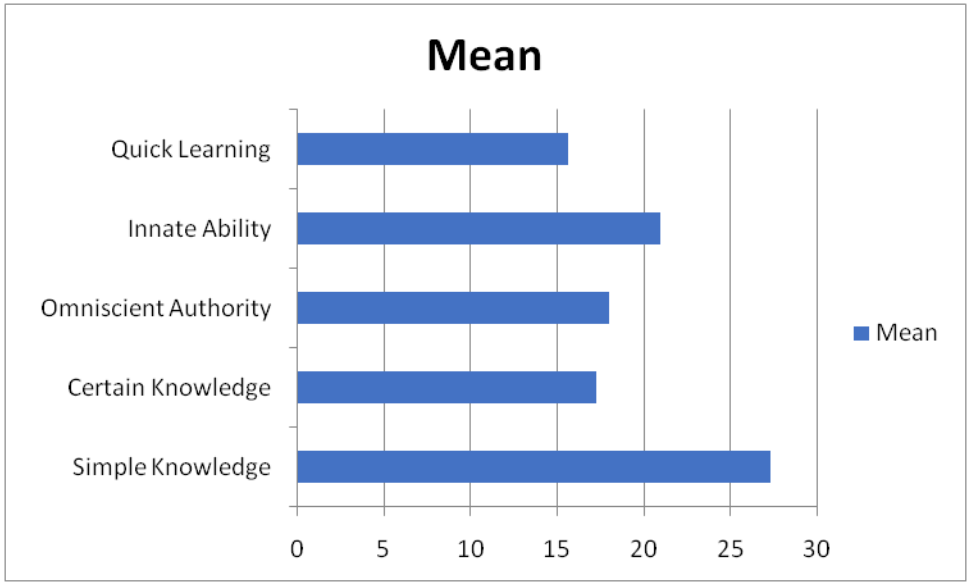
Mean scores of Epistemological Beliefs of Prospective teachers with its dimensions

Dimensions	**No. of items**	**Mean**	**SD**
Simple Knowledge	7	27.35	4.69
Certain Knowledge	5	17.26	3.91
Omniscient Authority(Source)	5	18.00	3.78
Innate Ability	6	20.97	3.88
Quick Learning(Speed)	5	15.64	4.6

Pursuant to the descriptive analysis results of the participating prospective teachers' Epistemological Belief scores, mean scores were as follows: (27.35) for the simple of knowledge dimension, (17.26) for the certainty of knowledge dimension, (18.00) for the omniscient authority dimension, (20.97) for the innate ability dimension and (15.64) for the quick learning dimension. According to these results, prospective teachers have the most sophisticated epistemological beliefs in the simple knowledge dimension contrarily; quick learning dimension involves the least sophisticated beliefs. More sophisticated beliefs understand that knowledge is constructed by the knower in interaction with others.**Gutierrez, Valencia, and Tindowen (2019)** in their study of epistemological beliefs of pre-service

teachers, revealed that pre-service teachers tend to be sophisticated and have a complex structure and reasoning along source of knowledge. They also reported that pre-service teachers tend to be naïve along ability to learn, stability of knowledge, and speed of learning.

Fig 4.1.1- ***Mean scores of Epistemological Beliefs of Prospective teachers with its dimensions***



4.1.2Mean scores of Teaching and Learning Conceptions of prospective teachers with its dimensions

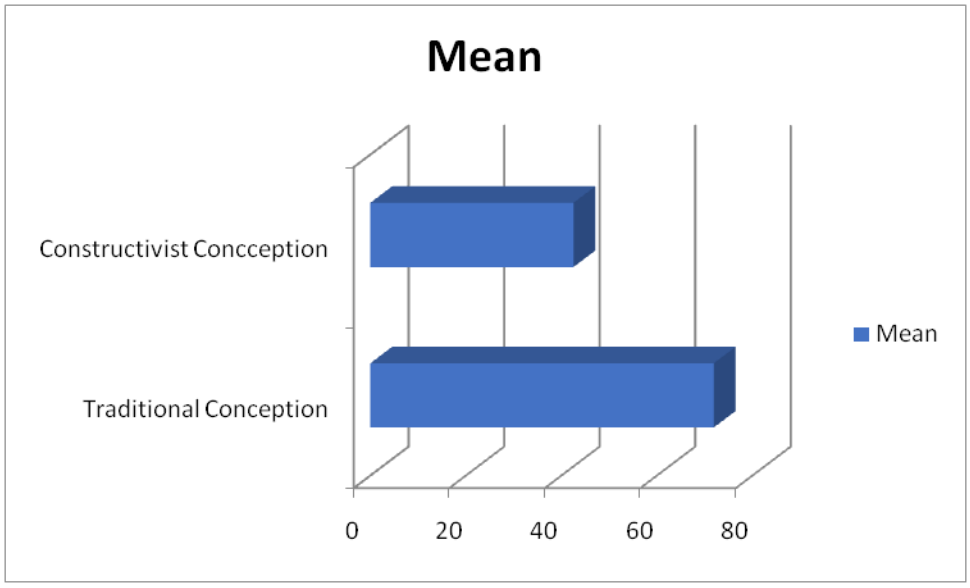
Table 2

Table 2 depicts the mean scores of Teaching and Learning Conception of prospective teachers with its dimensions.

Dimensions	**No. of items**	**Mean**	**SD**
Traditional Conception	18	71.93	10.72
Constructivist Conception	12	42.56	9.46

Table 2 shows the mean and standard deviations of constructivist and traditional conceptions of teaching and learning. The mean score of traditional conception was higher (M = 71.93, SD = 10.72) than the constructivist conception (M = 42.56, SD = 9.46). This suggests that, pre-service teachers' conceptions of teaching and learning are more of the traditional conception than the constructivist conception. This result is line with the findings of **Bishaw and Dagnew (2018)** who reported that most student-teachers were found to possess traditional beliefs of teaching and learning as evidenced by the mean score in the traditional conception (M= 3.47, SD= .29) which was higher than the mean score of the constructivist conception (M=2.08 and SD= .22).**Şentürk and Zeybek (2019)** found that teachers had a low-level constructivist teaching learning conception (M = 2.52, SD = 0.656) and a high-level traditional teaching-learning conception (M = 4.33, SD = 0.471).

Fig .2 ***Mean scores of Teaching Learning Conception of Prospective teachers with its dimensions***



4.1.3. Difference in mean scores between prospective teachers' Epistemological Belief and Stream of study

Table below depicts the Difference in mean scores between prospective Teacher' Epistemological Belief and Stream of study.

Table 3

Difference in mean scores between prospective teachers' Epistemological Belief and Stream of study

Stream of study	**N**	**Mean**	**SD**
Arts	68	96.78	15.36
Science	66	100.68	17.42
Mathematics	66	100.29	13.25
Total	**200**	**99.23**	**15.46**

From the above table its understood that the mean Epistemological Belief score for prospective teachers belonging to Science stream is 100.68, which is slightly higher than the mean Epistemological Belief scores for Mathematics and Arts stream prospective teachers whicharerespectively100.29and96.78.Science and Mathematics stream students have more sophisticated belief than Arts students.

4.1.4 Difference in mean scores between prospective teachers 'Epistemological Belief and Institution type

Table gives the details of difference in mean scores between prospective teachers' Epistemological Belief and Institution type.

Table 4

Difference in mean scores between prospective teachers 'Epistemological Belief and Institution type

Type of Institution	N	Mean	SD
Government	114	99.51	16.89
Government Aided	86	98.84	13.42

The above Table shows the mean value of prospective teachers from 'Government' institutions is 99.5088, whereas the mean value of prospective teachers from 'Government Aided' institutions is 98.8488. When comparing the mean values of institution types, prospective teachers from Government Aided had sophisticated belief than their counterparts.

4.1.5 Difference in mean scores between prospective teachers' Epistemological Belief and Medium of Instruction

Table shows the Difference in mean scores between prospective teachers' Epistemological Belief and Medium of Instruction.

Table 5

Difference in mean scores between prospective teachers' Epistemological Belief and Medium of Instruction

Medium of Instruction	N	Mean	SD
English	152	99.09	14.22
Tamil	48	99.63	19.02

The table illustrates, the mean value of prospective teachers from English medium of instruction is 99.63, whereas the mean value of prospective teachers' from Tamil medium of instruction is 99.09. When comparing the mean values of medium of Instruction,

prospective teachers from English medium had sophisticated Epistemological Belief than those from Tamil medium.

4.1.6 Difference in mean scores between prospective teachers' Epistemological Belief and Educational Qualification

Table 6 shows the Difference in mean scores between prospective teachers' Epistemological Belief and Educational Qualification.

Table 6

Difference in mean scores between prospective teachers' Epistemological Belief and Educational Qualification

Educational Qualification	N	Mean	SD
UG	113	98.05	13.72
PG	87	100.75	17.43

From the table it is understood that, the mean value of prospective teachers from 'PG' is100.75, whereas the mean value of prospective teachers from‘UG’is98.0531.When comparing the mean values of educational qualification, Post Graduate prospective teachers had sophisticated Epistemological Belief than those of under graduate prospective teachers.

4.1.7Difference in mean scores between prospective teachers' Epistemological Belief and Locality of residence

Table below shows Difference in mean scores between prospective teachers' Epistemological Belief and Locality of residence

Table7

Difference in mean scores between prospective teachers' Epistemological Belief and Locality of residence

Locality of Residence	N	Mean	SD
Rural	116	97.01	15.34
Urban	84	102.29	15.19

Looking at the table it can be seen that, the mean value of prospective teachers from 'Urban' is 102.29, whereas the mean value of prospective teachers from ‘Rural’ is 97.01.When comparing the mean values of locality of residence, prospective teachers from urban areas had sophisticated Epistemological Belief than those from rural areas.

4.1.8Difference in mean scores between prospective teachers' Epistemological Belief and Experience in teaching

The Table shows the Difference in mean scores between prospective teachers' Epistemological Belief and Experience in teaching

Table 8

Difference in mean scores between prospective teachers' Epistemological Belief and Experience in teaching

Experience in teaching	N	Mean	SD
Yes	58	101.38	15.05
No	142	98.3451	15.59

According to the statistics, prospective teachers with teaching experience have a mean value of 101.38, whereas prospective teachers without teaching experience have a mean value of 98.3451.Prospective teachers with teaching experience exhibited sophisticated Epistemological Belief when compared to prospective teachers without teaching experience.

4.1.9 Difference in mean scores between prospective teachers' Epistemological Belief and Good Reading habit

Table below shows the Difference in mean scores between prospective teachers' Epistemological Belief and Good Reading habit.

Table 9

Difference in mean scores between prospective teachers' Epistemological Belief and Good Reading habit

Good Reading Habit	N	Mean	Std. Deviation
Yes	179	99.3017	16.16
No	21	98.5714	7.21

The table shows that Prospective teachers with a good reading habit have a mean value of 99.3017, whereas prospective teachers without a strong reading habit have a mean score of98.5714. When compared to prospective teachers without a good reading habit, prospective teachers with a good reading habit had sophisticated Epistemological Belief.

4.1.10 Difference between Mean score of Epistemological Belief and Percentage of marks obtained

The table below shows the Difference between Mean score of Epistemological Belief and Percentage of marks obtained

Table 10

Difference between Mean score of Epistemological Belief and Percentage of marks obtained

Percentages In groups	N	Mean	SD
50-60%	6	104.67	17.64
61-70%	42	96.55	13.40
71-80%	75	97.87	16.41
81-90%	67	101.93	16.22
91-100%	10	99.30	5.27
Total	200	99.23	15.46

The above table illustrates that, prospective teachers with a mean score of '50-60 percent' had strong Epistemological Belief when compared to other percentage groups of 61-

70 %, 71-80 %, 81-90 % and 91-100 % with mean Epistemological Belief scores of 96.55,97.87,101.93,99.30 respectively.

4.1.11 Difference in mean scores between prospective teachers' Teaching and Learning Conceptions and stream of study

The table below shows the difference in mean scores between prospective teachers' Teaching and Learning Conceptions and stream of study.

Table 11

Difference in mean scores between prospective teachers' Teaching and Learning Conceptions and stream of study

Stream of study	**N=200**	**Mean**	**SD**
Arts	68	111.78	16.81
Science	66	114.48	19.14
Mathematics	66	117.29	17.19
Total	**200**	**114.49**	**17.79**

From the table its understood that ,prospective teachers 'mean Teaching and Learning Conceptions score for 'Mathematics' as a major subject is 117.29, which is slightly higher than the mean Teaching and Learning Conceptions scores for 'Arts' and 'Science' as major subjects, which are respectively111.78 and 114.48.

4.12 Difference in mean scores between prospective teachers' Teaching and Learning Conceptions and Institution type

The below shows the Difference in mean scores between prospective teachers' Teaching and Learning Conceptions and Institution type.

Table 12

Difference in mean scores between prospective teachers' Teaching and Learning Conceptions and Institution type

Institution Type	**N**	**Mean**	**SD**
Government	114	116.24	18.29711

Government Aided	86	112.17	16.91932

According to the findings, the mean value of prospective teachers from 'Government' institutions is 116.24, whereas the mean value of prospective teachers from 'Government Aided' institutions is 112.17. When comparing the mean values of institution types, prospective teachers from Government Aided had higher Teaching and Learning Conceptions than those from Government.

4.1.13 Difference in mean scores between prospective teachers' Teaching and Learning Conceptions and Medium of Instruction

The table below shows the Difference in mean scores between prospective teachers' Teaching and Learning Conceptions and Medium of Instruction.

Table 13

Difference in mean scores between prospective teachers' Teaching and Learning Conceptions and Medium of Instruction

Medium of Instruction	**N**	**Mean**	**SD**
English	152	114.39	16.80
Tamil	48	114.81	20.82

The table shows that, the mean value of prospective teachers from 'Tamil'mediumofinstructionis114.81, where as the mean value of prospective teachers from ‘English 'medium of instruction is 114.39. When comparing the mean values of medium of instruction, prospective teachers from Tamil medium had higher Epistemological Belief than those from English medium.

4.1.14 Mean score difference between Teaching and Learning Conceptions and Educational Qualification with respect to prospective teachers

Table 14

The table below shows the Mean score difference between Teaching and Learning Conceptions and Educational Qualification with respect to prospective teachers

Mean score difference between Teaching and Learning Conceptions and Educational Qualification with respect to prospective teachers

Educational Qualification	N	Mean	SD
UG	113	114.17	15.51722
PG	87	114.91	20.45337

According to the table, the mean value of prospective teachers from 'PG' is114.91, where as the mean value of prospective teachers from 'UG' is 114.71.When comparing the mean values of educational qualification; prospective teachers from Post Graduate had higher Teaching and Learning Conceptions than those from undergraduate prospective teachers.

4.1.15Mean score difference between Teaching and Learning Conceptions and Locality of residence

The table below shows the Mean score difference between Teaching and Learning Conceptions and Locality of residence.

Table 15

Mean score difference between Teaching and Learning Conceptions and Locality of residence

Locality of Residence	N	Mean	Std. Deviation
Rural	116	114.82	19.22752
Urban	84	114.04	15.68780

From the table it's seen that, the mean value of prospective teachers from 'Rural' is 114.82, whereas the mean value of prospective teachers from 'Urban' is 114.04. When comparing the mean values of locality of residence, prospective teachers from rural area had higher Teaching and Learning Conceptions than those from urban area prospective teachers.

4.1.16 Mean score difference between Teaching and Learning Conceptions and Experience in teaching

The table below shows Mean score difference between Teaching and Learning Conceptions and Experience in teaching

Table 16

Mean score difference between Teaching and Learning Conceptions and Experience in teaching

Experience in teaching	N	Mean	SD
Yes	58	113.24	17.21
No	142	115.00	18.05

According to the statistics, prospective teachers without teaching experience have a mean value of 115, whereas prospective teachers with teaching experience have a mean value of 113.24. Prospective teachers without teaching experience exhibited stronger Teaching and Learning Conceptions when compared to prospective teachers with teaching experience.

4.1.17 MeanscoredifferencebetweenTeachingandLearningConceptionsandPercentageof marks obtained

Table 17

The table below shows Mean score difference between Teaching and Learning Conceptions and Percentage of marks obtained

Mean score difference between Teaching and Learning Conceptions and Percentage of marks obtained

Percentage of Marks	**N=200**	**Mean**	**SD**
50-60	6	129.17	19.63
61-70	42	112.21	15.48
71-80	75	113.61	17.51
81-90	67	113.73	17.91
91-100	10	126.90	21.70
Total	**200**	**114.49**	**17.79**

The table depicts the, prospective teachers with a mean score of'50-60 percent 'had strong Teaching and Learning Conceptions when compared to other percentage groups of61-70 %, 71-80 %, 81-90 % and 91-100 % with mean Teaching and Learning Conceptions scores of 112.21, 113.61, 113.73 and 126.90 respectively.

4.1.18Mean score difference between teaching and learning conceptions and good reading habit

The below table shows the Mean score difference between teaching and learning conceptions and good reading habit

Table 18

Mean score difference between teaching and learning conceptions and good reading habit

Good Reading Habit	**N**	**Mean**	**Std. Deviation**
Yes	179	114.56	18.10302
No	21	113.86	15.21278

According to data, Prospective teachers with a good reading habit have a mean value of 114.56 , whereas prospective teachers with a strong reading habit have a mean value of 113.86.When compared to potential instructors with a good reading habit, prospective teachers without a good reading habit had better Teaching and Learning Conceptions.

SECTION II

DIFFERENTIAL ANALYSIS

4.2.1 Epistemological Belief of Prospective teachers with reference to background variables

Difference in Epistemological belief and Educational qualification of Prospective teachers

Table below depicts the difference in Epistemological belief and Educational qualification of Prospective teachers.

Table 19

Difference in Epistemological Belief and Educational Qualification of prospective teachers

Educational Qualification	N	Mean	Std. Deviation	df	t-value	Sig.(2-tailed)	Remarks
UG	113	98.0531	13.72097	198	-1.186	0.237	Not Significant
PG	87	100.75	17.42707				

(The table value oft-value(two-tailed):+/-1.97 at0.05 significantlevelforthedegreesoffreedom198)

The above table depicts the difference in the Epistemological beliefs and Educational qualification of prospective teachers. The computed t-value (significant 2-tailed) of the variable Educational Qualification is 0.237, which is greater than 0.05 at the 5% level of significance. As a result, the null hypothesis is accepted, and it is determined that there is no significantdifferenceinprospectiveteachers'EpistemologicalBeliefandEducationalqualification.

4.2.2. Differences in prospective teachers' Epistemological belief and Major subject

The table below shows the differences prospective teachers' Epistemological Belief and Major subject.

Table 20

Differences in* prospective teachers' *Epistemological belief and Major subject

Epistemological Belief	Sum of Squares	df	Mean Square	F	Sig.	Remarks
Between Groups	621.335	2	310.668	1.304	.274	Not Significant
Within Groups	46939.540	197	238.272			
Total	47560.875	199				

(at0.05 significant level the table value of 'F'is3.04)

From the table its understood that, the estimated p-value(significant2-tailed)of the variable major subject is greater than 0.05 at the 5% level of significance. As a result, the null hypothesis is accepted, and it is determined that in terms of prospective teachers, there is no significant difference between Epistemological Belief and Major Subject.

4.2.3. Differences in prospective teachers' epistemological beliefs and mode of instruction

Table depicts the Differences in prospective teachers' epistemological beliefs and mode of instruction.

Table 21

Differences in prospective teachers' Epistemological beliefs and medium of instruction

Medium of Instruction	N	Mean	Std. Deviation	df	t-value	Sig.(2-tailed)	Remarks
English	152	99.0987	14.22327	198	-0.177	0.860	Not Significant
Tamil	48	99.6250	19.02029				

(The table value of t-value(two-tailed):+/-1.97 at0.05 significantlevelforthedegreesoffreedom198)

The computed p-value (significant 2-tailed) of the variable medium of instruction is 0.860, which is greater than 0.05 at the 5% level of significance. As a result, the null hypothesis is accepted, and it is determined that there is no significant difference in prospective teachers' Epistemological Belief and Medium of instruction.

4.2.4. Differences prospective teachers' Epistemological Belief and Medium of Instruction

The table below shows the differences prospective teachers' Epistemological Belief and Medium

of Instruction.

Table 22

Difference in prospective teachers' Epistemological Belief and Experience in teaching

Experience in teaching	N	Mean	Std. Deviation	df	t-value	Sig.(2-tailed)	Remarks
Yes	58	101.38	15.05176	198	1.261	0.209	Not Significant
No	142	98.3451	15.58962				

(The table value of t-value(two-tailed):+/-1.97 at0.05 significantlevelforthedegreesoffreedom198)

The table illustrates that, the computed p-value (significant 2-tailed) of the variable experience in teaching is 0.209, which is greater than 0.05 at the 5% level of significance. As a result, the null hypothesis is accepted, and it is determined that there is no significant difference in prospective teachers' Epistemological Belief and Experience in teaching.

4.2.5. Differences in prospective teachers' Epistemological Belief and Locality of residence.

The table below shows the differences in prospective teachers' Epistemological Belief and Locality of residence.

Table 23

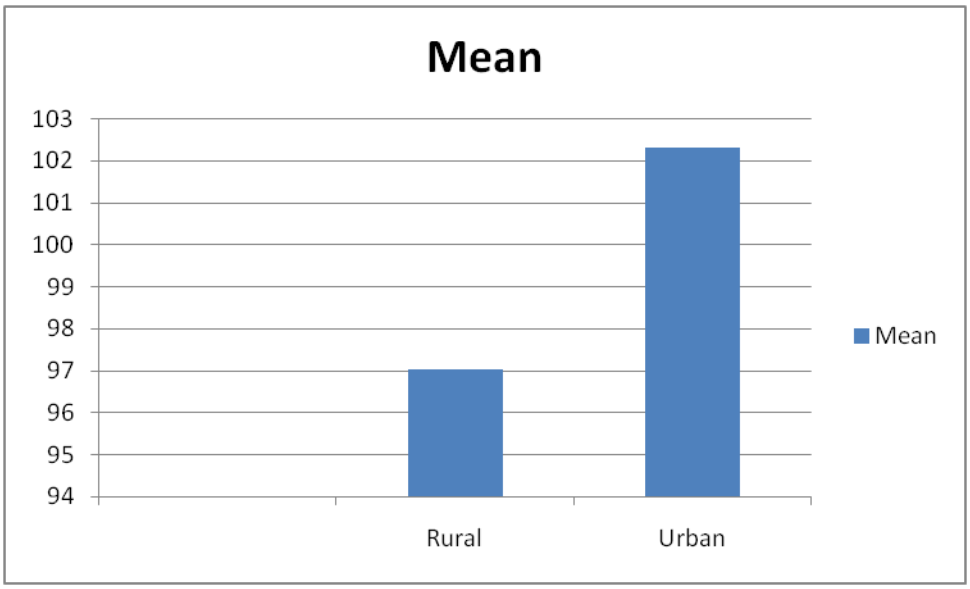
Difference in Epistemological Belief and Locality of residence of prospective teachers

Locality of Residence	N	Mean	Std. Deviation	df	t-value	Sig.(2-tailed)	Remarks
Rural	116	97.0086	15.33878	198	-0.241	0.017	Significant
Urban	84	102.29	15.18843				

(The table value oft-value (two-tailed):+/-1.97 at0.05 significantlevelforthedegreesoffreedom198)

The table shows that, the computed p-value (significant 2-tailed) of the variable locality of residenceis0.017, which is less than 0.05 at the 5% level of significance. As a result, the null hypothesis is rejected, and it is determined that there is a significant relationship in prospective teachers' Epistemological Belief and Educational qualification.

Fig 4.2.1 ***Difference in Epistemological Belief and Locality of residence of prospective teachers***



4.2.6. Difference in prospective teachers' Epistemological Belief and Type of Institution

The table below shows the difference in **prospective teachers'** Epistemological Belief and Type of Institution.

Table 24

Difference in prospective teachers' Epistemological Belief and Institution type of prospective teachers

Institution Type	**N**	**Mean**	**Std. Deviation**	**df**	**t-value**	**Sig.(2-tailed)**	**Remarks**
Government	114	99.5088	16.89019	198	0.298	0.766	Not Significant
Government Aided	86	98.8488	13.41774				

(The table value of t-value(two-tailed):+/-1.97 at0.05 significantlevelforthedegreesoffreedom198)

The table illustrates, the computed p-value (significant 2-tailed) of the variableinstitutiontypeis0.766, which is greater than 0.05 at the 5% level of significance. As a result, the null hypothesis is accepted, and it is determined that there is no significant

difference in prospective teachers' Epistemological Belief and Institution Type.

4.2.7. Difference in prospective teachers' Epistemological Belief and Good reading habit.

The table shows the difference in prospective teachers' Epistemological Belief and reading habit.

Table 25

Difference in prospective teachers' *Epistemological Belief and Good reading habit*

Reading Habit	N	Mean	Std. Deviation	Df	t-value	Sig.(2-tailed)	Remarks
Yes	179	99.3017	16.16483	198	0.368	0.714	Not Significant
No	21	98.5714	7.20813				

(The table value of t-value (two-tailed):+/-1.97at0.05 significantlevelforthedegreesoffreedom198)

The table depicts the computed p-value (significant 2-tailed) of the variable Good Reading Habit is 0.714, which is greater than 0.05 at the 5% level of significance. As a result, the null hypothesis is accepted, and it is determined that there is no significant difference in prospective teachers' Epistemological Belief and Reading Habit

4.2.8 Difference in prospective teachers' Epistemological Belief and Source of Reference

The table below depicts the Difference in prospective teachers' Epistemological Belief and Source of Reference.

Table 26

Difference in prospective teachers' Epistemological Belief and Source of Reference

Reference Mode	N	Mean	Std. Deviation	Df	t-value	Sig. (2-tailed)	Remarks
Google	158	99.386	15.2665	198	0.7485	0.3211	Not Significant
Library	42	98.523	16.2799				

(The table value oft-value (two-tailed):+/-1.97 at0.05 significant level for the degrees of freedom 198)

From the above table it is understood that, the computed p-value (significant 2-tailed) of the variable Source of Reference is 0.3211, which is greater than 0.05 at the 5% level of significance. As a result, the null hypothesis is accepted, and it is determined that there is no significant relationship in prospective teachers' Epistemological Belief and Good Reading Habit.

The table data shows that the, Prospective teachers with Google as Source of Reference have a mean value of 99.386, whereas prospective teachers with Library as Source of reference have a mean value of 98.523.

4.3. Teaching and Learning Conceptions of Prospective teachers with reference to background variables

4.3.1. Difference in prospective teachers' Teaching and Learning Conceptions and Educational qualification of prospective teachers

Table below gives a detailed description of differences in prospective teachers' Teaching and Learning Conceptions and Educational qualification.

Table 27

Difference in prospective teachers' Teaching and Learning Conceptions and Educational qualification

Educational Qualification	N	Mean	Std. Deviation	Df	t-value	Sig.(2-tailed)	Remarks
UG	113	114.17	15.51722	198	-0.281	0.779	Not Significant
PG	87	114.91	20.45337				

(The table value of t-value (two-tailed):+/-1.97 at0.05 significant level for the degrees of freedom198)

The table illustrates that, the computed p-value (significant 2-tailed) of the variable Educational Qualification is 0.779, which is greater than 0.05 at the 5% level of significance. As a result, it is determined that there is no significant relationship in prospective teachers' Teaching and Learning Conceptions and Educational qualification.

4.3.2. Difference in prospective teachers' Teaching and Learning Conceptions and Stream of study

The table below gives the difference in prospective teachers' Teaching and Learning Conceptions and Stream of study.

Table 28

Difference in prospective teachers' Teaching and Learning Conceptions and stream of study

Teaching and Learning Conceptions	Sum of Squares	df	Mean Square	F	Sig.	Remarks
Between Groups	1016.274	2	508.137	1.616	0.201	Not Significant
Within Groups	61955.706	197	314.496			
Total	62971.980	199				

(at 0.05 significant level the table value of 'F'is3.04)

According to table, the estimated p-value (significant 2-tailed) of the variablemajorsubjectisgreaterthan0.05atthe5%levelofsignificance.Asaresult,thenullhypothesisis accepted, and it is determined that in terms of prospective teachers, there is no significant difference between Teaching and Learning Conception sand Major Subject.

4.3.3. Difference in Teaching and Learning Conceptions and Medium of instruction of prospective teachers

The Below table shows Difference in Teaching and Learning Conceptions and Medium of instruction of prospective teachers

Table 29

Difference in prospective teachers' Teaching and Learning Conceptions and Medium of Instruction

Medium of Instruction	N	Mean	Std. Deviation	df	t-value	Sig.(2-tailed)	Remarks
English	152	114.39	16.80	198	-0.129	0.898	Not Significant
Tamil	48	114.81	20.82				

(The table value of t-value(two-tailed):+/-1.97 at0.05 significantlevelforthedegreesoffreedom198)

Looking at the table its understood that, the computed p-value (significant 2-tailed) of the variable medium of instructionis0.898, which is greater than 0.05 at the 5% level of significance. As a result, the null hypothesis is accepted, and it is determined that there is no significant difference in prospective teachers' Teaching and Learning Conceptions and Medium of instruction.

4.3.4. Difference in prospective teachers' Teaching and Learning Conceptions and experience in teaching of prospective teachers

Table gives an outline of Difference in prospective teachers' Teaching and Learning Conceptions and Experience in teaching.

Table 30

Difference in* prospective teachers' *Teaching and Learning Conceptions and Experience in teaching of prospective teachers

Experience in teaching	N	Mean	Std. Deviation	df	t-value	Sig.(2-tailed)	Remarks
Yes	58	113.24	17.21108	198	-0.633	0.527	Not Significant
No	142	115.00	18.05429				

(The table value of t-value(two-tailed):+/-1.97 at0.05 significantlevelforthedegreesoffreedom198)

According to table 4.3.4, the computed p-value (significant 2-tailed) of the variable experience in teaching is 0.527, which is greater than 0.05 at the 5% level of significance. As a result, the null hypothesis is accepted, and it is determined that there is no significant relationship in prospective teachers' Teaching and Learning Conceptions and Experience in teaching.

4.3.5 Difference in prospective teachers' Teaching and Learning Conceptions and Locality of residence

Table gives an outline of Difference in prospective teachers' Teaching and Learning Conceptions and Locality of residence.

Table 31

Difference in prospective teachers' Teaching and Learning Conceptions and Locality of residence

Locality of Residence	N	Mean	Std. Deviation	df	t-value	Sig.(2-tailed)	Remarks
Rural	116	114.82	19.22752	198	0.317	0.752	Not Significant
Urban	84	114.04	15.68780				

(The table value oft-value(two-tailed):+/-1.97 at0.05 significantlevelforthedegreesoffreedom198)

The table shows that, the computed p-value (significant 2-tailed) of the variable locality of residence is 0.752, which is greater than 0.05 at the 5% level of significance. As a result, the null hypothesis is accepted, and it is determined that there is no significant difference in prospective teachers' Teaching and Learning Conceptions and Locality of residence

4.3.6 Difference in prospective teachers' Teaching Learning Conceptions and type of Institution

The table below depicts the Difference in prospective teachers' Teaching Learning Conceptions and type of Institution

Table 32

Difference in prospective teachers' Teaching Learning Conceptions and type of Institution

Institution Type	N	Mean	Std. Deviation	Df	t-value	Sig.(2-tailed)	Remarks
Government	114	116.24	18.29711	198	1.605	0.110	Not Significant
Government Aided	86	112.17	16.91932				

(The table value of t-value(two-tailed):+/-1.97 at0.05 significantlevelforthedegreesoffreedom198

The table illustrate, the computed p-value (significant 2-tailed) of the variableinstitutiontypeis0.110,which is greater than 0.05 at the 5% level of significance. As a result, the null hypothesis is accepted, and it is determined that there is no significant relationship in prospective teachers' Teaching Learning Conceptions and Institution Type.

4.3.7 Difference in prospective teachers' Teaching and Learning Conceptions and Good Reading habit

The table below shows the Difference in prospective teachers 'Teaching and Learning Conceptions and Good reading habit

Table 33

Difference in prospective teachers' Teaching and Learning Conceptions and Good reading habit

Good Reading Habit	N	Mean	Std. Deviation	df	t-value	Sig.(2-tailed)	Remarks
Yes	179	114.56	18.10302	198	0.172	0.864	Not Significant
No	21	113.86	15.21278				

(The table value of t-value(two-tailed):+/-1.97at0.05 significantlevelforthedegreesoffreedom198)

According to the table, the computed p-value (significant 2-tailed) of the variable Good Reading Habit is 0.864, which is greater than 0.05 at the 5% level of significance. As a result, the null hypothesis is accepted, and it is determined that there is no significant relationship in prospective teachers' Teaching and Learning Conceptions and Good Reading Habit.

4.3.8 Difference in prospective teachers' Teaching and Learning Conceptions and Source of Reference

The table below shows the Difference in prospective teachers' Teaching and Learning Conceptions and Source of Reference

Table 34

Difference in prospective teachers' Teaching and Learning Conceptions and Source of Reference.

Reference Mode	N	Mean	Std. Deviation	Df	t-value	Sig. (2-tailed)	Remarks
Google	158	115.728	18.3517	198	0.0561	1.9216	Not Significant
Library	42	109.833	14.7696				

(Thetablevalueoft-value(two-tailed):+/-1.97 at0.05 significantlevelforthedegreesoffreedom198)

The table shows that, the computed p-value (significant 2-tailed) of the variable Source of Reference is 1.9216, which is greater than 0.05 at the 5% level of significance. As a result, the null hypothesis is accepted, and it is determined that there is no significant relationship in prospective teachers' Teaching and Learning Conceptions and Source of Reference

According to data, Prospective teachers with Google as Source of Reference have a mean value of 115.728, whereas prospective teachers with Library as Source of reference have a mean value of 109.833.

SECTION III

CORRELATION ALANALYSIS

A Pearson product-moment correlation coefficient was computed to assess the relationship between pre-service teachers' Epistemological beliefs and their Academic Achievement, Teaching and Learning Conceptions and Academic Achievement and Epistemological beliefs and Teaching and Learning Conceptions.

4.4.1 Correlations between Epistemological Belief and Academic Achievement of Prospective teachers

A Pearson product-moment correlation coefficient was computed to assess the relationship between prospective teachers' Epistemological beliefs and Academic Achievement. Table below shows the results of the Pearson correlations. The results indicated that there was a significant positive relationship between Epistemological beliefs and Academic Achievement.

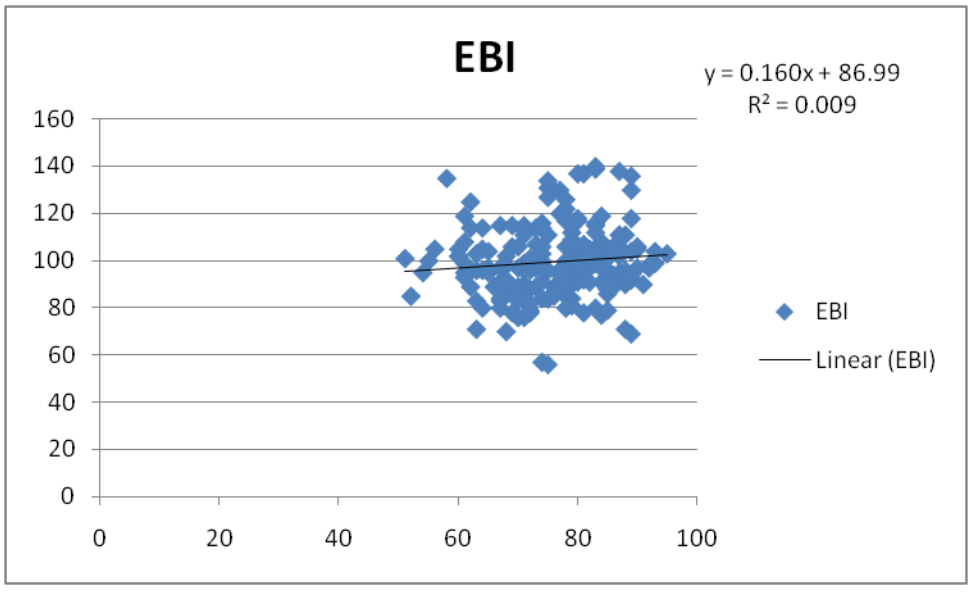
Table 35

Correlation between Epistemological Belief and Academic Achievement of Prospective teachers

		Epistemological Belief	Academic Achievement
Epistemological Belief	Pearson Correlation	1	.098**
	Sig. (2-tailed)		0
	N	200	200
**. Significant at the 0.01 level (2-tailed).			

The table illustrates , the computed p-value (significant 2-tailed) between Epistemological Belief and Academic Achievement of Prospective teachers is > 0.01atthe5% level of significance with the Pearson Correlation value 0.0985.As a result, the null hypothesis is rejected, stating that there is a high significant correlation between Epistemological Belief and Academic Achievementof prospective teachers. In her study with high school students, Schommer (1993) found that epistemological beliefs was a determiner of general academic achievement, and grade level and intelligence was a determiner of epistemological beliefs.

Fig 4.4.1 ***Correlations between Epistemological Belief and Academic Achievement of Prospective teachers***



4.4.2 Correlations between Teaching Learning Conceptions and Academic Achievement of Prospective teachers

A Pearson product-moment correlation coefficient was computed to assess the relationship between prospective teachers' Teaching Learning Conceptions and Academic Achievement. Table below shows the results of the Pearson correlations. The results indicated that there was a significant positive relationship between Teaching Learning Conceptions and Academic Achievement.

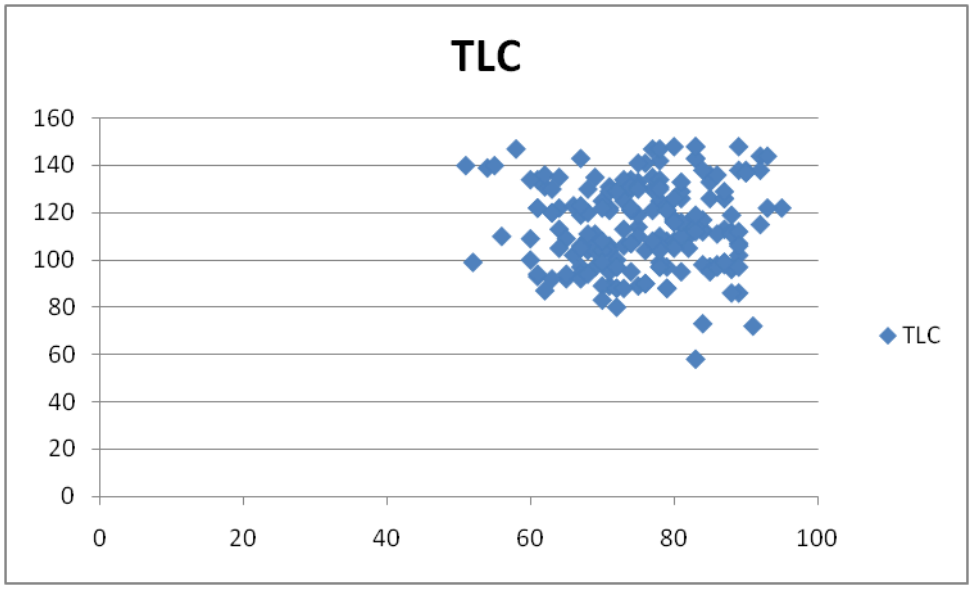
Table 36

Correlations between Teaching and Learning Conceptions and Academic Achievement of Prospective teachers

		Teaching Learning Conceptions	**Academic Achievement**
Epistemological Belief	Pearson Correlation	1	.022**
	Sig. (2-tailed)		0
	N	200	200
Teaching and Learning Conception	Pearson Correlation	.022**	1
	Sig. (2-tailed)	0	
	N	200	200
**. Correlation is significant at the 0.01 level (2-tailed).			

According to table 4.4.2, the computed p-value (significant 2-tailed) between Teaching and Learning Conceptions and Academic Achievement of Prospective teachers is > 0.01 at the 5% level of significance with the Correlation value 0.022. As a result, the null hypothesis is rejected, and it is determined that there is a high significant correlation between Teaching and Learning Conceptions and Academic Achievementof Prospective teachers

Fig 4.4.2*Correlations between Teaching and Learning Conceptions and Academic Achievement of Prospective teacher*



4.4.3 Correlation between Epistemological Belief and Teaching and Learning Conceptions of Prospective teachers

A Pearson product-moment correlation coefficient was computed to assess the relationship between prospective teachers' Epistemological Belief and Teaching Learning Conceptions**.** Table below shows the results of the Pearson correlations. The results indicated that there was a significant positive relationship between Teaching Learning Conceptions and Academic Achievement.

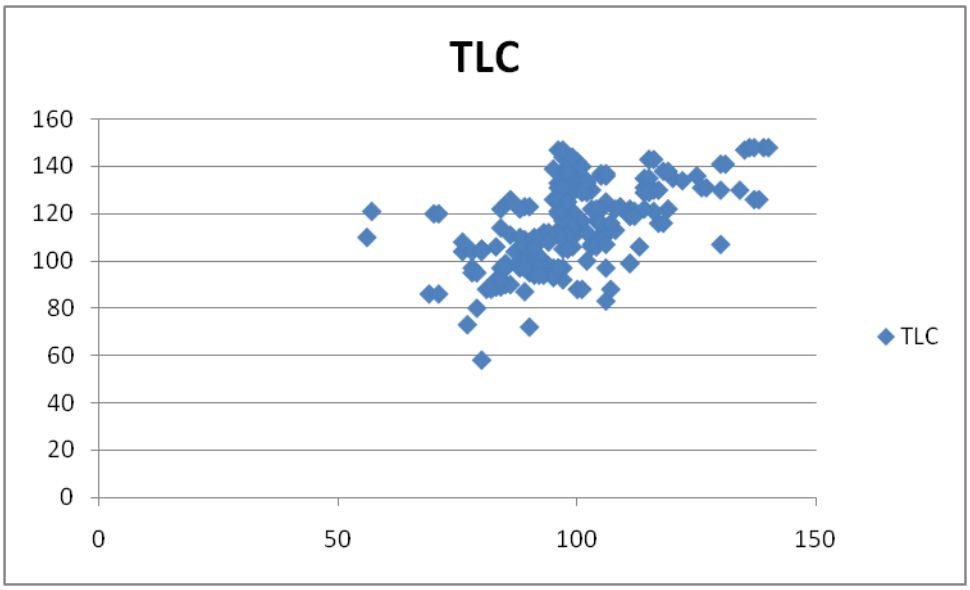
Table 37

Correlation between Epistemological Belief and Teaching and Learning Conceptions of Prospective teachers

		Epistemological Belief	**Teaching and Learning Conception**
Epistemological Belief	Pearson Correlation	1	.578**
	Sig.(2-tailed)		.000
	N	200	200
Teaching Learning Conception	Pearson Correlation	.578**	1
	Sig.(2-tailed)	.000	
	N	200	200
**.Correlation is significant at the 0.01level (2-tailed).			

From the table its understood that, the computed p-value (significant 2-tailed) between Epistemological Belief and Teaching and Learning Conceptions of Prospective teachers is <0.01 at the 5% level of significance with the Pearson Correlation value 0.578.As a result, the null hypothesis is rejected, and it is determined that there is a high significant correlation between Epistemological Belief and Teaching and Learning Conceptions of Prospective teachers. This result is in line with the findings of Mardiha and Alibakhshi (2020) who found teachers' epistemological beliefs were highly related to their conceptions of learning and teaching. Khalid et al (2021) also determined positive and significant relationships between prospective teachers' epistemological beliefs and conceptions of learning.

Fig 4.4.3 ***Correlation between Epistemological Belief and Teaching and Learning Conceptions of Prospective teachers***


TLC
160
140
120
100
80
60
40
20
0
0
50
100
150
TLC

SUMMARY AND CONCLUSION

CHAPTER-V

SUMMARY, FINDINGS AND CONCLUSION

5.1 Introduction

The study focused on prospective teachers' Epistemological beliefs and their Teaching and Learning Conceptions. The study involves a 28 item Epistemic Belief Inventory has seven items measuring simple knowledge, five items measuring certain knowledge, five items measuring omniscient authority, six items measuring innate ability, and five items measuring quick learning. And a 30 item Teaching and Learning Conception Questionnaire that measures Traditional conception and Constructivist conception. The study was conducted among a respondent sample of 200 prospective teachers.The findings of the present research work are consolidated and presented in this section. A conclusion is arrived out of the discussion made in the previous chapters.

A brief report of the result of the data analysis and the findings are presented and interlinked in this chapter. All the hypotheses were verified and only the relevant hypotheses are retained.

5.2 Hypotheses of the study

1. There is no significant difference between prospective teachers' Epistemological beliefs and Educational Qualification.
2. There is no significant difference between prospective teachers' Epistemological Belief and Stream of study
3. There is no significant difference between prospective teachers' Epistemological Belief and Medium of Instruction
4. There is no significant difference between prospective teachers' Epistemological Belief and Type of Institution
5. There is no significant difference between prospective teachers' Epistemological Belief and Locality of residence

6. There is no significant difference between prospective teachers' Epistemological Belief and Experience in teaching
7. There is no significant difference between prospective teachers' Epistemological Belief and Good reading habit
8. There is no significant difference between prospective teachers' Epistemological Belief and Source of Reference
9. There is no significant difference between prospective teachers' Teaching and Learning Conceptions and Educational qualification
10. There is no significant difference between prospective teachers' Teaching and Learning Conceptions and Stream of study
11. There is no significant difference between prospective teachers' Teaching and Learning Conceptions and Medium of Instruction
12. There is no significant difference between prospective teachers' Teaching and Learning Conceptions and Type of institution
13. There is no significant difference between prospective teachers' Teaching and Learning Conceptions and Locality of residence
14. There is no significant difference between prospective teachers' Teaching and Learning Conceptions and Experience in teaching
15. There is no significant difference between prospective teachers' Teaching and Learning Conceptions and Good reading habit
16. There is no significant difference between prospective teachers' Teaching and Learning Conceptions and Source of Reference
17. There is no significant relationship between prospective teachers' Epistemological Belief and Academic Achievement
18. There is no significant relationship between prospective teachers' Teaching and Learning Conceptions and Academic Achievement.
19. There is no significant relationship between Epistemological Belief and Teaching and Learning Conceptions of Prospective teachers.

5.3 Variables of the study

In research, this term refers to the measurable characteristics, qualities, traits, or attributes of a particular individual, object or situation being studied. Researchers use the term variable whether they are conducting, reading or using results of qualitative or quantitative research. Researchers often refer to variables by the terms dependent or independent. Dependent variables represent outcomes of interest, and they are affected by independent (i.e predictor) variables. In this study the investigator followed independent variables and dependent variables.

- Independent variables
- Dependent variables

5.3.1 Independent Variables

A variable that is expected to influence the dependent variable. Its value changed or altered independent of any other variable. In this present study, the investigator used the following independent variables such as,

i. Major Subject [Arts / Science / Maths]
ii. Institution Type [Government / Government Aided]
iii. Medium of Instruction [English / Tamil]
iv. Educational Qualification [UG / PG]
v. Locality of Residence [Rural/ Urban]
vi. Experience in Teaching [Yes / No]
vii. Marks obtained in Percentage
viii. Good Reading Habit [Yes / No]
ix. Source of Reference [Google/ Library]

5.3.2 Dependent Variables

A dependent variable is the variable that changes as a result of the independent variable manipulation. It is the outcome you're interested in measuring, and it depends on your independent variable. Dependent variables are those events which are by hypothesized as dependent on the changes in the dependent variable. In this study Epistemological beliefs and Teaching and Learning conceptions were the dependent variables.

5.4 Findings of the present study

Among the 200 respondents from prospective teachers,

- Prospective teachers have the most sophisticated epistemological beliefs in the simple knowledge dimension contrarily; quick learning dimension involves the least sophisticated beliefs.
- Prospective teachers' conceptions of teaching and learning are more of the traditional conception than the constructivist conception
- Science major prospective teachers' mean Epistemological Belief score was slightly higher than the other major subjects.
- Prospective teachers from Government Aided had higher Epistemological Belief than those from Government.
- Prospective teachers from Tamil medium had higher Epistemological Belief than those from English medium.
- Prospective teachers from Post Graduate had higher Epistemological Belief than those from under graduate prospective teachers.
- Prospective teachers from Urban area had higher Epistemological Belief than those from rural area prospective teachers.
- Prospective teachers with teaching experience exhibited stronger Epistemological Belief when compared to prospective teachers without teaching experience.
- Prospective teachers with a mean score of '50-60 percent' had strong Epistemological Belief when compared to other percentage groups.
- When compared to prospective teachers without a good reading habit, prospective teachers with a good reading habit had better Epistemological Belief.
- Prospective teachers whose source of reference is Google had strong Epistemological Belief when compared to others who had Library for reference Source.
- Prospective teachers' mean Teaching and Learning Conceptions score for 'Maths' as a major subject is slightly higher than the other major subjects.
- Prospective teachers from Government Aided had higher Teaching and Learning Conceptions than those from Government.

- Prospective teachers from Tamil medium had higher Epistemological Belief than those from English medium.
- Prospective teachers from Postgraduate had higher Teaching and Learning Conceptions than those from under graduate prospective teachers.
- Prospective teachers from rural area had higher Teaching and Learning Conceptions than those from urban area prospective teachers.
- Prospective teachers without teaching experience exhibited stronger Teaching and Learning Conceptions when compared to prospective teachers with teaching experience.
- Prospective teachers with a mean score of '50-60 percent' had strong Teaching and Learning Conceptions when compared to other percentage groups.
- Prospective teachers whose source of reference is Google had Strong Teaching Learning Conceptions when compared to others who had Library for reference Source.
- There is no significant difference between Epistemological Belief and Major Subject.
- There is no significant difference between prospective teachers' Epistemological Belief and Institution Type.
- There is no significant difference between prospective teachers' Epistemological Belief and Medium of instruction.
- There is no significant difference between prospective teachers' Epistemological Belief and Educational qualification.
- There is a significant difference between prospective teachers' Epistemological Belief and Locality of Residence.
- There is no significant difference between prospective teachers' Epistemological Belief and Experience in teaching.
- There is no significant difference between prospective teachers' Epistemological Belief and Good Reading Habit.
- There is no significant difference between prospective teachers' Epistemological Belief and Source of Reference
- There is no significant difference between Teaching and Learning Conceptions and Major Subject.
- There is no significant difference between prospective teachers' Teaching and Learning Conceptions and Institution Type.

- There is no significant difference between prospective teachers' Teaching and Learning Conceptions and Medium of instruction.
- There is no significant difference between prospective teachers' Teaching and Learning Conceptions and Educational qualification.
- There is no significant difference between prospective teachers' Teaching and Learning Conceptions and Locality of Residence.
- There is no significant difference between prospective teachers' Teaching and Learning Conceptions and Experience in teaching.
- There is no significant relationship in prospective teachers' Teaching and Learning Conceptions and Good Reading Habit.
- There is no significant relationship in prospective teachers' Teaching and Learning Conceptions and Source of Reference
- There is a positive correlation between Epistemological Belief and Academic Achievement of Prospective teachers.
- There is positive correlation between Teaching and Learning Conceptions and Academic Achievement of Prospective teachers.
- There is a high significant correlation between Epistemological Belief and Teaching and Learning Conceptions of Prospective teachers.

5.5. Educational Implications

Epistemological beliefs play a major role in every field and its fangs are deeply felt in the educational sectors among students and teachers. Epistemology might be a strange word for many but psychologically these beliefs are inherent in the society. Epistemological beliefs are related to several metrics of student performance at various stages of schooling. Both teacher's and Student's epistemological views vary as a result of the influence of domain of study and socio-cultural characteristics. Epistemic cognition refers to components of teachers' thinking that are concerned with questions of knowledge. This may be especially relevant for classroom assessment methods since instructors must determine what their pupils know and then use this information to influence teaching. In the case of prospective teachers, epistemological beliefs may help them grow as an academician and sometimes act as a limitation in implementing innovations in teaching. They are 'knowledge certainty, knowledge simplicity, knowledge source, and knowledge justification.' Personal epistemological views have been studied and

shown to have a profound, subtle, and unconscious impact on teaching, learning, and their consequences. In general, teaching and learning concepts may be defined as ideas about teaching that govern a teacher's assessment of a situation and shape actions. Approaches to teaching, on the other hand, are the methods through which beliefs are put into action. The connection between epistemological beliefs and teaching and learning conceptions guide prospective teachers in understanding the classroom climate, student attitudes, and performance and take appropriate actions as a teacher.

Students were influenced by their teachers in the development of their epistemological views and that teachers' reflection of their own epistemological views in the classroom environment may have a positive effect on their students. This interaction between the teacher and students is a determining factor for the development of epistemological views of both prospective teachers and their prospective students. It has also been suggested that the epistemological views of prospective teachers may provide clues as to how they will approach learning activities and future classroom teaching activities.

5.6. Suggestions for further research

- Similar studies can be conducted at other Colleges.
- Similar studies can be conducted by using different student related variables like cognitive style and learning style.
- Experimental studies may be conducted on students of different localities in order to compare the results and find out the actual correlation between Epistemological Beliefs and Teaching learning conceptions.
- Other variables can be taken in to consideration.

5.7.Conclusion

The study was conducted among a respondent sample of 200 prospective teachers. The findings of the study reveal that the epistemological beliefs have no significant impact on the major subject, institution type, medium of instruction, educational qualification, experience of teaching, percentage of marks obtained, reading habit and Source of Reference. But a significant relationship is observed between Epistemological Belief and Educational qualification indicating that individuals with higher educational qualifications have a better clarity on facts and

knowledge and hence can make measured decisions on teaching and learning. On the other hand, teaching and learning conceptions have no significant relationship with major subject, institution type, medium of instruction, educational qualification, experience in teaching reading habits and Source of Reference. Parallelly, teaching and learning conceptions and percentage of marks are significantly related and a high significant correlation is observed between Epistemological Belief and Teaching and Learning Conceptions of Prospective teachers. This confirms the fact that epistemological beliefs have on inherent impact on teaching and learning conceptions. Prospective teachers must focus on improving their clarity on knowledge and ability which will help them in developing healthy teaching and learning conceptions. The impact of epistemological beliefs and teaching, learning conceptions will reflect on the ability of prospective teachers to be successful in their teaching careers and hence are important for prospective teachers. The teaching skill, quality of teaching materials, the ability to impart knowledge, and classroom strategies are all influenced by Epistemological Beliefs and Teaching and Learning Conceptions.

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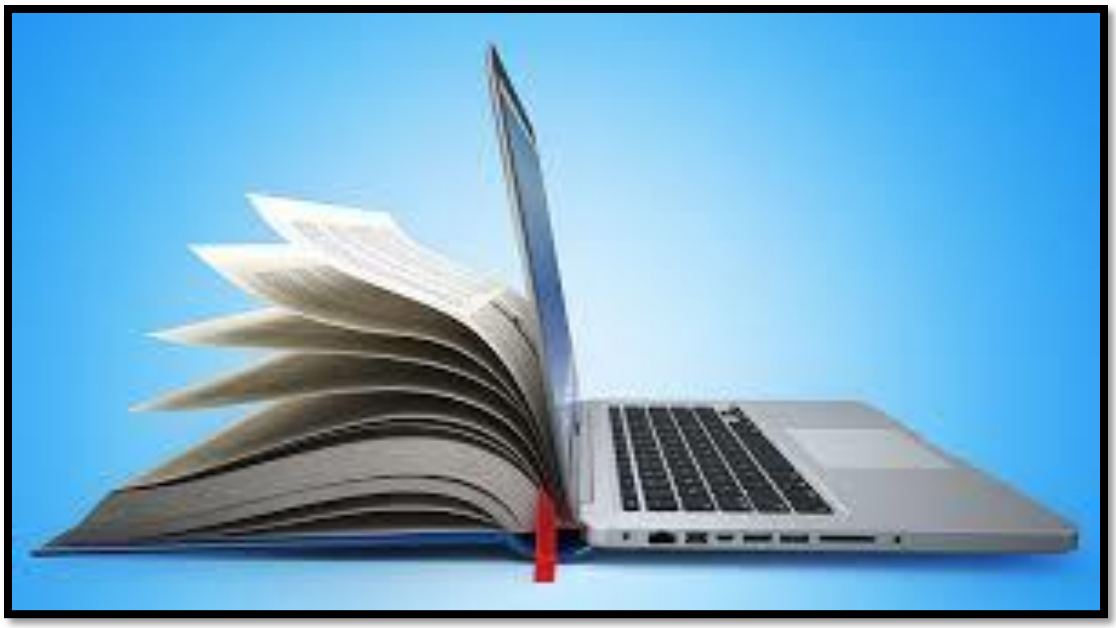

APPENDICES

APPENDIX I

PERSONAL DATA

Name	:	
UG / PG	:	
Major subject	:	Science/Arts/ Math
Type of Institution	:	Govt. Aided / Govt.
Medium of Instruction	:	Tamil / English
Educational Qualification	:	UG / PG
Locality of Residence	:	Rural / Urban
Experience in Teaching	:	Yes / No
Academic achievement in percentage	:	50-60 % / 60-70% / 70-80%/ 80-90%/90-100%
Do you have a good Reading Habit	:	Yes / No
Mode of reference collection (For Assignment, Project ,Teaching etc...)		Google / Library

APPENDIX II

Epistemic Beliefs Inventory

1	Most things worth knowing are easy to understand.	SD	D	N	A	SA
2	What is true is a matter of opinion.					
3	Students who learn things quickly are the most successful.					
4	People should always obey the law.					
5	People's intellectual potential is fixed at birth.					
6	Absolute moral truth does not exist.					
7	Parents should teach their children all there is to know about life.					
8	Really smart students don't have to work as hard to do well in school.					
9	If a person tries too hard to understand a problem, they will most likely end up being confused.					
10	Too many theories just complicate things.					
11	The best ideas are often the most simple.					
12	Instructors should focus on facts instead of theories.					
13	Some people are born with special gifts and talents.					
14	How well you do in school depends on how smart you are.					
15	If you don't learn something quickly, you won't ever learn it.					
16	Some people just have a knack for learning and others don't.					
17	Things are simpler than most professors would have you believe.					
18	If two people are arguing about something, at least one of them must be wrong.					
19	Children should be allowed to question their parents' authority.					
20	If you haven't understood a chapter the first time through, going back over it won't help.					

21	Science is easy to understand because it contains so many facts.	
22	The more you know about a topic, the more there is to know.	
23	What is true today will be true tomorrow.	
24	Smart people are born that way.	
25	When someone in authority tells me what to do, I usually do it.	
26	People shouldn't question authority.	
27	Working on a problem with no quick solution is a waste of time.	
28	Sometimes there are no right answers to life's big problems.	

APPENDIX III

Teaching and Learning Conception Questionnaire

1	It is important that a teacher understands the feelings of the students.	SD	D	N	A	SA
2	Good teachers always encourage students to think for answers themselves.					
3	Learning means students have ample opportunities to explore, discuss and express their ideas.					
4	In good classrooms there is a democratic and free atmosphere which stimulates students to think and interact					
5	Every child is unique or special and deserves an education tailored to his or her particular needs.					
6	Effective teaching encourages more discussion and hands on activities for students.					
7	The focus of teaching is to help students construct knowledge from their learning experience instead of knowledge communication.					
8	Instruction should be flexible enough to accommodate individual differences among students.					
9	Different objectives and expectations in learning should be applied to different Students.					
10	Students should be given many opportunities to express their ideas.					
11	The ideas of students are important and should be carefully					

	considered.	
12	Good teachers always make their students feel important	
13	A teacher's major task is to give students knowledge/information, assign them drill and practice, and test their recall.	
14	During the lesson, it is important to keep students confined to the textbooks and the desks.	
15	Learning means remembering what the teacher has taught.	
16	Good students keep quiet and follow teacher's instruction in class.	
17	The traditional/lecture method for teaching is best because it covers more information/knowledge.	
18	It is best if teachers exercise as much authority as possible in the classroom.	
19	Good teaching occurs when there is mostly teacher talk in the classroom	
20	Learning mainly involves absorbing as much information as possible.	
21	Students have to be called on all the time to keep them under control	
22	Teaching is to provide students with accurate and complete knowledge rather than encourage them to discover it	
23	A teacher's task is to correct learning misconceptions of students right away instead of verify them for themselves.	
24	No learning can take place unless students are controlled.	
25	Teachers should have control over what students do all the time.	
26	Learning to teach simply means practicing the ideas from lecturers without questioning them.	
27	I have really learned something when I can remember it later.	
28	Teaching is simply telling, presenting or explaining the subject matter.	
29	The major role of a teacher is to transmit knowledge to students.	
30	Learning occurs primarily from drilling and practice.	