CHAPTER II

REVIEW OF RELATED LITERATURE

INTRODUCTION

Review of related literature is one of the major steps in any research study. It allows the researcher to acquaint himself/herself with current knowledge in the field or area in which he/she is going to conduct his/her research. John W. Best (1995) pointed out that review of related literature is “A brief summary of previous research and writing of recognized experts provide the researchers familiar with what is already known and with what is still unknown and untested. Since effective research must be based on past knowledge this step helps to eliminate the duplication of what has been done already and provides useful hypothesis and helpful suggestions for significant investigation”.

The review of related literature paves a clear way for the investigator to present in a proper way to solve the prominent problem. It helps the investigator to form proper objective and hypothesis for the study. It avoids unnecessary duplicity of work.

The purpose of the literature review was to comprehensively investigate ideas, issues, and themes related to the Influence of multiple intelligence and self-efficacy of the secondary teacher education students on their teaching competency. For that the investigator collected as many studies as possible related to different aspects of the problem under investigation. The studies collected are divided into following subheadings.

(1) Studies Abroad

(2) Indian Studies
STUDIES ABROAD

(a) Studies related to Multiple Intelligence

Gardner (1983) proposed that intelligence was not unitary but rather comprises eight multiple intelligence: verbal-linguistic intelligence, logical-mathematical intelligence, visual-spatial intelligence, bodily-kinesthetic intelligence, musical-rhythmic intelligence, inter-personal intelligence, intra-personal intelligence and naturalistic intelligence. Each of this intelligence is a distinct module in the brain and operates more or less independently of the others.

Gardner and Hatch (1989) discussed about the educational implications of the theory of multiple intelligence. In this, Gardner opposed the practices of traditional education system that typically place a strong emphasis on the development and use of verbal-linguistic and logical-mathematical intelligence. They proposed that educators should recognize and teach to a broader range of talents and skills.

Blythe and Gardner (1990) proposed the process of implementation of multiple intelligence theory oriented instructional strategy for the schools. They stressed the urgency and importance of adopting this method in schools and pointed out the discrepancies in the conventional method adopted in the present schools.

Mc Cahill (1994) conducted a study to enhance teachers’ power as educational critics, professionals who understand how to use technological learning materials that promote growth across multiple intelligence.

The case study demonstrated how this demand was met in an "Advanced" grade 10 English class. Harward Professor Howard Gardner's multiple intelligence
was taken as the basis. The tasks were shaped to suit learning-style preferences including verbal-linguistic, logical-mathematical, visual-spatial, bodily-kinesthetic, musical-rhythmic, inter-personal and intra-personal. The assignment met Gardner's demands for a responsive, integrated, substantive, co-operative curriculum in which students were called upon to function as active participants in the learning process. The teacher's role is manageable, responsive and dynamic.

Berger and Pollman (1996) compared the whole child approach to early childhood education and Gardner's concept of multiple intelligence. They provided activities and ideas to address each of the seven intelligence and listed specific suggestions to fix parent/child experiences, field trip experiences and constructivist experiences of multiple intelligence.

Hine (1996) gave characteristics of the seven multiple intelligence and promoted a systematic approach to teaching that strives to meet individual need of children. He provided teaching tools and strategies including active learning centres to support the development of each intelligence area and expose children to varied ways of learning.

Silver (1997) pointed out that no individual is universally intelligent; certain fields of knowledge engage or elude everyone. They also pointed out that the educator could build on students' interests. When students engaged in research either individually or in groups, show them the menus and allow them to choose the product or approach appeals to them, they should choose the best product for communicating their understanding of the topic or text. Thus, students discovered not only the meaning of quality, but also something about the nature of their own interest, concerns and intelligence.
**Kuzniewski (1998)** conducted an action research project that described a programme for expanding multiple intelligence to increase reading comprehension in both English and Mathematics.

Data revealed students’ low economic conditions, high mobility rates and poor attendance. The data also indicated students’ poor social skills and lack of self-discipline. Additionally, the data revealed a lack of teacher training in multiple intelligence and innovative teaching strategies. A review of solution strategies and analysis of the problem setting resulted in the selection of two major categories of intervention, incorporation of multiple intelligence strategies combined with co-operative learning techniques in English and Mathematics units and the implementation of weekly student observation sheets and anecdotal reflections. Post intervention data indicated an increase in student reading comprehension skills in English and Mathematics and an increase in student learning expectations.

**Mayer (1998)** conducted study on naturalistic intelligence and pointed out that teachers must provide opportunities in the classroom for the naturalistic intelligence to grow. One simple way to encourage the naturalistic intelligence is to take students outside to explore their school community. Teacher must consider all intelligence while planning and recognizing lessons.

**Campbell (1999)** pointed out that a school is responsible for helping all students to discover and develop their talents or strengths. He also pointed out that some teachers interpret multiple intelligence theory as an instructional process that provides numerous entry points into lesson content. Campbell concluded that teachers should apply theory appropriately for their students, school and community.
Christison (1999) conducted a study on multiple intelligences: teaching the whole student.

The study pointed out that an understanding of multiple intelligence theory broadens teachers’ awareness of their students' knowledge and skills and enable them to look at each student from the perspective of strengths and potential.

Constanzo and Paxton (1999) pointed out that multiple intelligence theory could be used in the classroom as a guide to provide a great variety of ways for students to learn and to demonstrate their learning. As learners and teachers work together, intelligence can emerge naturally through interviews, preference grids and need assessments.

Gardner (1999) postulated that there were many forms of intelligence, many ways by which we know, understand and learn about our world, not just one. Gardner's view of intelligence is backed by scientific research, which revealed different parts of the brain to be sites of different abilities, Gardner identified that scientific understanding of intelligence is ever changing and the accumulation about the brain and genetics will only accelerate the process and multiple intelligence will become more appealing.

Adams and Gregory (2000) conducted a case study on the effects of exposure to multiple intelligence theory on high school students.

This qualitative case study described how high school students exposed to multiple intelligence theory altered their perceptions of reality as a result. Six 11th graders, 3 boys and 3 girls, were randomly selected to serve as participants in 3 week long study. The participants first received instruction in the multiple intelligence
theory and then completed a self-inventory of their multiple intelligence strengths and weaknesses. They were asked how their exposure to the theory affected them and changed their perceptions.

The results showed that the theory made sense to the participants, they were able to recognize and tolerate others multiple intelligence profile, they were able to evaluate their teachers and schools accommodation of the theory, they used the theory to relate with friends and family and to evaluate their chosen career pathways and they saw no difference in how each gender interpreted the theory.

**Elliott, et al. (2001)** conducted a study on personal approach to multiple intelligence instruction.

This phenomenological study evaluated an individualized approach to multiple intelligence instruction. The targeted population consisted of students of two inner city elementary schools in Indiana. An analysis of the literature led to the understanding that each student has the capabilities to activate all eight intelligences, but this intelligence may be developed to different degrees within each individual. Each student's dominant intelligence was identified.

**Nuzzi (2001)** described Multiple Intelligence Instruction based on the theory that human being possesses seven intelligence: visual, musical, logical-mathematical, intra-personal, inter-personal, linguistic and bodily-kinesthetic. Nuzzi argued that current methods of assessment are deficit based and not helpful in assessing Multiple Intelligence Instruction of students. He described an intelligence-based approach to assessment, developed by Gardner.
Berkemeir (2002) conducted a study on multiple intelligence teaching and learning of science at higher education levels, specifically within community colleges.

The purpose of this study was four fold. The first purpose was to investigate adult learning through multiple intelligence theory at the community college level. The second purpose was to determine whether there were among students in their perceived multiple intelligence with regard to age and gender. The third purpose was to investigate the relationship between perceived and tested multiple intelligence with regard to science and non-science courses. The study suggested the need for variety of education and curriculum reform that should start with the student's attitudes instead of classroom instruction and method of teaching.

Martinez (2002) discovered that babies and young children learn through extensive experimenting and by being encouraged, unknowingly by parents to use their multiple intelligence. Later, children are forced to conform to the narrow intelligence valued by the formal educational system, those who cannot adapt drop out. By using multiple intelligence, pupil can access a greater portion of the brain and thus learning becomes easier.

Sourino (2002) conducted a study on how an understanding or multiple intelligence might translate into a variety of teaching techniques and strategies directed toward specific intelligence they found in their eight grade of science classroom.

It featured a collaborative group actions research to explore how visual-spatial teaching techniques and strategies might effect the integration of the curriculum. Unit lesson plans were developed and evaluated for the multiple intelligence included. By
exploring regular, deliberate use of the visual-spatial intelligence in lesson planning and evaluating the success, the group was able to address student's needs and integrate the curriculum in ways that otherwise not have occurred.

**Reidel, et al. (2003)** conducted a study on improving student academic reading achievement through the use of multiple intelligence teaching strategies.

The study consisted of three fifth-grade classes with approximately 30 students per class, ages 10-11. The researchers conducted student and parent surveys to develop data about general perceptions toward reading. A diagnostic reading test examined where students are in three areas of reading: phonics, comprehension and vocabulary. This same test was administered as the final post-test at the end of the study. An observation checklist, filled out by the researchers, was done bi-weekly to establish trends and patterns in classroom behaviours that go on during this study. A multiple intelligence bulletin board and reading enter was established to provide students with choice in classroom activities. The activities were changed bi-weekly as the skill and strategy focus changed in the reading curriculum. A portfolio system was put into place in the second month of the study. The information gathered by the students was assembled into a portfolio according to the checklist and rubric was designed and explained by the teacher researchers. This was an ongoing project that did not have final evaluation until the end of the study. The benefits to the students varied. The hopes were to focus on the strengths of all types of learners by using multiple intelligence strategies and enhance weaknesses for self-discovery. Also, there was an increase in reading comprehension and skill mastery that built a stronger, more confident and motivated reader. The activities and specific skill reinforcement intertwined content with student choice. Based on the presentation
and analysis of the data, students showed a marked improvement in reading comprehension, motivation and student engagement.

**Dominick and Peter (2004)** conducted a study on the role of inter-personal multiple intelligence on the usage of co-operative learning teaching methods.

The purpose of this study was to determine the relationship between inter-personal multiple intelligence and the usage of co-operative learning teaching methods. Participants consisted of 103 teachers from two Pennsylvania school districts and one Pennsylvania private catholic high school. Data were collected from the co-operative learning survey and MIDAS (Multiple Intelligence Developmental Assessment Scale).

A Pearson product moment correlation co-efficient revealed that there was no significant relationship between inter-personal multiple intelligence and the usage of co-operative learning teaching methods. Relationship between demographic data and use of co-operative learning were also examined. ANOVA showed that there was a significant mean difference of the attitude of teachers toward co-operative learning among elementary, middle and high school instructions. Investigation revealed that elementary teachers had a significantly more positive attitude toward co-operative learning than high school teachers.

**Sohn (2004)** conducted a study on a method for introducing the Howard Gardner’s Theory of Multiple Intelligence to middle school students.

This case study documented the influence of the theory of multiple intelligence on 6th grade students of Andrews’s middle school. It examined how effective the researcher (1) introducing 6th grade students to the concepts of the
multiple intelligence of Gardner, (2) fostering the exploration and development of their personal profile of intelligence within the multiple intelligence framework, (3) eliciting their thoughts and experience and (4) applying their newly gained insights to help to solve novel mathematical problems.

Findings suggested that the students self identified multiple intelligence profiles assisted them in selecting appropriate strategies to solve mathematical problems. Problem allowed them to determine which methods or strategies will best assist them with helping them to understand what the problem is asking, determine the pertinent information needed, choose the appropriate mathematical operation apply correctly.


The purpose of the study was to compare the multiple intelligence profiles of college undergraduate singers and non-singers in an effort to define patterns attributed to singing involvement, age, gender and ethnicity and to determine if these patterns hold significance in teachers of singing. This study consists of subjects (n = 233) from three mid-west colleges. The Multiple Intelligence Development Assessment Scale instrument was used to determine the profiles of the eight specific areas of intelligence.

Result of the study revealed that singers scored significantly higher than non-singer in musical intelligence and linguistic intelligence. The difference in linguistic-verbal intelligence was attributable to make subjects only. Males scored
significantly higher in areas of logical-mathematical intelligence and intra-personal intelligence than females. The mean scores indicate that female spatial mean scores are higher with age and male spatial mean scores are lower with age. Mean scores revealed that non-singers intra-personal mean scores were higher with age while singers scores were lower with age.

**Thomsen and Elisabeth (2004)** conducted a study on multiple intelligence theory in practice: a case study of two teachers taking ownership of study.

The study examined theory practice relationship, specially the meditation process involved in the application of Howard Gardner’s multiple intelligence theory in classrooms. The purpose of the study was to examine this complex process in order to bring greater understanding of the nature of theory application and to probe how links between theory and practice might be strengthened. A multiple case study design for the data collection was employed, with 2 teachers selected for the case study. Data sources included: classroom observations, interviews with teachers and principals, document analysis and field notes based upon observations and informal talks with the teachers.

The finding suggested that theory applications were a messy endeavour, which is highly depended upon the context. Teachers in various countries adopt similar values and beliefs about human intelligence and instructional practices, because of the theory. These values and beliefs give rise to a change in perception, which results in common themes in the application. The theory does not appear to be binding upon the teachers practice. Rather than teachers used multiple intelligence theory for their own purpose, thus taking ownership of the theory.
Shearer (2006) conducted a study on multiple intelligence assessment to facilitate teacher development.

In phase one of the study, development and validation studies of a new assessment for the multiple intelligence were conducted. The second phase of the study was a pilot implementation project during academic year in collaboration with several public school teachers. Phase one involved a series of activities including initial instrument development, expert content reviews, field testing, pilot validation studies, item analysis, subscale development, instrument revision and secondary validation studies. The developed instrument, the multiple intelligence development assessment scale (MIDAS), was validated through studies involving nearly 3,000 middle school students, approximately 70 high school students, groups of adult and college students. Phase two considered how a multiple intelligence profile might be used by classroom teachers. Six elementary and secondary school teachers participated.

Findings from the study indicated that multiple intelligence profile can sensitize teachers to their own weaknesses and help them empathize with students who are struggling. Teachers able to understand the multiple intelligence profile as a descriptive narrative of intellectual and creative lives.

(b) Studies related to Self-Efficacy

Gibson and Dembo (1984) developed an instrument to measure teachers' sense of efficacy for teaching. Subsequent studies have linked this construct to patterns of classroom behaviour known to yield achievement gains and have shown it to be positively related to change in individual teacher practice, ratings of lesson
presentation, classroom management and questioning and teacher success in implementing innovative programmes.

**Broussard and Byass (1988)** conducted a study on federal programme supporting education change: factors affecting pre-service and in-service teachers’ efficacy beliefs.

The objective of the study was to compare first year pre-service teachers and final year pre-service teachers with experienced in-service teachers with regards to their perception on teaching efficacy beliefs level. It was found that as teaching experience increased; the sense of teaching efficacy beliefs became less significant.

**Martin (1989)** conducted a study on contextual effects on the self perceived efficacy of final year pre-service teachers.

The objective of the study was to find out the differences in the efficacy of pre-service teachers at the beginning of their final year at college and into their first year of their formal classroom teaching.

Results indicated that there are transitional stages of teaching efficacy that a high sense of teacher efficacy beliefs begins early in teacher education or training programme, but decrease in intensity and perception as pre-service teachers progress through their training and during the early years of classroom teaching.

**Woolfolk and Hoy (1990)** conducted a study on prospective teachers’ sense of efficacy and beliefs about control.

The findings indicated that pre-service teachers remained optimistic about their personal ability to motivate students to learn (personal efficacy), but were less confident in overcoming influences of non-school or non-academic factors
(general efficacy). In addition, they discovered that those teachers who successfully completed their teaching practice had an increase in their personal efficacy.

**Hoy and Woolfolk (1993)** noticed that teachers’ sense of personal efficacy is more positive in schools where colleagues and administrators have high expectations for students’ achievement and where teachers receive relevant and regular assistant from their principles or fellow teachers in solving problems and facing challenges.

**Loreto and Elizabeth (1994)** conducted a study on the relationship of prior training and previous teaching experience to self-efficacy among graduate teaching assistants.

This study, based on the theoretical model of teacher self-efficacy proposed by Denham and Michael (1981), explored the effects of prior training, previous teaching experience and certain demographic variables on the teaching self-efficacy of graduate teaching assistants. An adapted version of the Self-Efficacy toward Teaching Inventory (Tollerud, 1990) was administered to a sample of graduate teaching assistants. Graduate teaching assistants with prior training endorsed a significantly higher level of self-efficacy than those with no training.

Correlation analyses demonstrated significant positive relationships between prior training and previous teaching experience with level of self-efficacy. Multiple regression analysis indicated that previous teaching experience explained a significant amount of variance in self-efficacy. Results are discussed in light of the current training and utilization of graduate teaching assistants and suggestions for future research are offered.
Henson (1999) conducted a study on self-efficacy in pre-service teachers: testing the limits of non-experiential feedback.

This study investigated the relationship between self-efficacy in pre-service teachers and simple but salient feedback from a non-experiential source. Pre-service teachers were placed in matched pairs according to teaching experience, then assigned to either a treatment group or a control group. The treatment group read a stimulus paragraph designed to bolster beliefs about efficacy, rated their agreement with it, wrote their opinion about why pre-service teachers are considered effective, and completed the Teacher Efficacy Scale. The control group followed the same protocol but read an unrelated paragraph. Results suggested that the stimulus paragraph had minimal effect on teacher efficacy and that the minimal effect was primarily due to changes in general teaching efficacy. The results indicated that self-efficacy is strongly experientially based.

Celep (2000) conducted a study on correlation of the factors: the prospective teachers' sense of efficacy and beliefs and attitudes about student control.

This study investigated the relationships between Turkish pre-service teachers' sense of self-efficacy; their beliefs about their colleagues, the students and the administration; and their attitudes about student control. The study also examined whether these factors were influenced by education, age, gender and educational attainment level. A group of 310 teachers from 22 elementary schools completed a questionnaire that asked about their personal characteristics and their beliefs about teaching efficacy, the administrator, their colleagues, the students and student control.
Results indicated that these factors differed significantly according to respondent gender, age, education, preferred student attitudes, approval of the administration and teacher collegiality. Female teachers perceived their students as more eager to learn, more respectful to each other and more responsible for their tasks. They were more authoritarian than male teachers in controlling their students and prioritized disciplinary rules in classroom management. Age influenced teachers' beliefs about students and teacher collegiality. Older teachers believed that students were more willing to learn but had a tendency to control students with rules and in a bureaucratic manner. Teachers with higher education levels expected more achievement from students.

Rushton (2000) conducted a study on student teacher efficacy in inner-city schools.

This study examined student teachers conflict resolution and growth toward efficacy while interning in inner city schools. Interviews, written reflections and group discussions indicated a sense of culture shock upon entering schools. Students were concerned about children's home lives, relationships with cooperating teachers and students and teaching abilities. Growth in self-efficacy began as interns attempted to manage problems and take risks.

Finson, et al. (2001) conducted a study on relationship of science teaching self-efficacy and outcome expectancy to the draw a science teacher teaching checklist.

In science teaching contexts, self-efficacy is an individual's belief that one has the ability to effectively perform science teaching behaviours as well as the
belief that his or her students can learn science given factors external to the teacher. The results of the study revealed the possible relationship between self-efficacy beliefs and self-perceptions as a science teacher.

**Freytag (2001)** conducted a study on teacher efficacy and inclusion: the impact of pre-service experiences on beliefs.

This study defined teacher efficacy beliefs, discussed teacher attitudes toward inclusion and investigated the impact of pre-service experiences. It hypothesized that there would be a significant mean difference in teachers' efficacy scores and the number of pre-service courses addressing inclusion and that there would be a mean difference between teaching field (general or special education). Each hypothesis was examined on two levels: personal efficacy and teaching efficacy. A group of 48 Florida general and special education teachers completed the Teacher Efficacy Scale and provided demographic data which included educational background and teaching assignment.

Results indicated that there were significant differences in both personal efficacy scores and teaching efficacy scores when teaching field was the main effect. Special education teachers had higher levels of general teaching efficacy and personal teaching efficacy than did general education teachers.

**Henson (2001)** conducted a study on relationships between pre-service teachers' self-efficacy, task analysis and classroom management beliefs.

This study examined the multivariate relationships between teacher efficacy and task analysis variables as predictors of classroom beliefs about control, focusing on these relationships in pre-service teachers. Pre-service teachers from a required
educational psychology course volunteered to participate in the study. They completed three instruments: the revised Teacher Efficacy Scale, a short form of the Attitudes and Beliefs on Classroom Control Inventory and the Means-End Teaching Task Analysis.

Results indicated that more efficacious student teachers were less interventionist regarding instructional and classroom management beliefs. Task analysis was unrelated to management beliefs. However, pre-service teachers exhibited a clear dichotomy regarding their locus of control for task analysis elements. The task analysis suggested differential locus of control for elements that helped teaching (attributed to the self) and elements that hindered teaching (attributed to external constraints).

Lin and Gorrell (2001) conducted a study to compare efficacy beliefs of pre-service teachers in Taiwan who were at the beginning of early childhood teacher preparation programme with those who were near the end of their preparation programme.

The results indicated that successful teacher preparation programme correlates with high sense of teacher efficacy. However, data analysis found no significant difference in mean scores in efficacy beliefs for both groups, but the results did suggest the two groups may have some conceptual differences. They suggested the idea of constructing and integrating teacher efficacy with social and cultural perspectives.

Reidel (2001) conducted a study on an extension analysis on the self-efficacy beliefs about equitable science teaching and learning instrument for prospective elementary teachers.
The purpose of this study was to develop, validate and establish the reliability of an instrument to assess the self-efficacy beliefs of prospective elementary teachers with regard to science teaching and learning for diverse learners. The Self-Efficacy Beliefs about Equitable Science Teaching (SEBEST) instrument is modelled after the Science Teaching Efficacy Belief Instrument (STEBI) and the Science Teaching Efficacy Belief Instrument for Prospective Teachers (STEBI-B). Based on the standardized development procedures used and the associated evidence, the SEBEST appears to be content and construct valid instrument with high internal reliability qualities for use with prospective elementary teachers to assess personal self-efficacy beliefs for teaching and learning science for diverse learners.

Saklofske (2001) conducted a study on teachers’ efficacy and teaching behaviours.

The results revealed that undergraduate pre-service teachers with low sense of teacher efficacy beliefs were more likely to favour a more firm and regimental style of control and management in the classroom. In comparison, pre-service teachers who score high on both general and personal teaching efficacy beliefs were more humanistic in their classroom control approach. They also noted that when pre-service teachers were engaged in teaching practice, efficacy beliefs, again was noted to have significant impact on their behaviour. Trainees with higher personal teaching efficacy beliefs were rated higher on their teaching performance, classroom control, and questioning techniques by their supervisors.

Henson (2002) conducted a study on the personality type as a predictor of teaching efficacy and classroom control beliefs in emergency certification teachers.
This study examined the personality types of emergency certification teachers as predictors of classroom management and self-efficacy beliefs. Participants were 120 teachers pursuing teacher certification through an emergency permit teacher education programme at a mid-sized Texas university. They all held at least a Bachelor's degree, were in their first year of teaching and were pursuing teacher certification. All were assigned to a public school mentor. Each respondent completed a demographic form and three questionnaires: the Myers-Briggs Type Indicator, the Attitudes and Beliefs on Classroom Control Inventory and the Hoy and Woolfolk (1993) Revised Teacher Efficacy Scale.

Results indicated that there was a limited relationship between personality and classroom management and efficacy beliefs. For the small effect observed, however, extraversion versus introversion was the salient personality variable and relationships were in expected directions. Marginal score reliabilities may have attenuated the observed effects. Emergency certification teachers tended to be more extraverted and they also tended to report higher teaching efficacy.

Housego (2002) conducted a study on efficacy beliefs and organizational health of schools.

The objective of the study was to find out pre-service teachers’ feelings of readiness to teach. He has found that one of the most important pre-requisites of successful teaching is confidence in one’s own abilities and competence to teach. Housego equated the pre-service teachers’ acquisition of confidence to teach as indication that the teacher has achieved the readiness to teach and a high level of personal teaching efficacy beliefs.
Witcher (2002) conducted a study on relationship between teacher efficacy and beliefs about education among pre-service teachers.

This study examined the relationship between candidates' teacher efficacy and their educational beliefs. Participants were 70 candidates enrolled in introductory-level classes for education majors at a south-eastern university. Candidates were administered the Witcher-Travers Survey of Educational Beliefs on the first day of class, which is a 40-item, 5-point Likert-type scale. Low scores indicate proclivity toward transmissivism and high scores suggest a tendency toward progressivism. Participants were also administered the Teacher Efficacy Scale.

Findings revealed no relationship between educational beliefs and personal teacher efficacy. Conversely, transmissive viewpoint was statistically significantly (moderately) associated with lower general teacher efficacy.

Chambers (2003) conducted a study on impact of length of student teaching on the self-efficacy and classroom orientation of pre-service teachers.

This study investigated whether the length of a teacher education programme would affect student teachers self-efficacy and classroom management beliefs, noting whether there were differences between students who had been in one semester versus two semesters of student teaching in regard to classroom management and self-efficacy beliefs.

During the spring and fall semesters, 55 secondary teacher education students from a mid-sized Texas university participated in the study. Participants included 28 who were completing the traditional two-semester student teaching programme and 27 who were completing the one-semester programme. Students in
the one-semester programme had the same experiences as those in the two-semester programme through an intensified semester. Near the end of the student teaching semesters, students completed two questionnaires, the Attitudes and Beliefs on Classroom Control Inventory and the Teacher Efficacy Scale. Data analysis indicated that there were no differences in the belief systems of students who participated in the two-semester versus one-semester programme.

Chu (2003) conducted a study on effects of web page design instruction on computer self-efficacy of pre-service teachers and correlates.

This study tested the effects of web page design instruction on improving computer self-efficacy of pre-service teachers. Various computer experiences, including weekly computer use, weekly internet use, and use frequencies of word processing, e-mail, games and presentation software were significantly related to computer self-efficacy. Use frequencies of word processing and computer graphics software, weekly computer use and age were significant predictors of computer self-efficacy.

Housego (2003) discovered that self-efficacy beliefs and feelings of readiness to teach, increased for pre-service teachers after the first and second terms of a three-term revised secondary teacher education programme, and there were no significant differences by gender or subjects’ area of study.

Huey and Gorrel (2003) conducted a study on pre-service teachers’ efficacy beliefs in Korea.

The purpose of the study was to find out the differences in teaching efficacy among Korean pre-service early childhood and primary teachers starting their first training term and those in their final term before graduating as qualified teachers.
Results indicated that pre-service teachers became more efficacious regarding their personal teaching efficacy beliefs during their training years, but less positive about general teaching efficacy beliefs throughout their pre-service education years.

Rebecca and Emma (2003) conducted a study on the classroom behaviour problems: the relationship between preparedness, classroom experiences and self-efficacy in graduate and student teachers.

The participants in this study were 54 primary education teachers with less than three years experience, and 25 student teachers in their final year of primary education training. The results revealed a significant positive association between self-efficacy in behaviour management, preparedness and classroom experiences. Furthermore, preparedness and classroom experiences significantly predicted teachers’ ratings of self-efficacy in behaviour management. However, both graduate and student teachers reported feeling only moderately prepared and self-efficacious, with 83.5% of the total sample indicating they would like additional training in the area of behaviour management.

The Science Teaching Efficacy Belief Inventory developed by Riggs and Enoch was administered to 88 men and 112 women, elementary science teachers in the Eastern Cape, South Africa. Significant mean sex differences (t = 4.55) were observed on the Personal subscale but not on the General subscale. This result has major implications for education planners and administrators employing female teachers whose cultural and educational experiences may not have prepared them as well as their male peers for teaching science. It is concluded that female teachers need support to change their beliefs about self-efficacy regarding teaching science.
Ross (2003) reviewed 88 teacher efficacy studies in pre-college settings and identified potential links between teachers’ sense of efficacy and their behaviours. Ross suggested that teachers with higher levels of efficacy were more likely to (1) learn and use new approaches and strategies for teaching, (2) use management techniques that enhance student autonomy, (3) provide special assistance to low achieving students, (4) build students’ self-perceptions of their academic skills, (5) set attainable goals, and (6) persist in the face of student failure.

Yetkin (2003) conducted a study on self-efficacy and prior experiences as predictors of prospective teachers' teaching anxiety.

This study aimed to explain prospective teachers' anxiety about teaching in relation to their teaching efficacy beliefs and prior teaching experiences. Participants included 27 pre-service teachers. Three instruments were used: Student Teacher Anxiety Scale (STAS), Prior Experiences in Teaching Questionnaire (PETQ) and Teachers' Sense of Efficacy Scale (TSES). The predictor variables were prior teaching experience, number of teaching methods courses taken and teaching efficacy and the criterion variable was teaching anxiety.

Correlation analysis demonstrated that teaching anxiety was negatively correlated with teaching efficacy. Regression analyses were carried out to determine the predictors of teaching anxiety. Results indicated that the regression equation of teaching anxiety, including all predictor variables, explained 40 percent of the variation in teaching anxiety. Teaching efficacy was found as the only significant predictor in the equation.
Spector (2004) conducted a study on teachers and teaching behaviours.

The results revealed that personal efficacy beliefs among undergraduate pre-service teachers increased linearly over a four year teacher education programme, culminating in their first year formal classroom teaching.

Tekkaya, Ceren (2004) conducted a study on Turkish pre-service science teachers' understanding of science and their confidence in teaching.

This study examined Turkish pre-service science teachers' understanding of science concepts and their confidence in its teaching. A total of 299 senior science education major students participated in the study. Data collection instruments included the Science Concepts Test and the Science Teaching Efficacy Belief Instrument.

The findings of the study indicated that majority of the participants held misconceptions concerning fundamental science concepts, they generally felt confident about teaching it. The relationship that might exist among pre-service science teachers' confidence in their effectiveness in teaching and the number of the science courses completed in university is examined.

Bakar and Mohamed (2005) conducted a study on computer self-efficacy of pre-service vocational teachers.

The objective of the study was to determine the level of computer efficacy among pre-service vocational teachers. Their computer self-efficacy was the classified as low efficacy, moderate efficacy and high efficacy. About one-half of the trainee teachers surveyed can be classified as having moderate efficacy in using electronic spreadsheet, about one-half of the students can be classified as having
high efficacy in word processing. About 57% of the students surveyed can be classified as having moderate efficacy in graphic work. About 51% of the students surveyed are moderately efficacious in creating data base.

**Bleicher and Lindgren (2005)** conducted a study on success in science learning and pre-service science teaching self-efficacy.

This study examined relationships between conceptual understanding, self-efficacy and outcome expectancy beliefs as pre-service teachers learned science in a constructivist-oriented methods class. Participants included 49 pre-service elementary teachers. Analysis revealed that participants increased in self-efficacy, outcome expectancy and conceptual understanding. Engaging pre-service teachers in hands-on, minds-on activities and discussion were important contributors. Participants reported that they would be inclined to teach from a constructivist perspective in the future.

One implication from this study is that increasing the quantity of science content courses that pre-service elementary teachers are required to take may not be sufficient to overcome their reluctance to teach science if some of their learning does not take place in a constructivist environment.

**Denzine (2005)** conducted a study on the confirmatory factor analysis of the teacher efficacy scale for prospective teachers.

The purpose of this investigation was to employ the use of modern confirmatory factor-analytic techniques to investigate the validity of the hypothesized dimensions of the Teacher Efficacy Scale. Participants for this investigation were 387 prospective teachers recruited from a university located in the
south-western region of the UA. Participants for Study 2 were 131 prospective
elementary teachers recruited from the same university as in Study 1. A confirmatory
factor analysis (CFA) procedure was used to evaluate the goodness-of-fit for two
theoretical models of the TES items.

The proposed two-and three-factor models of teacher self-efficacy for
prospective teachers were rejected. A re-specified three-factor model of the TES was
then derived from theoretical and empirical considerations. The re-specified model
hypothesized three dimensions: self-efficacy beliefs, outcome expectations and
external locus-of-causality. In Study 2, the re-specified three-factor measurement
model was evaluated in a new sample. Results of the CFA procedure indicated
satisfactory fit of the re-specified model to the data; however, the results were not
consistent with predictions derived from social learning theory.

**Jeffrey (2005)** conducted a study on the cognitive modelling and self-efficacy:
effects on pre-service teachers learning of teaching strategies.

Phase 1 provided instruction in either a cognitive modelling mode or a
direct instruction mode; phase 2 provided a skill-demonstration video with either
self-efficacy commentary accompanying the demonstration or task-oriented
commentary.

A 2 (low self-efficacy vs. moderate self-efficacy) x 2 (cognitive modelling
vs. direct instruction) x 2 (self-efficacy vs. task-oriented commentary) MANOVA
performed on written protocols revealed statistically significant main effects
favouring cognitive modelling and self-efficacy groups in applying the strategies
that were taught. Also, the cognitive modelling groups made more references to
teacher activity and the self-efficacy groups made more references to student activity in their protocols.

**Wagler and Moseley (2005)** conducted a study on pre-service teacher efficacy: effects of a secondary education methods course and student teaching.

The purpose of this study was to investigate the effects of a secondary content-specific methods course and student teaching on pre-service teacher efficacy. The study employed a single-group pre test-post test 1-post test 2 design. The repeated-measures analysis of variance indicated no significant change in overall teacher efficacy from the beginning of the secondary methods course until the end of student teaching; however, overall efficacy did increase significantly after the secondary methods course but by the end of student teaching had returned to its original pre-secondary methods course level. Classroom management efficacy over all three test times, before and after methods course and after student teaching was unchanged. Instructional strategy efficacy was shown to be statistically significant and positively affected by the secondary methods course, but no significant change in instructional strategy efficacy was detected after student teaching. No significant change in student engagement efficacy was found immediately following the methods course, but student engagement efficacy significantly decreased after student teaching.

**Utley (2005)** conducted a study on relationship between science and mathematics teaching efficacy of pre-service elementary teachers.

The purpose of this study was to investigate the change in teacher efficacy beliefs about mathematics and science teaching during participation in methods
courses and student teaching, as well as the relationship between mathematics and science teaching efficacy.

Results indicated a significant difference in both the personal mathematics and personal science teaching efficacy scores, as well as mathematics outcome expectancy. Additionally, pre-service teachers' personal mathematics and science teaching efficacies were directly related, as were their mathematics and science teaching outcome expectancies.

Brand and Wilkins (2006) conducted a study on using self-efficacy as a construct for evaluating science and mathematics methods courses.

The focus of this study was elementary pre-service teachers' development as effective teachers of science and mathematics as influenced by their participation in elementary science and mathematics methods courses.

The analysis indicated all 4 sources influenced pre-service teachers teaching self-efficacy beliefs, with mastery experiences considered the most influential. Embedded within discussions of mastery experiences were references to the other sources of efficacy, which suggest an interrelationship between mastery experiences and the other sources.

David (2006) conducted a study on multiple intelligences and perceived self-efficacy among Chinese secondary school teachers in Hong Kong.

This study assessed multiple intelligences in a sample of 96 Chinese secondary school teachers in Hong Kong and explored the consistency between these teachers' multiple intelligences and their areas of responsibilities.
Teachers typically reported relative strengths in inter-personal and intra-personal intelligences and weaknesses in visual-spatial and bodily-kinesthetic intelligences. While there were no gender or age group differences, arts/music/sports teachers indicated greater strengths in musical intelligence when compared with language and social studies teachers and guidance teachers indicated greater strengths in both intra-personal intelligence and inter-personal intelligence than did non-guidance teachers. Using the eight intelligences as predictors, teachers' inter-personal intelligence was the significant predictor of their self-efficacy in helping others.

Heba (2006) conducted a study on an investigation of pre-service teacher’s self-efficacy and self-image as a science teacher in Egypt.

This study investigated the possible impact of a science teaching methods course on pre-service teachers’ self-efficacy and perceptions of self as science teachers. The study also investigated the probable relationship between these two variables, which both measure issues related to the expected behaviour teachers adopt when teaching science. Participants were enrolled in a 4-year educational programme at one of the Schools of Education in Egypt. Self-efficacy was measured using the Science Teaching Efficacy Belief Instrument, Form B (STEBI-B) developed by Riggs and Enochs (1990). The Draw A Science Teacher Teaching Checklist (DASTT-C) was used to measure perceptions of self as a science teacher (Thomas, & Pedersen, 1998; Thomas, Pedersen, & Finson 2001). These instruments measure the expected behaviour teachers adopt when teaching science in light of what they think they are capable of. Pre-test and post-test data generated by both instruments from 36 pre-service science teachers representing three groups (Primary,
Chemistry and Physics, and Biology) enrolled in a science teaching methods class were compared to determine the relationship between the two instruments.

Significant gains on the Personal Science Teaching Efficacy (PSTE) subscale and Science Teaching Outcome Expectancy (STOE) subscale STOE were found for all three groups of pre-service teachers. Significant mean decreases in the modified total of the DASTT-C score were found for one group. Moderate correlations were found between scores from the two instruments, for those with ‘high’ PSTE and STOE scores. The specific design of the science teaching methods course may be responsible for these changes.

Palmer (2006) conducted a study on durability of changes in self-efficacy of pre-service primary teachers.

The purpose of this study was to investigate the durability of changes in pre-service primary teachers' self-efficacy beliefs. Their science teaching self-efficacy was measured at the beginning and end of a science methods course and then after a delay period of 9 months. Interviews were carried out 1 year after the end of the course.

The results indicated that positive changes in self-efficacy occurred as a result of the course and these high levels were still present after the delay period. Having an opportunity to teach science in primary school was a significant factor in consolidating efficacy levels after the methods course.

Romi and Leyser (2006) conducted a study on exploring inclusion pre-service training needs: a study of variables associated with attitudes and self-efficacy beliefs.
The study examined attitudes towards inclusion and sense of efficacy of 1155 Israeli pre-service teachers and variables related to these beliefs. Participants responded to an "Options related to inclusion scale" and a "Teacher efficacy scale".

Findings revealed strong support for the principle of inclusion, yet also support for segregated special education placements. Several concerns regarding inclusion were expressed, which were related to the area of classroom management and teacher instructional skills. Sense of efficacy scores on personal efficacy, social efficacy and efficacy regarding low-achieving students were higher than those for teaching efficacy. Less support for inclusion was found for students in Arab (Muslim) colleges compared to students in Jewish colleges. These two groups were also different on self-efficacy scores. The major area of study and experience was associated with the level of support for inclusion and to self-efficacy scores. The progression in the training programme was associated with increased concerns and less support for inclusion. Female students were more supportive of inclusion than males and had higher self-efficacy scores.

Swars (2006) conducted a study on relationship between mathematics anxiety and mathematics teacher efficacy of elementary pre-service teachers.

The study investigated the relationship between mathematics anxiety and mathematics teacher efficacy among elementary pre-service teachers.

Participants included 28 elementary pre-service teachers at a mid-size university in the south-eastern United States who had just completed a mathematics methods course. Data sources included the Mathematics Anxiety Rating Scale, Mathematics Teaching Efficacy Beliefs Instrument and clinical interviews.
Findings revealed a significant, moderate negative relationship between mathematics anxiety and mathematics teacher efficacy. In general, the pre-service teachers with the lowest degrees of mathematics anxiety had the highest levels of mathematics teacher efficacy. The interviews indicated that efficaciousness toward mathematics teaching practices, descriptions of mathematics and basis for mathematics teaching efficacy beliefs were associated with mathematics anxiety.

Watson (2006) conducted a study on technology professional development: long-term effects on teacher self-efficacy.

This study examined the effects of the project on the long-term self-efficacy of in-service teachers and their use of the Internet in the classroom. Teachers improved level of self-efficacy after the summer workshops remained high even years after their involvement in the programme, (b) that combining an intense summer workshop with additional online courses shows a significant difference in some aspects of self-efficacy over just having a professional development workshop, and (c) certain external factors do affect teacher self-efficacy over the long-term.

Yeh (2006) conducted a study on interactive effects of personal traits and guided practices on pre-service teachers' changes in personal teaching.

In this study, it was hypothesised that the interactive effects from the coupling of personal traits with guided practices would be a reliable predictor of the degree of improvement in personal teaching efficacy during computer-simulated training. One hundred and seventy-eight pre-service teachers completed an interactive teaching experience via the "Computer Simulation for Teaching General
Critical-thinking Skills" in which guided practices were integrated via specially designed teaching sequences and loops.

The findings suggested that intra-personal intelligence, critical-thinking dispositions and a judicial thinking style are related to self-awareness, analytical learning and reflective thinking and that in this study, these personal qualities seemingly interacted with guided practices, which resulted in reflective teaching and mastery experience.

Yoon, et al. (2006) conducted a study on exploring the uses of cases and case methods in influencing elementary pre-service science teachers' self-efficacy beliefs.

In this study, authors hypothesised that cases demonstrating exemplary practice in the science classroom can be used as a source for learning content and pedagogical skills that will improve teachers' self-efficacy beliefs. Twelve pre-service elementary science teachers were followed as they participate in a case and case method activity illustrating the Grade 7 topic of robotics and fluids.

Results indicated that the case acted as a boundary object for brokering between individual experiences and those found in the science teaching community by scaffolding for multiple points of entry, bridging the theory practice gap and offering beginning teachers more immediate access to the community of already practicing teachers.

Bembenutty (2007) conducted a study on pre-service teachers' motivational beliefs and self-regulation of learning.
The results revealed a high correlation between the teacher candidates' motivational beliefs, willingness to delay gratification and use of self-regulated learning strategies and their teacher self-efficacy beliefs.

Gencer and Cakiroglu (2007) conducted a study on the Turkish pre-service science teachers' efficacy beliefs regarding the science teaching and their beliefs about classroom management.

The purpose of this study was to explore Turkish pre-service science teachers' science teaching efficacy and classroom management beliefs. Data in this study were collected from a total number of 584 pre-service science teachers utilizing the Science Teaching Efficacy Belief Instrument and the attitudes and beliefs on classroom control (ABCC) inventory.

Results indicated that pre-service science teachers generally expressed positive efficacy beliefs regarding science teaching. In addition, results revealed that participants were interventionist on the instructional management dimension, whereas they favoured non-interventionist style on the people management dimension of the ABCC inventory.

Lancaster and Bain (2007) conducted a study on design of inclusive education courses and the self-efficacy of pre-service teacher education students.

The study examined whether participation in a 13-week undergraduate inclusive education course co-varied with an improvement in the self-efficacy of pre-service elementary education teachers. We sought to determine whether self-efficacy was influenced differentially by the type of field-based placement experienced by students in the course.
The results showed that an improvement in student self-efficacy co-varied with participation in the inclusive education course, although the field-based placement did not differentially affect self-efficacy at a statistically significant level.

**Poulou and Maria (2007)** conducted a study on the personal teaching efficacy of student teachers and its sources.

This study explored the factors that precede student teachers' beliefs of teaching efficacy and determine their conviction that they can influence instructional strategy, classroom management, and students' engagement. In the study 198 fourth-year students from two primary education departments in Greece completed a Teacher Efficacy Sources Inventory and a Teachers' Sense of Efficacy Scale. It was found that self-perceptions of teaching competence, personal characteristics and motivation for teaching were contributory factors to teaching efficacy.

**Siwatu (2007)** conducted a study on the pre-service teachers' culturally responsive teaching self-efficacy and outcome expectancy beliefs.

In this study Culturally Responsive Teaching Self-Efficacy Scale (CRTSE) and the Culturally Responsive Teaching Outcome Expectancy (CRTOE) Scale were developed and administered to a sample of pre-service teachers in the Midwest.

The findings from this study suggested that pre-service teachers were more efficacious in their ability to help students feel like important members of the classroom and develop positive, personal relationships with their students, than they were in their ability to communicate with English Language Learners. Pre-service teachers' culturally responsive teaching outcome expectations was highest for the possibility that a positive teacher-student relationship can be established by building
a sense of trust in their students. Item-specific means were lowest among the pre-service teachers for the possibility that encouraging students to use their native language will help to maintain students' cultural identity.

Ling (2008) conducted a study on enhancing prospective teachers' science teaching efficacy beliefs through scaffolded, student-directed inquiry.

This study examined the impact of a recently revised science course that engaged pre-service teachers in a scaffolded, student-directed inquiry unit on local streams. The objective of the study was to find out what extent does the implementation of the stream study unit influence the prospective teachers' science teaching efficacy beliefs.

The findings revealed that upon the completion of the inquiry project, the teacher candidates in the stream study classes demonstrated significantly greater improvement in the personal science teaching efficacy (PSTE) beliefs than their peers did in the non-stream study classes.

(c) Studies related to Teaching Competency

Margerum (1981) conducted a study on the teaching competency assessment. An inter judge reliability study for student teachers in physical education at West Chester state college.

This study measured the extent to which physical education student teachers demonstrated each of 39 role competencies. Eighty one college seniors were assigned to public schools for teaching experience. The student teachers, co-operating teachers, and college supervisors pre tested and post tested the competency statements for each student teacher, providing the inter judge reliability
co-efficient. It was found that the students demonstrated their mastery of the competencies through sufficiently high post-assessment scores in personal and professional attributes and planning competencies.

Norton (1989) conducted a study on performance-based teacher education and competency-based staff development: programme that really works.

Performance-Based Teacher Education (PBTE) is an approach to instructor preparation in which (1) the training programme is based on the competencies required of successful vocational and technical instructors and (2) the instructor must not only obtain certain knowledge but is also required to demonstrate the essential teaching skills in an actual instructional situation.

The modules provided essential elements and desirable characteristics for each skill area. They were developed following research on teacher competencies. The module development process was structured to ensure maximum involvement of persons representing all occupational areas who were actively engaged in vocational instructor preparation. The modules were designed to be used by individuals or groups of teacher-trainees or in-service instructors. They provided learning experiences that integrate theory and application and culminate with assessment and they are flexible. The modules were field tested, revised, and retested.

Zhang and Burry-Stock (1995) conducted a study on multivariate analysis of teachers’ perceived assessment competency as a function of measurement training and years of teaching.

This study investigated in-service teachers’ assessment competency as a function of measurement training and years of teaching. Data were collected on a 67
item Assessment Practices Inventory (API). Seven composite scores were formed based on the underlying dimensions from a principal factor analysis. A 2x3 MANOVA was used to examine the effects of measurement training and years of teaching on teachers’ perceived competency in the seven assessment categories as reflected in the composite scores.

Multivariate interaction effects between measurement training and years of teaching were significant. Subsequent examination revealed significant multivariate simple effects of measurement training at four or more years of teaching in two factor analyzed assessment categories. Follow up comparisons between means indicated that among teachers who had taught four or more years, those with measurement training scored significantly higher than those without measurement training on standardized test results interpretation, classroom statistics and using assessment results in decision making. This group also scored significantly higher on performance assessment and information observation.

Bell (1997) conducted a study on longitudinal measure of the perceptual impact of a cultural diversity teaching practicum on the inter-personal competency of student teachers.

This study evaluated the longitudinal effect of a planned in-school practicum experience addressing cultural diversity on the self-perception of student teachers regarding their inter-personal competence in such situations. Subjects were 18 student teachers of agricultural education and 6 student teachers of family and consumer science enrolled in the University of Nebraska's College of Agricultural Sciences and Natural Resources and College of Human Resources and Family Sciences, respectively.
Evaluation was accomplished through the administration of a multicultural attitudinal inventory to all subjects prior to, immediately after and at least 1 year after the experience. Subscale evaluation included the areas of teaching skills, knowledge of cultural diversity, teacher-student relationships, and cultural awareness. Perceptual change of inter-personal competency occurred within subjects in all subscale areas measured. The area of greatest gain was teacher-student relationships.

Chang and Huey-Por (1998) conducted a study on nature and assessment of teaching competency in apprentice science teachers.

The purpose of this study was to investigate the durability of changes in pre-service primary teachers' self-efficacy beliefs. Their science teaching self-efficacy was measured at the beginning and end of a science methods course and then after a delay period of 9 months. Interviews were carried out 1 year after the end of the course. The results indicated that positive changes in self-efficacy occurred as a result of the course and these high levels were still present after the delay period. Having an opportunity to teach science in primary school was a significant factor in consolidating efficacy levels after the methods course.

Jasman (1998) conducted a study on issues in establishing professional competency-based teaching standards: an analysis of processes used in determining level 3 classroom teachers in Western Australia.

In 1997, the Education Department of Western Australia, in conjunction with the teachers' union, initiated a trial project to establish a career path for teachers. Standards are to be set for the career path for three stages: (1) entry to level 1, (2) transition from level 1 to 2, and (3) transition from level 2 to 3.
The first issue is how to group or categorize teachers. When analysis of a sample of teaching portfolios suggested that establishing categories similar to those used by the National Board of Professional Teaching Standards was not appropriate, alternative groupings were generated based on teachers' descriptions of their context, philosophy and professional practice. The second issue relates to setting the "standard." As part of the selection process for level 3, 40 elementary and 40 secondary school teaching portfolios were assessed on the quality of the evidence presented to demonstrate achievement of each of five competencies. Teaching portfolios rated equivalently were analyzed to determine there was any consistency in the professional practices of these teachers. This analysis generated a "standard" for each band of ratings that was then used in determining the appropriate level of professional expertise needed to achieve level 3 classroom teacher status.

**Gultekin (2006)** conducted a study on attitudes of pre-school teacher candidates studying through distance education approach towards teaching profession and their perception levels of teaching competency.

The purpose of this study was to determine the attitudes of pre-school teacher candidates studying through distance education approach towards the teaching profession and to determine their perception levels of teaching competency. The population and sampling of the study were the senior students of Anadolu University, open education faculty, pre-school teacher training undergraduate programme. The study was conducted through 957 teacher candidates.
The study revealed that the attitudes of teacher candidates towards teaching profession are quite positive and their perception levels of teaching competency are very good. Moreover, the teacher candidates consider the programme they enrolled in so beneficial for them to gain teaching competencies.

INDIAN STUDIES

(a) Studies related to Multiple Intelligence

Jasmine (2000) suggested that use of the theory of multiple intelligence in the education depends on the recognition of and respect for each learners special interests and talents.

Manju (2004) conducted a study on effectiveness of strategies involving multiple intelligence theory on the achievement in mathematics at higher secondary level.

The purpose of the study was to compare the effectiveness of strategies involving multiple intelligence theory on mathematics achievement at secondary level with that of present method.

The researcher adopted experimental method for the present study and selected the pre test post test non equivalent group design for the study. The tools used were lesson transcripts based on strategies involving multiple intelligence, lesson transcripts based on present method and an achievement test in mathematics.

The study revealed that teaching through strategies involving multiple intelligence theory was more effective in mathematics achievement.

Abhilash (2005) conducted a study on awareness on biotechnology and multiple intelligence of the college students.
The purpose of the study was to find out the relationship between awareness on biotechnology and multiple intelligence of college students.

The findings revealed that there is no significant relationship between awareness on biotechnology and logical-mathematical, visual-spatial, bodily-kinesthetic and musical-rhythmic intelligence, but there was significant relationship between awareness on biotechnology and verbal-linguistic, inter-personal, intra-personal and multiple intelligence of college students.

Ajith (2005) conducted a study on learning styles and multiple intelligence of B. Ed. students.

The purpose of the study was to find out the relationship between learning styles and multiple intelligence of B. Ed. students. The tools used were learning style inventory and multiple intelligence inventory. The finding of the study revealed that there was significant relationship between learning styles and multiple intelligence of college students.

Anisha (2007) conducted a study on the multiple intelligence of secondary teacher education students.

The objectives of the study were (i) to find out whether there is any significant difference between male and female secondary teacher education students in their multiple intelligence, (ii) to find out whether there is any significant difference between aided and un-aided secondary teacher education students in their multiple intelligence and (iii) to find out whether there is any significant difference between graduate and post-graduate secondary teacher education students in their multiple
intelligence. The survey method was adopted for the study. Tool used in the study was multiple intelligence inventory adapted by Anisha and Annaraja.

The findings revealed that male secondary teacher education students are better than female secondary teacher education students in their visual-spatial intelligence. Findings also revealed that un-aided college secondary teacher education students are better than aided college secondary teacher education students in their verbal-linguistic intelligence. It was also found out that post-graduate secondary teacher education students are better than graduate secondary teacher education students in their naturalistic intelligence.

Anisha (2008) conducted a study on relationship between multiple intelligence and knowledge of the content pedagogy of natural science secondary teacher education students.

The objective of the study was to find out the relationship between multiple intelligence and knowledge of the content pedagogy of natural science secondary teacher education students.

The survey method was used in the study. Tools used were multiple intelligence inventory adapted by Anisha and Annaraja and content pedagogy knowledge tool developed by Anisha and Annaraja. Result revealed that there was significant relationship between multiple intelligence and knowledge of the content pedagogy of natural science secondary teacher education students.

b) Studies related to Self-Efficacy

Anisha and Annaraja (2007) conducted a study on multiple intelligence and self-efficacy of secondary teacher education students.
The objective of the study was to find out whether there is any significant relationship between multiple intelligence and self-efficacy of secondary teacher education students.

The survey method was used in the study. Tools used were multiple intelligence inventory adapted by Anisha and Annaraja and self-efficacy scale developed by Anisha and Annaraja. Result revealed that there was significant relationship between multiple intelligence and self-efficacy of secondary teacher education students.


The objective of the study was to find out the relationship between converging, diverging, assimilating, accommodating learning styles and self-efficacy of B. Ed. students. The study revealed that there was no significant relationship between diverging and converging styles and self-efficacy of B. Ed. students, but there was significant relationship between assimilating and accommodating styles and self-efficacy of B. Ed. students.

(c) Studies related to Teaching Competency

Singh and Satyanarayana (1984) conducted a study on effect of training in teaching skills using micro-class peers and real pupils on the general teaching competence of student teachers at elementary level.

The objectives of the study were (i) to compare the general teaching competency of the student-teachers undergoing student teaching programme using microteaching and the traditional approach, (ii) to study the effectiveness of
microteaching under simulated and real classroom situations in respect of general
teaching competence and (iii) to study the effect of training on the attitude of
student-teachers towards microteaching. The entire student population of 36 students
of the first year TCH of an English-medium women's TTI was taken as the sample.
The population was divided into three groups of 12 students each. Group I, the
reference group, was the control group. The other two groups were experimental
group I and experimental group II. Tools designed and developed by the NCERT,
New Delhi, were used without any modification. These were the general teaching
competency rating scale, evaluation proforma for rating teaching skills, reaction
towards microteaching rating scale, and self-evaluating microteaching programme
rating scale. Experimental group I practiced under simulated classroom condition
while experimental group II practiced under real classroom conditions. Each
student-teacher practiced a skill for two complete microteaching cycles.

The major findings of the study were: (i) The student-teachers trained using
microteaching under the simulated conditions acquired better teaching competency
than those trained under the traditional training method. (ii) The student-teachers
trained, using microteaching under real classroom conditions acquired better
teaching competency than those trained under the traditional training method. (iii) The
effectiveness of the microteaching training technique was more significant in respect
of those trained under real classroom conditions than those trained under simulated
classroom conditions in developing the teaching competence of student-teachers.
(iv) The microteaching training technique made a significant impact in developing a
positive attitude in the student-teachers towards microteaching.
Basi (1991) conducted a study of teaching competency of language teachers in relation to their job satisfaction, locus of control and professional burnout.

The study was conducted in Ferozpur, Ropar and Ludhiana. 440 trained graduate teachers were selected using Incidental purposive sampling. Self Rating Scale for Teachers, Job Satisfaction Scale (Chandel) and Maslach Burnout Inventory were used. A positive correlation was found between teaching competence and job satisfaction.

Lalitha (1994) conducted a study on creativity in relation to teaching competence of B. Ed. teacher trainees studying in the colleges of education of Bangalore university.

The sample comprised 206 B. Ed. trainees studying in four colleges of education affiliated to Bangalore University. Using a stratified random sampling procedure, 130 Arts graduates and 76 science graduates were drawn. The instruments used include Baquer Mehdi’s Creativity Test and Baroda General Teaching Competency Scale. Statistical techniques include mean, SD, Co-efficient of Correlation, and step wise Regression Analysis. Significant correlation was found between Teaching Competence and other variables pertaining to Creativity.

Naseema (1994) conducted a study on teaching competency of secondary school physical science teachers in relation to satisfaction of teaching physical science.

The major objective of the study was to find out the efficiency of satisfaction to predict teaching competence of physical science teachers. The sample comprised 150 physical science teachers in secondary schools of Kerala. The sample was
selected using stratified random sampling method. The tools used include Teaching Competence Rating Scale, General Teaching Competency Scale, Job Satisfaction Questionnaire for Physical Science Teachers and School Organisational Climate description Questionnaire. The collected data was treated using percentages, biserial co-efficient of correlation, chi square and multiple regression analysis. It as found that 30.92 percent of Physical Science teachers differed in perceived teaching competence which can be attributed to work.

**Thiagarajan and Santhana (1995)** conducted a study on teaching competency and achievement.

The objective of the study was to find out whether there is any significant relationship between the competency of the teachers perceived and academic achievement by the boy and girl students.

A random sample of 290 teachers was selected from 8 schools in Chidamabaram district. Teaching Competency Scale by Passi was used to collect data. Statistical treatment as done using correlation and critical ratio. Result showed significant relation between teaching competency and academic achievement. There was a significant difference in scores obtained by boys and girls.

**Madhusudan (2004)** conducted a study on effect of teacher competency on student's achievement at minimum levels of learning.

The study was conducted in the district of Gulbarga of Karnataka. Teachers teaching Language and Mathematics were selected for the study. Sixty sample schools were selected. The minimum levels of learning based achievement test in Mathematics and Kannada along with the General Teaching Competence Scale by
Passi were used. Teacher competency was found to be a significant determining factor in students’ achievement.

**Parveen (2006)** conducted a study on teaching aptitude in relation to general teaching competency, professional teaching and academic achievements of B. Ed. pupil teachers.

The objectives of the study were (i) to study the relationship among teaching aptitude, general teaching competence, professional interest and academic achievement of B. Ed. pupil teachers, (ii) to study the relationship of teaching aptitude with general teaching competence by the effect of professional interest and academic achievement, (iii) to study the relationship of teaching aptitude with professional interest by the effect of general teaching competence and academic achievements, (iv) to study the relationship of teaching aptitude with academic achievements by the effect of general teaching competence and professional interest, (v) to study the effect of sex, discipline, general teaching competence and their various interactions on teaching aptitude, (vi) to study the effect of sex, discipline, professional interest and their various interactions on teaching aptitude.

This research work was non-experimental in nature. In this study 262 pupil teachers were taken. Tools used were teaching aptitude Singh’s aptitude test (SAT), general teaching competency GTC by Passi and Lalitha, professional interest inventory prepared by investigator.

On the basis of the result of this study, the following conclusions were drawn: It was observed that female arts pupil teachers secured significantly higher mean scores than their counterpart male arts pupil teacher. It was found that
teaching aptitude of the pupil teacher was significantly correlated with their
general teaching competence, professional interest and academic achievements.
General teaching competence and professional interest of the pupil teachers
significantly affect their teaching aptitude. In addition to this, effect of academic
achievement on teaching aptitude of the pupil teaches was positive but not
significant at acceptable level of confidence.

Anisha (2008) conducted a study on the relationship between self-efficacy
and teaching competency of secondary teacher education students.

The objective of the study was to find out the relationship between
self-efficacy and teaching competency of secondary teacher education students.
The survey method was adopted for the study. The tools used were self-efficacy
scale and teaching competency scale developed by Anisha and Annaraja. The
result revealed that there was significant relationship between self-efficacy and
teaching competency of secondary teacher education students.

CRITICAL REVIEW

The investigator reviewed ninety-six studies related to the variables - multiple
intelligence, self-efficacy and teaching competency. Among which eighty studies
were conducted in abroad and sixteen in India. Most of the studies have employed
survey method. In many of the studies random sampling techniques have been used
for selecting sample.

The investigator would like to add the following critical comments
starting with the variable multiple intelligence. After a critical evaluation of the
studies related to multiple intelligence, the investigator has made the following conclusions.

Gardner (1983) proposed that intelligence was not unitary but rather comprises eight multiple intelligence. Gardner and Hatch (1989) discussed about the educational implications of the theory of multiple intelligence.

Blythe and Gardner (1990) stressed the urgency and importance of implementation of multiple intelligence theory oriented instructional strategy for the schools. Hine (1996) gave detailed characteristics of the seven multiple intelligence and promoted a systematic approach to teaching that strives to meet individual need of children. Mayer (1998) conducted study on naturalistic intelligence and pointed out that teachers must provide opportunities in the classroom for the naturalistic intelligence to grow. Campbell (1999) concluded that teachers should apply multiple intelligence theory appropriately for their students, school and community.

Christison (1999) concluded that an understanding of multiple intelligence theory broadens teachers’ awareness of their students’ knowledge and skills and enabled them to look at each student from the perspective of strength and potential. Nuzzi (2001) argued that current methods of assessment were deficit based and not helpful in assessing Multiple Intelligence Instruction of students. He described an intelligence based approach to assessment, developed by Gardner. Martinez (2002) discovered that by using multiple intelligence, pupil can access a greater portion of the brain and thus learning becomes easier.

Reidel, et al. (2003) concluded that students showed a marked improvement in reading achievement through the use of multiple intelligence teaching strategies.
Manju Krishna (2004) concluded that teaching through strategies involving multiple intelligence theory was more effective in mathematics achievement than the present method.

Ajith (2005) reported that there was significant relationship between learning styles and multiple intelligence of college students. Shearer (2006) reported that multiple intelligence profile could sensitize teachers to their own weaknesses and helped them to empathize with the students who were struggling. Anisha (2007) concluded that there was significant difference in the mean scores of multiple intelligence in terms of sex, management of the college and qualification. Anisha (2008) reported that there was significant relationship between multiple intelligence and knowledge of the content pedagogy of natural science secondary teacher education students.

The variable self-efficacy was another area of exploration and serious deliberation for the investigator.

After a critical evaluation of the studies related to self-efficacy the investigator has made the following conclusions.

Gibson and Dembo (1984) concluded that there was positive correlation between teachers’ sense of efficacy for teaching and classroom management, questioning and teacher success in implementing innovative programmes.

Evans and Tribble (1986) and Coladarci (1992) concluded that efficacious teachers had high level of professional commitment. Broussard and Byars (1988) in a study concluded that, in the case of more experienced teachers, self-efficacy had no role.
Martin (1989) also reported that sense of teacher efficacy beliefs decreased as pre-service teachers progress through their training and during the early years of classroom teaching. Woolfolk and Hoy (1990) examined that those teachers who successfully completed their teaching practice had an increase in their personal self-efficacy. Loreto and Elizabeth (1994) suggested that a significant positive relationship was found between prior training and previous teaching experience with their level of self-efficacy.

Ross (1994) in a study, reported that teachers with high level of sense of efficacy were more competent in using new teaching strategies by providing special attention to low achievers, improving students’ self perception of their academic skills and by setting attainable goals. The study also suggested that high level of sense of efficacy enhances teaching competency.


Lin and Gorrell (2001) in a study concluded that successful teacher preparation programme correlated with high sense of teacher efficacy. Henson (2001) suggested that more efficacious student teachers were less interventionist regarding instructional and pupil classroom management beliefs.

Lin (2001) found out the influence of teaching experience on student teachers' efficacy beliefs. Saklofske, et al. (2001) found out that high self-efficacy beliefs had
positively influenced teaching competency. Housego (2002) concluded that the important goal for pre-service education was to present programmes which were designed to enhance and foster pre-service teachers’ sense of teaching efficacy beliefs.

Housego (2002) found out that pre-service teacher’s self-efficacy beliefs improved their confidence and teaching competency. Yetkin (2003) found out that teaching anxiety was negatively correlated with teaching efficacy.

David (2006) concluded that teachers’ interpersonal intelligence was the significant predictor of their self-efficacy in helping others.

Anisha and Annaraja (2007) reported that there was significant relationship between multiple intelligence and self-efficacy of secondary teacher education students.

After a critical evaluation of the studies related to multiple intelligence, the investigator has made following conclusions.

Basi (1991) concluded that a positive correlation was found between teaching competence and job satisfaction. Lalitha (1994) concluded that a significant correlation was found between teaching competence and creativity. Madhusudan (2004) reported that teacher competency was found to be a significant determining factor in students’ achievement.

Gultekin, Mehmet (2006) concluded that the attitudes of teacher candidates towards teaching profession were quite positive, and their perception levels of teaching competency were very good.

Anisha (2008) conducted a study on the relationship between self-efficacy and teaching competency of secondary teacher education students. The result revealed that
there was significant relationship between self-efficacy and teaching competency of secondary teacher education students.

The present study differs from the rest of the studies in several ways. First of all, there was no study undertaken so far which had combined the variables of multiple intelligence, self-efficacy and teaching competency. Therefore, the present study is the first of its kind in this regard.

Secondly, it could be said that, there were plenty of foreign studies that dealt with multiple intelligence of students, but only three studies directly dealt with secondary teacher education students. Hence this study stands unique in this regard also.

Thirdly, there was only one study made on the variable self-efficacy in India. In this respect, this study is something new and different.

Fourthly, with regard to the teaching competency it could be said that there were plenty of studies on teaching competency of teachers and student teachers with different variables such as job satisfaction, competency based assessment, creativity and academic achievement, but this study is the first of its kind in this regard.

Fifthly, the present study is unique and differs from the rest of the studies in terms of population and sample. It is also found from the above studies that none of them directly dealt with the influence of multiple intelligence and self-efficacy of the secondary teacher education students on their teaching competency.