Chapter 2

Review of Related Literature

- Theoretical Overview of the Variables
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The present study is an investigation to understand the influence of Epistemological Beliefs, Achievement Goals, and Self Regulated Learning Strategies on Achievement in Accountancy of higher secondary school students. In this chapter, in order to get the overview of Epistemological Beliefs, Achievement Goals, and Self Regulated Learning Strategies the investigator reviewed the available literature related to the variables. This chapter is divided into two sections. The first section deals with the theoretical overview of the independent variables such as Epistemological Beliefs, Achievement Goals, and Self Regulated Learning Strategies. The second section deals with the review of empirical studies related to the variables. The heading of the chapter are organized as follows:

Theoretical Overview of the Variables

- Theoretical Overview of Epistemological Beliefs
- Theoretical Overview of Achievement Goals
- Theoretical Overview of Self Regulated Learning Strategies

Review of Related Studies

- Studies on Epistemological Beliefs
- Studies on Achievement Goals
- Studies on Self Regulated Learning Strategies
- Studies on the Subject Accountancy
Theoretical Overview of the Variables

This section deals with the theoretical framework of the independent variables namely, Epistemological Beliefs, Achievement Goals, and Self Regulated Learning Strategies.

Theoretical Overview of Epistemological Beliefs

Epistemology is that branch of philosophy which deals with nature of knowledge and methods of acquiring of knowledge. The word Epistemology is derived from the Greek word ‘Episteme’ which means knowledge and ‘logos’ means discourse. Thus, the epistemology deals with the nature of human knowledge and the process of verifying or justifying the acquired knowledge. Epistemology is the study of the origin, nature and limitation of knowledge (Good, 1976). Epistemology is distinctively a branch of philosophy which defines the systematic investigation of the nature of knowledge with a view to determine the grounds of its possibility and its objective worth or significance (Raj, 1996). The personal epistemology of human beings consists of specific dimensions that comprise of individual understanding of knowledge and knowing and an epistemological belief is multidimensional concept which explains how students develop their conceptions of knowledge and knowing and how they use these conceptions to develop their outlook about the world (Hofer, 2002). Knowledge can be understood as the understanding of an individual about the subject matter and
its concepts. The scientific basis of knowledge assumes that epistemology deals with the nature of science and scientific way of acquiring knowledge by analyzing how the individual creates knowledge and draws inferences about the gathered information.

Piaget used the term ‘genetic epistemology’ in his theory of intellectual development to describe the development process of knowledge. Genetic epistemology attempts to explain knowledge on the basis of its history and especially the psychological origin of the notions and operations upon which it is based. Genetic epistemology also takes into account logical formalizations applied to equilibrated thought structures and in certain cases to transformations from one level to another in the development of thought. The genetic epistemology deals with both the formation and meaning of knowledge. It also explains the process of how people develop their cognitive aspects from birth throughout their lives (Piaget, 1971). Piaget believed that human knowledge is a biological function that results from the actions of an individual and is borne out of change and transformation in order to understand how a certain state is brought about. According to Piaget (1971), knowledge is a system of transformations that become progressively adequate and knowledge consists of structures and comes about by the adaptation of these structures with the environment. Piaget viewed that the intellectual abilities of human beings develop as a result of the organization and reorganization of schemas through the processes of assimilation,
accommodation, and equilibration. Piaget’s theory of intellectual development conceptualized that the cognitive development of human beings take place as an interaction between the individual and the world throughout four sequential stages such as sensori motor stage (birth to 2 years), pre-operational stage (2-7 years), concrete operational stage (7-11 years), and formal operational stage (11 years onward) (Piaget, 1971).

Epistemology has always been concerned with issues such as nature, extent, source, and legitimacy of knowledge. The concept of epistemological beliefs find its origin in the work of Perry (1968) and later, Schommer (1990) introduced the concept of personal epistemology by considering a system of more-or-less independent beliefs. The system of beliefs means that there are multiple beliefs that compose personal epistemology and more-or-less independent means these beliefs may or may not develop at synchronous rates (Schommer, 1994; Schommer-Aikins, 2004). Epistemological beliefs are defined by Schommer (1990) as the beliefs pertaining to what is the knowledge and how the knowing and learning occurs. Epistemological beliefs about learning (or learning beliefs) are defined as socially shared intuitions about the nature of knowledge and the nature of learning and involve knowledge about the limits of knowing, the certainty of knowing, and the criterion of knowing (Jehng, Johnson & Anderson, 1993). Hofer and Pintrich (1997) conceptualized epistemological beliefs as beliefs of the individuals on how new knowledge is perceived and
processed. An epistemological belief is a multidimensional and multilayered concept in which individual possesses general beliefs about knowledge and beliefs about more specific forms of knowledge (academic knowledge or domain specific knowledge) (Buehl & Alexander, 2001). Epistemological beliefs in particular includes the beliefs about the definition of knowledge, how knowledge is constructed, how knowledge is evaluated, where knowledge resides, and how knowing occurs (Hofer, 2001). Epistemological beliefs are defined as the system of implicit assumptions and beliefs that students have about the nature of knowledge and its acquisition (Paulsen & Feldman, 2005). Therefore, epistemological beliefs may be defined as the individual’s beliefs about knowledge and the process of acquiring as well as verifying the knowledge acquired by the individual.

**Approaches to Epistemological Beliefs**

Educational researchers and scholars used different ways and various approach to study about epistemological beliefs. The important approaches to study the epistemological beliefs are developmental approach and dimensional approach. The first line of research in the area of epistemological beliefs used structural and developmental sequences. The second line of research to understand the epistemological beliefs of the individual concluded that individual’s thinking and reasoning process get influenced by the epistemological assumptions which are similar to the developmental
sequences. The first and second line of research can be grouped under the developmental approach to epistemological beliefs. The third line of research which is most recent is dimensional approach which viewed epistemological beliefs as a system of more or less independent beliefs rather than a systematically arranged developmental structure. The approaches to epistemological beliefs are given in Figure 1.

**Figure 1.** Approaches to Epistemological beliefs

**Developmental Approach**

The developmental approach to study the epistemological beliefs of individuals suggests that the beliefs about knowledge and knowing of an individual develop and progress systematically through various stages or positions. The origin of developmental approach can be traced back in the...
works of Perry (1968). The extension of epistemological development framework was done by the educational researchers such as Belenky, Clinchy, Goldberger, and Tarule (1986), Kuhn (1992), Magolda (1992), and King and Kitchener (1994) by working upon Perry’s model of epistemological beliefs and proposed models of epistemological beliefs for specific contexts which are developmental in nature. Perry (1968) in his theory of epistemological development suggested the stages of development of epistemological beliefs where the students in early stages perceived knowledge as right or wrong and believe that authority provides answers for all questions. On progressing through the stages of epistemological development students realize that there are multiple sources for knowledge and at later stages they have commitment to some ideas. Hence, Perry (1970) concluded that through the stages of development of epistemological beliefs students progressively develop more complex and integrated ways of viewing the world. Belenky, Clinchy, Goldberger, and Tarule (1986) analyzed women’s ways of knowing and suggested five knowledge positions of cognitive development through which women perceive themselves and deal with the knowledge. The developmental model proposed the knowledge positions of cognitive development in women’s ways of knowing which are silence, received knowledge, subjective knowledge, procedural knowledge, and constructed knowledge. The positions are particular to women which moves from the stage were authority of
knowledge viewed powerful to recognition of interrelatedness of knowledge where knowledge is constructed, destructed, and reconstructed.

Kuhn (1992) proposed the model of epistemological development in which there are three levels of epistemological understanding by examining the augmentation reasoning skills of the students. The three levels of epistemological understanding are absolutist epistemological understanding, multiplist epistemological understanding, and evaluativist epistemological understanding which are more or less similar to stages suggested by Perry. From the absolutist epistemological understanding in which the knowledge is absolute and certain, the individual moves to evaluativist epistemological understanding which is a position that the individual believes that each opinion need to be evaluated by weighing their merits as well as demerits before accepting it. Magolda (1992) conducted a longitudinal study of university students and developed epistemological reflection model which emphasized the nature of learning than assumptions about knowledge. The sequence of four ways of knowing suggested in epistemological reflection model is absolute, transitional, independent, and contextual. The absolute knower perceives knowledge as certain and handed down by authority whereas a contextual knower constructs individual perspectives of knowledge specific to context. King and Kitchener (1994) proposed reflective judgment model which explains epistemic assumptions that influence reasoning and thinking after conducting an interview with high school students, graduate
students, and adult learners. The model suggested seven stages in development of knowledge that are categorized into three levels such as pre-reflective level, quasi-reflective level, and reflective level. The pre-reflective level includes the stages such as knowledge exists absolutely and concretely, knowledge is obtained directly through senses, and knowledge is obtained from authorities. The quasi-reflective level includes the stages such as knowledge is uncertain and knowledge is contextual as well as subjective. The reflective level includes the stages such as knowledge is constructed into individual conclusions and knowledge is the outcome of process of reasonable inquiry.

**Dimensional Approach**

Another approach to study the personal epistemology of individuals is dimensional approach. The dimensional approach to the study of epistemological beliefs views epistemological beliefs as a set of more or less independent system of beliefs. Schommer (1990) pioneered the multidimensional approach to personal epistemology by reviewing and reconsidering the works of developmental approach to epistemological beliefs. Recent researches in epistemological beliefs are mainly based on the dimensional approach and another important model was developed by Hofer and Pintrich (1997). The followers of dimensional approach to epistemological beliefs perceived epistemological beliefs as that develop as
independent dimension rather than a uniform stage which develop in synchrony. Thus, according to dimensional view epistemological beliefs develop as a multidimensional concept which explains how an individual move through a patterned sequence in their development of beliefs about knowledge and knowing.

Schommer (1990) viewed epistemological beliefs as a multidimensional construct which includes a system made of almost independent dimensions about knowledge and nature of knowing. Schommer (1990) re-conceptualized the one dimensional construct of personal epistemology and suggested a multidimensional constructs of epistemological belief system which explained beliefs about nature of knowledge and also the nature of learning. The multidimensional model of epistemological belief system consists of five dimensions such as certainty of knowledge, source of knowledge, structure of knowledge, speed of knowledge acquisition, and control of knowledge acquisition.

According to Jehng, Johnson and Anderson (1993) learning beliefs consist of the five dimensions such as certainty of knowledge, omniscient authority, orderly process, innate ability, and quick learning. Certainty of knowledge means that the knowledge is more likely to be certain and unchanging rather than tentative and unpredictable. Omniscient authority dimension explains that knowledge is handed down by teachers and other
experts rather than formed by independent reasoning. The dimension of orderly process describes that learning process tend to be systematic than irregular. Innate ability explains that the ability to learn is innate rather than acquired. Learning is an immediate rather than a slow process of accumulating knowledge is explained by the dimension quick learning.

Hofer and Pintrich (1997) reviewed the developmental and dimensional approaches in epistemological beliefs and proposed a theoretical model that describes about the four dimensions of nature of knowledge and knowing. The four dimensions are certainty of knowledge, simplicity of knowledge, source of knowledge, and justification of knowledge. The nature of knowledge is described by using the dimensions of epistemological beliefs such as certainty of knowledge and simplicity of knowledge. The nature of knowing part is described with the help of epistemological dimensions such as source of knowledge and justification of knowledge. Buehl (2003) described epistemological beliefs in terms of the structure of knowledge (simplicity or complexity), the stability of knowledge (changing from one to another one), the source of knowledge (authority or experience), the nature of knowledge (quickly or gradually), and the ability of learning (innate or effort in times).
Perry’s Theory of Epistemological Development

Perry (1968) studied college students’ ideas about the nature of knowledge and identified nine positions in intellectual and ethical development of the students. The first half of the theory of epistemological development described in Perry’s theory is focused on intellectual development and the other part is focused on ethical, moral, and identity development. Perry (1968) analyzed and interpreted Harvard University undergraduate students’ educational experiences and found that majority of the first year students believed that knowledge is simple, certain, and handed down by omniscient authority, while majority of the fourth year students believed that knowledge is complex, tentative, and derived through reasoning. Thus, Perry (1968) developed the nine positions in intellectual development which ranges from dualism to relativism. The nine positions in which development of knowledge takes place can be grouped into four major categories such as dualism (positions 1 and 2), multiplicity (positions 3 and 4), relativism (positions 5 and 6), and commitment (positions 7, 8 and 9). The first three positions represent a simple right-wrong structure and their adjustment to diversity, the middle three trace the move to a generalized relativistic structure in which students face the issue of identity through personal commitment in a relative world and the last three represent stages in the growth of commitment (Culver & Hackos, 1982). The nine positions are described as follows:
**Position 1: Basic Duality**

Epistemologically the outlook assumes that knowledge consists of a set of right answers known by the authorities and existing in the absolute, in position one. An individual who is in this position perceives any knowledge, act, or value to be either right or wrong. It is assumed that there is right answer for everything and all answers are either right or wrong. The authorities know which is right and which is wrong and authority cannot be separated from the absolute. The knowledge is certain and any knowledge or act that differs from authority is considered as wrong or evil (Perry, 1968). The learner believes that the truth relies with the authority and receives knowledge from the authority.

**Position 2: Multiplicity Pre-legitimate**

The Position two is characterized by the student's temperamental and developmental tendency either toward compliance (Adherence) or revolt (Opposition) in relation to authority (Perry, 1968). The individual begins to believe that diversity in opinion exists. Students perceive authorities in question as he presents complexities to the students and helps student to find out the right answers through their own efforts. The authority wants the students’ to explore their own truth and places an unwarranted hindrance to the right answer. The individual in this position believes that authorities does not know what is right and wrong and student’s go for their own exploration
or multiplicity. Multiplicity refers to plurality of answers. The students become aware about the multiplicity of opinion (Perry, 1970).

**Position 3: Multiplicity Subordinate**

A person in this position accepts the multiplicity or uncertainty and diversity as unavoidable and legitimate but only in areas where authority has not attained the right answers. The individual believes that uncertainties exist and authorities are trying to find out the right answers or truth (Perry, 1968).

**Position 4: Multiplicity Correlates or Relativism Subordinates**

In position four, the multiplicity attains a status of a realm of its own, correlate with and over against the world of authority. The position is characterized by two alternative views of the students such as multiplicity correlates and relativism subordinates. In multiplicity correlates, the individual believes that the multiplicity of opinion correlates with absolutism in which right answers are known. Everyone has their own right and there is no absolute right and wrong. The individuals are in a position to understand that the solutions proposed by others are right according to them and the authority wants the individual to arrive at a solution of their own. Relativism subordinate emphasizes that knowledge or truth is not absolute and different approaches exist for one problem for developing one’s own thought. Relativism means that the knowledge, truth and morality exist in relation with culture or societal context and are not absolute. (Perry, 1968)
Position 5: Relativism Correlate, Competing or Diffuse

A person in this position perceives relativistic reasoning as what authority wants. The individual believes that truth and morality exist in relation with the context for which the individual seeks solution to the problem or question. The weighing of different approaches to one problem and developing of one’s own thoughts occur according to the context. In this position, the individual understands that all proposed solutions have reasons and there is no right and wrong answers. The right and wrong answers may be different for different persons at different time. The individuals have to evaluate the solutions with respect to the context because depending upon the contexts some solutions is better than others. The old believes and identity breakdown are diffused in relation with authority (Perry, 1968, 1970).

Position 6: Commitment Foreseen

The implication of commitment began to experience by an individual in this position. This position describes a realization of a necessity to commit oneself in a realistic world. The person understands that the realistic world provides plenty of opportunities. The individual also recognizes the necessity of making choices from the alternatives for arriving at a suitable solution for the problematic situation. The individual starts to develop strong belief about an idea or an opinion by relating with the realistic world. The individual is in a position to reason and justify their opinion and ideas assuming at the same
time that the choice is existing. Commitment refers to a person's affirmation of personal values or strong belief in idea or system and orientation in a relative world (Perry, 1968).

**Position 7: Initial Commitment**

A person in this position is able to undertake his own responsibilities as well as decisions in his/her own life. On the basis of reasoning and evidences the individual starts to believe that some ideas are more reliable than others. The individual begins to learn from experiences and make reflections about their own activities (Perry, 1970).

**Position 8: Orientation in Implications of Commitment**

A person in this position has begun to experience the implications of commitment and to relate their experiences with the realistic views. The individual relate their experience with the commitment by exploring the subjective issues. The students also start to explore the issues of responsibility (Perry, 1968).

**Position 9: Developing Commitment**

A person in this position has developed a maturity in which they are in a position to believe their own values and what they think is justifiable and logical. The individual has developed the maturity in which his identity was affirmed in his commitment and associated responsibilities. The individual is
aware that others may think differently as well as in a position to respect others and to learn from others. The person is also aware that the commitment is an ongoing activity and ready to reconsider their views (Perry, 1970).

The nine positions explained by Perry (1968) in theory of epistemological development are summarized in Figure 2.

Figure 2. Positions in Theory of Epistemological Development by Perry (1968)

Among the four categories, a person who believes in dualism views knowledge as right or wrong, dualistic, or absolute. The learner believes that there is only one truth and receives knowledge from authorities. The learner who passes to the multiplicity stage recognizes the diverse views of knowledge and the uncertainty of knowledge. The relativism position helps
the learner to understand that there is no right and wrong even though the role of self becomes more dominant. The individuals are able to accept that some views are better than others. The commitment stage helps the learner to establish personal identity by developing commitment within a relativistic world. The person moves from a dualistic viewpoint through multiplicity and contextual relativism to position themselves with commitment in a realistic world.

**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. leaning. 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 and
• 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).

The revision of Epistemological Questionnaire was carried out by many researchers. Qian and Alvermann (1995) revised Epistemological Belief Questionnaire and renamed as Revised Epistemological Questionnaire which consist of 32 items related to the four factors by eliminating the factor omniscient authority. Chan and Elliott (2002) carried out a revision of Schommer’s Epistemological Questionnaire and developed Epistemological Beliefs Questionnaire. The instrument which initially consisted of 45 items then reduced to 35 items on the four factors. The internal consistency of the items on Cronbach alpha coefficient value ranges from .60 to .70.

Hofer (2000) developed a discipline focused epistemological beliefs questionnaire based on Schommer’s Epistemological Questionnaire to assess the specific belief in psychology and science. The instrument consists of 18 items on four factors such as certain/simple knowledge, justification for knowing, source of knowledge, and attainability of truth. Beliefs about learning Questionnaire was developed by Jehng, Johnson, & Anderson, (1993) which consist of 60 statements that requires students to respond on a
seven point scale based on the five dimensions certain knowledge, omniscient authority, rigid learning, innate ability, and quick process.

The Epistemic Beliefs Inventory (Schraw, Bendixen, & Dunkle, 2002) consisted of 28 items related to the five hypothesized beliefs by Schommer (1990) which measured the aspects related to general epistemological beliefs of undergraduate psychology students. The Epistemic Beliefs Inventory included the dimensions such as certainty of knowledge, simple knowledge, quick learning, omniscient authority, and innate ability. The test retest reliability coefficient obtained for the inventory is .78.

Epistemological Belief Survey for Mathematics developed by Wheeler (2007) is used to measure mathematics related beliefs of university students. Ten to twelve statements were included in the instrument based on the dimensions such as source of knowledge, certainty of knowledge, structure of knowledge, speed of knowledge acquisition, innate ability-general, innate ability-personal, and real-world applicability. The instrument consists of 75 items with alpha coefficient estimate of internal consistency .93.

**Theoretical Overview of Achievement Goals**

Achievement goal orientation, the aspect of motivational constructs plays a prominent role in determining students' achievement and learning. Motivation is an important determinant of learning and academic performance. Student motivation is a complex psychological process which
includes many personal and situational reasons for the motivated and de-motivated behavior of the learner. Motivation to learn is a combination of intrinsic and extrinsic motivation. Children are intrinsically motivated when performing and learning by setting goals within themselves. Whereas, the extrinsically motivated student engage in the academic activity for the sake of material or other rewards that are not intrinsically related to learning. Achievement motivation governs the behavior related to achievement and learning. Among the various approaches to explain achievement motivation, the goal approach to achievement motivation explained adaptive and maladaptive motivational factors.

Competence is the essence of the achievement goal construct. Competence is defined in terms of the referent or standard that is used in performance evaluation (Elliot & McGregor, 2001). Competence or standard is divided into absolute, intrapersonal, and normative. The absolute standard means one has acquired understanding or mastered a task. The intrapersonal standard means improving one’s performance or fully developed one’s knowledge and skills or compares one’s own performance with their own past attainment or maximum potential attainment. Normative standards mean that improving one’s performance better than others. Absolute and intrapersonal competences have many conceptual similarities as they both represent mastery of task and the development of one’s knowledge. The competence is
valenced in terms of positive which means approaching success and negative which means avoiding failure (Elliot & McGregor, 2001).

The goal adopted by the students is an important factor of students’ motivation as it provides proper direction and purpose to engage in an activity for the students (Pintrich & Schunk, 1996). An achievement goal is commonly defined as the purpose for engaging in a task and the specific type of achievement goal adopted by the individual creates a framework for how individuals experience their achievement pursuits. An achievement goal concerns the purposes of achievement behavior (Ames, 1992). Achievement goals are defined as involving a program of cognitive processes that have cognitive, affective, and behavioral consequences (Elliott & Dweck, 1988). Achievement goals are the different ways of approaching, engaging in and responding to achievement related activities by an individual (Dweck & Leggett, 1988). Achievement goals are concrete cognitive representations that direct individuals towards specific end states (Elliot & McGregor, 2001). It has emerged as a dominant framework for studying motivation and competence in academic achievement. The individual give meaning to their achievement on the basis of achievement goal adopted by them. Achievement goals and orientations are assumed to be cognitive representations of what individuals are trying to do or what they want to achieve and are more domain, situation, or task specific (Elliot & Thrash, 2001). Achievement goal refers to the achievement oriented or achievement directed behavior where
success is the goal (Roberts, 2006). Achievement goals are conceptualized as
cognitive–dynamic aims that focus on competence and any given
achievement goal is thought to contain components from two independent
competence dimensions (Elliot & Murayama, 2008). Thus, achievement goals
can be described as the cognitive representations as well the activities done by
the individuals while approaching and engaging in academic related activities
which are directed towards the specific academic goals.

**Achievement Goal Theory**

Achievement goal theory assumes that individual is an intentional as
well as goal directed organism that operates in a rational manner. The
researchers in achievement motivation identified that the type of achievement
goals pursued by the students influences the motivational process (Dweck &
Elliott, 1983; Nicholls, 1984; Elliott & Dweck, 1988; Ames, 1992; Elliot &
McGregor, 2001; Elliot & Thrash, 2001). The achievement beliefs and
behaviours related to achievement are governed by the achievement goals
adopted by the individual.

**Dichotomous Framework of Achievement Goal Theory**

Traditional achievement goal theory or normative goal theory were
viewed and analyzed achievement goals on a dichotomous framework. In
1983, the original goal models by Dweck and Elliott identified two classes of
goals such as performance goals and learning goals. The purpose of
performance goal is to validate one’s ability or avoid demonstrating a lack of ability. By adopting a performance goal the individual aims to gain favorable judgments of their competence or avoid negative judgments, predicted to produce challenge-avoidance and learned helplessness when perceived ability was low and to promote certain forms of risk-avoidance even when perceived ability was high. On the other hand the purpose of learning goals is to acquire new knowledge or skills. By adopting learning goals the individual aims to increase their competence, predicted to promote challenge-seeking, and a mastery-oriented response to failure regardless of perceived ability (Elliott & Dweck, 1988).

Nicholls (1984) identified achievement behavior into two categories such as task-involved goals and ego-involved goals instead of learning goal and performance goal. An individual who adopts task-involved goal tries to achieve mastery of subject, improve learning, and uses self-referenced measures to demonstrate their ability. The goal of action of an individual who adopts ego-involved goal is to demonstrate their ability with reference to others and tries to outperform others in all activities or being better related to others (Nicholls, 1984, 1989).

According to Ames and Archer (1988), the achievement goals are classified into performance goals and mastery goals. An individual with performance goal orientation aims to show evidence of their ability by
outperforming others and by being successful with little efforts. Whereas, an individual with mastery goal orientation gives much importance to development of skills, process of learning, and dependent on efforts which help to master the task. Hence, the achievement goals are bifurcated into mastery goal orientation and performance goal orientation.

Thus, the normative goal theory or dichotomous framework of achievement goal classifies achievement goals as mastery goal or task-involved or learning goal and performance goal or ego-involved or ability goals. The terms “mastery goal”, “task involved goal”, and “learning goals” are used to explain the goal pursued by the learner that focuses on mastering of task or learning. Whereas, the terms such as “performance goal”, “ego involved goal”, and “ability goals” are used to explain the goal pursued by the learner that focuses on improving their ability or performance better than others.

**Trichotomous Framework of Achievement Goal Theory**

The trichotomous framework of achievement goal theory bifurcate the performance approach goal into performance-approach goal and performance-avoidance goal by understanding the shortcomings of dichotomous framework of achievement goal theory (Elliot & Harackiewicz, 1996). Thus, the achievement goal construct consists of three types of goals such as performance-approach goal, performance-avoidance goal, and mastery goal.
The performance goal construct is divided into two as approach-avoidance valence. A performance-approach goal is focused on attaining competence relative to others and to demonstrate one’s ability or competence to others. An individual who adopts a performance-approach goal towards learning is concerned most with the outcome of learning in particular and tries to outperform others and concentrate on attainment of normative competence. A performance-avoidance goal is focused on avoiding incompetence relative to others or avoidance of normative incompetence. With performance avoidance goal the student is concerned with the avoidance of demonstration of low ability in front of others and tries to avoid situations demonstrating one’s incompetence. On the other hand, the mastery goal orientation focuses on the development of one’s competence and mastery of task. A student who adopts a mastery goal towards learning is concerned most with the process of learning rather than the product/outcome and believes that efforts lead to improvement in performance. Thus, the mastery goal focuses on the development of one’s own competence, performance-approach goal focuses on the favourable judgment of competence by others and performance-avoidance goal focuses on avoiding the situations or activities which leads to unfavourable judgment of competence of an individual. Mastery and performance-approach goals were aimed at the development of potential positive outcomes whereas performance-avoidance goals concentrated on
potential negative outcomes (Elliot & Harackiewicz, 1996; Elliot & Church, 1997; Elliot, 1999; Middleton & Midgely, 1997; Pintrich, 2000b; Elliot, 2005).

2 X 2 Achievement Goal Theory Framework

The trichotomous classification was revised by bifurcating the mastery goal into mastery-approach goal and mastery-avoidance goal. Thus, the trichotomous framework is extended to 2 X 2 achievement goal framework by adding mastery-avoidance goal (Pintrich, 2000a). According to (Pintrich, 2000a), the mastery goals also have the approach and avoidance version in addition to performance-approach goals and performance-avoidance goals. The trichotomous framework divide only the performance goal into approach and avoidance perspective but in the 2 X 2 framework the distinction of approach-avoidance is also extended to mastery goal (Pintrich, 2000a; Elliot and McGregor, 2001). Thus, the achievement goals were extended to four types of goal such as mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance goals. The 2 X 2 achievement goal framework includes the combination of definition and valence dimensions of mastery and performance goal. According to Elliot and McGregor (2001), in the trichotomous framework the mastery goal is treated as mastery-approach goal that defined competence in absolute or intrapersonal terms where the individual strives to attain mastery of the task as well as to improve their performance compared to their past performance or potential attainment and
is positively valenced. Mastery-avoidance goal construct defined competence in terms of absolute or intrapersonal terms where individual strives to master the task or one’s own pattern of attainment and is negatively valanced in which incompetence is the focal point of regulatory attention. Mastery-avoidance goals were described as a focus on avoiding self-referential or task-referential incompetence (Elliot, 2005). The performance-approach goal defined competence in normative terms where the individual strives to improve their performance better than others and is positively valenced. The performance-avoidance goal defined competence in normative terms where the individual sets standard to perform better than other by avoiding situations which shows their incompetence and is negatively valanced (Pintrich, 2000a; Elliot & McGregor, 2001). The approach-avoidance states of achievement goal for mastery and performance goals are described by Pintrich (2000a) is given in Table 1.
Table 1

*Approach-Avoidance States of Achievement Goal (Pintrich, 2000a)*

<table>
<thead>
<tr>
<th></th>
<th>Approach State</th>
<th>Avoidance State</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mastery Goal</strong></td>
<td>Focus on mastering task, learning, and understanding</td>
<td>Focus on avoiding misunderstanding, not learning or not mastering the task</td>
</tr>
<tr>
<td></td>
<td>Use of standards for self improvement, progress, and deep understanding of task</td>
<td>Use of standards of not being wrong, not doing it incorrectly relative to task</td>
</tr>
<tr>
<td><strong>Performance Goal</strong></td>
<td>Focus on being superior, best, or smarter, and best in task than others</td>
<td>Focus on avoiding inferior, avoiding situation treating stupid, or dump in comparison with others.</td>
</tr>
<tr>
<td></td>
<td>Use of normative standards for getting highest, or top grades, or for becoming best performer than others</td>
<td>Use of standards for not getting lowest grades, or for not performing worst than others</td>
</tr>
</tbody>
</table>

**3 X 2 Achievement Goal Theory Framework**

Elliot, Murayama and Pekrun (2011) worked on the 2 X 2 framework of achievement goal construct and developed a distinct framework which was separate from the mastery–performance distinction. They referred performance goals as other-oriented goals and mastery goals were distinguished into task-oriented and self-oriented goals. The approach-avoidance distinction was made to the task-oriented goal, self-oriented goal, and other-oriented goal to form the 3 X 2 framework on achievement goals. Thus, the 3 X 2 achievement goal model comprised of task-approach goal, task-avoidance goal, self-approach goal, self-avoidance goal, other-approach goal, and other-avoidance goal. The task-approach goal focused on the
attainment of task-based competence, a task-avoidance goal focused on the avoidance of task-based incompetence, a self-approach goal focused on the attainment of self-based competence, a self-avoidance goal focused on the avoidance of self-based incompetence, other-approach goal focused on the attainment of other-based competence, and other-avoidance goal focused on the avoidance of other-based incompetence. The brief summary of various frameworks of achievement goal theory is given in Figure 3.

Figure 3. Summary of Achievement Goal Theory Frameworks
Measurement of Achievement Goals

A large number of tools are developed to measure the achievement goal from dichotomous framework to 3X2 framework. Some instruments used to measure achievement goals are described below:

Roedel, Schraw, and Plake's (1994) developed Goals Inventory to measure the learning and performance goals of college students. The Goals Inventory consists of 25 statements related to attitudes and behaviors that reflect either learning or performance goals. The sub scales of Goals Inventory included 12 items related to learning goals and the remaining 13 items were related to performance goals. The test-retest reliability of items related to learning goals was $r = 0.73$ and for the performance goals sub scale $r= 0.76$. Eppler and Harju (1997) used the Goal Inventory in their study and the Cronbach's alpha was calculated. For the learning goals sub scale, the alpha coefficient is .85 and for the performance goals sub scale the alpha coefficient is .75.

Elliot and Church (1997) devised Achievement Goals Questionnaire to assess the achievement goals of college students. The Achievement Goals Questionnaire is a seven point scale which consists of 18 items. Among these items, six questions were related to mastery goals, six were related to performance-approach goals, and another six were intended to measure performance-avoidance goals. The 18 items in the questionnaire were rated on
a 4 point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). Cronbach’s alpha for the items were calculated to ensure the reliability. The Cronbach alpha coefficient for mastery goal, performance-approach goal, and performance-avoidance goal are .77, .79, and .85 respectively.

Midgley et al. (1998) developed Patterns of Adaptive Learning Survey (PALS) to assess students’ achievement goal orientation on three dimensions of achievement goal such as mastery goal, performance-approach goal, and performance avoidance goal. The instrument consists of 14 items on personal goal oriented in which responses to be marked on a three point Likert scale. Out of 14 items, 5 items represent mastery goal, 5 items represent performance-approach goal, and 4 items represent performance-avoidance goal. The Cronbach alpha coefficient calculated for mastery goal, performance-approach goal, and performance-avoidance goal orientations are .89, .74, and .83 respectively.

Elliot and McGregor (2001) designed an Achievement Goal Questionnaire to assess each of the four achievement goals in the 2 X 2 framework. The items related to mastery-approach goal, performance-approach goal, and performance-avoidance goal were adopted from the tool developed by Elliot (1999), and Elliot and Church (1997). The new items for mastery-avoidance goal were added to measure the 2 X 2 framework of achievement goals. The revised Achievement Goal Questionnaire (AGQ-R)
consisted of 12 items which is equally divided representing the four types of achievement goals i.e. mastery-approach goal, mastery-avoidance goal, performance-approach goal, and performance-avoidance goal. The 12 items in the questionnaire were rated on a 7-point Likert scale. The validity of the instrument was ensured through factor analysis. The Cronbach’s alpha coefficient obtained for the tool is .68. Coutinho and Neuman (2008) used the Achievement Goals Questionnaire in their study and the overall Cronbach’s alpha coefficient for the items calculated was .83. Based on the Achievement Goal Questionnaire, Elliot and Murayama (2008) revised and developed an Academic Goal Questionnaire-Revised (AGQ-R) to measure the 2 X 2 framework of achievement goals. The questionnaire consisted of 12 statements to measure mastery-approach goal, mastery-avoidance goal, performance-approach goal, and performance-avoidance goal on a five-point scale ranging from strongly disagree (1) to strongly agree (5).

The Achievement Goal Inventory developed by Grant and Dweck (2003) measured the goal orientation factors such as outcome goals, ability goals, normative goals, and learning goals. The normative goals included normative outcome and normative ability goals. The learning goals included learning and challenge-mastery goals. The final version of Achievement Goal inventory consisted of 18 items representing three items each from the six goal orientation factors. The factor analysis showed that the alpha coefficient for outcome goals, ability goals, normative goals, and learning goals were .85,
Elliot, Murayama, and Pekrun (2011) devised 3 X 2 Achievement Goal Questionnaire (AGQ) to measure the six achievement goals of undergraduate students. The Achievement Goal Questionnaire consisted of 18 items dividing three items to represent task-approach goal, task-avoidance goal, self-approach goal, self-avoidance goal, other-approach goal, and other-avoidance goal. The respondent has to mark their responses on a 7 point Likert scale ranging from 1 (not true to me) to 7 (extremely true to me).

Gafoor and Kurukkan (2015) developed Academic Goal Orientation Inventory to assess the 2 X 2 framework of achievement goal orientation of senior secondary students. The purpose of the inventory is to identify performance-approach, performance-avoidance, mastery-approach, and mastery-avoidance goal orientations of adolescent students. Item analysis was done and the discriminating power of items in performance goal orientation ranges between .31 to .68 and for the mastery goal orientation items, the discriminating power ranges between .33 to .69. Construct validity of the test is ensured by the investigators. The items loading greater than .30 are included in the final tool which consists of 15 stem statements. Cronbach’s alpha coefficient obtained for performance goal orientation is .83 and for mastery goal orientation is .75. The test retest correlation coefficient
obtained is .98 for performance-approach, .98 for performance-avoidance, .99 for mastery-approach, and .97 for mastery-avoidance.

Theoretical Overview of Self Regulated Learning Strategies

Self regulation plays an important role in student learning, learning outcomes, and academic performance in classroom context. (Zimmerman, 1989; Pintrich & De Groot, 1990; Zimmerman, 1994; Schunk, 1994; Vrugt & Oort, 2008; Chandran & Kadhiravan, 2012). The theories of constructivism and social learning theory form basis for self regulation. The social cognitive theory of self regulation by Bandura (1991) brought together the behavioural and cognitive components and concluded that human beings are able to control their behavior by using self regulation process. According to Zimmerman (1989), the three sub functions of self regulation are self-observation, self-judgment, and self-reaction. Self-observation provides information need for setting goals and ways of realizing these goal as well as monitors and adjusts the behavior according to the situation. Self-judgment process helps an individual to evaluate the consequences of their own behavior and to compare their performance either with personal standards or with the performance of others. Self-reaction is reflection about accomplishments and dissatisfactions as a consequence of their behavior and provides self-reinforcement and self-punishment by comparing with the standards. Self-efficacy beliefs or people’s beliefs about their ability to
succeed exert a strong influence on the self regulation process or human thought, affect, motivation and action. The choices made by the individual, their aspirations, the efforts used by the individual to accomplish the task, techniques used to adapt with the difficulties and setbacks, stress experienced while coping with environmental demands, and supporting measures taken by the individual are affected by people’s beliefs in efficacy (Bandura, 1991).

Self regulated learning is defined as those specific processes in which students are metacognitively, motivationally, and behaviourally active participants in their own learning (Zimmerman, 1986). The metacognitive processes mean the students plan, set goals, organize, monitor, and self evaluate the learning process at various levels. The motivational processes mean self-efficacy, self-attribution, and intrinsic interest in the task of the learner. The behavioural process includes the activities done by the students to select, create, and structure the classroom environment to optimize their learning (Zimmerman, 1990). According to Zimmerman (1989), self regulated learning involves the regulation of three aspects of academic learning such as self regulation of behavior, self regulation of motivation and affect, and self regulation of cognition. Self regulation of behavior involves those processes in which the student actively controls the resources available to them such as time and study environment. The self regulation of motivation and affect involves controlling the self-efficacy, goal setting, and anxiety to improve their learning. Finally, the self regulation of cognition involves the
deep processing strategies of cognitive aspects which enhance the learning process.

Boekaerts (1997) considered self regulated learning as a goal directed process to achieve the goal where the learners deliberately select the strategies to achieve the goal. The self regulated learner with the help of the appropriate metacognitive, motivational, and affective strategies tries to become successful learners. Self regulated learning is a process of self-initiated action in which the individual sets the goal, regulate their own efforts to reach the goal, self-monitors their activities (metacognition), manages time, and regulates their physical and social environment (Zimmerman & Risemberg, 1997). Pintrich (2000c) defined self regulated learning as an active and constructive process in which students set goals for their learning as well as monitor, regulate, and control their cognition, motivation and behavior to attain the learning goals. Zimmerman (1990) summarized that the self regulated learning involves the use of self regulated learning strategies by the students, the responsiveness of the students to self-oriented feedback about learning process, and independent motivational processes of the students. Thus, academic self regulation is the process by which students achieve their personal goals by regulating cognition, affect, motivation, and behavior.
Zimmerman’s Cyclical Model of Self Regulation

According to Zimmerman (2002) self regulation is a directive process in which the students transform their mental abilities to academic skill. Among the various models of self regulation, the most popular one is Zimmerman’s cyclical model of self regulation (Zimmerman, 2000). The cyclical model explains that the students set goals, monitor their progress, and reflect about their performance interactively. The structures of the self regulatory processes are viewed as a multidimensional cyclical process which involves a set of three recurring phases (Zimmerman, 1986). The phases involved in the cyclical process of self regulatory learning are forethought phase, performance phase, and self-reflection phase (Zimmerman, 1986). The phases involved in the Zimmerman’s (1986) cyclical model of self regulatory learning are shown in Figure 4.

\[ Figure 4. \] Zimmerman’s Cyclical model of Self Regulatory Learning
The functions of each phases of the cyclical process of self regulatory learning (Zimmerman, 1986) are described below;

**Phase 1. Forethought Phase**

The first phase is forethought phase which deals with the processes and beliefs that occur before the learning efforts. It is considered as planning beforehand which facilitates a platform for action. The forethought phase includes task analysis and self-motivation beliefs. The process of task analysis refers to those activities which involve goal setting and strategic planning. The student tries to understand the problem/task by setting short term or long term goals of their learning experience. They also create the mental maps to find solution for the problem or to understand the task under consideration (Zimmerman, 2002). Self-motivation beliefs include self-efficacy, outcome expectations, intrinsic interest/values, and learning goal orientation. Self-efficacy beliefs refer to the personal beliefs of the student in his/her capacity to perform or learn at a designated level. The learner who engages in a task believes that they can do and have the competence to do the specific task. Here, the learners engage in those tasks which they believe they can succeed (Zimmerman, 2000). The outcome expectations means the beliefs of the learner related to the personal consequences of the learning. According to Bandura (1997), the outcome expectations of an individual in the learning process determine the action and behavior of that individual. Intrinsic interest/
value mean the capability of the student in valuing a task skill for its own merits (Zimmerman, 2002). According to Zimmerman (2000), the intrinsic interest means the students’ engagement in a task for the sake of learning and mastering the task. Learning goal orientation explains the process of valuing learning process for its own merits. The students who find interest in the subject they are studying are motivated to learn in self-regulated way and achieve mastery of the task (Zimmerman, 2002).

**Phase II. Performance Phase**

According to Schunk and Zimmerman (1998) the performance phase or performance control phase refers to the strategies to control their performance to become successful in the learning process. The students engage in self-monitoring and self-control of those goals. The two processes in the performance phase are self-control and self-observation or self-monitoring. Self-control includes those processes which uses the methods and strategies selected during the forethought phase. The learner uses the self-control methods such as imagery, self-instruction, task analysis, time management, attention focusing, environmental structuring, help-seeking, interest incentives, and self-consequences (Zimmerman, 2002). The self-observation involves the use of metacognitive monitoring and self-recording or self experimentation of personal events to find out the cause of these events (Zimmerman, 2000). According to Schunk and Zimmerman (1998), self-
monitoring or self-observation helps the learner to update about their progress in learning tasks or the problem.

**Phase III. Self-reflection Phase**

The third phase of self regulation is self-reflection. According to Schunk and Zimmerman (1998), students compare the outcomes to performance goals by reflecting and evaluating their reactions. The self-reflection phase includes the processes such as self-judgment and self-reaction. Self-judgment means self-evaluation and causal attribution. Students ask themselves whether they have accomplished the goals which they set in the forethought phase. They also analysis the errors occurred while attaining the goals on the basis of their beliefs (Zimmerman, 2002). In self-reaction, in order to overcome the shortcomings the learner look for more effective methods than the ones used earlier which includes self-satisfaction and adaptive or defensive reactions. Self-satisfaction means that the students evaluate their own performance, how well the task was completed, collect feedback from peers, and compares performance with the standards. Adaptive reactions means discarding the ineffective strategy and adapting more effective methods to accomplish the standards where as defensive reactions means avoiding opportunities to learn and perform in order to protect one’s own self-image (Zimmerman, 2000).
Pintrich Model of Self Regulation

The model of self regulation based on socio-cognitive perspective proposed by Pintrich (2000c) organizes the self regulatory processes into four phases which occur in a strict linear sequence such as (a) forethought, planning and activation, (b) monitoring, (c) control, and (d) reaction and reflection. Self regulation activities in each of these phases are conceptualized to operate in all major areas of human behavior such as cognition, motivational/affective, behavioral, and contextual. The Pintrich model of self regulation is represented in Figure 5.

![Figure 5. Pintrich Model of Self Regulation](image-url)

According to Pintrich (2000c), the four steps represent a general sequence as the student carries out the task and self regulated learning process operate across cognitive, motivation/affect, behavioral and contextual areas. The phases are neither hierarchically nor linearly structured as earlier
phases must always occur before later phases (Pintrich, 2004). The details of the phases of self regulation are given below;

**Phase I. Forethought, Planning and Activation**

According to Pintrich (2000c), the first phase of self regulation process involves planning and setting of desired goals as well as activation of prior knowledge about material, metacognitive knowledge of task (cognition), activation of motivational beliefs and task value (motivation/affect), perceptions and knowledge of the task, resources and context (context), time and effort planning, and the self-observation of behavior (behavioral).

**Phase II. Monitoring**

The phase two is related to various monitoring processes such as metacognitive and monitoring of cognition awareness and monitoring of motivation and effect, awareness and monitoring of effort, time use, need for help, and self-observation behavior as well as awareness of different aspects of the self and task or context (Pintrich, 2004).

**Phase III. Control**

According to Pintrich (2004), the phase three involves efforts to control and regulate different aspects of the self or task and context. It includes the selection and adaptation of cognitive strategies for learning and thinking, selection and adaptation of strategies for managing motivation and
affect, selection and adaptation of strategies which increase/decrease effort, and help-seeking behavior as well as selection and adaptation of strategies which change or renegotiate task or leave context.

**Phase IV. Reaction and Reflection**

Finally, the phase four represents various kinds of reactions and reflections which include cognitive judgments and attributions, affective reactions and attributions, behavior choice, and evaluation on the self and the task or context (Pintrich, 2000c).

**Self Regulated Learning Strategies**

Learner can improve their performance by use of learning strategies through a variety of techniques (Zimmerman, 2000; Pintrich, 2000c; Schunk & Zimmerman, 1998). According to Schunk and Zimmerman (1998), self regulated learning combines the learning strategies and mental processes in which the learners engage consciously to help them and achieve healthier gains academically. Self regulated students select and use self regulated learning strategies on the basis of feedback about the learning effectiveness in order to achieve the desired goals. Pintrich and De Groot (1990) stated that self regulated learning strategies involve the use of combination of cognitive learning strategies, metacognitive learning strategies, and resource management strategies by the student. The self regulated learning strategies combines students' metacognitive strategies for planning, monitoring, and
reflection, cognitive strategies used by the students to learn, remember, and understand the material and resource management strategies used by the students’ to take control of their effort and classroom learning environment.

Self regulated learning strategies refer to the action and processes directed at acquisition of information or skills that involve agency, purpose, and instrumentality perceptions of the learner. The self regulated learners are aware of the strategic relation between regulatory process or response and learning outcomes as well the use of these strategies to achieve academic goals (Zimmerman, 1989, 1990). Self regulated learning strategies are defined as those strategies which are used by the students to regulate their cognition which involves rehearsal, elaboration, organization, critical thinking, metacognitive self regulation, time/study environmental management, effort regulation, peer learning, and seeking help strategies (Pintrich, 1999). Self regulated learning strategies help the students to plan independently, organize the learning resources, monitor and assess their learning.

A meta analysis of self regulated learning strategies conducted by Boer, Donker-Bergstra, and Kostons (2013) classified self regulated learning strategies into cognitive strategies, metacognitive strategies, management strategies, and motivational strategies. Cognitive strategies are those strategies which are lower than the metacognitive methods used by the learner to
understand and remember the learning material. Cognitive strategies involve elaboration strategies which are used to establish connection between the new learning material and the previously learned ones, rehearsal strategies which help to store information by repeating the learning material and organization strategies that are used to understand the learning material to facilitate learning. Metacognitive strategies include planning strategies and monitoring strategies to check the performance of the learner and evaluation strategies to evaluate the process or product of learning. Management strategies focus on the optimal utilization on learning environment and learning condition. It involves effort management strategies which help an individual to overcome learning difficulties, help seeking strategies which facilitates collaborative learning, and managing physical environment for acquiring information from books and by utilizing library. Motivational strategies involve those activities which focus on enhancing goal orientation task value beliefs and students’ self efficacy. Thus, the self regulated learning strategies are those learning strategies which help the individual to regulate their cognition and behavior related to the academic activities. Self regulated learners take responsibility of their learning by using various cognitive, metacognitive, and resource management strategies to control and regulate their own learning.

**Measuring Self Regulated Learning Strategies**

The tools used to measure self regulated learning strategies used by the
students identified by the investigator through review of literature are described below.

The most widely used tool for measuring self regulated learning strategies is Motivated Strategies for Learning Questionnaire (MSLQ) devised by Pintrich, Smith, Garcia, and McKeachie (1991). It is a self-reporting instrument designed to measure college students’ motivational orientations and use of learning strategies in which students report themselves on a seven point Likert scale. The tool consists of two sections namely, motivation section and learning strategies section. There are 81 items in the scales representing 31 items in motivation section and 50 items in learning strategies section. The motivation section includes the sub scales such as task value, self-efficacy for learning, and test anxiety. The learning strategies section includes sub scales such as rehearsal, elaboration, organization, metacognition, time and study environment management, and effort regulation. The Cronbach’s alpha coefficient calculated for the sub scale ranges between .61 and .89 for the motivational scales and for learning strategies scales between .70 and .93.

Self Regulated Learning Scale developed by Kadhiran in 1999 to measure the self regulated learning strategies of college students consisted of 40 items in which the responses are to be marked on a five point scale. The scale is used for measuring 10 different self regulated learning strategies such
as self-evaluation, organizing and transforming, goal setting and planning, seeking information, keeping records, environmental structuring, self-consequences, rehearsing and memorizing, seeking social assistance, and review of records. The test-retest reliability coefficient calculated for the scale is $r=0.79$ and the predictive validity coefficient is $r=0.897$ (Chandran and Kadhiravan, 2012).

Self Regulatory Learning Strategy Scale (SRLSS) was developed by Usha and Seema in 1996 to measure the self regulatory learning strategies of the secondary school students. The scale consists of 56 items related to personal, behavioural, and environmental strategies to be marked on a three point Likert scale. The test-retest reliability coefficient obtained for the scale is $r=0.77$ and construct validity coefficient is $r=0.62$ (Seema, 2007).

To measure the self regulated learning strategies of undergraduate science students Banarjee and Kumar (2014) developed Self Regulated Learning Scale. The scale consisted of 46 items which measures the sub scales representing metacognition, behaviour, and environment strategies and 14 different self regulated learning strategies namely self-evaluation, organization, transforming, goal setting, planning, information seeking, record keeping, self-monitoring, environmental structuring, giving self-consequences, rehearsing, memorizing, seeking social assistance, and
reviewing records. The validity of the tool is ensured by using content validity and the split-half reliability coefficient obtained for the tool is .724.

Bozpolat (2016) developed the Self Regulated Learning Strategies Scale to measure the self regulated learning strategies used by university students. The scale consists of 29 items which represent eight sub scales of self regulated learning strategies such as motivation regulation, effort regulation, planning, attention focusing, using additional resources, summarizing strategy, emphasis strategy, and self direction. The reliability alpha coefficients for the sub scales of the six point scale ranges from .68 to .79.

**Review of Related Studies**

This section deals with the review of empirical studies related to the variables namely, Epistemological Beliefs, Achievement Goals, and Self Regulated Learning Strategies. It also deals with the empirical studies related to Accountancy subject. The investigator has gone through a large number of studies related to the variables under consideration but only relevant and recent studies are included under this section.
Studies on Epistemological Beliefs

Ekinci (2017) examined the relationships between teaching and learning conceptions and epistemological beliefs of lower-secondary education teachers. The sample for the study comprised of 184 lower-secondary school teachers. The data were collected by using Epistemological Belief Questionnaire (EBQ) and the Teaching and Learning Conception Scale. The results of analysis of variance revealed that lower-secondary teachers’ level of epistemological beliefs about the authority/expert knowledge and learning effort/process was found to be high and regarding the innate/fixed ability was found to be average and teachers’ beliefs regarding the certainty of knowledge is low. The regression analysis indicated that the teachers’ epistemological beliefs are significant predictor of constructivist ($R=.63, R^2=.40, p<.01$) and traditional teaching learning conceptions ($R=.60, R^2=.36, p<.01$).

Feinkohl, Flemming, Cress, and Kimmerle (2016) investigated the impact of epistemological beliefs and cognitive ability on recall and critical evaluation of scientific information. The findings showed that the participants who are having more sophisticated and domain specific epistemological beliefs were able to recall the scientific information and having more critical evaluation. The findings also showed that the cognitive ability is not related to critical evaluation as well as there is no interaction effect of epistemological
beliefs and cognitive ability of participants on recall or critical evaluation of scientific information.

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.

A person centered approach to understand the epistemological beliefs in science of high school students was conducted by Kampa, Neumann, Heitmann, and Kremer (2016). The profile of epistemological beliefs in science of 4995 tenth grade students were collected and analyzed for the dimensions of epistemological beliefs in science such as justification, development, source, and certainty. The results revealed that majority of the students show same epistemological beliefs in science for all dimensions. By analyzing the data with respect to gender, it showed that female students tend to belong to the sophisticated and slightly sophisticated groups and male students tend to belong to multiplistic and evidence-based/dynamic group.
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.
Nayebi and Tahriri (2014) studied the impact of gender and educational level of EFL learners on the dimensions of epistemological beliefs such as structure of knowledge, stability of knowledge, source of knowledge, ability to learn, and speed of learning. Epistemological Questionnaire was used to collect data from 101 EFL students studying English literature and English translation in the Islamic Azad University, Iran. The findings indicated that there exist no significant differences in the scores of epistemological beliefs among male and female EFL learners. While considering the educational level, the results indicated that sophomore students is having more naive beliefs about dimensions certain knowledge and quick learning than freshman students as the mean scores of sophomore students is significantly higher than that of the freshman students on certain knowledge and quick learning.

Schommer-Aikins and Duell (2013) studied the influence of domain specific and general epistemological beliefs or beliefs about knowledge and learning on mathematical problem solving among college students. A domain general and domain specific mathematical problem solving questionnaires were employed to the sample consisted of 700 college students in USA. The study revealed that the domain specific beliefs were the psychometrically strongest factors than general epistemological beliefs in predicting mathematical problem solving among college students. The results also indicated that the students with high mathematical background showed
consistency between domain specific and general epistemological beliefs, whereas, students with less mathematical background are having significant difference between domain specific and general levels of belief. The domain specific mathematical problem solving ability has direct effect and a general epistemological belief has indirect effect on mathematics performance and cognition.

The cross sectional study conducted by Sharma, Ahluwalia, and Sharma (2013) aimed to analyze the epistemological beliefs and expectations of physics among Indian students. It also made the comparison of students’ epistemological beliefs at senior secondary, undergraduate, post graduate levels, and to other countries for which comparison data is available. The sample for the study consisted of 228 students of standard XII, undergraduate students of Shimla and Mandi Districts, and MS Students of Kurukshetra University of Haryana. The results indicated that UG students and standard XII students believed that the learning physics is simply receiving knowledge from authorities or textbooks and MS students agreed that learning physics means constructing one’s own understanding and it should go beyond text books and rote drill. Similar results are observed among students in US, Turkey, and Thailand. The results also showed that for the aspects coherent as well as consistent structure of physics, awareness of concepts of physics, linking their learning with real life experience and that the concepts of maths and physics are related, MS students of India, US, Thailand, and Turkey
students showed more favourable opinion than that of UG students and senior secondary students. The UG and XII students of India showed more favourable attitude in the use of available information most efficiently than MS students of India, US, Turkey, and Thailand. The gender wise analysis of the results indicated that male and female students do not differ in their scores on epistemological beliefs at all levels of education.

Rebello, Siegel, Witzig, Freyermuth, and McClure (2012) conducted a case study to analyze the epistemic beliefs and conceptual understanding of the students in biotechnology. The case study approach explored in-depth epistemic views of three undergraduate non science majors students enrolled in the biotechnology and society group selected on the basis of performance in exams. The data were collected through multiple sources such as individual semi structured interviews, three course exams, and a conceptual instrument. The analysis revealed that the student having more sophisticated epistemology achieved a high level of understanding and performance in the course than a student having less sophisticated epistemology.

Ulucinar, Akar, Demir, and Demirhan (2012) investigated the level of epistemological belief of university students with respect to family education status, religiosity levels, departments, faculty type, class level, and reading habits. Schommer’s Epistemological Beliefs Questionnaire was used to collect data from the participants consisted of 321 students chosen randomly
from several departments such as Mathematics, Geography, History, Turkish Language, and Literature, Primary Mathematics Teaching, Turkish Teaching, Primary Education Teaching, Social Studies Teaching, Science Teaching at Faculty of Art and Science, and Education departments at University of Usak. The findings revealed that significant differences exist in level of epistemological beliefs of university students with respect to family education status, religiosity levels, departments, faculty type, and reading habits. There exists no difference in level of epistemological beliefs with respect to class level.

Cam and Geban (2011) analyzed the effectiveness of case based learning instruction over traditionally designed chemistry instruction on epistemological beliefs and their attitudes toward chemistry of eleventh grade students’. The experimental group consisted of 28 high school students were instructed with case based learning approach and the control group consisted of 35 high school students were instructed with traditional approach by the same teacher. The results showed that there exist significant difference with respect to students’ epistemological beliefs and attitudes toward chemistry between the experimental and control group subject. The study recommended that the case based learning is more effective for development of students’ epistemological beliefs and attitudes toward chemistry than traditional methods
Deniz (2011) studied the importance of epistemological beliefs in science and nature of science and emphasized the effectiveness of explicit reflective approach in science literature. The study also explored the factors that mediating the development of epistemological beliefs such as thinking dispositions, metacognitive awareness, science self efficacy beliefs, and achievement goals.

Students’ epistemological beliefs and attitude towards studying was analyzed by Önen (2011). Epistemological Belief Questionnaire and the Attitudes towards Studying Scale were administered to a sample consisting of 440 secondary students studying in tenth, eleventh, and twelfth grades. The results revealed that there exists significant difference in epistemological beliefs of male and female students. The female students are having more sophisticated epistemological beliefs than the male students. Furthermore, the grade level comparison revealed that epistemological beliefs score of 12th grade students is higher than that of 10th and 11th grade students. The results of correlation analysis showed that there exist positive relation between epistemological beliefs and attitude towards studying among the secondary students.

The study of Ozkal, Tekkaya, Sungur, Cakiroglu, and Cakiroglu (2010) explored the relationship between scientific epistemological beliefs with the socio-economic status and gender of elementary school students.
Scientific Epistemological Beliefs Instrument was used to collect data from 1,152 eighth grade Turkish students. The results of canonical correlation indicated significant relationship between epistemological beliefs and socio-economic status of the students. The variables of socio-economic status such as mother work status, father and mother educational level, number of books at home, and availability of a study room were positively correlated with tentative views while work status of father and having daily newspaper has no significant relationship with epistemological beliefs. The student from high socio-economic status family is having more sophisticated epistemological beliefs compared to the students from low socio-economic status family. The results of multivariate analysis of variance showed that significant difference exist between boys and girls concerning the epistemological beliefs. The boys are having more sophisticated beliefs than the girls’ students.

Yilmaz-Tuzun and Topcu (2010) investigated the relationship between epistemological beliefs, meta-cognition, and constructivist science learning environment among elementary school students. The sample for the study consisted of 626 students of sixth, seventh, and eighth grades of nine elementary public schools located in Ankara, Turkey. The factor analysis identified four factors of epistemological beliefs such as innate ability, quick learning, omniscient authority, and certain knowledge. The results of the study revealed that for elementary school students, epistemological beliefs of the students vary with levels of metacognition. Results of regression analyses
showed that metacognition and omniscient authority were predictors of constructivist learning environment for science.

Österholm (2009) analyzed the theories of epistemological beliefs and communication in order to create an in-depth theoretical foundation of relations between the two constructs. The author suggested a type of unification in building on the theories of epistemological resources and discursive psychology even though some contradictions between theories are found. The study emphasized that to understand the aspects of epistemological beliefs and communication the relevance of mental representations and processes should be considered and adopt a constructive view of language. Epistemological beliefs are being constructed in a specific situation and can be seen as different ways of thinking, where the processes of utilizing prior experiences and of participating in a discursive practice are of fundamental importance.

The impact of gender, grade level, and fields of study on epistemological beliefs was analyzed by Kurt (2009) of Turkish sixth, eighth, and tenth grade students (N=1557). The findings of the study indicated that the level of epistemological beliefs vary with regard to gender, grade level, and fields of study of the students. It was found that the girls possess more sophisticated beliefs than the boys for the dimension justification of knowledge and tenth grade students possessed more sophisticated beliefs than
the sixth and eighth grade students for the dimensions source of knowledge, certainty of knowledge, and development of knowledge. Furthermore, the results also indicated that the students belongs to mathematics and science fields of study possessed more sophisticated beliefs for the dimension justification of knowledge than the students belonging to literature and social science fields of study.

Walker, Brownlee, Lennox, Exley, Howells and Cocker (2009) studied the personal epistemology and learning of first year university students. The results of longitudinal study revealed that the level of epistemological beliefs differ significantly with respect to the course of study, previous post school education experience, family experience, gender, and age.

The study conducted by Felbrich, Muller and Blomeke (2008) examined the epistemological beliefs concerning the nature of mathematics among teacher educators and teacher education students in mathematics. The analysis revealed that epistemological beliefs of teacher education students is characterized by high level of agreement to the static aspect of mathematics and less confident in meaningful application of mathematics for the students in beginning and end of their education. The group of future teachers who are in the beginning and end of education differ significantly with respect to structure of beliefs. While considering the sample of teacher educators, all groups of educators agreed upon the application and process related
statements regarding the nature of mathematics. With respect to structure of beliefs, differences in mean scores exist between the groups of teacher educators in various disciplines of mathematics.

Sachdev (2008) explored the nature of epistemological beliefs as well as investigated the relation between the epistemological beliefs and academic performance of undergraduate arts and design students. The sample for the study consisted of 81 students of foundation programme of art and design course Banglore. Schommer’s Epistemological Beliefs Questionnaire was used to collect data from students. The results of the study showed that the epistemological beliefs and differences in beliefs among the people are influenced largely by the cultural contexts. Furthermore, the results also indicated that those who had naïve epistemological beliefs possessed less academic skills in art and design course when compared to those who had sophisticated epistemological beliefs.

Yadav, Mukarabukumba, and Nsanzineza (2008) conducted a study to investigate the students’ epistemological beliefs about knowledge and learning in physics. The study was conducted on a sample of 796 senior secondary school students of Rwandan. The findings of the study revealed that several common unfavourable epistemological beliefs about knowledge and learning in physics exist among senior secondary school students. The study also compared the epistemological beliefs in physics among the
students and the experts. The results indicated that there exist a large gap between the epistemological beliefs of the students and experts related to the physics subject.

Zhu, Valcke, and Schellens (2008) explored the relationship between epistemological beliefs, learning concepts and approaches to study in a cross-cultural setting where the sample consist of first-year university students in Beijing, China, and Flanders. Schommer’s Epistemological Beliefs Questionnaire (EBQ), Conceptions of Learning Inventory, and Approaches and Study Skills Inventory for Students were used to collect the data. The results of the study validated that epistemological beliefs predict students’ conceptions of learning, which in turn are related to specific approaches to study in a cross-cultural perspective. The mean difference analysis revealed that there exist significant difference in the mean scores of epistemological beliefs, learning concepts, and approaches to study among Chinese and Flemish groups.

Rodríguez and Cano (2006) examined the relationship between epistemological beliefs, learning approaches, and study orchestrations of 388 university students. The results revealed that there exists significant relation between epistemological beliefs and learning approaches as well as epistemological beliefs and study orchestrations. The students who follow more superficial and reproduction oriented learning approaches possessed
more simplistic and naïve epistemological beliefs whereas the students who follow deeper and meaning oriented approaches possessed more mature and sophisticated epistemological beliefs. Those students who used deep study orchestration were having sophisticated epistemological beliefs than those who used surface study orchestration. Regression analysis indicated that learning approaches, study orchestration, and epistemological beliefs predict the academic performance of university students.

Schommer-Aikins, Duell, and Hutter (2005) examined the structure of general epistemological beliefs and domain-specific mathematical problem solving beliefs of middle school students’ on predicting students’ academic performance. The findings confirmed that both general epistemological beliefs and mathematical beliefs have direct and indirect influence on mathematical performance and overall academic performance. The results of regression analyses revealed that the beliefs in quick/fixed learning and studying aimlessly are significantly related to beliefs about effortful math, useful math, understand math concepts, and math confidence. The path analysis indicated that both general and domain specific epistemological beliefs predicted academic performance as measured by solving mathematical problems and overall grade point average.

Palmer and Marra (2004) examined that the epistemological beliefs of college students differs across the disciplinary areas of the sciences and the
humanities. The findings of the study indicated that there exists difference in epistemological beliefs across the disciplinary areas. In addition to that the authors proposed a grounded theory that describes how students’ epistemological beliefs vary across the disciplines. The grounded theory described that the students move from simple to complex epistemologies more naturally in humanities and social science than the science subjects.

Schommer-Aikins, Duell, and Barker (2003) analyzed the students’ beliefs about the nature of knowledge and learning, epistemological beliefs, across domains that vary according to Biglan’s classification of academic disciplines (hard vs. soft disciplines and pure vs. applied disciplines). The results indicated that epistemological beliefs of college undergraduates are moderately domain general and students’ epistemological beliefs are similar for mathematics and social sciences, as well as for mathematics and business. The findings showed a stronger correlation between mathematics and business for epistemological beliefs when compared with correlations between mathematics and the social sciences. The correlations for students who had high exposure to both domains of interests and low academic experience in both domains supported moderately strong domain generality.

Youn, Yang, and Choi (2001) investigated the nature of epistemological beliefs about learning and analyzed the effect of developmental factors such as age, educational level, academic achievement,
gender, and the two aspects of the self-construal, the independent self-construal and the interdependent self-construal in contributing to the development of epistemological beliefs of South Korean high school students. The results showed that the educational level, gender, age, and the interdependent self-construal are negatively related to learning beliefs. The students’ academic achievement and independent self-construal are positively related to the epistemological beliefs of the students.

Manson (2000) examined the influence of anomalous data and of students' beliefs in the certainty/uncertainty of knowledge on conceptual change about two controversial topics such as the dinosaur extinction and the construction of the Giza Pyramids in Egypt. Schommer's Epistemological Questionnaire was administered to 343 students of eighth grade in the first phase and 126 students attending last year in public schools. The results of correlation analysis indicated that the acceptance of anomalous data significantly contributed the most to theory change whereas the epistemological belief contributed less significantly and less strongly for the topic Giza Pyramids. The results of the study also revealed that the relationship is significant between the acceptance of data conflicting with the participants' held theory and the epistemological belief factor that knowledge is certain and handed down by authority.
A meta analysis of studies related to Epistemological Beliefs is presented in the Table 2.

Table 2

*Meta Analysis of Studies Related to Epistemological Beliefs*

<table>
<thead>
<tr>
<th>Year</th>
<th>Author</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>Ekinci</td>
<td>The secondary education teachers’ level of epistemological beliefs about the authority/expert knowledge and learning effort/process was found to be high, regarding the innate/fixed ability was found to be average, and teachers’ beliefs regarding the certainty of knowledge is low. Results also indicated that the teachers’ epistemological beliefs are significant predictor of constructivist and traditional teaching learning conceptions.</td>
</tr>
<tr>
<td>2016</td>
<td>Feinkohl, Flemming, Cress, and Kimmerle</td>
<td>The participants who are having more sophisticated domain specific epistemological beliefs were able to recall the scientific information and having more critical evaluation.</td>
</tr>
<tr>
<td>2016</td>
<td>Gu</td>
<td>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.</td>
</tr>
<tr>
<td>2016</td>
<td>Kampa, Neumann, Heitmann, and Kremer</td>
<td>The female students tend to belong to the sophisticated and slightly sophisticated groups and male students tend to belong to multiplistic and evidence-based/dynamic group</td>
</tr>
<tr>
<td>2015</td>
<td>Arslantaş</td>
<td>There exist significant positive relation between the factors of epistemological beliefs and academic achievement of teacher candidates</td>
</tr>
<tr>
<td>2015</td>
<td>Sadi</td>
<td>There exist direct and positive relation between the students' epistemological beliefs in biology knowledge and factors of conceptions of learning</td>
</tr>
<tr>
<td>Year</td>
<td>Author</td>
<td>Findings</td>
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<tr>
<td>2014</td>
<td>Nayebi and Tahriri</td>
<td>There exist no significant differences in the scores of epistemological beliefs among male and female EFL learners and the sophomore students had more naive beliefs than the freshman students on certain knowledge and quick learning</td>
</tr>
<tr>
<td>2013</td>
<td>Schommer-Aikins, and Duell</td>
<td>The domain specific beliefs were the psychometrically strongest factors than general epistemological beliefs in predicting mathematical problem solving among college students</td>
</tr>
<tr>
<td>2013</td>
<td>Sharma, Ahluwalia, and Sharma</td>
<td>There exist difference in epistemological beliefs in physics at almost all levels of education in India, U S, Turkey and Thailand and no gender difference in epistemological beliefs among students all levels of education.</td>
</tr>
<tr>
<td>2012</td>
<td>Rebello, Siegel, Witzig, Freyermuth, and McClure</td>
<td>The student having more sophisticated epistemology achieved a high level of understanding and performance in the course than a student having less sophisticated epistemology</td>
</tr>
<tr>
<td>2012</td>
<td>Ulucinar, Akar, Demir, and Demirhan</td>
<td>There exist significant differences in level of epistemological beliefs of university students with respect to family education status, religiosity levels, departments, faculty type, and reading habits. There exists no difference in level of epistemological beliefs with respect to class level</td>
</tr>
<tr>
<td>2011</td>
<td>Cam and Geban</td>
<td>The study recommended that the case based learning is more effective for development of students’ epistemological beliefs and attitudes toward chemistry than traditional methods</td>
</tr>
<tr>
<td>2011</td>
<td>Deniz</td>
<td>Explored the mediating factors in the development of epistemological beliefs such as thinking dispositions, meta-cognitive awareness, science self-efficacy beliefs and achievement goals.</td>
</tr>
<tr>
<td>2011</td>
<td>Önen</td>
<td>The results of correlation analysis showed that there exist positive relation between epistemological beliefs and attitude towards</td>
</tr>
<tr>
<td>Year</td>
<td>Author</td>
<td>Findings</td>
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<td>------</td>
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<tr>
<td>2010</td>
<td>Ozkal, Tekkaya, Sungur, Cakiroglu, and Cakiroglu</td>
<td>There exist significant relationship between epistemological beliefs and socio-economic status of the students and showed that significant difference exist between boys and girls concerning the epistemological beliefs.</td>
</tr>
<tr>
<td>2010</td>
<td>Yilmaz-Tuzun and Topcu</td>
<td>The meta-cognition and omniscient authority are predictors of constructivist learning environment for science.</td>
</tr>
<tr>
<td>2009</td>
<td>Österholm</td>
<td>Epistemological beliefs are being constructed in a specific situation and can be seen as different ways of thinking, where the processes of utilizing prior experiences and of participating in a discursive practice are of fundamental importance.</td>
</tr>
<tr>
<td>2009</td>
<td>Kurt</td>
<td>The level of epistemological beliefs vary with regard to gender, grade level, and fields of study of the students.</td>
</tr>
<tr>
<td>2009</td>
<td>Walker, Brownlee, Lennox, Exley, Howells, and Cocker</td>
<td>The level of epistemological beliefs differ significantly with respect to the course of study, previous post school education experience, family experience, gender, and age.</td>
</tr>
<tr>
<td>2008</td>
<td>Felbrich, Muller, and Blomeke</td>
<td>The majority of teacher education students agreed with the static aspect of mathematics and less confident in meaningful application of mathematics in beginning and end of their education.</td>
</tr>
<tr>
<td>2008</td>
<td>Sachdev</td>
<td>Those who possessed naïve epistemological beliefs possessed less academic skills in art and design course when compared to those who possessed sophisticated epistemological beliefs.</td>
</tr>
<tr>
<td>2008</td>
<td>Yadav, Mukarabukumba and Nsanzineza</td>
<td>Several common unfavourable epistemological beliefs about knowledge and learning in physics exist among senior secondary school students and there exist a large gap between the</td>
</tr>
<tr>
<td>Year</td>
<td>Author</td>
<td>Findings</td>
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<td>---------------------------------</td>
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</tr>
<tr>
<td>2008</td>
<td>Zhu, Valcke and Schellens</td>
<td>The epistemological beliefs predict students’ conceptions of learning and there exist significant difference in the mean scores of epistemological beliefs among Chinese and Flemish groups.</td>
</tr>
<tr>
<td>2006</td>
<td>Rodríguez and Cano</td>
<td>The students who follow more superficial and reproduction oriented learning approaches possessed more simplistic and naïve epistemological beliefs whereas the students who follow deeper and meaning oriented approaches possessed more mature and sophisticated epistemological beliefs. The epistemological beliefs predict the academic performance of university students.</td>
</tr>
<tr>
<td>2005</td>
<td>Schommer-Aikins, Duell, and Hutter</td>
<td>Both general and domain specific epistemological beliefs predicted academic performance as measured by solving mathematic problems and overall grade point average.</td>
</tr>
<tr>
<td>2004</td>
<td>Palmer and Marra</td>
<td>There exists difference in epistemological beliefs across the disciplinary areas.</td>
</tr>
<tr>
<td>2003</td>
<td>Schommer-Aikins, Duell, and Barker</td>
<td>A strong correlation exists between mathematics and business with epistemological beliefs when compared with correlations between mathematics and the social sciences with epistemological beliefs.</td>
</tr>
<tr>
<td>2001</td>
<td>Youn, Yang, and Choi</td>
<td>The educational level, gender, age, and the interdependent self-construal are negatively related to learning beliefs. The students’ academic achievement and independent self-construal are positively related to the epistemological beliefs of the students</td>
</tr>
<tr>
<td>2000</td>
<td>Manson</td>
<td>The relationship is significant between the acceptance of data conflicting with the participants’ held theory and the epistemological belief factor that knowledge is certain and handed down by authority</td>
</tr>
</tbody>
</table>
Studies on Achievement Goals

Acharya (2017) studied the relationship of task involvement goal orientations and ego involvement goal orientations with psychological coping skills among university athletes. The participants for the study consisted of 85 athletes from Utkal University, Bhubaneswar. The results of the study showed that both the goal orientations have moderate positive relation with psychological coping skills and ego involvement goal orientation has stronger relationship than task involvement goal orientation. The study also indicated that there exists no difference in goal orientations among male and female athletes.

Sherin (2017) examined the relation between learning strategies and goal orientation of prospective teachers. The study was conducted on a sample of 500 prospective teachers at secondary level under University of Calicut region. The results indicated that there exist a substantial or marked relationship between ($r=0.56$) learning strategies and goal orientation. Mean difference analysis revealed that there exist no significant difference in the means scores of goal orientation of prospective teachers with respect to gender, locale, and type of management. For the means scores of learning strategies of prospective teachers there exists significant difference with respect to type of management and no difference with respect to gender and locale.
Structural equation modeling conducted by Madigan, Stoeber, and Passfield (2016) studied the relation between perfectionism and achievement goals on 3 X 2 achievement goal frame work among 136 junior athletes. The results indicated that perfectionistic strivings are positively associated with task-approach and self-approach goals and associated negatively with task-avoidance and self-avoidance goals. In the case of perfectionistic concerns, the task-avoidance and self-avoidance goals are positively associated and task-approach and self-approach goals are negatively associated.

Musa, Dauda, and Umar (2016) analyzed the gender differences in achievement goals and performances in English language and Mathematics of senior secondary schools. The data was collected from a sample of 827 senior secondary students by using Hierarchical Model of Approach and Avoidance Achievement Goals Motivation Scale. The results indicated that there exist no difference in mathematics performance with respect to gender but male students secured high scores in english language and overall academic performance. Furthermore, the male students are more oriented towards learning goal than the female students while there is no influence of gender on performance-approach goal and performance- avoidance goal orientations.

The study conducted by Rameli and Kosnin (2016) examined the relationship between achievement goal orientation and mathematics anxiety of Malaysian school students. The participants consisted of 976 secondary
school students selected through cluster random sampling. Achievement Goal Questionnaire and Mathematics Anxiety Scale were used to collect data from the respondents. The correlation analysis revealed that the mastery goal orientation and performance avoidance goal orientation correlated significantly with the scores of mathematics anxiety of secondary school students. The regression analysis indicated that among the type of achievement goals, performance avoidance goal orientation contributes largest to the changes in mathematical anxiety.

Ramnarain and Ramaila (2016) investigated the achievement goals orientation of South African University Physics students. The participants for the study constituted 291 students. The results indicated that the students hold stronger mastery goal orientation than performance approach goals and performance avoidance goals orientations. The results of multiple regression analysis showed that students’ perceptions of teacher and peer goal factors made largest unique contribution to their mastery goal orientation.

Sharma and Nasa (2016) explored the relation between goal orientation, academic self-efficacy, academic help-seeking behaviour, and achievement by using structural equation modeling. The participants for the study comprised of 600 secondary school students of class X from Faridabad district. The findings of the study indicated that mastery goal orientation and performance goal orientation are positively correlated with academic self
Mastery goal orientation is positively correlated with academic help-seeking behavior but performance goal orientation is negatively correlated. The students who give more importance to performance approach goals secured higher grades and had beliefs about their abilities.

Bahrami and Bahrami (2015) examined the relation between achievement goals and self-esteem of Iranian students. The data was collected from 54 eighth grade students by using self-esteem questionnaire and achievement goal questionnaire. Descriptive analysis of data revealed that the mean score of approach goal orientations are higher than that of avoidance goal orientations. The results of correlation analysis reported that mastery approach goal orientation and performance approach goal orientation are positively correlated whereas mastery avoidance goal and performance avoidance goal orientations are negatively correlated to self-esteem.

Gafoor and Kurukkan (2015) conducted a study to develop and standardize an academic goal orientation inventory for senior secondary school students of Kerala. The sample for the study consisted of 832 adolescent students of Kerala state. The investigators validated an Academic Goal Orientation Inventory with 15 items in final test representing performance-approach, performance-avoidance, mastery-approach, and mastery-avoidance goal orientations. The results indicated that students’ goal orientation is context specific and they do not stick on one goal orientation.
The study also identified that all aspects of academics are not identical in their value related to goal orientations. For both mastery and performance avoidance goal orientations are best reflected in students’ reports of their input intentions, performance approach reflected in their efforts and mastery approach best reflected yardsticks for evaluating aspects of academics. Students who pursue mastery goal orientation retain the motivation till the end of learning act than the other three goals and performance avoiders apply minimal enthusiasm at initial phases of learning acts.

The study conducted by Hall, Hanna, Hanna, and Hall (2015) investigated the associations between achievement goal orientations and academic performance among students at a UK pharmacy school. The sample for the study consisted of 319 postgraduate pharmacy students. In the case of achievement goal orientation, the goals such as mastery-approach, performance-approach, mastery-avoidance, performance-avoidance, and work-avoidance goals were taken into account by the investigators. On the basis of academic performance the students were classified into higher performer group and low performer group. The mastery goal orientations obtained highest mean score and work-avoidance orientation got lowest mean score on academic performance. The results indicated that there exist significant difference in achievement goal orientations among the students with respect to gender, year of study, and academic performance. The female students secured high scores on mastery-approach and performed higher than
the male students. The mean score in work-avoidance is higher for male students than female students and for low performers than high performance. The mastery-approach and performance-approach scores are lower for final year students than first year pharmacy students. The regression analysis revealed that work avoidance and mastery-avoidance are found significant in predicting the academic performance of the students.

Junasiyamol (2015) conducted a study to compare the achievement goal orientation of orphan students and non-orphan students in secondary schools. The sample for the study consisted of 704 orphan and non-orphan secondary school students. The results indicated that orphan students pursue mastery goal orientation while the non-orphan students pursue performance goal orientation. Furthermore, the results indicated that there exist no significant difference in achievement goals orientation for male sample but there exist difference in performance goal orientation among the two groups. There exists significant difference both in mastery goal and performance goal orientations of orphan and non-orphan secondary school students for female sample and rural sample. While considering the urban sample, there exist no difference in mastery goal orientation and performance goal orientation for orphan and non-orphan students.

Kandemirdoi (2014) conducted a study which explained the relation between achievement goals and variables such as personality traits, self
esteem, and academic self efficacy beliefs. The sample consisted of 513 students belonging to faculty of education in Gazi University. The results supported that the students’ personality traits, self esteem, and academic self efficacy beliefs contributes directly and indirectly on approach and avoidance achievement goals. The responsibility as personality trait contributes positively to learning and performance approach achievement goals. Students with neurotic personality are related positively with avoidance achievement goal and negatively with approach achievement goal. Self respect is positively predicted approach achievement goals whereas academic self efficacy positively predicted both the achievement goals. But academic self efficacy more strongly predicted approach achievement goal.

Barkur, Govindan, and Kamath (2013) studied the relation between achievement goal orientation and academic performance of undergraduate medical students. The mastery, performance-approach, performance-avoidance, and work-avoidance goal orientations of 244 medical students of Manipal medical college were assessed by the investigators. The results indicated that comparing with high performer group, the low performance for the low performer group was due to the effect of work-avoidance goal. The students who pursue mastery goal and performance-approach goal secured high scores in academic achievement than who pursue performance-avoidance and work-avoidance goal orientations. Among the four goal orientations, there exist significant difference only in the mean scores of
work-avoidance goal orientation among the low performer and high performer groups. The results of factor analysis showed that the four types of achievement goal orientation contributed to 40.8 percent of total variance in goal orientation. Among the four factors, performance-approach goal orientation (16.70 percent) contributed higher variance. The mastery goal orientation contributed 10.80 percent, performance-avoidance goal orientation contributed 7.70 percent and work avoidance-goal orientation contributed 5.70 percent. The work-avoidance goal oriented contributed to the least variation.

In a study, Kadhiravan (2012) examined the goal orientation and cognitive styles of higher secondary school students. The sample for the study consisted of 410 higher secondary school students. The results indicated that there exists significant difference in goal orientation with respect to gender, year of study, subject specialization, and type of school. The girls’ students, students studying in plus two class, science subject and government schools were more oriented towards learning goals than performance-approach and performance-avoidance goals. The results also revealed that type of goal orientation had significant effect on cognitive styles.

Madjar, Bachner, and Kushnir (2012) investigated the relation of perceived psychosocial abilities and frustration tolerance with the achievement goals of first year medical students. The results revealed that
medical students are oriented more towards mastery goals than performance goals. Moreover, the age and gender of medical students does not have any significant association with the type of achievement goal orientation. The results also indicated that the mastery goal orientation is positively associated with perceived psychosocial abilities and negatively associated with low frustration tolerance of medical students. While considering the performance goal orientations they are positively associated with low frustration tolerance.

A case study was conducted by Asif (2011) to investigate the relation by considering achievement goal as predictor variable and intrinsic motivation for learning as outcome variable among the students of International Islamic University of Malaysia. The results of correlation analysis indicated that achievement goals are correlated significantly with intrinsic motivation of students. Along the trichotomous classification of goal, mastery goals showed high correlation with intrinsic motivation and performance-avoidance goal showed low correlation with intrinsic motivation. The students with mastery goal orientations are intrinsically highly motivated whereas students with performance-avoidance goal orientations are intrinsically not highly motivated. The regression analysis revealed that mastery goal orientation is the strongest predictor and performance-avoidance goal orientation is the weakest predictor of intrinsic motivation.
Huang (2011) conducted a meta analysis to study the relation between achievement goals and achievement emotions. The author analyzed 77 studies to establish the relation between achievement goals and achievement emotions. The meta analysis supported that mastery goals are strongly related to positive emotions whereas performance avoidance goals are strongly associated with negative emotions. The implications suggested that for improving the psychological well being of students, the teachers and parents should encourage students to adopt mastery goals and to avoid performance avoidance goals.

Diseth and Kobbeltvedt (2010) analyzed the meditational effect of achievement motives, achievement goals, learning strategies, and achievement. The sample for the study consisted of 229 undergraduate students of psychology and economics at the University of Bergen, Norway. The results of correlation analysis indicated that performance-approach goal, mastery goal, and strategic learning strategies are positively correlated with achievement whereas performance-avoidance goal and surface learning strategies are negatively correlated with achievement. The path analysis showed that strategic learning strategies mediated between achievement goals and academic achievement as well as achievement goals mediated between achievement motives and learning strategies.
Hadsell (2010) carried out a study to understand the relation between achievement goals, locus of control, and academic success in economics. The results indicated that performance-approach goals showed strong positive association with examination scores and mastery goals showed negative relation with examination scores. Those students who pursue mastery goals indicated high interest in economics subject than those who follow performance goals while locus of control is negatively associated with the interest of students in economics.

The study conducted by Fouladchang, Marzooghi, and Shemshiri (2009) investigated the effect of gender and grade level differences on achievement goal orientations of Iranian undergraduate students. Achievement goal questionnaire was used to collect data from 302 undergraduate students. The results of multivariate analysis of variance showed that there is no significant interaction effect of gender and grade level on Achievement. There exist significant gender difference and grade level difference on goal orientation. The male students are oriented to performance-approach goal orientation than female students and the last grade students are more oriented towards mastery goal than first grade students.

Shelly (2009) explored the gender difference in goal orientation and learning strategies in relation to academic achievement among elementary school students. Sample for the study consisted of 200 students of 8th grade.
elementary school students of Punjab. The results showed that there exist significant relation between high achievers and low achievers of elementary school students in relation to mastery goal performance-approach goal, use of deep strategies, deep motive, and surface strategy for goal orientation as well learning strategies dimensions. It also indicated that in relation to performance-avoidance goal orientation there exists no significant difference between high achievers and low achievers of elementary school students. Mean difference analysis with reference to gender reveal that there exist significant difference in mastery goal orientation, deep strategy, and surface strategy among high achiever boys and girls of elementary schools. Whereas, no significant difference between high achiever boys and girls of elementary schools in performance-approach goal orientation and performance-avoidance goal orientation.

Coutinho and Neuman (2008) used structural equation modelling to study the integration between achievement goal orientation, learning style, self efficacy, and metacognition among 629 undergraduate students. The results showed that self-efficacy is the strongest predictor of metacognition, followed by deep processing, surface processing, and mastery avoidance where as metacognition is the weak predictor of performance. Furthermore, the performance-approach and mastery-approach goals are positive predictors and mastery-avoidance and performance–avoidance goals are negative predictors of self efficacy. Both the deep processing and surface processing
Learning styles are adopted by the students who pursue mastery goal orientation to attain mastery of the subject matter.

Structural equation modeling used by Vrugt and Oort (2008) explored the impact of achievement goals (mastery, performance-approach, and -avoidance goals) on metacognition and on study strategies and the impact of metacognition (metacognitive knowledge, regulation, and experience) on study strategies (metacognitive, deep cognitive, surface cognitive, and resource management strategies), and academic achievement of psychology students. The results indicated that metacognition is positively related to mastery goals and four study strategies. While considering the performance-approach goals, metacognition is negatively correlated and positively affected by the use of surface cognitive and resource management strategies. Furthermore, the pathways revealed that there exists positive relation between the use of metacognitive and resource management strategies and exam scores whereas negative effect for the use of surface cognitive strategies.

The study conducted by Roebken (2007) analyzed the relation between student goal orientation, student satisfaction, academic engagement, and achievement. The participants consisted of 2309 college students from the University of California. The analysis of demographical variables showed that there exist no significant gender difference in pursuing achievement goals but there exist difference with respect to class level, parental education, and
discipline of study. The results also indicated that both the mastery and performance goals are associated with academic satisfaction, academic engagement, and achievement. The students who pursue both the mastery and performance goals have more academic satisfaction, higher degree of academic engagement, and achieve better grades than those students who pursue mastery goal orientation or performance orientation alone.

A longitudinal study conducted by Barron, Evans, Baranik, Serpel, and Buvinge (2006) investigated the achievement goal orientations of students with ADHD. The investigator conducted the goal assessment both at the beginning and end of the sixth grade and represented former as Time 1 and later as Time 2. The level of goal orientation of students differs significantly over time frame as depicted in the findings. For both the time frames, mastery goal orientations are most likely adopted and performance approach goal orientations are least likely adopted. The relation of achievement goals with adaptive and maladaptive behaviors was also analyzed. The result of correlation analysis revealed that for both the time frames mastery goal orientations is positively related to academic efficiency and negatively correlated with avoiding novelty, skepticism about the relevance of school, disruptive behavior and work avoidance. For Time 1, the performance-approach goal orientations are not strongly correlated with academic efficiency and negatively with disruptive behavior. For Time 2, performance-approach goal orientation is negatively correlated with academic efficiency.
For both the time frames, performance-avoidance goal orientation is positively correlated with avoiding novelty and with academic efficiency whereas negatively correlated with skepticism about the relevance of school.

Shih (2005) examined the relation of achievement goals and use of cognitive strategies and motivational processes based on the trichotomous framework of achievement goal. The sample for the study consisted of 198 sixth grade Taiwanese students. The results showed that both mastery and performance-approach goals predicted low levels of text anxiety whereas performance-avoidance goals predicted positively for text anxiety scores. While considering achievement goals as predictors of intrinsic value the results indicated that mastery goals and performance-approach goals predicted high levels of intrinsic value whereas performance-avoidance goals predicted low levels of intrinsic value. In the case of use of metacognitive strategies, both mastery goal and performance-approach goal are positive predictors of metacognitive strategies while performance-approach goal is negative predictor.

Mattern (2005) analyzed the goal orientations of college students and relation with achievement. The data was collected from 143 undergraduate students by using Motivated Strategies for Learning Questionnaire. The results revealed that students with mastery goal orientations performed better followed by students with both mastery and performance approach goal
orientations. The students who follow performance-approach goal orientations showed worst performance. The results also indicated that mastery goal group achieved better course grades than performance-approach goal group.

Bråten and Strømsø (2004) analyzed the impact of epistemological beliefs and implicit theories of intelligence on pursuing mastery, performance-approach, and performance–avoidance goals. The sample for the study consisted of 80 Norwegian student teachers. The results indicated that than implicit theories of intelligence, the epistemological beliefs are found to play more important roles in goal adoption. Students who believed that learning occurs quickly are more likely to adopt performance-approach and performance-avoidance goals than mastery goal and students who believed that knowledge is stable and given are less likely to adopt mastery goals.

The study conducted by Al-Emadi (2001) to understand the relations between goal orientation, study strategies, and achievement. The results revealed that mastery and performance goals are positively related to academic achievement whereas negatively related to avoidance goals. The students who pursue mastery goals predicted the use of deep processing while who pursue performance goals predicted the use of both surface and deep processing strategies. Both the mastery and performance goals are negative predictors of disorganization. In contrast the students who pursue performance-avoidance goal is predicted negatively to the use of deep
processing and surface processing strategies and positive predictor of disorganization.

A meta analysis of studies related to Achievement Goals is presented in the Table 3.

Table 3

Meta Analysis of Studies Related to Achievement Goals

<table>
<thead>
<tr>
<th>Year</th>
<th>Author</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>Acharya</td>
<td>Task involvement goal orientation and ego involvement goal orientation have moderate positive relation with psychological coping skills and ego involvement goal orientation has stronger relationship than task involvement goal orientation. There exists no difference in goal orientations among male and female athletes.</td>
</tr>
<tr>
<td>2017</td>
<td>Sherin</td>
<td>There exist a substantial or marked relationship between learning strategies and goal orientation. There exist no significant difference in the means scores of goal orientation of prospective teachers with respect to gender, locale, and type of management.</td>
</tr>
<tr>
<td>2016</td>
<td>Madigan, Stoeber, and Passfield</td>
<td>The perfectionistic strivings are positively associated with task-approach and self-approach goals and associated negatively with task-avoidance and self-avoidance goals</td>
</tr>
<tr>
<td>2016</td>
<td>Musa, Dauda, and Umar</td>
<td>The male students are more oriented towards learning goal than the female students while there is no influence of gender on performance-approach goal and performance-avoidance goal orientations</td>
</tr>
<tr>
<td>2016</td>
<td>Rameli and Kosnin</td>
<td>The performance-avoidance goal orientation contributes largest to the changes in mathematical anxiety</td>
</tr>
<tr>
<td>2016</td>
<td>Ramnarain and Ramaila</td>
<td>The students hold stronger mastery goal orientation than performance-approach goals and performance-avoidance goals orientations</td>
</tr>
<tr>
<td>Year</td>
<td>Author</td>
<td>Findings</td>
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</tr>
<tr>
<td>2016</td>
<td>Sharma and Nasa</td>
<td>The students who give more importance to performance approach goals secured higher grades and beliefs about their abilities</td>
</tr>
<tr>
<td>2015</td>
<td>Bahrami and Bahrami</td>
<td>The mastery-approach goal orientation and performance-approach goal orientation are positively correlated whereas mastery-avoidance goal and performance- avoidance goal orientations are negatively correlated to self-esteem</td>
</tr>
<tr>
<td>2015</td>
<td>Gafoor and Kurukkan</td>
<td>Academic Goal Orientation Inventory was validated. The students’ goal orientation is context specific and they do not stick on one goal orientation. The study also identified that all aspects of academics are not identical in their value related to goal orientations.</td>
</tr>
<tr>
<td>2015</td>
<td>Hall, Hanna, Hanna , and Hall</td>
<td>There exist significant difference in achievement goal orientations among the students with respect to gender, year of study, and academic performance. The regression analysis revealed that work avoidance and mastery-avoidance are found significant in predicting the academic performance of the students</td>
</tr>
<tr>
<td>2015</td>
<td>Junasiyamol</td>
<td>The orphan students pursue mastery goal orientation while the non-orphan students pursue performance goal orientation</td>
</tr>
<tr>
<td>2014</td>
<td>Kandemirdoi</td>
<td>The personality trait and academic self efficacy contributed positively to learning and performance-approach achievement goals. Students with neurotic personality are related positively with avoidance achievement goal and negatively with approach achievement goal. Academic self efficacy positively predicted both the achievement goals.</td>
</tr>
<tr>
<td>2013</td>
<td>Barkur, Govindan, and Kamath</td>
<td>The students who pursue mastery goal and performance approach goal secured high scores in academic achievement than who pursue performance avoidance and work avoidance goal orientations</td>
</tr>
<tr>
<td>Year</td>
<td>Author</td>
<td>Findings</td>
</tr>
<tr>
<td>------</td>
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</tr>
<tr>
<td>2012</td>
<td>Kadhiran</td>
<td>The girls’ students studying in plus two classes, science subject and government schools are more oriented towards learning goals than performance-approach and performance-avoidance goals. The results also revealed that the type of goal orientation has significant effect on cognitive styles.</td>
</tr>
<tr>
<td>2012</td>
<td>Madjar, Bachner, and Kushnir</td>
<td>The mastery goal orientation is positively associated with perceived psychosocial abilities and negatively associated with low frustration tolerance. Students with performance goal orientations are positively associated with low frustration tolerance.</td>
</tr>
<tr>
<td>2011</td>
<td>Asif</td>
<td>The mastery goal orientation is the strongest predictor and performance-avoidance goal orientation is the weakest predictor of intrinsic motivation.</td>
</tr>
<tr>
<td>2011</td>
<td>Huang</td>
<td>The mastery goals are strongly related to positive emotions where as performance-avoidance goals are strongly associated with negative emotions.</td>
</tr>
<tr>
<td>2010</td>
<td>Diseth and Kobbeltvedt</td>
<td>The performance approach goal, mastery goal, strategic learning strategies are positively correlated with achievement whereas performance-avoidance goal and surface learning strategies are negatively correlated with achievement.</td>
</tr>
<tr>
<td>2010</td>
<td>Hadsell</td>
<td>The performance approach goals has strong positive association with examination scores and mastery goals showed negative relation with examination scores.</td>
</tr>
<tr>
<td>2009</td>
<td>Fouladchang, Marzooghi, and Shemshiri</td>
<td>There exist significant gender difference and grade level difference on goal orientation. The male students shows greater performance-approach goal orientation than female students and the last grade students are more oriented towards mastery goal than first grade students.</td>
</tr>
<tr>
<td>2009</td>
<td>Shelly</td>
<td>There exist significant relation between high achievers and low achievers of elementary school.</td>
</tr>
<tr>
<td>Year</td>
<td>Author</td>
<td>Findings</td>
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</tr>
<tr>
<td>2008</td>
<td>Coutinho and Neuman</td>
<td>The performance-approach and mastery-approach goals are positive predictors and mastery-avoidance and performance-avoidance goals are negative predictors of self-efficacy.</td>
</tr>
<tr>
<td>2008</td>
<td>Vrugt and Oort</td>
<td>The results indicated that metacognition is positively related to mastery goals and negatively correlated to performance-approach goals.</td>
</tr>
<tr>
<td>2007</td>
<td>Roebken</td>
<td>There exist no significant gender difference in pursuing achievement goals but there exist difference with respect to class level, parental education and discipline of study. The mastery and performance goals are associated with academic satisfaction, academic engagement and achievement.</td>
</tr>
<tr>
<td>2006</td>
<td>Barron, Evans, Baranik, Serpel, and Buvinge</td>
<td>The level of goal orientation of students differs significant over time frame. The beginning and the end of the course mastery goal orientations are most likely adopted by the students and performance-approach goal orientations are least likely adopted.</td>
</tr>
<tr>
<td>2005</td>
<td>Shih</td>
<td>Both mastery goal and performance-approach goal are positive predictors of meta cognitive strategies while performance approach goal is a negative predictor.</td>
</tr>
<tr>
<td>2005</td>
<td>Mattern</td>
<td>The mastery goal group achieved better course grades than performance approach goal group.</td>
</tr>
<tr>
<td>2004</td>
<td>Bråten and Strømsø</td>
<td>Students who believed that learning occurs quickly are more likely to adopt performance-approach and performance-avoidance goals than mastery.</td>
</tr>
</tbody>
</table>
year  | author       | findings                                                                                                                                                                                                                                                                                                                                 |
<table>
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<tbody>
<tr>
<td>2001</td>
<td>al-emadi</td>
<td>goal and students who believed that knowledge is stable and given are less likely to adopt mastery goals. The students who pursue mastery goals predicted the use of deep processing while who pursue performance goals predicted the use of both surface and deep processing strategies. Both the mastery and performance goals are negative predictors of disorganization.</td>
</tr>
</tbody>
</table>

**Studies on Self Regulated Learning Strategies**

Cleary and Kitsantas (2017) with the help of structural equation modeling examined the influence of motivation and self regulated learning on mathematics achievement. The data were collected from 331 middle school students by using self report questionnaires and teacher ratings. The results of structural equation modeling analyses revealed that both cognitive and self regulated learning behavior factors caused to 51 percent of the variance in mathematics performance. Results also indicated that after controlling prior achievement both cognitive and behavioral factors served as key mediators in the model for predicting mathematics performance. The motivation beliefs such as self efficacy, task interest, and school connectedness play an important role in explaining self regulated behaviors.

Relational Screening Model was used by Bozpolat (2016) to investigate the self regulated learning strategies of university students. The sample for the study consisted of 826 third year students from 11 departments.
of the Education faculty of Cumhuriyet University. The results of logistic regression analysis revealed that gender, general academic average, and academic self efficacy are significant predictors of self regulated learning strategies. The analysis based on gender indicated that the female students use the self regulated learning strategies more than the male students. Academic self efficacy and general academic average are positively correlated with the self regulated learning strategies of the students.

Das (2016) examined the relationship between self regulated learning strategies and cognitive styles of higher secondary school students. The results of correlation analysis showed that all the components of cognitive style such as planning, analysis, control, left mode, vision, insight, right mode, and sharing are having significant positive correlation with the total self regulated learning strategies.

The study conducted by Yıldızlı, Saban and Ewing (2016) examined the effect of self regulated learning strategies on mathematics achievement and motivational beliefs of sixth grade Turkish students. The experimental study used the cyclical model of self regulated learning by Zimmerman for the experimental group and general curriculum activities for the control group. The results indicated that there exist significant difference in mathematics achievement and motivational beliefs of experimental group and control group. The difference in the post-test scores is higher for experimental group
than the control group. Self regulated learning strategies applied to experimental group are more effective when compared to current curriculum activities applied to the control group. The experimental group who exposed to self regulated learning model started to view math as fun, important for everyday life, develop self confidence, stated goals, and monitor their own activities than the control group.

Kumari and Chamundeswari (2015) examined the relationship between parental involvement, self regulated learning, and academic achievement of higher secondary school students (N=300). The results of the study indicated that there exist a significant correlation between parental involvement (r=0.94), self regulated learning (r=0.16), and academic achievement of higher secondary students. Further the results also indicated that there exists significant difference in parental involvement, self regulated learning, and academic achievement of students at state, matriculation, and central board categories. The analysis of mean scores obtained for various categories of schools showed that central board students (M=90.83) are using better self regulated learning strategies than the state board (M=70.83) and matriculation (M=88.60) students at higher secondary level. The comparison of means of boys and girls revealed that for all the variables, parental involvement, self regulated learning, and academic achievement, girls are better than boys in state board schools, matriculation schools, and central board schools at higher secondary level. The mean scores of students in first course differ
significantly with third course students but no significant difference with second course students. The mean difference between second course students and third course students are also not significant.

Razi, Vahidian, and Hashemi (2015) studied the relation between self regulation and academic motivation of high school students. The results revealed that there exists significant positive relation between self regulation and academic motivation ($r=0.521$) of high school students. The independent t-test stated that there exist significant differences between the boys and girls in self regulation. The girls are using more self regulated learning strategies than the boys among high school students. The univariate analysis of self regulation indicated that there exists significant difference in the use of self regulation among students of different courses.

Banarjee and Kumar (2014) studied the gender differences in relationship between self regulated learning and academic achievement among under graduate science students. The results revealed that there exists significant positive correlation between self regulated learning and academic achievement ($N=300$). In the use of self regulated learning strategies in total, the male and female students differ significantly and the mean scores of self regulated learning strategies for female ($M=84.03$) students is higher than the male students ($M=76.66$). While considering the individual components of self regulated learning strategies there exists no significant difference in self
motivation, cognitive, and behavioral strategies but for environment strategies there exist significant difference between male and female students.

Aregu (2013) studied the role of self regulated learning strategies in predicting critical reading performance of second year distance education students (N=140). The results indicated that variables were positively correlated and 52 percent of variance in critical reading accounted for the group effects of self-regulated learning strategies among the distance education students. The close examination of independent variables of self regulated learning strategies showed that behavioral self regulated learning strategies ($\beta = .34$) are best predictors followed by personal self regulated learning strategies ($\beta = .27$) and environmental self-regulated learning strategies ($\beta = .23$) of critical reading performance.

The study conducted by Azizi and Yeshodhara (2013) examined the relationship between self regulated learning strategies and level of internet competency of science degree students. The Motivational Strategies for Learning Questionnaire (MSLQ) was used to collect data from a sample of 254 Bachelor of Science students to measure the self regulated learning strategies. The correlation analysis revealed that there exists significant positive relationship between self regulated learning strategies such as metacognitive, critical thinking, rehearsal, elaboration strategy, help seeking, and peer learning strategies individually as well as in total and all the
components of internet competency (except communication and collaboration), Information search, computer general ability, computer general knowledge, information management, general webpage using, and total internet competency of students. Moreover, the results of regression analysis depicted that among the various self regulated learning strategies, the peer learning, and critical thinking are the strongest predictor of level of internet competency of the students.

Sadi and Uyar (2013) found out the relationship between cognitive self regulated learning strategies and biology achievement with the help of a path model. Data were collected from a sample of 300 Turkish ninth grade high school students with the help of Motivated Strategies for Learning Questionnaire (MSLQ). The results showed that the cognitive self regulated learning strategies such as rehearsal, elaboration, and organization are significant predictors of ninth grade students’ biology achievement. Structural equation modeling used to explain the relationships among rehearsal, elaboration, organization, critical thinking, and achievement of high school students in biology revealed that all cognitive self regulated learning variables contributed directly to critical thinking which in turn enhanced the biology achievement of students’.

Tran and Duong (2013) investigated the relation between students’ attitudes towards English language learning and use of self regulated learning
strategies among college non english majors. The results showed that the participants who possess positive attitude towards english language are not actively engaged in self regulated learning strategies. Among the self regulated learning strategies, the participants used organizational strategies more and peer learning strategies are least utilized. In addition, the results also depicted that there exists no gender difference in use of self regulated learning strategies. Both male and female students utilized organizational strategies more and peer learning strategies are less utilized.

The study conducted by Chandran and Kadhiravan (2012) analyzed the impact of cognitive styles on self regulated learning of adolescents. The sample consisted of 312 college students of Madurai. The results indicated that all dimensions of self regulated learning and aspects of cognitive styles such as planning, analysis, control, left mode, vision, insight, sharing, and right mode are moderately related (r ranging from .36 to .44). The close observation of impact of parental education on self regulated learning strategies revealed positive association with both self regulated learning and cognitive styles.

Cazan (2012) investigated the role of self regulated learning strategies in predicting the academic adjustment of first year university students. Self regulated learning strategies of students’ were measured by using Motivated Strategies for Learning Questionnaire (MSLQ). The results indicated that
overall self regulation is strongly related with academic adjustment of students’ of psychology and education sciences. Among the self regulated learning strategies, the strongest predictor of academic adjustment of students’ is metacognitive strategies.

Johnson and Ramganesh (2012) analyzed the effectiveness of self regulatory strategies in science problem solving among high school students. The results of the experimental study revealed that self regulatory strategies with multimedia learning materials are effective in enhancing self regulatory awareness of students related to problem solving competence. The pre-test and post-test scores showed significant difference in all dimensions of self regulatory awareness such as declarative knowledge, conditional knowledge, procedural knowledge, planning, information management strategies, comprehension, monitoring, debugging strategies, and evaluation at .01 level of significance. The results also indicated that the female and male students do not differ significantly in pre-test scores of self-regulatory awareness. But in the case of post-test scores of self regulatory awareness, the female students are more self regulative in their problem solving action than male students.

The study conducted by Nandagopal and Ericsson (2012) examined the individual differences in using self regulated learning strategies among upper level college bioscience students. The results indicated that there exists
significant difference in using self regulated strategies by high achieving and low achieving groups of upper level college students. It was found that students who are using a larger number of different strategies and engage in strategies such as organizing and transforming, seeking information, and reviewing strategies scored higher scores for semester exam.

Alharbi, Paul, Henskens, and Hannaford (2011) investigated the learning styles and self regulated learning strategies of computer science students. The results indicated that students preferred learning styles have a significant impact on academic performance of the students. The analysis of self regulated learning strategies revealed that the metacognitive strategies are less used by the students when compared to cognitive and resource management strategies.

Fettahlioglu (2011) analysed the impact of gender on using self regulated strategies among science teacher candidates. Learning Strategies Scale was used to collect data from 222 teacher candidates of Gazi University. The analysis of the results revealed that among the self regulated strategies, the teacher candidates are highly using regulation and explication learning strategies. The peer collaboration, critical thinking, effort management, and time and study environment learning are used by the teacher candidates only at a low level. The results also showed that there exists significant gender difference in the use for all components of self regulated learning strategies.
The mean scores obtained for male teacher candidates are higher than female teacher candidates in the regulation, explication, metacognitive, effort management, and time and study environment learning strategies. In case of repetition, critical thinking, and peer collaboration learning strategies, the mean scores of female teacher candidates are higher than their counterparts.

Throndsen (2011) examined the relation between basic mathematical skills and the use of math strategies, metacognitive competence, and motivational beliefs of young primary school children. The study also analyzed the difference in basic mathematics skills with respect to different self regulation components. The results revealed that the students who possess high self regulated learning strategies performed high in achievement scores in mathematics. The basic mathematics skills of young primary school students differ with respect to overt strategies, covert strategies and retrieval strategies of self regulation. The results indicated that the performance in mathematics skills were not only related to the children’s use of self regulated learning strategies but also related with their metacognitive competence and motivational beliefs.

Yusuf (2011) investigated the impact of self efficacy, achievement motivation, and self regulated learning strategies on academic achievement of undergraduate students. The results of structural equation modelling revealed that there exists direct relation between self efficacy and academic
achievement. Results also indicated that there exists only an indirect relation of achievement motivation and self regulated learning strategies with academic achievement. The strongest predictor of academic achievement of respondents' is self efficacy than achievement motivation and self regulated learning strategies.

In a study, Al-Khatib (2010) examined the association between metacognitive self regulated learning and motivational beliefs as predictors of academic performance of college students’ of United Arab Emirates. The study was conducted on a sample of 404 college students enrolled in general education courses and self regulated learning strategies were measured by using Motivated Strategies for Learning Questionnaire (MSLQ). The factor analysis showed that intrinsic goal orientation, self efficacy, text anxiety, and metacognitive self regulated learning strategies are significant predictors of academic performance of the students. Self efficacy is the strongest contributor with $\beta = .285$, $p < .01$ and second strongest contributor is metacognitive self regulated learning with $\beta = .232$, $p < .01$ in explaining academic performance of college students.

Kitsantas, Steen, and Huie (2009) examined the role of self regulated learning strategies and goal orientation in predicting achievement of elementary school children. The study was conducted on a sample of 81 fifth grade students. The results indicated that use of self regulated strategies has
significant impact on students’ academic achievement and goal orientation is not a significant predictor of students’ academic achievement. The self regulated learning strategies ($r=0.29$) and mastery goal orientation ($r=0.43$) are moderately related with the academic performance of the students. The analysis on the basis of gender revealed that there exists no significant difference in the use of self regulated learning strategies and goal orientation among the elementary school students.

Structural equation modeling was conducted by Vrugt and Oort (2008) on a group of effective self regulators and a group of less effective self regulators with respect to the variables sex, age, and intellectual ability. The results revealed that students with high effort investment represented as effective self regulated learners and students with low effort investment represented less effective self regulators. The gender basis analysis revealed that women are characterized as more effective self regulated learners than men. The analysis on the basis of age revealed that younger students are more self regulated learners and scored higher exam scores than older students. It also indicated a positive relation of mastery goals with metacognition whereas a negative relation of performance-avoidance goals with metacognition.

Seema (2007) conducted a study to understand the interaction effect of self regulatory learning strategies and classroom learning environment on achievement in physics of secondary school students. The findings of the
study indicated that there exist no significant difference in self regulatory learning strategies with respect to gender but there exist significant difference with respect to locale and type of management of school. Urban secondary school students and government secondary school students are using high self regulatory learning strategies than the rural secondary school students and private aided secondary school students. The main effect and interaction effect of the variables, self regulatory learning strategies and classroom learning environment are found to be significant for the total sample and subsamples with respect to gender, locale, and type of management of schools.

The study conducted by Man-Chih (2006) investigated the effect of using self regulated learning strategies in promoting learning and satisfaction in Physical Education of college students’. The results of the quasi experimental study revealed that the experimental group who had undergone self regulated learning process demonstrated significantly higher satisfaction in learning than the control group. By using the self regulated learning strategies the students of experimental group showed more interest, confidence, and higher performance in physical education class than the control group.

Lynn et al. (2003) assessed the impact of self regulated learning strategies on enhancing mathematical problem solving of third grade
students’. The experimental study incorporated the goal setting and self evaluation aspects of self regulated learning strategies. The experimental group was instructed with problem solving transfer plus self regulated learning strategies and the control group was instructed with problem solving transfer alone to teacher designed instruction. The results of the study showed that incorporating self regulated learning strategies significantly contributed to the mathematical problem solving of third grade students’.

Chen (2002) analyzed the effectiveness of self regulated learning strategies on achievement in information systems course. The effect of self regulated learning strategies such as metacognition, physical, and social environment management, time management and effort regulation strategies on achievement was analyzed by the investigator. Motivated Strategies for Learning Questionnaire (MSLQ) was used to measure the self regulated learning strategies of 197 students in business information system course. The regression analysis showed that effort regulation strategies are the strongest predictor of achievement and social environment strategies showed a negative correlation with achievement of students in information system course.

A meta analysis of studies related to Self Regulated Learning Strategies is presented in the Table 4.
Table 4

*Meta Analysis of Studies Related to Self Regulated Learning Strategies*

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017 Cleary and Kitsantas</td>
<td>Both cognitive and self regulated learning behavior factors to the variance in mathematics performance. The motivation beliefs such as self efficacy, task interest, and school connectedness play an important role in explaining self regulated behaviors.</td>
</tr>
<tr>
<td>2016 Bozpolat</td>
<td>The female students use the self regulated learning strategies more than the male students. Academic self-efficacy and general academic average are positively correlated with the self regulated learning strategies of the students.</td>
</tr>
<tr>
<td>2016 Das</td>
<td>The components of cognitive style such as planning, analysis, control, left mode, vision, insight, right mode, and sharing were having significant positive correlation with the total self regulated learning strategies.</td>
</tr>
<tr>
<td>2016 Yıldızlı, Saban, and Ewing</td>
<td>The experimental group who exposed to self regulated learning model started to view math as fun, important for everyday life, develop self-confidence, stated goals and monitor their own activities.</td>
</tr>
<tr>
<td>2015 Kumari and Chamundeswari</td>
<td>There exists significant difference in parental involvement, self regulated learning, and academic achievement of students at state, matriculation and central board categories and also with respect to gender as well as course level.</td>
</tr>
<tr>
<td>2015 Razi, Vahidian, and Hashemi</td>
<td>There exists significant positive relation between self regulation and academic motivation of high school students. There exists significant difference in the use of self regulation among students of different courses and gender.</td>
</tr>
<tr>
<td>2014 Banarjee and Kumar</td>
<td>There exists significant positive correlation between self regulated learning and academic achievement. The male and female students differ significantly and the mean scores of self regulated learning strategies for female students is higher than the male students.</td>
</tr>
<tr>
<td>Year</td>
<td>Author(s)</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
</tr>
<tr>
<td>2013</td>
<td>Azizi and Yeshodhara</td>
</tr>
<tr>
<td>2013</td>
<td>Sadi and Uyar</td>
</tr>
<tr>
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<td>Tran and Duong</td>
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</tr>
<tr>
<td>2012</td>
<td>Cazan</td>
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<tr>
<td>2012</td>
<td>Johnson and Ramganesh</td>
</tr>
<tr>
<td>2012</td>
<td>Nandagopal and Ericsson</td>
</tr>
<tr>
<td>2011</td>
<td>Alharbi, Paul, Henskens, and Hannaford</td>
</tr>
<tr>
<td>Author</td>
<td>Findings</td>
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<tr>
<td>---------------------</td>
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</tr>
<tr>
<td>2011 Fettahlioglu</td>
<td>There exists significant gender difference in the use of all components of self regulated learning strategies</td>
</tr>
<tr>
<td>2011 Throndsen</td>
<td>Students who possess high self regulated learning strategies performed high in achievement scores in mathematics</td>
</tr>
<tr>
<td>2011 Yusuf</td>
<td>There exists direct relation between self efficacy and academic achievement. Results also indicated that there exists only an indirect relation of achievement motivation and self regulated learning strategies with academic achievement. The strongest predictor of academic achievement of respondents' is self efficacy than achievement motivation and self regulated learning strategies.</td>
</tr>
<tr>
<td>2010 Al-Khatib</td>
<td>The intrinsic goal orientation, self efficacy, text anxiety and metacognitive self regulated learning strategies were significant predictors of academic performance of the students</td>
</tr>
<tr>
<td>2009 Kitsantas, Steen, and Huie</td>
<td>Self regulated learning strategies have significant impact on academic performance and goal orientation is not a significant predictor. There exist no significant difference in the use of self regulated learning strategies and goal orientation among the elementary school students</td>
</tr>
<tr>
<td>2008 Vrugt and Oort</td>
<td>The students with high effort investment represented effective self regulated learners and students with low effort investment represented less effective self regulators. The women were characterized as more effective self regulated learners than men and younger students are more self regulated learners as well scored higher exam scores than older students</td>
</tr>
<tr>
<td>2007 Seema</td>
<td>The main effect and interaction effect of self regulatory learning strategies and classroom learning environment are found to be significant for the total sample and subsamples with respect to gender, locale, and type of management of schools</td>
</tr>
<tr>
<td>2006 Man-Chih</td>
<td>By using the self regulated learning strategies the students of experimental group showed more</td>
</tr>
<tr>
<td>Author</td>
<td>Findings</td>
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<tr>
<td>--------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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<tr>
<td>2003 Lynn et al.</td>
<td>Incorporating self regulated learning strategies significantly contributed to the mathematical problem solving of third grade students’</td>
</tr>
<tr>
<td>2002 Chan</td>
<td>The effort regulation strategies is the strongest predictor of achievement and social environment strategies showed a negative correlation with achievement of students in information system course</td>
</tr>
</tbody>
</table>

**Studies on the Subject Accountancy**

Chawla, Jain, and Mahajan (2013) examined the attitude of senior secondary school students towards accountancy subject, subject teachers’, and teaching methodologies of subject teachers. Data was collected from 300 students of public and private senior secondary schools in Mordabad city. The results revealed that the students are having positive attitude towards accountancy teacher and methodology of teaching. But their thinking towards the subject is negative subject due to the numerical as well as confusing nature of the subject. Both the boys and girls do not differ in their attitude towards the subject, subject teachers, and teaching methodologies of subject teacher.

Durgut, Gerekan, and Pehlivan (2013) examined the impact of emotional intelligence on achievement in accounting subject. The study was carried out on a sample of 177 students attending accounting lessons in two
different universities in Turkey. The results showed that strong positive relation exist between achievement in accounting subject and all components of emotional intelligence such as self awareness, interpersonal relationship, adaptability, stress management, and general mood. The regression analysis indicated that the sub components of emotional intelligence such as independence, self actualization, social responsibility, flexibility, and problem solving influence the achievement in accounting subject of university students.

Kohli (2013) found out the effect of computer assisted instruction on achievement in accountancy in relation to problem solving ability and learning styles. Sample consisted of 500 senior secondary students of Amritsar city and 250 students were divided each into the experimental group and control group. The experimental group was taught through computer assisted instruction package in accountancy developed by the investigator and the control group was taught by conventional method. The results indicated that there exists significant difference in achievement scores for high problem solving ability group and low problem solving ability group as well as for different learning styles. The interaction effect of instructional strategies and problem solving ability on achievement in accountancy is found to be significant. But, the interaction effect of instructional strategies and learning style on achievement in accountancy is not significant.
Sreesan (2013) studied the effectiveness of reflective learning strategy on problem solving ability in accountancy of higher secondary commerce students. The results showed that scores for problem solving ability of students of experimental group who taught through reflective learning method is higher than that of those students who taught through constructivist method of teaching.

Singh (2012) explored the capability of gifted pupils in high schools to use self regulated learning to master an advance curriculum in accounting. The findings of the study revealed that self regulated processes used by the gifted learners are useful in enhancing their mastery of content in accounting curriculum. The results of the experimental study indicated that the gifted pupil in South African high schools are able to master subject matter of an advanced level accounting curriculum by using self regulated strategies. Thus, the empirical study recommended the use of self regulated processes such as metacognition, motivation and creativity contributes in the discourse on giftedness.

The effectiveness of advance organizer model on problem solving ability in accountancy was studied by Thaskiya (2012). The sample for the study consisted of 100 higher secondary students from two classes who were divided into control and experimental group consisting of 50 students in each group. The students in experimental and control group were equated on their
intelligence, classroom environment, and previous knowledge. The results revealed that advance organizer model is more effective than constructivist method in developing problem solving ability in accountancy at higher secondary level.

Garkaz, Banimahd, and Esmaeili (2011) analyzed the factors affecting performance of accounting students. A total sample of 450 students in Islamic Azad University was selected for the study. It was found that gender, type of diploma, interest, and employment status are significantly related to the academic performance and student's marital status and family role have no significant relationship with academic performance. The mean scores of male students ($M=16.64$) on performance in accounting are higher than that of female students ($M=15.50$). The mean scores of performance in accounting are higher for employed students than unemployed students. Students from mathematics ($M=15.58$) background performed high in accounting than the students from non-mathematics ($M=15.03$) background. The students who are interested in accounting performed high in accounting than those who are not interested in accounting subject.

Mangad (2011) analyzed the perception on learning difficulties in accountancy among higher secondary school students. The sample consisted of 514 higher secondary school students of Calicut and Malappuram districts. The learning difficulty in accountancy was assessed by using a Scale on
Learning Difficulties in Accountancy which consists of 62 items under the dimensions academic factors, parental factors, personal factors, and environmental factors affecting learning difficulty in accountancy. Majority of the students (65.95%) showed average level of perception on learning difficulty in accountancy. Among the four factors, high perception on learning difficulty in accountancy falls under personal factor (65.49%) followed by environmental factor (62.17%), academic factor (62.17%), and parental factor (60.66%). Furthermore, the study indicated that there exists difference in perception on learning difficulty in accountancy on the basis of gender on academic and parental factors. But, there exist no gender difference in personal and environmental factor of learning difficulty. The male students ($M=121.86$) perceive high learning difficulty in accountancy than the female students ($M=110.61$) in higher secondary schools.

Niranjana and Satheesh (2011) investigated the extent of learning difficulty in accountancy among higher secondary school students ($N=240$). Majority of the students (60.42 %) are having learning difficulty in accountancy at higher secondary level. The gender wise comparison revealed that the boys ($M=10.93$, $SD=4.63$) at higher secondary schools are facing more difficulty in learning accountancy than the girls ($M=7.81$, $SD=4.96$).

Rajeesh (2011) studied the relationship between attitude towards accountancy and achievement in accountancy of higher secondary school
students \((N=500)\). The results of the study revealed that there exists significant positive relationship between attitude towards accountancy and achievement in accountancy \((r=8.47)\) among higher secondary school students. Moreover, the study also indicated that there exist significant difference in the mean scores of achievement in accountancy among boys and girls, government school students and unaided school students, aided and unaided school students and rural and urban school students. Whereas, no difference in the mean scores of achievement in accountancy among government and aided school students. The girls students \((M=17.33)\) secured higher scores in accountancy than the male students \((M=17.33)\). Likewise, the students studying in government schools secured high scores in achievement test in accountancy than the students studying in unaided school.

Sree and Krishnamurthy (2011) studied the relation between emotional intelligence and achievement in commerce of higher secondary commerce students. The sample consisted of 300 higher secondary school students of commerce group in Cuddalore district of Tamil Nadu state. The results indicated that there exist significant differences in mean scores of achievement in commerce and emotional intelligence with respect to gender and locality. The analysis of type of school showed that there exists difference in the mean scores of achievement in commerce for rural and urban school students but no difference in emotional intelligence. The study also showed that there exist no difference in mean scores of achievement in commerce and
emotional intelligence with respect to religion, family size, and family income. The mean scores of achievement in accountancy and emotional intelligence for girls are higher than the boys and for urban school students are higher than rural school students. The mean scores in achievement in accountancy of private school students are higher than government school students. The correlation analysis indicated that there exist positive moderate correlation between emotional intelligence and achievement in commerce among higher secondary school students for total sample \((r=0.474)\) and sub sample.

Arumugarajan (2008) conducted a study to find out the level of abstract reasoning ability of commerce students studying in plus one and plus two classes. The sample for the study consisted of 238 higher secondary students. The results indicated that the higher secondary commerce students possess only a moderate level of abstract reasoning ability. The results of the study also reported that female students have more abstract reasoning skills when compared to the male higher secondary students of commerce.

Babu and Kaliamoorthy (2007) examined the level of achievement in accountancy and educational adjustment of higher secondary school students \((N=700)\). The results indicated that level of students’ achievement in accountancy is average and educational adjustment is high for higher secondary school students. There exist significant difference in the mean
scores of achievement in accountancy with respect to gender, locality of school, and mothers’ education. The female students, rural higher secondary school students, and students having educated mothers secured higher scores in achievement test in accountancy than the male students, urban higher secondary school students and students with uneducated mothers’ respectively. Students of literate and illiterate fathers’ do not differ significantly in achievement scores in accountancy. In case of educational adjustment, female students of higher secondary schools showed better educational adjustment than their male counterparts. The emotional adjustment scores do not differ significantly with respect to locality of school, mothers’ education, and fathers’ education of higher secondary school students.

Experimental study was conducted by Baby (2003) to understand the effectiveness of co-operative learning strategy in learning accountancy among higher secondary pupil. It was found that the experiment group of students who were taught through cooperative learning strategy has significant higher achievement scores in accountancy than those who are were taught through existing teaching strategy or traditional method.

The critical-analytical study of accountancy text book conducted by Niranjana (2003) analyzed the accountancy text book prescribed for higher secondary schools in Kerala state and examined the opinion of practicing
teachers (N=120) about the accountancy text book. The document analysis indicated that the content included in the accountancy text book is capable of attaining only some objectives mentioned in the curriculum and improvements are needed to meet the practical aspects of accountancy. The higher secondary school teachers opined that methods adopted for transacting the accountancy content and evaluation system are not appropriate.

The study conducted by Santhosh (2002) aimed to identify the competencies to be developed among higher secondary commerce students in accountancy and business studies. The investigator identified 52 competencies and 228 sub competencies in accounting and 23 competencies and 115 sub competencies in business studies. The analysis of responses of higher secondary school commerce teachers revealed that the competencies identified for business studies and accountancy possess the attributes such as functionality, achievability, evaluability, learning continuum, communicability, and coverage.

The exploratory study conducted by Sharma (1997) analyzed the reasons for lack of accounting student quality desired by accounting educators and employees. The results reported that majority of the students prefer very certain and stable learning context as well lecture by teachers to convey knowledge clearly as well as in a structured way. Furthermore, the results also indicated that the students lack analytical and critical conceptual skills related
to accounting learning. Majority of the students were highly syllabus bound and experience fear of failure in accounting subjects. The results also revealed that accounting and finance students lack abstract reasoning skills.

A meta analysis of studies related to Accountancy subject is presented in the Table 5.

Table 5

*Meta Analysis of Studies Related to the Subject Accountancy*

<table>
<thead>
<tr>
<th>Year</th>
<th>Author</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>Chawla, Jain, and Mahajan</td>
<td>The senior secondary students are having positive attitude towards accountancy subject teacher and methodologies of teaching where as they are having negative attitude towards the subject.</td>
</tr>
<tr>
<td>2013</td>
<td>Durgut, Gerekan, and Pehlivan</td>
<td>There exist a strong positive relation between achievement in accounting subject and all components of emotional intelligence. The regression analysis indicated that the sub components of emotional intelligence such as independence, self actualization, social responsibility, flexibility, and problem solving influence the achievement in accounting subject.</td>
</tr>
<tr>
<td>2013</td>
<td>Kohli</td>
<td>The interaction effect of instructional strategies and problem solving ability on achievement in accountancy is found to be significant and the interaction effect of instructional strategies and learning style on achievement in accountancy is not significant among senior secondary school students.</td>
</tr>
<tr>
<td>2013</td>
<td>Sreesan</td>
<td>The use of reflective learning strategy is effective for developing problem solving ability among higher secondary school commerce students</td>
</tr>
<tr>
<td>2012</td>
<td>Singh</td>
<td>Self regulated processes used by the gifted learners are useful in enhancing their mastery of content in accounting curriculum. The study recommended</td>
</tr>
<tr>
<td>Year</td>
<td>Author</td>
<td>Findings</td>
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</tr>
<tr>
<td>2012</td>
<td>Thaskiya</td>
<td>The use of self regulated processes such as metacognition, motivation and creativity contributes in the discourse on giftedness.</td>
</tr>
<tr>
<td>2011</td>
<td>Garkaz, Banimahd, and Esmaeili</td>
<td>The advance organizer model is effective in developing problem solving ability in accountancy at higher secondary level.</td>
</tr>
<tr>
<td>2011</td>
<td>Garkaz, Banimahd, and Esmaeili</td>
<td>The gender, type of diploma, interest and employment status are significantly related to the academic performance and student's marital status and family role have no significant relationship with academic performance of university students.</td>
</tr>
<tr>
<td>2011</td>
<td>Mangad</td>
<td>Majority of the students showed average level of perception on learning difficulty in accountancy. Male students perceive high learning difficulty in accountancy than the female students of higher secondary schools.</td>
</tr>
<tr>
<td>2011</td>
<td>Niranjana and Satheesh</td>
<td>Majority of the students are facing learning difficulty in accountancy at higher secondary level and the boys’ students are having more difficulty in learning accountancy than the girls’ students.</td>
</tr>
<tr>
<td>2011</td>
<td>Rajeesh</td>
<td>There exists significant positive relationship between attitude towards accountancy and achievement in accountancy among higher secondary school students. Difference exists in the mean scores of achievement in accountancy among boys and girls, government school students and unaided school students and rural and urban school students.</td>
</tr>
<tr>
<td>2011</td>
<td>Sree and Krishnamurthy</td>
<td>Emotional intelligence and achievement in commerce are having moderate positive relation. There exist difference in the scores of achievement in accountancy with respect to gender, locality, and type of school. Significant differences exist in the mean scores of emotional intelligence with respect to gender and locality.</td>
</tr>
</tbody>
</table>
| 2008 | Arumugarajan | The higher secondary commerce students possess only a moderate level of abstract reasoning ability and female students have more abstract reasoning
<table>
<thead>
<tr>
<th>Year</th>
<th>Author</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>Babu and Kaliamoorthy</td>
<td>The level of students’ achievement in accountancy is average and educational adjustment is high for higher secondary school students. There exists significant difference in the mean scores of achievement in accountancy with respect to gender, locality of school and mothers’ education but no difference for students of literate and illiterate fathers’. The emotional adjustment scores do not differ significantly with respect to locality of school, mothers’ education and fathers’ education of higher secondary school students but there exist difference with respect to gender.</td>
</tr>
<tr>
<td>2003</td>
<td>Baby</td>
<td>Co-operative learning strategy is found to enhance the achievement in accountancy of higher secondary school students.</td>
</tr>
<tr>
<td>2003</td>
<td>Niranjana</td>
<td>The content included in the accountancy text book is capable of attaining only some objectives mentioned in the curriculum and improvements are needed to meet the practical aspects of accountancy.</td>
</tr>
<tr>
<td>2002</td>
<td>Santhosh</td>
<td>52 competencies and 228 sub competencies in accounting and 23 competencies and 115 sub competencies in business studies were identified to be developed among higher secondary commerce students.</td>
</tr>
<tr>
<td>1997</td>
<td>Sharma</td>
<td>The accounting and finance students lack abstract reasoning skills, analytical and critical reasoning skills. Majority of the students prefer very certain and stable learning context as well lecture by teachers to convey knowledge clearly as well as in a structured way</td>
</tr>
</tbody>
</table>
Conclusion

An extensive review of literature has been made for analyzing the studies on Epistemological Beliefs, Achievement Goals, Self Regulated Learning Strategies and Accountancy subject. Those studies which are seemed to be relevant for the present study are mentioned in this chapter. The review of literature related to the independent variables namely, Epistemological Beliefs, Achievement Goals, and Self Regulated Learning Strategies showed considerable evidence for the impact of these variables on enhancing academic performance of students at various levels. From the review it is evident that majority of the studies related to the independent variables were carried out in foreign countries. In the case of Epistemological Beliefs only a few studies are conducted in Indian context. The analysis of research studies reported in students' epistemological beliefs indicates that epistemological beliefs play a significant role in academic performance and learning process. Most of the studies analyzed are done in the conceptual understanding of science subjects and it is hard to find any studies related to accountancy subject. Majority of the studies in Achievement Goals are traced back to the context of foreign countries but a few studies are reported in Indian context. Most of the studies are related to self efficacy, anxiety, frustration, tolerance, and not with achievement in accountancy. The analysis of studies related to Self Regulated Learning Strategies revealed that a number of Indian scholars examined the studies in this area. But it was hard to found studies related to
the use of self regulated learning strategies in accountancy. The review of studies related to accountancy subject revealed that the students are having negative attitude towards accounting subject and they face difficulty in learning accounting subject. Even though a couple of studies are there to enhance learning of accountancy subject, the investigator noticed a dearth of research examining the individual and combined influence of Epistemological Beliefs, Achievement Goals, and Self Regulated Learning Strategies on Achievement in Accountancy of higher secondary school students. Thus, it would be worthwhile to understand the individual influence of Epistemological Beliefs, Achievement Goals, and Self regulated learning Strategies and their combined effect on Achievement in Accountancy of higher secondary school students.