



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Teachers' Belief: An Overview

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Abstract

Studies on beliefs dates back to the field of psychology in the early 1900s. After the 1920s, however, interest in beliefs waned. It was not until the 1960s with the work of some psychologists such as Rokeach that the subject was revisited. In the 1970s, the inception of cognitive science opened the door to further pursuits of beliefs research. A transformation in the focus of education research began at this time. Heretofore, the focus had included only a behavioral emphasis wherein teachers' intentions were largely ignored. But the development of cognitive science provided a venue for education researchers to give increased attention to teacher cognition. This focus involves teacher thinking, including teacher beliefs. This development catapulted the study of beliefs in the 1980s in a variety of fields, including education. The major aim of the present study is to explore the concept, meaning and definition of the teachers' belief. Secondary sources such as internet, online resources, journal articles, thesis, and dissertation have been utilized to prepare this article. Accordingly, a specific literature search strategy was used in the present study. For this purpose, a literary search and selection of the related studies focusing on the teachers' belief generated mainly two types of studies-the qualitative and the quantitative type of studies. I searched scholarly and online databases (Google Scholar, JStor, Proquest) for studies published between 1950 till the date that focus on the teachers' belief and related policies, trends, and issues in various countries. Results of the present study shows that it is very difficult to define teachers' belief and teachers' beliefs are an intangible construct' as they are made up of rational ideas developed over a period of time, through experiences gained while trying to understand a students' mind, and monitoring classroom behavior how students react to lectures. As a mental construct, beliefs are not easily defined, and indeed most scholars come to the consensus that beliefs are notoriously difficult to define. Accordingly there is difference among belief, knowledge and attitudes and teachers' belief is developed on the basis of personal experiences; experiences with schooling and instruction; and experience with formal Knowledge. Anthropologists, social psychologists, and philosophers have contributed to an understanding of the nature of beliefs and their effects on actions. There is considerable congruence of definition among these three disciplines in that beliefs are thought of as psychologically-held understandings, premises or propositions about the world that are felt to be true.

Keywords: Teachers' belief, teachers' knowledge, teachers' attitude, sources of belief, teaching, learning, teachers, learners

Concepts of Beliefs

Everyone holds a range of personal, religious, political, epistemological and educational beliefs, and these beliefs influence how we think, act and feel. Inversely, our experiences of practical situations may influence our varied beliefs. Researchers have accounted for this connection between practice and belief by differentiating between espoused beliefs and beliefs in action, depending on whether such beliefs remain in an ideal, abstract state or are enacted in practice. In educational contexts, practical teaching and learning processes are directly influenced by the educational beliefs held by teachers and students, and these beliefs, in turn, are influenced by teachers' and students' practical experiences.

There are several terms used in the teacher cognition research to refer to beliefs, which include: attitudes, values, judgments, axioms, opinions, ideology, perceptions, conceptions, conceptual systems, preconceptions, dispositions, implicit theories, explicit theories, personal theories, internal mental processes, action strategies, rules of practice, practical principles, perspectives, repertoires of understanding and social strategy (*Pajares, 1992:309*). The study of teacher cognition has been accompanied by a proliferation of terms, which has caused some degree of confusion.

Examples of these terms include attitudes, axioms, opinions, conceptions, perceptions, practical principles, pedagogical content knowledge and repertoires of understanding (*Pajares, 1992*). Although beliefs may be considered to be one of the most valuable psychological constructs in teacher education (*Mansour, 2009*), it is indeed a complex matter to define and to study beliefs, owing to their psychological nature.

Research exploring the ideas, assumptions and thoughts that underlie teachers' classroom practice uses various terms including personal theories, personal knowledge, practical knowledge, mental images, views, conceptions and beliefs, which all refer to teachers' subjective thinking (*Hutner and Markman, 2016; Kagan, 1992; Pajares, 1992*). Belief and conception are most salient and are interchangeably used in teacher education literature (*Bryan, 2012; Kember, 1997; Pajares, 1992*). A variety of terminology have been used in place of teachers' belief. Some have referred to teacher beliefs as preconceptions (*Clark, 1988; Wubbels, 1992*) and implicit theories (*Clark, 1988; Munby, 1982; Weinstein, 1989*). Others have preferred to use the term teacher perspectives. (*Goodman, 1988; Tabachnick & Zeichner, 1984*). Scholars define beliefs in different ways, for instance, *Pajares (1992, p. 307)* observed that the following words had been used to refer to beliefs: "attitudes, values, judgments, axioms, opinions, ideology, perceptions, conceptions, preconceptions, implicit theories, personal theories, and internal mental processes, rules of practice, practical principles, and perspectives". These almost seem synonyms for several psychological terms.

The majority of research on teacher beliefs has taken place in Western contexts-much of it in North America and Western Europe. The roots of this research can be traced back to the 1920s, when social psychologists began to investigate the nature of beliefs and their influence on individuals' actions (*Cantu, 2001; Richardson, 1996*). Although the topic fell into disfavour by the 1930s with the ascent of behaviourism, interest began to rise again in the 1960s with research on teachers' beliefs and attitudes by psychologists like *Rokeach (1960, 1968)*. By the 1970s, a growing interest among educationists in cognitive psychology, ethnographic and sociological paradigms, and the centrality of the teacher, contributed to increased attention towards teachers' cognition (*Calderhead, 1996*). This sparked a growing body of research on teacher thinking or teachers thought processes', exemplified by Philip Jackson's *Life in Classrooms (1968)* and Dan Lortie's *Schoolteacher (1975)*, two pioneering works which first drew attention to and legitimised the investigation of mental constructs underlying teachers' behaviour (*Cantu, 2001; Clark and Peterson, 1986*).

A parallel influence was the rise of humanistic psychology, a 1970s American movement spearheaded by Maslow and Rogers, concerned with people's values, perceptions, and search for personal meaning and self-actualization. These ideas were brought into teacher education by individuals like *Combs (1965, 1979, 1982)* who argued for a humanistic approach to teacher education, moving away from the earlier behaviourist paradigm to focus instead on the teacher's personhood, dignity, agency and personal growth (*Korthagen, 2004*). By the 1980s, the emphasis in teacher education began shifting from observable behaviours and competencies, to an emphasis on teachers' cognitive and reflective processes, sparking numerous studies on these topics (*Brousseau & Freeman, 1988; Clark & Peterson, 1986; Eisenhart et al, 1988; Feiman-Nemser & Floden, 1986; Guskey, 1988; Halkes & Olson, 1984; Munby, 1984; Nespor, 1985*). By 1990, Pintrich foresaw beliefs as becoming one of the most central psychological constructs in the field of teacher education. Likewise, *Armour-Thomas (1989)* claimed that the study of teachers' thought processes 'promises to yield information that may revolutionize the way we traditionally conceived the teaching-learning process' (*p.35*).

Methods and Materials

The major aim of the present study is to shed light in the concept, meaning and definition of the teachers' belief. A specific literature search strategy has been used in the present study. For this purpose, a literary search and selection of the related studies focusing on the teachers' belief. I searched scholarly and online databases (Google Scholar, JStor, Proquest) that focus on the teachers' belief and related policies, trends, and issues in various countries. I used search terms associated with the following various topics such as concept, definition of teachers' belief, belief and knowledge, belief and attitude, sources of belief and so on.

Search Strategy

A literary search and selection of the related studies focusing on the teachers' belief generated mainly two types of studies: the qualitative and the quantitative type of studies. The literature review builds on and research reports from previous and ongoing initiatives, original research and academic studies, meta-analyses, literature and policy reviews, and technical reports at the international, regional, and country levels.

Selection Criteria

I searched online databases (Google Scholar, JStor, Proquest) published between 1950 to till the date that focus on the teachers' belief and related concepts.

Definition of Teachers' Beliefs

Even if scholars have studied definitions of beliefs for several decades, the definitions have been vague. Several scholars have been interested in beliefs because factors of making teachers' instructional decisions were not enough to explain the nature of teachers' instruction without teachers' beliefs. Because of raising concerns of beliefs, several researchers in mathematics education defined beliefs as personal philosophical conceptions, ideologies, worldviews and values that shape practice and orient knowledge (*Aguirre & Speer, 1999; Ernest, 1989; Speer, 2005*). Even though scholars have adequately defined beliefs, several scholars assert that there is not a certain definition of beliefs yet. They defined the belief in a variety of ways, and no one definition has gained significant prominence. Perhaps due to this ambiguity, other researchers have used the term without defining it. This lack of clarity and consistency has both led to, and been heightened by, the use of the term beliefs interchangeably with multiple other terms such as attitudes, values, perceptions, theories, and world view, among a variety of others (*Pajares, 1992*).

Anthropologists, social psychologists, and philosophers have contributed to an understanding of the nature of beliefs and their effects on actions. There is considerable congruence of definition among these three disciplines in that beliefs are thought of as psychologically-held understandings, premises or propositions about the world that are felt to be true. *Goodenough (1963)* described beliefs as propositions that are held to be true and are 'accepted as guides for assessing the future, are cited in support of decisions, or are referred to in passing judgment on the behavior of others' (p. 151). *Eisenhart, Shrum, Harding, and Cuthbert (1988)*, however, added an element of attitude to Goodenough's definition: 'a belief is a way to describe a relationship between a task, an action, an event, or another person and an attitude of a person toward it' (p. 53). *Rokeach (1968)* defined beliefs as heuristic propositions that may begin with the phrase: 'I believe that. . .' (p ix). He was particularly interested in the structure of belief systems, which he believed were organized in a psychological but not necessarily logical form. He also wrote that some beliefs are more central than others, and that central beliefs are more difficult to change.

Green's (1971) philosophical approach to a description of beliefs provided an understanding of how humans can hold incompatible or inconsistent beliefs. He suggested that people hold beliefs in clusters, and each cluster within a belief system may be protected from other clusters. In Green's formulation, there is little cross fertilization among belief systems, and beliefs that are incompatible may be held in different clusters. As long as incompatible beliefs are never set side by side and examined for consistency, the incompatibility may remain. While there is considerable agreement across disciplines about the nature of beliefs, there are many other mentalist constructs that, if not synonymous with beliefs, are closely related. *Pajares (1992)* suggested that such concepts as attitudes, values, preconceptions, theories, and images are really beliefs in disguise. But perhaps the most complex issue in current research on teaching and teacher education is the confusion between the terms belief and knowledge.

Anthropologists, social psychologists, and philosophers have agreed upon a commonly accepted definition of beliefs; 'beliefs are thought of as psychologically held understanding, premises, or propositions about the world that are felt to be true' (*Richardson, 1996, p.103*). Understanding the concepts of beliefs outlined by different anthropologists, psychologists, philosophers, and educators help understand how teachers' beliefs would influence their teaching. In educational settings, *Haney et al., (2003)* defined beliefs as 'one's convictions, philosophy, tenets, or opinions about teaching and learning' (p. 367). Anthropologists, social psychologists, and philosophers concur that beliefs are ideas and conceptions that a person either consciously or unconsciously perceives to be true (*Richardson, 1996*). *Rokeach (1968)* identifies five types of beliefs based on their source: primitive beliefs with 100% consensus, primitive beliefs with 0% consensus, authority beliefs, derived beliefs, and inconsequential beliefs. Primitive beliefs with 100% consensus are beliefs one has in common with close friends and colleagues. These are core beliefs which are seldom discussed and remain entrenched unless specific events compel an individual to confront them. Primitive beliefs with 0% consensus evolve from personal experiences and may or may not be shared with other close acquaintances. Authority and derived beliefs have their sources in the beliefs held by authority figures and influential groups with which an individual associates. Inconsequential beliefs, Rokeach explains, are more akin to personal preferences.

Teachers' beliefs are an intangible construct' as they are made up of rational ideas developed over a period of time, through experiences gained while trying to understand a students' mind, and monitoring classroom behaviour, for instance, how students react to lectures. *Pajares (1992)* mentioned that beliefs are a 'messy construct', as researchers in this field have defined identical terms differently and different terms have been used to refer to similar concepts (*Eisenhart et al., 1988; Pajares, 1992; Pedersen and Liu, 2003*). However, in order to understand more clearly the link between beliefs and classroom practices, the term beliefs needs to be clarified. It becomes clear from these definitions that there are some aspects which need to be taken into account when teacher cognition is investigated. These include: 'different terms have been invoked to refer to beliefs; beliefs cannot be accessed directly, so they must be inferred from what the teacher says and what he/she does; teachers may be reluctant to air unpopular beliefs ... because they are often held unconsciously' (*Kagan, 1990, p. 420*); their lack of appropriate language sometimes makes it harder for teachers to reflect on their underlying cognition; and the study of beliefs is extremely context or teacher specific. Hence, it is important to bear these aspects in mind when designing research on teachers' beliefs. Another area of confusion in teacher cognition research is the distinction between beliefs and knowledge, since there

might be some overlap between the nature of knowledge and the characteristics of beliefs (*Raths, 2001; Nishino, 2009*).

Pajares (1992) posits that beliefs are intangible; they are evident only through one's actions and words. He further notes that the construct of teacher beliefs is plagued with '...definitional problems, poor conceptualizations, and differing understandings of beliefs and belief structures' (p. 307). However, Pajares concludes that because all people have beliefs regarding all things about which they have knowledge, teachers have beliefs regarding elements of their profession such as pedagogy, student learning, and teacher roles and responsibilities. Furthermore, Pajares posits that these beliefs occupy a compartment in a teacher's belief system.

Beliefs have been receiving a great deal of attention from educational researchers and widely discussed in the literature. Although there have been many studies related to beliefs, educational researchers still discuss the definition and the nature of beliefs. Therefore, there is a need to clarify the terms and definition of a belief in order to better understand the relationship between teacher beliefs and practice. In reviewing the research on this topic, *Pajares (1992)* refers to beliefs as a messy construct, one that has not always been accorded much precision and which:

...travels in disguise and often under an alias of attitude, values, judgments, axioms, opinions, ideology, perceptions, conceptions, conceptual systems, dispositions, implicit theories, personal theories, internal mental process, action strategies, rules of practice, practical principles, perspectives, repertoires of understanding, and social strategy, to name but a few that can be found in the literature...(p. 309).

Pajares (1992) maintains that beliefs play a role not only in defining behaviour and organising knowledge and information, but also in the appraisal, acceptance, while *Grossman et al. (1989)* acknowledge that the distinction between these two terms is blurry at best (p. 31). Many researchers (*Kagan, 1992a; Pajares, 1992; Calderhead, 1996; Southerland et al., 2001; Smith and Siegel, 2004*) use both terms synonymously, or interchangeably. *Woods (1996)* also argued that it may not be possible to distinguish beliefs from knowledge and proposed the concept of BAK (beliefs, assumptions, and knowledge), rejection of new information. Teachers use their beliefs to define or frame tasks and select cognitive strategies.

Beliefs have been defined by various researchers in different ways and as such there is no unanimous definition of what it means. However, it is necessary to understand the difference between beliefs and knowledge before looking at the various definitions of 'beliefs'. The difference between these two concepts has led to a debate amongst researchers (*Turner et al., 2009*). 'Beliefs' represent an individual's subjective knowledge about their attitudes and behaviours, whereas knowledge can be subjective or objective (*Pajares, 1992; Pehkonen & Pietila, 2003*). In this sense 'beliefs' can be referred to as the subjective knowledge of an individual, made up of assumptions or ideas or personal thoughts or commitments. Beliefs that are subjective in nature are prone to disputes. On the other hand, objective knowledge cannot be referred to as 'beliefs' as they are factual propositions (*Turner et al., 2009*). Teacher's beliefs are beliefs relevant to their teaching abilities, the role they play in facilitating learning and are also made up of a combination of their previous experiences, such as life and school experiences (*Raths, 2001*). It is also claimed that beliefs are 'based on evaluation and judgment' (*Pajares, 1992, p. 313*).

One of the earliest instigators of beliefs research was psychologist Rokeach whose work was seminal in the revival of beliefs research. *Rokeach (1968)* spells out beliefs as 'inferences made by an observer about underlying states of expectancy' (p. 2). Therein he also defines beliefs as 'any simple proposition, conscious or unconscious, inferred from what a person says or does, capable of being preceded by the phrase 'I believe that...'' (p. 113). *Rokeach (1968)* explains three underlying premises to beliefs. First, there are different types of beliefs. Second, these beliefs differ in their importance to an individual. And finally, the centrality of a belief directly parallels the degree to which that belief is likely to change. He explains this centrality as a connectedness that involves the influence and inter-relatedness a belief has with other beliefs (p. 5). Greater connectivity and centrality of a belief indicates less inclination for that belief to change.

Pajares (1993) made an effort toward clarity in his definition of teachers' beliefs as 'the attitudes and values about teaching, students, and the education process that students bring to teacher education-attitudes and values that can be inferred by teacher educators not only from what preservice teachers say but from what they do' (p. 46). As *Pajares (1992)* emphasized, reference to teachers' beliefs in educational research typically is referring to their educational beliefs rather than their broader, general belief system. *Pratt (1992)* broadly defined conception as a 'specific meaning attached to phenomena which then mediate our response to situations involving those phenomena' (p. 204). In the context of science education, *Hewson and Hewson (1987)* defined 'conception' as a 'set of ideas, understandings and interpretations of experience concerning the teacher, teaching, the nature and content of science, and the learner and learning which the teacher uses in making decisions about teaching' (p.194).

According to *Pajares (1992)*, beliefs change through a process which results when a person questions existing beliefs or perceives new truths to be incompatible with preconceived ideas. Beliefs may change, but the ease with which they are altered is thought to be dependent upon the type of belief under question. Core beliefs are deeply rooted in the psyche and highly resistant to change (*Pajares, 1992; Rokeach, 1968*). Rokeach explains that these strong beliefs are closely tied to one's sense of identity because they arise from experiences early in life and are used when evaluating later experiences (*Pajares, 1992*). Pajares' synthesis of empirical studies on beliefs leads to the supposition that core beliefs rarely change in adults. However, according to *Rokeach (1968)*, authority and derived beliefs may change if the source of the belief loses credibility.

As a mental construct, beliefs are not easily defined, and indeed most scholars come to the consensus that beliefs are notoriously difficult to define (*Pajares, 1992 cited in Nedjah, 2010*). *Pajares (1992, p. 2)* indeed called them a 'messy construct that travels in disguise and often under aliases'. *Richardson (1996)* defined beliefs as 'psychologically-held understandings, premises, or propositions about the world that are felt to be true' (*p. 103*). Unlike knowledge, beliefs are not necessarily based on evidence, and may very well defy logic (*Richardson, 1996*). In fact, the term is so deceptively simple that some researchers have taken the meaning of the word for granted, leaving it undefined in their studies on teachers' beliefs (*Boulton-Lewis et al. 2001 as cited in Borg, 2006*). As *Mohamed (2006)* puts it, 'whether a belief is held consciously or unconsciously, it is always accepted as true by an individual who holds them' (*p. 19*) (*cf. also Pajares, 1992; Haussamen et al., 2003*). *Borg (2011)* defines beliefs as 'propositions individuals consider to be true and which are often tacit, have a strong evaluative and affective component, provide a basis for action, and are resistant to change' (*p. 371*). It is important for research about how teachers learn to consider beliefs, especially in the context of teacher training, as they are 'a measure of a teacher's professional growth' (*Kagan, 1992, p. 85*). To this end, having considered beliefs in general we will now focus on the role played by beliefs in language teaching.

Attempts to define belief include *Kagan (1992)* who defined teacher belief 'as tacit, often unconsciously held assumptions about students, classrooms, and the subject matter taught' (*p. 65*). More recently, *Hutner and Markman (2016)* proposed that 'beliefs are mental representations that influences the practice of a teacher only when a belief is active in the cognition' (*p. 675*). For consistency, I will use 'belief'. I subscribe to a view of belief as a part of a collection of mental constructs that forms the structure of human cognition that supposedly drive actions (*Bryan, 2012; Dancy and Henderson, 2007*). Although people hold beliefs about almost every aspect of the perceived world, teachers specifically hold beliefs about subject knowledge, teachers and teaching, learners and learning, moral, ethical and societal issues (*Levin, 2015*).

Further, beliefs provide rationale or justification for teachers' decision and choice of a particular instructional practices (*Dancy and Henderson, 2007*). Teachers draw on and use their beliefs as a mental screen when making instructional decisions (*Pajares, 1992*). A hypothetical example of belief could be that whenever teachers ask difficult questions, they call on boys to answer, whereas when they ask simple questions requiring recall, they invite girls to answer. Such teachers could be holding certain beliefs about the intelligence and learning abilities of boys and girls. Overall, research on teacher beliefs focuses on describing teachers' subjective thinking upon which they draw when making instructional decisions and choices (*Thomas et al., 2001*).

According to *Rokeach (1968)*, a group of related beliefs gives rise to attitudes and values, which, together with the beliefs, form a belief system. He compares a belief system to the structure of an atom. Anchoring the belief system, like the nucleus of an atom, is the set of strongly entrenched core beliefs, while on the periphery are the more easily changed beliefs (primitive beliefs with 0% consensus, authority beliefs, derived beliefs, and inconsequential beliefs). While Rokeach does not speak explicitly about teacher beliefs, *Pajares (1992)* reviewed 35 empirical studies on teachers' beliefs and concludes that 'individuals develop a belief system which houses all the beliefs acquired through the process of cultural transmission' (*p. 325*). Pajares also adds that belief systems are formed early and reinforced by subsequent experiences. They are ranked according to their affiliation with other beliefs, and belief systems influence perceptions, behavior, and decisions. Furthermore, according to *Kagan (1992)*, core beliefs about teaching affect the processing of new information about teaching. According to *Mansour (2009)*, beliefs are one of the most difficult concepts to define. Although educational literature has paid great attention to teachers' beliefs, there is still no clear definition of belief (*Savasci-Acikalin, 2009*). As *Pajares (1992)* argued, 'the difficulty in studying teachers' beliefs has been caused by definitional problems, poor conceptualizations, and differing understandings of beliefs and belief structures' (*p. 307*). Therefore, the definitions of beliefs have been varied in the literature. He suggested that researchers need agreement on meaning and conceptualization of belief.

Teacher belief has been extensively researched both generally in education and in the language teaching field from diverse perspectives and with different purposes (*Philip & Borg, 2009*). A review of recent literature has shown a significant level of complexity of teacher belief because the definition of the term varies greatly and 'different terms have been used to describe similar concepts' (*Borg, 2003, p.8*) The distinct terminology used in this field of study which overlaps with teacher belief in many ways include teachers' knowledge (*Clandinin & Connelly, 1987, p. 487*), 'teachers' practical knowledge' (*Biggs, 1989*), teacher cognition (*Borg, 2003; 2006*) and teachers' conceptions

of teaching (Pratt, 1992; Kember, 1997). The inconsistency of terminology and lack of clear definition, as Pajares (1992) put it, has impeded the research on school teachers' beliefs (Kember, 1997).

Pajares (1992) in his extensive and seminal literature review suggests that difficulties in studying teachers' beliefs resulted from the shortcomings in the definition and use of the term belief, 'arguing distinguishing knowledge from belief is a daunting undertaking' (Pajares, 1992, p. 309). It is also possible to have a fuller definition as used as a loose synonym of beliefs in teacher cognition research (Borg, 2006). All teachers hold beliefs about:

Their work, their students, their subject matter, and their roles and responsibilities, but variety of conceptions of educational beliefs have appeared in the literature. As belief is studied in diverse fields this has resulted in a variety of meanings and the educational research community has been unable to adopt a specific working definition' (Pajares, 1992, p. 301).

Moreover, there are various definitions of the term beliefs (Borg 2006; Furinghetti and Pehkonen 2002; Leder and Forgasz 2002; Pajares 1992; Rokeach 1968). This diversity of terms and definitions makes 'beliefs' a 'messy construct' that is difficult to research (Pajares 1992). Pajares (1992: 329) suggests that beliefs need to be 'clearly conceptualized' in order to make them less messy and more researchable. Borg's (2001:186) defines beliefs:

A belief is a proposition which may be consciously or unconsciously held, is evaluative in that it is accepted as true by the individual and is therefore imbued with emotive commitment; further, it serves as a guide to thought and behaviour.

Based on this definition, beliefs can be conscious or unconscious (Rokeach 1968; Ackermann 1972). These beliefs affect the teachers' way of perceiving and interpreting knowledge (Calderhead and Robson 1991; Kagan 1992; Munby 1982; Richardson 1996). Moreover, they are thought to be influential on teachers' thinking and classroom practice (Andrews 2003; Breen et al. 2001; Pajares 1992; Smith 1996). Teacher belief has been a more commonly used term in the recent years. However, the same terminology has been defined very differently by researchers in this field. Kagan (1992, p. 66) regarded 'teachers' beliefs as teachers' implicit assumptions about students, learning, classrooms, and the subject matter to be taught'. Freeman (1993, p.488) depicted teacher belief as 'teacher's understanding of the school context, the subject matter, or the students'.

Beliefs represent the rich store of general knowledge of objects, people, events and their characteristic relationships that teachers have that affects their planning and interactive thoughts and decisions, as well as their classroom behaviours. (Nisbett & Ross, 1980, cited in Fang, 1996, p.49).

Richards (1998) defines language teacher belief as the

Information, attitudes, values expectations, theories, and assumptions about teaching and learning that teachers build up over time and bring with them to the classroom (p. 66).

Beliefs are judgments and evaluations that we make about ourselves, about others, and about the world around us. They are personal convictions based on observation or logical reasoning. Ford (1994) defined the beliefs as a group of norms or opinions which were formed in the individual through his experiences and the overlapping of thoughts during the learning processes.

Elen and Lowyck (1999) describe teachers' beliefs as suppositions about educational issues such as teaching, learning, and curricula. In a study of junior high school teachers' beliefs regarding the integration of technology into pedagogy and classroom practice, Hudgins (2008) defines teachers' beliefs as those "...beliefs about teaching and learning (referred to as pedagogical beliefs) and the beliefs they have about how technology enables them to translate those beliefs into classroom practice" (p. 19). For the purpose of the current study, the definition of teachers' beliefs draws from the definition proposed by Elen and Lowyck (1999) and Hudgins (2008). Teachers' beliefs are defined as beliefs teachers hold about teaching, learning, and curricula and beliefs they hold about the role of technology in literacy instruction. In this research, teachers' beliefs include teachers' personal practical knowledge and implicit personal theories and assumptions about students, teaching methods, the role of the teacher, their relationship with students, teaching objectives, as well as the interplay of all the elements above in a certain context. The definition differs from others' in the following aspects: It emphasizes belief as a system, including different aspects that interact with each other dynamically; It is closely related to teachers' personal practical knowledge and professional identity and self; It sees and teacher belief as being cultural, contextual and personal in nature and being influenced by experience, culture and context.

According to Loucks-Horsely et al., (1998), 'beliefs are more than opinions: they may be less than truth, but we are committed to them' (p. 27). Pajares (1992) also note that the difficulty of in studying teachers' beliefs has been caused by definitional problems, poor conceptualization, and differing understandings of beliefs structures' (p. 309). Researchers in other field have been noted that beliefs is not an easily define concept (Cantu, 2001). Abelson (1979)

defined beliefs in terms of people manipulating knowledge for a particular purpose or under a necessary circumstance. According to **Brown and Cooney (1982)**, beliefs are dispositions to actions and major determinants of behavior. **Rokeach (1972)** defined beliefs as ‘any simple proposition, conscious and unconscious, inferred from what a person says or does, capable of being preceded by phrase ‘I believe that’ (p. 113).

Ackermann (1972) examined beliefs in four different categories as behavioral beliefs, unconscious beliefs, conscious beliefs, and rational beliefs. Behavioral beliefs are not distinguished simply because of fixed behavioral patterns that anyone holding a certain beliefs will exhibit. Rather unconscious beliefs long-standing beliefs that can influence behavior over a long period of time but resist recognition by the agent. Unlike behavioral beliefs, unconscious beliefs cannot be interpreted from behaviors. Behavioral beliefs, by contrast, will be thought of as non-conscious rather than unconscious. Conscious beliefs are any beliefs a person has explicitly formulated and is aware of. Rational beliefs are defined as a philosophical idealization of actual belief structures.

Difference among Beliefs, Knowledge, and Attitude

It is very difficult to differentiate among belief, knowledge and attitude. These terminologies are closely related and seems similar in the various context. In the following sections, I have tried to differentiate among these terminology.

Beliefs and knowledge

In the traditional philosophical literature, knowledge depends upon a truth condition that suggests that a proposition is agreed upon as being true by a community of people (**Green, 1971; Lehrer, 1990**). Propositional knowledge has epistemic standing; that is, there is some evidence to back up the claim. Beliefs, on the other hand, do not require a truth condition. As **Feiman-Nemser and Floden (1986)** pointed out, ‘It does not follow that everything a teacher believes or is willing to act on merits the label knowledge’ (p. 515). Such a differentiation between beliefs and knowledge is not evident in much of the teaching and teacher education literature. **Fenstermacher (1994)** suggested that many scholars use the term knowledge as a grouping term. **Alexander, Schallert, and Hare (1991)** described 26 terms that are used in the literature on literacy to denote different types of knowledge. They also equated beliefs and knowledge: ‘knowledge encompasses all that a person knows or believes to be true, whether or not it is verified as true in some sort of objective or external way’ (p. 317). **Kagan (1990)** also made the decision to use the terms beliefs and knowledge synonymously in her analysis of methodological issues inherent in studying teachers' knowledge. Her rationale for this formulation was that teachers' knowledge is subjective, and therefore much like beliefs.

There is also considerable similarity between the terms knowledge and beliefs in the concept of teachers' personal practical knowledge. Practical knowledge, first explored in teaching practice by **Elbaz (1983)**, and developed further by **Clandinin and Connelly (1987)**, is an account of how a teacher knows or understands a classroom situation. Practical knowledge is gained through experience, is often tacit, and is contextual. This form of knowledge, however, is not synonymous with beliefs because it is thought of as embodied within the whole person, not just the mind (**Hollingsworth, Dybdahl, & Minarik, 1993**). Embodied knowledge is more than cognitive and relates to the way in which people physically interact with the environment (**Johnson, 1987**). It is this knowledge that **Yinger (1987)** suggested is used by the teacher in an improvisational manner in the classroom. Yinger stated that this knowledge may be inseparable from a particular classroom action, a view that is similar to **Schon's (1983)** notion of knowledge-in-action. As **Carter (1990)** pointed out, this conception of understanding or personal knowledge does not separate the knower from the known. It is personalized, idiosyncratic and contextual, and, for **Yinger (1987)**, emerges during action.

In the study of teacher cognition, the terms knowledge and beliefs have frequently been used to refer to teacher cognition (**Nespor (1987)**, on the other hand, attempted to distinguish beliefs from knowledge. While knowledge is likely to change, beliefs are static, and when they do change, it is ‘a matter of a conversion or gestalt shift’ (p. 321), not the result of argument or reason. Nespor suggested that knowledge is grounded on objective fact, whereas beliefs rely heavily on affective and evaluative components. In the literature, researchers deploy several terms to refer to teacher knowledge. These terms include subject matter knowledge, pedagogical content knowledge, curriculum knowledge (**Shulman, 1986b**), practical knowledge (**Elbaz, 1981; Meijer et al., 2001**), personal practical knowledge (**Clandinin and Connelly, 1987; Golombek, 1998**) and teachers' practical theory (**Mangubhai et al., 2004**). The fact that researchers have employed different words to refer to the same thing has led to confusion.

The term belief has been used synonymously with a variety of terms. This interchange has created a considerable amount of confusion, particularly when employed correspondingly with the term knowledge. Because beliefs and knowledge are highly interrelated, distinguishing between the two has historically proven daunting (**Elbaz, 1983; Kagan, 1992; Nisbett & Ross, 1980**). Beliefs are seldom clearly defined in studies or used explicitly as conceptual tools, but the distinction between beliefs and knowledge is common to most definitions. In order to define beliefs, the relationship between beliefs and other similar concepts need to be clarified. Knowledge is a concept which has a complex, debatable relationship with beliefs. The difference between knowledge and beliefs has been widely debated (**Hoy and Weinstein 2006; Pajares 1992**). While some researchers try to distinguish the two concepts (**Abelson 1979; Nespor 1987**), other researchers tend to see the two concepts as similar, overlapping, synonymous or difficult

to distinguish (*Calderhead 1996; Kagan 1992; Pajares 1992*). *Fenstermacher (1994:29)* argues that knowledge and beliefs are undoubtedly distinguishable in an epistemic sense. He notes that 'a claim to know is a special type of claim, different from a claim to believe and requiring justification in ways that beliefs do not' (*Fenstermacher 1994:31*). In other words, knowing something is to assert that it is true or real usually by providing evidence. On the other hand, believing something would suggest that it might be real, or it may only be an 'assumption about the reality' (*Nespor 1987:318*). However, the boundaries this philosophical point of view tries to create between 'knowledge' and 'beliefs' do not seem to be always clear particularly in the case of teaching, as the two concepts seem to be overlapping.

One of the main reasons for the blurred boundaries between knowledge and beliefs in teacher cognition research is that 'teachers often treat their beliefs as knowledge' (*Grossman et al. 1989:31*). Most teachers tend to see knowledge and beliefs as overlapping constructs (Hoy and Weinstein 2006:182). The main reason for this overlap resides in teachers' minds. *Verloop et al. (2001:446)* argue that 'in the mind of the teacher, components of knowledge, beliefs, conceptions and intuitions are inextricably intertwined'. Thus, while beliefs shape the way teachers think and process new information (*Richardson 1996:102*), knowledge can be a source of beliefs. For example, while the beliefs student teachers bring to their teacher education programmes influence their perception of knowledge, the information they are learning from their teacher education can contribute to developing, changing, modifying their beliefs or creating new beliefs. *Calderhead and Robson (1991:7)* note that the beliefs student teachers bring to their teacher education programmes 'can influence what they find relevant and useful in the course and how they analyse their own and others' practice'. *Pajares (1992:325)* states that while knowledge and beliefs are 'inextricably intertwined, the potent affective evaluative and episodic nature of beliefs makes them a filter through which new phenomena are interpreted'.

The overlap between the two concepts is evident in teacher cognition research. *Grossman et al. (1989:31)* found themselves researching teachers' beliefs in their study about teacher knowledge and they concluded that 'while we are trying to separate teachers' knowledge and belief about subject matter for the purposes of clarity, we recognise that the distinction is blurry at best'. Other researchers have used inclusive terms to refer to teacher's mental processes 'to embrace the complexity of teachers' mental lives' (*Borg 2003:86*). *Borg (2003)* uses the term 'teacher cognition' to refer to what teachers think, know or believe and *Woods (1996)* uses the term 'BAK' which refers to beliefs, attitudes and knowledge. In brief, distinguishing beliefs from knowledge might seem possible but it is difficult because of the dynamic overlap between both constructs. Deciding to use an inclusive term (teacher cognition), or one of the sub-terms (knowledge or beliefs) depends on the researcher's conceptual orientations and research purposes. This study adopts a constructivist approach aiming to understand beliefs and practices from the participants' perspectives. *Munby (1982)* says that beliefs are powerful constructs as they frame our interpretation of reality and might outweigh knowledge. However, while my study focuses on beliefs, inevitably some elements of teacher knowledge would be included under the term beliefs. *Kagan (1992)* says that most teachers' professional knowledge can be regarded as beliefs.

In the literature of the field of education, distinctions between beliefs and knowledge are often overlooked. *Kagan*, for example, unites the two by defining belief in light of knowledge. She defines teacher belief as 'a particularly provocative form of personal knowledge that is generally defined as pre- or inservice teachers' implicit assumptions about students, learning, classrooms, and the subject matter to be taught' (*Kagan, 1992, p. 65-66*). She further underscores the lack of differentiation between belief and knowledge in her definition of knowledge as 'belief that has been affirmed as true on the basis of objective proof or consensus of opinion (p. 73). For *Kagan*, the subjectivity of the concepts of belief and knowledge leave little differentiation between the two. Thus, one significant premise of her research is that "teachers' professional knowledge can be regarded more accurately as belief" (p. 73). Though the transition point between knowledge and beliefs is a gray area, there are those in educational research who have underscored differences between belief and knowledge. *Bandura (1982, p.126)* asserted that beliefs serve as a mediator for a person's knowledge base, and ultimately influence action (*Pohan & Aguilar, 2001*). Furthermore, *Tillema's (1995)* investigation of the relationship between beliefs and learning gave evidence that teachers' beliefs served to mediate knowledge acquisition. Teachers acquired the knowledge most closely corresponding with their beliefs.

In what is likely the most extensive examination of the topic, *Nespor (1987)* draws on the work of *Abelson (1979)* in delineating four characteristics that differentiate beliefs and two differentiating belief systems from knowledge and knowledge systems. First, beliefs often include existential presumptions regarding entities such as God, laziness, or object permanence, or the nonexistence of such entities. *Rokeach (1968)* identified these as the primitive, personal beliefs that belong to the core of the belief system and are rarely open to change. In the realm of education, teachers believe students to embody such entities. This can greatly impact how teachers view their students and how they approach teaching them. Second, alternative realities are part of beliefs. These realities may be the mental creation of an ideal situation and play a role in defining goals. For example, a teacher's vision of the perfect classroom is an influential belief, like a fantasy that she may try to enact through her classroom practices. Third, in contrast to knowledge, beliefs tend to favor the affective and evaluative. Whereas with knowledge one may know something

about a concept, idea, or field, a belief about the same thing would carry an associated feeling. The most common distinction between belief and knowledge is that beliefs are primarily rooted in evaluation and judgment, whereas knowledge finds its roots in fact (*Pajares, 1992, p. 313*). Knowledge typically infers that there is some supporting evidence not required by beliefs. A dimension of beliefs that Abelson mentions but Nespors does not emphasize is that of that certitude. Beliefs can be held with different degrees of certainty. *Nisbett and Ross (1980)* evidence this distinction in their delineation between “theories” (beliefs) and “generic knowledge (p.28). It is notable, however, that they view beliefs and knowledge as two kinds of knowledge structure.

Nespors’s fourth distinction is that knowledge lends itself to a more semantic system of storage that breaks things down logically, whereas beliefs store data episodically according to prior experiences. Nespors asserts that those experiences influence the interpretation of subsequent situations. A good example of the influence of this episodic dimension of beliefs in education research is evident in a study by *Calderhead and Robson (1991)*. They found pre-service teachers’ images of teaching to powerfully influence what preservice teachers intake from what is presented in their courses as well as their analysis of theirs and others’ classroom practice.

We will explore belief systems in more depth in the following section. However, we briefly address them in light of Nespors’ differentiation of belief systems from knowledge systems. *Nespors (1987)* defined belief systems as ‘loosely-bounded systems with highly variable and uncertain linkages to events, situations, and knowledge systems...bound up with the personal, episodic, and emotional experiences of the believer (p. 321). In contrast, he describes knowledge systems as more distinctly defined structures that grow and develop only in accordance with more strict guidelines. Nespors cites two further characteristics as differentiating the two. Nonconsensuality, or the disputability of various beliefs, is inherent to belief systems. Beliefs do not require the agreement of a group, or even consistency with a person’s other beliefs. As Abelson points out regarding beliefs, the believer generally grasps that others may disagree. Though with that said, the personal nature of belief systems does not lend them to evaluation from outside sources as easily as do knowledge systems. *Nespors* explains that a change in beliefs typically has to stem from something as weighty as ‘a conversion or gestalt shift (p. 321). Whereas knowledge systems grow and change, belief systems are relatively more static. Knowledge implies a verifiable truth not expected of beliefs. Finally, in what Nespors refers to as “unboundedness,” belief systems are less dependent on logic and more fluid in their organization of domains. The relevance of those beliefs may be tied to the experiential, whereas knowledge systems have more distinct, defined domains.

As these scholars evidenced, beliefs and knowledge differ. But why focus on beliefs rather than knowledge for this present study? Teachers may have access to much the same knowledge through education and literature, but their teaching will differ according to their beliefs. Arguably, beliefs are considered more powerful in their influence over pre-service teachers’ learning, decisions, and behaviors than is knowledge (*Calderhead & Robson, 1991; Ernest, 1989; Nespors, 1987*). Furthermore, beliefs have been found to filter knowledge acquisition and influence knowledge construction. Also, *Nespors (1987)* concluded that regardless of their peculiarities, beliefs, more than knowledge, are responsible for task and problem definition and organization, and are effective in predicting behavior. This will be addressed more substantially later when we explore the importance of teachers’ beliefs. Another important aspect that reflects the complexity inherent to the nature of belief is its complex relationship with knowledge. Though they have been examined as overlapping constructs (*Kubanyiova, 2012*), differences between these two concepts have been illustrated by some researchers, as can be summarized as below (table 1) :

Table 1: Comparison between knowledge and belief

Item	Knowledge	Belief
1.	Objective, emotion-free	Subjective, emotion-related
2.	Factual and proven information transmitted within an educational system (<i>Alexander, Murphy, Guan & Murphy, 1998, p. 98</i>)	Aligned with unproven but deeply-held convictions. (<i>Alexander, Murphy, Guan & Murphy, 1998, p. 98</i>)
3.	Knowledge pertains to objective, verifiable fact (<i>Pajares 1992, p.70</i>)	Beliefs are based on judgment And evaluation (<i>Pajares 1992, p.70</i>)
4.	Acquired through learning, experiencing and observing	Acquired mainly through experiencing
5.	Easy to change and develop (<i>Pajares, 1992</i>)	Resistant to change (<i>Pajares, 1992</i>)
6.	Highly consistent	Can be competing and inconsistent

When teacher knowledge is viewed from a personal constructions perspective based on the connected relation between disciplinary knowledge and personal understanding and experiences, it is closely intertwined with teacher belief (*Ennis, 1994*). However, ‘knowledge alone is not adequate in making sense of all teachers’ behaviour which makes it necessary to explore teacher belief in order to complete the missing paradigm’, which is understanding how teachers think about teaching and subject matter, etc. (*Zheng, 2009, p. 75*).

Beliefs and attitudes

Due to the emphasis on behavioral research in the 1950s and 1960s, teachers' attitudes had enjoyed significant attention. In the shift toward investigation of cognition, however, beliefs began to replace attitudes in the research spotlight (*Richardson, 1996*). Attitudes came to hold a more affective connotation while beliefs were viewed as a cognitive concept. *Rokeach (1968)* explained attitudes in terms of beliefs, defining attitude as a 'relatively enduring organization of beliefs around an object or situation predisposing one to respond in some preferential manner' (*Rokeach, p. 112*). *Rokeach* asserted that clusters of interrelated beliefs actually make up attitudes. Thus, he depicted attitudes as subsystems of beliefs (*p.123*). *Rokeach's* explanation, while valuable in recognizing the two concepts, was still limited in distinguishing the two. *Fishbein and Ajzen (1975)* moved further to individualize the concepts of attitude from belief. They describe attitudes as more evaluative or affective when they explain, 'Affect refers to a person's feelings toward an evaluation of some object, person, issue, or event; cognition denotes his knowledge, opinions, beliefs, and thoughts about the object' (*p.12*). *Fishbein and Ajzen* tie beliefs to information and differentiate attitudes as an evaluation of something or someone. As beliefs are formed, an automatic and simultaneous attitude is developed. Belief assessment generally measures persons' attitudes.

In spite of such efforts at distinction, differentiation between the two terms has often not succeeded on a wide scale in education research. As *Pajares* explains, the interconnection of beliefs within various attitudes about education, society, race, and other issues can create life-shaping values, influence perceptions, and dictate behaviors (*Pajares, 1992*). Such an interconnection has paved the way for great interplay in language usage. The terms are largely employed in an interchangeable manner (*Garcia-Nevarez, 2005*). Much like the situation with beliefs research, the term attitudes is not explicitly defined in many attitudes research studies (*Lee & Oxelson 2006; Reeves, 2006*). This is not surprising given the lack of consensus on terminology of beliefs, knowledge, and attitudes (*Richardson, 1996*).

The effort in this study is toward clarity of definition, delineation, and general agreement with previously established distinctions in relevant terminology. To be clear, this present study differs from language attitude research, which is a branch of study focusing on students' and teachers' feelings toward a language. Because the focus herein takes a more cognitive interest in language teaching and learning in a mainstream environment, this study focuses on beliefs. This present review has largely excluded studies that employ the term attitude rather than belief. Though in some cases the terms are used interchangeably, much research fails to define the use of such terminology and ambiguity leaves room for doubt about the meaning of the terms. Therefore, I have chosen to mark the boundaries of this study to principally include specifically "beliefs" research.

Nature of Teachers Beliefs

Depending on the theorist or researcher's point of view, there are different views about the concept of beliefs. *Dewey (1938)* developed a bipolar model within which there were two opposite dimensions: on the one pole, beliefs were characterized as traditional, and on the other as progressive. These two poles formed a unidimensional system since the concept of belief consisted of traditional and progressive components which were negatively related. Therefore, a person oriented at the traditional pole would be expected to disagree with progressive ideas and vice versa (*Mansour, 2009*). *Dewey's* definition oversimplifies the concept of beliefs and lead to unrealistic understanding of its basic elements (*Bunting, 1984*). However, a multidimensional system has been tried by the researchers to identify the concept of beliefs since the 1970s. Referring to the work of *Wehling and Charter (1969)* shows that the concept of beliefs is identified as consisting of eight dimensions. Two dimensions describe subject matter and human adjustment matters, while other six describe instrumental and impersonal processes affecting educational outcomes.

Rokeach (1968), on the other hand, groups beliefs into five categories according to their connection with the central beliefs, and maintains that everybody has beliefs that belong to these five types. Type 'A' formed earlier, involves the nature of oneself and one's physical and social world. Beliefs of this type are central. Owing to their connection with social norms, they are not prone to controversy and thus are hardly changeable. Type 'B' beliefs differ from type 'A', being private matters and independent of any social judgment. Type "C" beliefs share some characteristics with type 'A' beliefs which, to a certain extent, are reshaped through an individual's derive from reliable secondary sources such as books and the media. The type 'E' beliefs consist of beliefs about taste, which is personal and not to be interfered with. These beliefs are far from the central belief, and rarely connected with other types. They are not changed and are considered insignificant.

In an attempt to clarify the meaning of beliefs, *Pajares (1992)* expresses the need to distinguish between beliefs and knowledge and explains that knowledge is based on objective fact, while beliefs are based on evaluation and judgment. Additional to this, *Kagan (1992)* argues that most of a teacher's professional knowledge can be regarded as belief, claiming that knowledge is considered a belief that has been affirmed as true on the basis of objective proof or consensus of opinion. According to *Mansour (2009)*, a further distinction between beliefs and knowledge is that while knowledge often changes, beliefs are "static". In addition, whereas knowledge can be evaluated or judged, such is not the case with beliefs since there is usually a lack of consensus about how they are to be evaluated. Furthermore, there do not appear to be any clear rules for determining the relevance of beliefs to real world events. While there are doubtless other distinctions that could be made between the two, and by considering beliefs as a form

of knowledge. This form of knowledge could be referred to as personal knowledge (*Nespor, 1987*). *Kagan (1992)* refers to beliefs as a 'particular provocative form of personal knowledge' and argues that most of a teacher's professional knowledge can be regarded more accurately as beliefs.

According to Kagan, as a teacher's experience in classrooms grows, this knowledge grows richer and more coherent and thus forms a highly personalized pedagogy or beliefs system that actually controls teacher's perception, judgment, and behavior. Although teachers may have similar scientific knowledge, they are likely to teach in different ways because teachers' beliefs are more powerful than their knowledge in influencing the way in which they teach (*Nespor, 1987*). The discussion about the relationship among knowledge, beliefs, and practices indicate a clear disagreement whether knowledge control beliefs or beliefs control knowledge. In order to answer this disagreement, *Mansour (2008)* carried out an empirical research and found that there is an interactive relationship between knowledge and beliefs. He asserts that the settled or developed teachers' beliefs act as an information organizer and priority categorizer, and in turn control the way it could be used. He added that in the interactions between knowledge and beliefs, beliefs control the gaining of knowledge and knowledge influenced beliefs. Having discussed the nature of beliefs, now it is necessary to focus on teachers' beliefs regarding science teaching-learning, as is done in the following section.

Understanding the complex nature of beliefs helps in explaining the relationship between beliefs and practice as some beliefs seem to be more influential on practices than others. A number of characteristics of beliefs are mentioned in the literature on belief. Beliefs can be core or peripheral (*Pajares 1992; Green 1971*), conscious or unconscious (*Ackermann 1972; Rokeach 1968*), ideal or reality-oriented (*Abelson 1979; Nespor 1987*) and can be contradictory (*Green 1971*). Most of these characteristics have not been widely researched possibly because it is difficult to get empirical evidence that supports these abstract ideas. Here I discuss what is available in the literature on these issues.

Core and peripheral beliefs

Beliefs are thought to form in different clusters within the human mind (*Green 1971; Rokeach 1968*). In teachers' belief system, core beliefs are central beliefs which tend to be more stable and influential than peripheral beliefs. *Rokeach (1968)* defines centrality of beliefs in terms of connectedness; core beliefs have more connections with other beliefs, which make them central and more powerful. *Cooney et al. (1998)* in their case study of 'Greg' a pre-service mathematics teacher found that Greg believed that the aim of teaching is to prepare students for life. Greg explained that he wanted his students to develop their life reasoning and adjustments abilities and problem-solving skills (Ibid). This belief seemed to be at the core of Greg's beliefs and his other beliefs seemed to be derived from this belief. *Breen et al. (2001:498)* in their study on language teachers' teaching principles and practices concluded that teachers in their study gave 'priority to certain principles'. *Phipps and Borg (2009)* in their study of three EFL teachers in the preparatory school of a private English-medium university in Turkey found that while teachers' practices did often not reflect their stated beliefs about language learning, these practices were consistent with deeper, more general beliefs about learning.

Teachers' core beliefs are prioritised over other beliefs in practice and they are held with more strength or 'emotive commitment' (*Borg 2001*). Also, core beliefs seem to be more stable and more resistant to change (*Pajares 1992; Rokeach 1968*). Core beliefs are more likely to be implemented in the teaching practice as they are more powerful. Further research is thus required for us to understand not just what language teachers have cognitions about but how the different elements in teachers' cognitive systems interact and which of these elements, for example, are core and which are peripheral. Attention to core and peripheral beliefs would contribute to better understanding of the relationship between beliefs and practices (*Phipps and Borg 2009*).

Conscious and unconscious beliefs

Rokeach (1968) divides beliefs into two types: conscious and unconscious *Ackermann (1972)* defines conscious beliefs as beliefs that a person has explicitly formulated and is aware of. *Pajares (1992)* states that 'conscious beliefs can be an unreliable guide to the nature of reality' as deeper unconscious beliefs might be influencing the reality. As a result, unconscious beliefs can be interpreted through behaviour, though not directly. *Kagan (1992:66)* argues that 'beliefs cannot be inferred directly from teacher behaviour, because teachers can follow similar practices for very different reasons' and the opposite is true. *Breen et al. (2001)* found that teachers who are working in the same context with similar groups of students can implement a shared principle in a different wide range of practice. *Breen et al. (2001)* can be seen as an investigation of implicit [unconscious] beliefs as the teachers may not have been aware of the principles behind their practices prior to the discussions of examples of their practices.

While giving teachers the opportunity to reflect on their practices is useful to gain insight into their unconscious beliefs, teachers might provide post-hoc explanations as some unconscious beliefs are difficult to articulate. Combining pre- and post-observation interviews and classroom observation can help in gaining deeper insights into teachers' beliefs. Considering the issue of consciousness is not only important to understand the relationship between

beliefs and practices, it is also important to understand the limitations and to appreciate the complexity of researching teachers' beliefs.

Ideal and reality-oriented beliefs

Teachers might hold ideal beliefs of how they want their teaching to be. *Abelson (1979)* points out that beliefs might represent alternative realities. *Nespor (1987)* explains that teachers might draw images of teaching which are neither based on knowledge nor experience. For example, a teacher 'drew her ideal of teaching from a model of what she had wanted classes to be like when she was young, a child-friendly and fun. Although she worked to shape her class to that ideal, she had never achieved it; nor had she experienced it as a child' (*Nespor 1987: 318*).

Ideal beliefs could be a source of tension between beliefs and practice (*Farrell 2008; Sakui and Gaies 2003*). For example, in a self-study, Keiko, a Japanese English language teacher, said that she writes every year in her journal about how she could improve her writing classes but when the teaching starts, she discovers that there are some things of which her students are not capable of (*Sakui and Gaies 2003*). Keiko's several years of teaching experience, reflection and probably her knowledge as a researcher helped her to be aware of her ideal beliefs which is not the case for other teachers. Keiko's students' level was a constraint that made her feel how ideal her beliefs are. Ideal beliefs can be individual and context-based; what is ideal for a particular person or in a particular context might be real for another person or another context. Real or reality-oriented beliefs are beliefs that proved to work in reality. They are practical beliefs; teachers usually gain from their teaching experience. *Phipps and Borg (2009: 388)* found that 'beliefs which exerted most influence on teachers' work were ones firmly grounded in experience'. Congruence and incongruence between beliefs and practice can be better understood by considering how real or ideal they are.

Contradictory beliefs

Teachers might also hold some contradictory beliefs. According to *Green (1971)*, a belief system includes different clusters of beliefs that might be isolated from each other. Therefore, teachers might not be aware of their contradictory beliefs until they set side by side and compared (*Green 1971:47*). Contradictions of beliefs could be the result of the institutional or political pressure on teachers (*Turner et al. 2009*). When teachers work in conditions that oppose their beliefs, they might have some contradictory beliefs. A researcher needs to be aware of the different characteristics of the context of investigation when researching teachers' beliefs as it has a big influence on the nature of these beliefs.

Sources of Teachers Beliefs

Beliefs are not isolated and independent. They exist in the framework of systems. *Rokeach (1968)* defined a belief system as 'having represented within it, in some organized psychological but not necessarily logical form, each and every one of a person's countless beliefs about physical and social reality (p. 2). He uses the atom as a metaphor describing belief systems. Within the atom of a belief system, there is a continuum of beliefs ranging from the central to the peripheral. Peripheral beliefs are less influential and more open to change, whereas central beliefs are more intense, powerful, and incontrovertible. Those central beliefs form the nucleus of a belief system. Such a core is a stable structure that is unlikely to change. Rokeach refers to these core beliefs as primitive beliefs that are developed early and are basic truths upon which the rest of the system is built. These beliefs are highly interrelated with many other beliefs. Therefore, to change in them radically impacts a large number of other beliefs. *Rokeach (1968)* also describes three more peripheral types of beliefs including authority beliefs, derived beliefs and inconsequential beliefs. The authority beliefs develop from the influence of persons and groups of authority. Derived beliefs come from a source other than a direct experience such as some sort of text. Inconsequential beliefs are simple matters of taste. These three types of beliefs are less nuclear to the structure of the belief system, less connected to other beliefs, and are therefore less important and more controvertible.

According to *Knowles (1992)*, teachers' beliefs are developed throughout their lifetimes and influenced by a variety of factors, including events, experiences, and other people in their lives. Some beliefs are directly adopted from the culture. Some are shaped by experiences framed by culture (*Mansour, 2009*). For example, each individual shares similar experiences as a child, as a member of a family, and as a parent or teacher. These experiences shape their beliefs about students, curriculum development, and overall schooling process (*McGillicuddy-De Lisi & Subramanian, 1996*). *Lortie (1975)* suggested that teacher education and classroom teaching experience contribute to the development of pedagogical content knowledge, while disciplinary knowledge in teacher education helps to develop subject matter and curricular knowledge among prospective teachers. Accordingly, *Shulman (1987)* concluded that teachers' beliefs come from four sources: accumulated content knowledge, educational materials and structures, formal teacher education, and wisdom of practices i.e., from practical experience. Experience plays a significant role in shaping teachers' beliefs about teaching and learning processes as individuals in society. *Mansour (2008)* identifies two types of experiences: formal and informal. A formal type of experience is represented in the formal education through which teachers have passed, either at school or at university level, or at in-service training courses. The informal type of experiences is represented in teachers' every-day life contacts, past or present that

might have a bearing by adding to, refining, adjusting, supporting, challenging, or even changing their beliefs and knowledge.

Experience is seen to filter decisions made by teachers. The kind of experience a teacher has had makes him or her act in certain manner or conducts a certain classroom activity or even under take a professional development activity which, in the end mirrors this experience. With a similar fashion, beliefs have been described as filters through which all new information must pass and which are used to interpret new experience (*Lortie, 1975; Kagan, 1992*). In this respect, *Pajares (1992)* indicates that beliefs are created through a process of enculturation and social construction. Therefore, classroom behaviors are the results of beliefs being filtered by experience. There is now clear evidence that teachers' belief systems are developed gradually throughout their lifetimes (*Lortie, 1975; Anning, 1988*). Pre-service teachers' mental lives do not start being developed when they first join teacher education programmes, but they bring with them with their personal theories, together with their learning experiences.

In the literature on learning to teach, three categories of experience are described as influencing the development of beliefs and knowledge about teaching. These categories may not be mutually exclusive, and, in fact, may be studied together, as is the case with many teacher biography and life history studies (*Ball and Goodson, 1985; Bullough and Baughman, 1993; Crow, 1987; Goodson, 1992; Knowles, 1992; Woods, 1984*). The three forms of experience begin at different stages of the individual's educational career. They are personal experiences, experiences with schooling and instruction, and experiences with formal knowledge.

Personal experiences

This form of experience includes aspects of life that go into the formation of world view, intellectual and virtuous dispositions, beliefs about self in relation to others, understandings of the relationship of schooling to society, and other forms of personal, familial, and cultural understandings. Ethnic and socio-economic background, gender, geographic location, religious upbringing, and life decisions may all affect an individual's beliefs that, in turn, affect learning to teach and teaching. A growing literature examines the relationship between personal experiences and how one approaches teaching. These are generally case studies of individual teachers. For example, in developing the theory of personal practical knowledge, *Clandinin (1986)* suggested that personal experience is encoded in images that affect practice. Images have moral, emotional, personal, private, and professional dimensions. *Clandinin and Connelly (1991)* wrote a case study of an elementary school principal, Phil Bingham, with whom they worked in constructing and reconstructing his narrative in order to understand his personal practical knowledge and actions as a principal. An important image in Bingham's narrative was community, an image developed from his experiences of growing up in a tightly-knit community on Toronto Island. This image of community affected his approach to the involvement of the community in his school. Another example is *Bullough and Knowles' (1991)* case study of a beginning teacher, Barbara, whose initial metaphor for teaching-teaching as nurturing--was thought to come from years of parenting.

Experiences with schooling and instruction

Lortie's (1975) discussion of the apprenticeship of experience suggests that students arrive in pre-service teacher education with a set of deep-seated beliefs about the nature of teaching based on their own experiences as students. It is speculated that these strong beliefs, in combination with the salience of the real world of teaching practice, create conditions that make it difficult for pre-service teacher education to have an impact. A number of studies have examined beliefs acquired from such experiences and how these beliefs affect teachers' conceptions of their role as teacher. In a study of teachers' theories of children's learning, for example, *Anning (1988)* concluded that the theories about children's learning held by the six teachers in her study were determined 'by their own particular previous experiences of teaching and learning in their classrooms' (p. 131). *Britzman's (1991)* case studies of two student teachers indicated that they held powerful conceptions of the role of teachers--both positive and negative--gained from observing teaching models. Britzman suggested that these conceptions profoundly affected the student teachers' classroom behaviors.

Life history studies often conclude that combinations of the first two types of experience--personal and schooling--strongly affect pre-service education students' and in-service teachers' beliefs. For example, *Knowles (1992)* conducted case studies of five pre-service secondary teachers, and found that family influences and previous teachers had influenced all five students' conceptions of the teacher role. Most researchers involved in life history and socialization research also agree that the experiential effects of personal life, previous schooling and student teaching are more powerful in building conceptions of teaching than the formal pedagogical education received in teacher education programs (*Brousseau, Book, and Byers, 1988; Feiman-Nemser, 1983*).

Experience with formal knowledge

Formal knowledge, as used here, is understandings that have been agreed upon within a community of scholars as worthwhile and valid. When students enter kindergarten, and often before, depending upon the nature of family and community life, students experience formal knowledge in their school subjects, outside readings, television, Sunday School classes, etc. Of particular interest in the consideration of learning to teach is knowledge of subject matter,

conceptions or beliefs about the nature of subject matter and how students learn it, and experiences with formal pedagogical knowledge that usually begin in pre-service teacher education programs.

School subjects

In an attempt to understand teachers' classroom actions, researchers have recently examined the form and structure of a subject matter in the minds of Pre-service students and in-service teachers. *Leinhardt (1988)*, for example, investigated a teacher's experiences with math texts as a student and as a teacher, and how these experiences contributed to her beliefs and understandings of the nature of mathematics and affected her classroom instruction. *John (1991)* followed five British students through their student teaching to determine how their perspectives on planning changed with experience. He found differences between the math and geography teachers in terms of how they viewed planning. The math student teachers' concepts of their subject strongly impacted their formation of ideas about planning, whereas the geography student teachers had little overall conception of their subject matter, which, therefore, had little effect on their planning. *John's (1991)* geography example seems the more likely scenario for teachers of many school subjects in American schools. Further, they have few opportunities, even in college or in teacher education programs, to develop that connected understanding of their subject matter. Knowledge of subject matter, in combination with understandings of how students learn the subject matter combines to form what is called pedagogical content knowledge (*Shulman, 1987*). A number of case studies have examined this form of knowledge in teachers, and its effects on classroom teaching (*Grossman, 1990; Gudmundsdottir, 1991; Munby and Russell, 1992; Wilson and Wineburg, 1988*).

Pedagogical knowledge

Another type of formal knowledge that teachers experience is pedagogical knowledge, most often initially encountered in pre-service teacher education courses taken prior to student teaching. Pedagogical knowledge relates to the practice of teaching and includes such topics as classroom management, models of teaching, and classroom environment. As mentioned earlier, experiences with formal pedagogical knowledge is seen as the least powerful factor affecting beliefs and conceptions of teaching and the teacher role. This does not mean that the influence is negligible, however. Several sets of case studies examined the nature of pedagogical content knowledge and teaching actions on the part of subject matter specialists who have and have not experienced formal pedagogical knowledge (*Grossman, 1990; Grossman and Richert, 1988*). These studies indicate considerable differences between pedagogically and non-pedagogically-educated teachers in terms of their pedagogical content knowledge and classroom actions. *Clift (1987)* found significant differences in the beliefs about teaching and learning between English majors not interested in teaching, and English majors who had completed their student teaching in a certification program. The English majors saw the teacher as the authority on the interpretation of literature, whereas the future teachers were much more constructivist. *Crow (1987)* conducted a case study of the formation of teacher role identity of Pre-service teachers. Using a life history approach, she found that models of former teachers and early childhood family experiences strongly influence teacher role identity. However, she also concluded that while there was no evidence of the influence of formal pedagogical knowledge in the first several months of teaching practice, there may be a 'lag time, at which point the cognitive changes that took place during formal pedagogical training find their way into teaching practice (*Crow, 1988*). *Featherstone (1993)* also suggested that there may be a sleeper effect of teacher education: 'the voices of teacher educators sometimes echo forward into these first years of teaching; the novice sometimes rehears, with a new ear, propositions which seemed to make little impact on them at the time they were offered' (p. 110).

Conclusion

I have explored major four aspects related to teachers' belief such as concept and definitions of teachers' beliefs; difference among beliefs, knowledge; and attitude, nature of teachers' beliefs; and sources of teachers beliefs. Since beliefs are intangible; they are evident only through one's actions and words. It is found out that it is very difficult to define teachers' belief. Teachers' beliefs are an intangible construct' as they are made up of rational ideas developed over a period of time, through experiences gained while trying to understand a students' mind, and monitoring classroom behavior how students react to lectures. There is considerable congruence of definition among these three disciplines in that beliefs are thought of as psychologically-held understandings, premises or propositions about the world that are felt to be true. Accordingly there is difference among belief, knowledge and attitudes and teachers' belief is developed on the basis of personal experiences; experiences with schooling and instruction; and experience with formal Knowledge.

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