

A SWOT Analysis of the Rise and Pedagogical Implications of the Social Constructivist Epistemology in Educational Practice

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ABSTRACT In this paper the researchers argue that constructivism is a term that should be used with caution because of its multifarious nature. It is widely used in many disciplines with very different meanings that make it appear 'like a *chimera*' creature whose real identity is a subject of debate. For instance, in education where it has been widely embraced as a modern progressive pedagogy as opposed to the traditional 'jug and mug' or banking concept (Freire 1990), it is also used with many and varied meanings, for example, to describe learning and teaching as well as curricula and assessment. The researchers explore the rise of the social constructivist epistemology by focusing our attention on the Strengths, Weaknesses, Opportunities and Threats (SWOT) of the approach in pedagogical terms. In doing so, the researchers draw from the views of both apologists and critics of the social constructivist epistemology. The paper is basically a conceptual theoretical discursive analysis of a seemingly popular teaching philosophy. The analysis therefore unfolds with an examination of the genesis and development of the social constructivist epistemology and proceeds with a discussion of the merits and insights generated by the approach in pedagogical terms. This implies that the opportunities and threats the epistemology offers to classroom practitioners are dealt with. The paper thus seeks to offer a critique of the constructivist epistemology in education through the SWOT analysis strategy.

INTRODUCTION

Educational theories have roots in broader philosophies and conceptions of the nature of reality (ontology). The perspectives or theories utilized in classrooms to teach have important implications for broader society. Social constructivism as one such perspective has been studied by many educational psychologists concerned with its implications for teaching and learning. In educational sociological circles the approach is known as social constructionism (Hacking 2002). In educational psychology this epistemology forms one of the major theories of child development, arising from the work of Piaget's theory of cognitive development. Constructivism as a philosophy of knowledge (epistemology) asserts that humans generate knowledge and meaning from an interaction between their experiences and their ideas. For instance, during infancy, it is the interaction between human experiences and their reflexes or behaviour-patterns which enable the social construction of knowledge for infants and their parents and older siblings (Donald et al. 2007). Piaget refers to these

systems of knowledge as *schemata*. Piaget's stage theory of cognitive development (describing four successive stages, sensori-motor (0-2 years), pre-operational stage (2-7 years), concrete operational stage (7-11 years) and the formal operations stage of cognitive development 11 years +) also became known as constructivism, because he believed children needed to construct an understanding of the world for themselves (Donald et al. 2007). Social constructivism is thus an epistemological position that focuses on the interdependence of social and individual processes in the co-construction of knowledge (Alfred 2002).

Vygotsky's contributions reside in *Mind in Society* (1978) and *Thought and Language* (1987). He independently came to the same conclusions as Piaget regarding the social constructive nature of knowledge through a process he termed socio-cultural mediation. It must be noted that social constructivism is not a specific pedagogy, although it is often confused with social constructionism. The latter describes an educational theory developed by Seymour Papert and inspired by constructivist and experien-

tial learning ideas such as those of Piaget and Vygotsky. Hacking (2002) notes that the confusion of constructionism and constructivism is due to the fact that although in both approaches the ontology is that knowledge is considered a social construct as people work together to co-construct it, there is however a thin line between the two epistemologies. While the former tends to focus on the artefacts or knowledge that are created through the social interactions of a group, the latter focuses on an individual's learning and development that take place because of the interactions in a group. Piaget and Vygotsky's social constructivist epistemologies have had a wide ranging impact on learning theories and pedagogy in education and have become an underlying theme of many education reform movements (Kozulin 1998; Magano et al. 2010). Research support for constructivist teaching techniques (pedagogy) has been mixed, with some supporting these techniques while other research contradicts them. According to social constructivists representations of physical and biological reality, such as race, sexuality and gender, as well as tables, chairs, molecules and atoms are all socially constructed. Kant, Gams, and Marx were among the first to suggest such an ambitious expansion of the power of ideas to inform the material realities of people's lives (Rickert 2007). The expression "constructivist epistemology" was first used by Piaget (1967) with plural form in the famous article from the *"Logic and Scientific Knowledge"*, an important text for epistemology.

The impetus for understanding the influence of social and cultural factors on cognition has led researchers to draw from Piagetian and Vygotskian constructivist theories. This has led researchers to the application of institutional analyses to investigate schooling as a cultural process, and the application of interpersonal analyses to examine how interactions promote cognition and learning, and to discursive analyses examining the patterns and opportunities in instructional conversation. It is this impetus that has also led to the application of the constructivist epistemology to selected contemporary issues, including, the acquisition of expertise across domains, assessment, educational equity and reform. The genesis and development of

the social constructivist epistemology is examined in some detail in the next section.

The Genesis and Development of Constructivism as an Epistemology

As mentioned in the introductory paragraph, social constructivism and social constructionism are related epistemologies or schools of thought that help to explain how social phenomena or objects of consciousness develop in social contexts (Hacking 2002). A social construction (also called a social construct) is a concept or practice that is the construct or artefact of a particular group. When something is said to be socially constructed, the focus is on its dependence on contingent variables of our social selves rather than any inherent quality that it possesses in itself (Von Glasersfeld 2005). The underlying assumptions on which social constructivism is typically seen to be based on are reality, knowledge, and learning (Matthews 1998). This section of the discussion adopts an historical perspective to shed much light on the origins and development of the constructivist epistemology to its current and somewhat confusing status. The discussion of the genesis of the approach gives particular emphasis to science and mathematics education, mainly because the influence has been largest in these fields (Shumba et al. 2011).

Constructivism has roots in chemistry, education and the social sciences. It criticizes objectivism, which embraces the belief that a human being can come to know external reality (the reality that exists beyond one's own mind) through deductive explorations of hypotheses (Creswell 2008). Constructivism holds the opposite view, that the only reality we can know is that which is represented by human thought and social interaction. Reality is independent of human thought, but meaning or knowledge is always a human construction (Berger and Luckman 1990). The focus of social constructivism is on human awareness or consciousness and its place in world affairs. It is a social theory. Social theory is the more general theory about the social world. In social theory, constructivists emphasize the social construction of reality. Their argument is that the social world is not a given but a world of

human consciousness, of thoughts and beliefs, of ideas and concepts, of languages and discourses. Four major types of ideas are ideologies; normative beliefs; cause-effect beliefs; and policy prescriptions. Constructivism has deeper roots; it is not an entirely new approach but grew out of an old methodology that is traceable back at least to the eighteenth-century writings of the Italian philosopher Giambattista Vico (Pompa 2004). According to Vico, the natural world is made by God, but the historical world is made by Man (Pompa 2004: 26). History is not some kind of unfolding or evolving process that is external to human affairs. Men and women make their own history. They also make states which are historical constructs. States are artificial creations and the state system is artificial too; it is made by men and women and if they want to, they can change it and develop it in new ways. Immanuel Kant is another forerunner for social constructivism (Hacking 2002: 41). *Kant argued that we can obtain knowledge about the world, but it will always be subjective knowledge in the sense that it is filtered through human consciousness.* Max Weber emphasized that the social world (that is, the world of human interaction) is fundamentally different from the natural world of physical phenomena. Human beings rely on 'understanding' of each other's actions and assigning 'meaning' to them. In order to comprehend human interaction, we cannot merely describe it in the way we describe physical phenomena, such as a boulder falling off a cliff; we need a different kind of interpretive understanding. Is a pat of another person's face a punishment or a caress? We cannot know until we assign meaning to the act. Weber concluded that subjective understanding is the specific characteristic of sociological knowledge (Von Glasersfeld 2002). Constructivists rely on such insights to emphasize the importance of 'meaning' and 'understanding' (Fierke and Jorgensen 2001).

Exploring the Many-sided Nature of Constructivism

As noted above, the researchers' concern here is with constructivism in education, in particular in learning and teaching. But one needs to start with a warning, because the term constructivism is used in different fields and with many different meanings. If one looks up the term constructivism in an encyclopedia, one gets

somewhat disturbing results. In Encyclopedia Britannica (2006 DVD version) constructivism is discussed in 29 articles. Most of these are related to a Russian art movement, and none of the articles are related to the constructivism we talk about in education. Similarly, Encarta (2006 DVD version) gives 30 entries, none of these are related to education. Searches on the internet provide somewhat different results. Google searches on constructivism results in about 2.5 million hits and most of these seem to be related to education. If one restricts the search by adding 'education' or 'learning' (or both) he or she still ends up with more than a million hits. Even 'Google scholar', which searches mainly academic literature, provides tens of thousands hits for such search entries. One also notes that most of these are related to the teaching and learning of science, technology and mathematics, although many also relate to other content areas. Many hits relate to informal teaching and learning as found in Science centres. As noted, the term constructivism is currently used very widely in educational literature, in academic papers as well as in books used for teacher training, curriculum development and assessment. The level of precision is often rather low, and the term is seldom clearly defined. This has led some critics (for example, Matthews 2011) to consider the term to be empty of meaning, and that its use is purely ideological. It seems to be used to distinguish the good guys (*constructivists*) from the bad guys (*traditionalists*). Many critics say that the label '*constructivist teaching*' is used by many authors as more or less synonymous to any teaching that is somewhat '*child-centered*', *caring, inclusive, or enquiry-based discovery or any kind of active involvement from the learners*. The literature abounds with lists of aspects that characterize constructivist classrooms, constructivist teachers, constructivist curricula and constructivist assessment and their pedagogical strengths and opportunities as this and the subsequent discussion shows. Most of the literature has a low precision on the definition of the term, but they all seem to associate the term with something unquestionably positive. Based on such observations, many critics argue that constructivism as a meaningful concept has lost its power. Some call constructivism a new orthodoxy, a fad and a fashion, a movement (Erickson 2001) or even a religion with different sects (Phillips 2005).

But there is, of course, also serious theoretical writing and research that strongly oppose such characterizations. Many academics claim that there is a strong theoretical underpinning of constructivism. But they also disagree with one another about the epistemological and theoretical status of constructivism. One should also note that even within the field of education, there are several varieties over the theme of constructivism. Many scholars use qualifiers when they refer to constructivism. Hence, we find *individual* and *cognitive* constructivism (often with reference to Jean Piaget), *social* constructivism (often with reference to Lev Vygotsky). Some use the term *simple*, *mild* or even *naïve* constructivism with reference mainly to some interpretations of Piaget, and with a contrast to *radical* constructivism, used by Ernst von Glasersfeld (2005). Other widely used versions include *contextual* constructivism (Cobern 1993), *socio-transformative* constructivism (Rodriguez 1998), and *socio-cultural* constructivism (Tobin 1998; Branco and Valsiner 2004). The list can be made longer, and many of the above qualifiers are used in new and inventive combinations.

Kincheloe has published numerous social and educational books on critical constructivism (2001, 2005, 2008), a version of constructivist epistemology that places emphasis on the exaggerated influence of political and cultural power in the social construction of knowledge, consciousness, and views of reality. In the contemporary mediated electronic era, Kincheloe (2005) argues, dominant modes of power have never exerted such influence on human affairs. Coming from a critical pedagogical perspective, Kincheloe argues that understanding a critical constructivist epistemology is central to becoming an educated person and to the institution of just social change. Kincheloe's characteristics of critical constructivism include that knowledge is socially constructed, the world and information co-construct one another; consciousness is a social construct; political struggles and power play an exaggerated role in the production of knowledge and consciousness and the necessity of understanding consciousness, even though it does not lend itself to traditional reductionist modes of measurability. Other tenets of constructivism outlined by Kincheloe (2001) include the inseparability of the knower and the known; the existence of multiple realities, making sense of a world far more complex than we originally

imagine; becoming humble knowledge workers and understanding our location in the tangled web of reality; standpoint epistemology, that is, locating ourselves in the web of reality so as to be better equipped to produce our own forms of knowledge; constructing practical knowledge for critical social action, overcoming reductionism; the centrality of interpretation; the new frontier of classroom knowledge- with personal experiences intersecting with pluriversal information and finally constructing new ways of being human, which entails a critical ontology (Kincheloe 2008).

For some, social constructionism can be seen as a source of the postmodern movement, and has been influential in the field of cultural studies (Solomon 2006). Some have gone so far as to attribute the rise of cultural studies (the cultural turn) to social constructionism (ibid). It is in this sense that from a realist's point of view, both postmodernism and constructivism can be construed as relativist theories. Cultural constructivism as yet another constructivist version asserts that knowledge and reality are a product of their cultural context. This means that two independent cultures will likely form different observational methodologies. For instance, Western cultures generally rely on objects for scientific descriptions; by contrast, Native American culture relies on events for descriptions (Plantinga 2006). These are two distinct ways of constructing reality based on external artefacts. Ernst von Glasersfeld (2002) was a prominent proponent of what has become known as radical constructivism, which claims that knowledge is not a commodity which is transported from one mind into another, rather, it is up to the individual to link up specific interpretations of experiences and ideas with their own reference of what is possible and viable. That is, the process of constructing knowledge is dependent on the individual's subjective interpretation of the experience not what actually occurred. For example, a teacher has the responsibility of ensuring the student can make sense of the material being taught through the consideration of how the student will interpret the work rather than repeating phrases, words and definitions in the way the teacher sees fit. Furthermore, since knowledge is a subjective construct rather than a compilation of empirical data, it is impossible to know the extent to which knowledge reflects an ontological reality (Von Glasersfeld 2002).

A series of articles published in the journal *Critical Inquiry* (1991) served as a manifesto for the movement of what has become popularly known as critical constructivism in various disciplines, including the natural sciences. Not only truth and reality, but also evidence, documents, experiences, facts, proof and other central categories of empirical research (in physics, biology, statistics, history, law, etc.) reveal their contingent character as a social and ideological construction (Kincheloe 2005). Thus, a realist or rationalist interpretation is subjected to criticism. Kincheloe's political and pedagogical notion (above) has emerged as a central articulation of the concept. While recognizing the constructedness of reality, many representatives of this critical paradigm deny philosophy the task of the creative construction of reality (Solomon 2006). They eagerly criticize realistic judgments, but do not move beyond analytic procedures based on subtle tautologies (ibid). They thus remain in the critical paradigm and consider it to be a standard of scientific philosophy per se. Although not the major focus or scope of this discussion to go into the details of the differences and similarities behind this flourishing terminology, constructivism, the authors felt the need to show how many-sided the concept has become as part of their quest to offer its critical or SWOT analysis. The point is simply to warn the audience about the possibility for misunderstandings, as well as for real and false disagreements within the social constructivist epistemology.

Fundamental Tenets of the Social Constructivist Epistemology

It is within the fundamental tenets of constructivism where the strengths and opportunities inherent in the perspective are embedded as the subsequent discussion shows. Social constructivists assert that children construct their own knowledge through their interaction with their educators or more competent peers (Kozulin 1998). The approach answers the question of whether it is the shared and accepted scientific knowledge about the world as it exists in established science and the answer often given is that scientific knowledge is socially constructed. Another important tenet of the constructivist paradigm is that there is no single valid reality or methodology in science, but rather a diversity of

useful methods (Rickert 2007). It is thus opposed to positivism, which is a philosophy that holds that the only authentic knowledge is that which is based on actual empirical sense experiences (ibid). Constructivism criticizes objectivism, which embraces the belief that human beings come to know external reality (the reality that exists beyond one's own mind) through empirical experiences as happens in positivist research (Shumba et al. 2011). Constructivism holds the opposite view, that the only reality we can know is that which is represented by human thought. Reality is independent of human thought, but meaning or knowledge is always a human construction (Rickert 2007).

For constructivists, even the world itself is socially constructed (Alfred 2002; Vygotsky 1987). The first of these questions is a problem of psychology and educational or learning theory, while the latter two are part of philosophy and epistemology. The latter question is also addressed by the sociology of knowledge. Analytically, it is important to keep these questions apart. One may, for instance, be a strong supporter of constructivist learning theories, while at the same time reject the two other stances, in particular the last and most extreme one. This latter kind of constructivism is criticized for being a subjectivist and relativist post-modern attack on the rationality of science (Rickert 2007; Boghossian 2006), a stance that runs against any suggestions from for instance, Piaget and Vygotsky to be discussed later in this presentation.

The common thread among all forms of constructivism is that they do not focus on an ontological reality, but instead on a constructed reality (Shumba et al. 2011). Indeed, a basic presupposition of constructivism is that Reality-As-It-Is-In-Itself (Ontological Reality) is utterly incoherent as a concept, since there is no way to verify how one has finally reached a definitive notion of Reality (Hacking 2002). According to constructivism, one must already have Reality in mind, that is, one must already know what Reality consists of in order to confirm when one has at last "hit bottom". It is in this connection that Rorty (1998) contends that all claims to Realism can be reduced to intuition. The Realist or Anti-Realist debate can be reduced, in the end, to a conflict of intuitions: "It seems to us that a realist would not view the argument in this way, and would say that one of these is misled, that

one group perceives correctly, and the other perceives incorrectly. Strict constructivists will attest that there is no way to confirm one way or another, since the goal of inquiry (Reality) must be assumed to be understood at the outset (Plantinga 2006; Rorty 1998). Constructivism proposes new definitions for knowledge and truth that form a new paradigm, based on inter-subjectivity instead of the classical objectivity and viability (Ibid). The constructivist point of view is pragmatic as Vico (1990) notes. In this paradigm sciences can justify their teaching and have a space in the academy as “real sciences”. Several scientists and researchers see a close connection between constructivism and modeling and simulation (Rorty 1998; Rickert 2007). A model is a purposeful abstraction and simplification of a perception of reality, captured as a formal but implementation independent specification of the resulting conceptualization of things, processes, and relation (ibid). The simulation implements the model, often on a digital computer. The result is a constructed reality in the computer from which new ideas can be generated. As these ideas, however, are rooted in the implementation of a model, hence being derived from a constructed reality, the principles are strongly connected with constructivism (Nightingale and Cromby 2002). One version of social constructivism contends that categories of knowledge and reality are actively created by social relationships and interactions (Solomon 2006). These interactions also alter the way in which scientific episteme is organized.

Social activity presupposes human beings inhabiting shared forms of life, and in the case of social construction, utilizing semiotic resources (meaning making and meaning signifying) with reference to social structures and institutions (Ragoff 2004; Kozulin 1998; Vygotsky 1987). Several traditions use the term Social Constructivism: psychology (after Vygotsky), sociology (after Berger and Luckman, themselves influenced by Alfred Schutz), sociology of knowledge (David Bloor), sociology of mathematics (Sal Restivo), philosophy of mathematics (Paul Ernest). Ludwig Wittgenstein’s (1990) later philosophy can be seen as a foundation for Social Constructivism, with its key theoretical concepts of language games embedded in forms of life (Boghossian 2006; Martin 2006)

However, much confusion and disagreement occur because one does not keep the fundamental differences between the nature of these

constructivists’ claims in mind. A recent book entitled *Teaching Constructivist Science* (Bentley et al. 2007) reveals that while the book is about constructivist methods of teaching, the title may suggest that the authors claim that science itself is constructed. It is apparent from the ideas discussed herein that within the large family of constructivism, there are some ideas that more or less all constructivists subscribe to. Hence, they may be seen to be a mild version of constructivist claims. The following are some of these core ideas, partly based on the analysis of Taber (2006):

- ❖ Knowledge is actively constructed by the learner, not passively received from the outside.
- ❖ Learning is something done by the learner, not something that is imposed on the learner.
- ❖ Learners come to the learning situation (in science etc.) with existing ideas about many phenomena. Some of these ideas are ad hoc and unstable while others are more deeply rooted and well developed.
- ❖ Learners have their own individual ideas about the world, but there are also many similarities and common patterns in their ideas. Some of these ideas are socially and culturally accepted and shared, and they are often part of the language, supported by metaphors etc. They also often function well as tools to understand many phenomena. These ideas are often at odds with accepted scientific ideas, and some of them may be persistent and hard to change.
- ❖ Knowledge is represented in the brain as conceptual structures, and it is possible to model and describe these in some detail.
- ❖ Teaching has to take the learner’s existing ideas seriously if they want to change or challenge these.
- ❖ Although knowledge in one sense is personal and individual, the learners construct their knowledge through their interaction with the physical world, collaboratively in social settings and in a cultural and linguistic environment. (The relative stress on such actors account for the different versions of constructivism earlier alluded to).

Notable Versions of Constructivism and Their Implications for Educational Practice

It may be revealing to take a look at the historical development of constructivist ideas in

education. The following discussion is based on versions of constructivism as apparent in Piaget and Vygotsky's cognitive and socio-cultural approaches respectively. Many of the core ideas of constructivism are quite old and traceable to Jean Piaget's (1896-1980) cognitive development which emphasizes the view that development precedes learning in the social construction of knowledge. This implies that a child has to develop cognitively first for him or her to be able to learn certain schema. Most of Piaget's examples of the intellectual development came from observations and clinical interviews with children when they manipulated physical, technical and chemical objects in experiments that were rather similar to traditional textbook examples (pendulum, balance etc.) Piaget's biological background and language, his use of examples from physics and technology as well as his wish to formulate general theories in a mathematical way may explain why Piagetian theory has a strong appeal to many constructivist educators. As one can understand, Jean Piaget covered several academic disciplines such as psychology and genetics (Piaget 1980; Boghossian 2006). It is, however, a paradox that the field where he has had most influence is in education despite not being an educator. He actually wrote very little on teaching and pedagogy though his work now has important implications for social constructivists in education. When one tries to understand (or to critique) Piaget's theories, one must know 'which Piaget' one has in mind. The early Piaget is very different from the older, and in many ways he was his own best critic. One might say that Piaget's strong interdisciplinary orientation was his strength, but it was also his problem, because it made his thinking difficult to access for people with a more typical (and narrow) academic background.

However, Piaget's basic research problem remained the same all the time. His problem was epistemological and philosophical: What is the nature of knowledge? How does it grow and develop? Piaget's epistemological research agenda is well reflected in the name of the institution that he established in Geneva in 1955: International centre for genetic epistemology.) Here, of course, 'genetic' refers to the genesis and development of knowledge, and not to biological heredity. The nature of knowledge should, according to Piaget, be studied empirically where it is socially constructed and developed. This can

be done through the growth and development of an individual as he or she interacts with others. We may therefore say that Piaget's study of the development of children was in effect only to get empirically access to his epistemological research question: the growth of knowledge and the development of logical thinking. Piaget's earlier writings, from the 1920s on, were on children's conceptions of the world. This was, in fact, also the title of one of his earlier books (Piaget 1967). Already at that time, he started to use the term *constructivism*: A very influential book had the title: *The Construction of Reality in the Child*. His other writings from the same period (late 1920s to 1940) included detailed studies on how children *developed or constructed ideas about time, space, causality, logic, numbers, movement and velocity, conservation and a long list of various natural phenomena*. Again, it is easy to understand why educators in science and mathematics became interested in his theories, although this came much later, when these books had been translated to English.

As argued above, Piaget gave meaning to the term *constructivism* long before it was used by academics in other fields, like the psychologist George Kelly's "Personal construct theory" (1955) and the sociologists Berger and Luckman in their "Social construction of reality" (1967). He was criticizing the traditional teaching methods which tended to regard teaching and learning as passive processes involving educators as fountains of knowledge that had to fill learners as empty vessels (*tabula rasas*-Locke). His approach led to the abandonment of the banking concept (Freire 1990) in education because this was not promoting the social construction of knowledge. It regarded learners as mugs (learners) that had to be filled with knowledge by the jugs (teachers).

Piaget remained faithful to the constructivist perspective throughout his long active period. In his last publication, written the year that he died, some 55 years after his first use of constructivism, he summarized his life-long program: his task had been to establish what has come to be called *the constructivist* theory of knowledge and, at the same time, refute the empiricist and nativist (traditional) theories. The essential question of this theory has always been how is new knowledge constructed? Is it, as empiricism contends, always derived from observing reality, or

is it preformed in the human mind, and thus innate? Piaget rejected the empiricist and behaviorist stance that knowledge derives directly from sense experiences. He also rejects the rationalist or preformist view that knowledge is innate and develops more or less biologically as people grow and mature.

Piaget developed his theory of knowledge based on ideas derived from biology: like the process of adaptation, consisting of assimilation and accommodation. Other Piagetian concepts like self-regulation also indicate his basic belief that the development of intelligence and thinking should be understood as the individual's biological adaptation to the external world. As noted, Piaget was not very interested in education, let alone in teaching (Solomon 2006). Nevertheless, his theories have probably been more widely used (and misused) in education than in other fields. As also noted, the main uses have been in science and mathematics education from reasons explained earlier. But even in these areas, his theories have been used in a wide and often contradictory way.

Lev Vygotsky began his version of the socio-cultural perspective as a critique of earlier approaches especially *Piagetian cognitivism*, which he attacked for neglecting the role of mediation in the social construction of knowledge (Kozulin 1998). Vygotsky extended Piaget's theory of cognitive development to include the notion of socio-cultural mediation and cognition. This implied that all learning occurs in social or cultural contexts involving social interactions. One of the major tenets of his approach was that human learning activities take place in social contexts and can best be understood when analysed in their historical development and as they are mediated by language and other symbolic systems (Adler 2001; John-Steiner and Mahn 2008). This means that for a teacher to effectively enhance learning he or she needs to understand the cultural worlds within which his or her learners have grown and developed. According to this theory, the socio-cultural situation often gives rise to particular educational needs and places specific demands on the provision of education because the recognition of cultural pluralism makes it possible for each group to receive instruction in a situated learning manner. This often leads to learners' lower mental functions being transformed to higher mental functions (Vygotsky 1978). Such a situation is said to

involve the individual in interactions with the culture, context and community within which learning occurs (Lave and Wenger 1998). The socio-cultural approach to learning has thus given rise to the view that students work best when engaged in collaborative activities as this enables them to share their different experiences and perspectives with each other thereby socially constructing knowledge (constructivism). The learners' social interaction enables self-regulation and voluntary engagement and commitment to peer learning.

Vygotsky's conception of mediation in the social construction of knowledge holds that, language is a dominant *psychological tool* for seeing; talking, acting, thinking as the mediator (teacher, parent, book, calculator or a more competent peer) scaffolds others toward higher mental functions (Adler 2001; Kozulin 1998). It is used to accomplish ways of representing ideas, interpreting and evaluating events and experiences and constructing explanations. In Vygotskian constructivism the use of language transcends the mere exchange of information as language constitutes the discourse which characterizes the social practices of specific communities (Wertsch 2004; Donald et al. 2007). Mediation as the process through which teachers, parents, peers and other mentors help students to construct knowledge needs to take place in the learners' zones of proximal development (ZPD). He describes the ZPD as the difference between what a learner can do on his or her own and what he or she can do with the assistance of a mediator (more competent peer collaborator, parent, teacher or with the aid of material or psychological tools (Vygotsky 1978). Mediation is therefore the process by which teachers, parents, peers and other mentors help students to construct knowledge. If it is done in the learners' ZPD then it is highly likely to be effective since it would be involving their highest level of motivation (Darling-Hammond 2001; Kozulin 1998). The role of the mediator in the social construction of knowledge is thus to select, change, amplify, interpret or re-interpret concepts, theories, hypothesis and processes to the learners so that they understand them. According to Vygotsky (1987) effective mediation is one that occurs in the Zone of Proximal Development (ZPD) where the learners need to overcome their learning barrier so that they are able to progress from lower mental functions to higher mental functions independent of adult

assistance. For educators this concept has important implications for teaching because it reflects the ability of one's teaching approach for his learners to benefit from his mediation efforts as well as social interaction emphasized in constructivism and its benefits, cooperative learning through group work (Darling-Hammond 2001; Ragoff 2004).

Unmasking the Weaknesses and Threats to Constructivism as a Pedagogical Philosophy

As any comprehensive theory or meta-narrative, constructivism has implications for other areas of life (Rickert 2007). In education, some of its tenets have detrimental effects as knowledge, truth or reality no longer exist other than in our perceptions and beliefs of that truth or reality. Other problems or threats to the entrenchment of the social constructivist epistemology in education include Schlossberg's (2005) criticism for the constructivist's epistemology that the social environment always precedes the ideas or knowledge forms created. Social constructivists Berger and Luckman admit that they take their root proposition for this view from Marx, specifically "that man's consciousness is determined by his social being" (1990: 5-6). The issue with this sort of formulation is that there is another assumption, that history is the same as nature (another derivative of Marx's materialism). Reinhold Niebuhr criticizes this in *The Irony of American History*, calling it "native belief". The idea that methods used in understanding nature can be used in studying human action and interaction is naïve according to Niebuhr (that is, it is a category error). But this should be no surprise as most social scientists begin with presuppositions of the Natural (rather than supernatural) and hence "mind is a product of material origin or that human behaviour is completely contingent on prior experiences" (Schlossberg 2005:153). "The habitat accounts for the opinions of the thinker and explains why his ideas are different from those of another person who lives in a different habitat" (ibid). Schlossberg continues:

The all-inclusiveness of the system [social constructivism] makes it invulnerable to refutation, regardless of the evidence adduced... All arguments are turned back as further evidence that the speaker is bound by the determining influence... which Mannheim admits is a "means for side-stepping the discussion"...

Such imperviousness to refutation, far from being a sign of strength, is further evidence that these disciplines are not the sciences they claim to be (2005:156).

Karl Popper levies strong criticism of the social constructivist epistemology by arguing, according to the theory, that the entire theory might simply be an expression of the class interests of those who advocate this theory (1971: 243). This is actually quite amusing as it might be the only critique that actually cannot be subsumed by the theory. So, to illustrate that constructivism is more of a faith system than a scientific enterprise, the following summation of the presuppositions is offered (from Schlossberg 2005; Naugle 2002; Plantinga 2008; White 2006; Sire 2004; Boghossian 2007):

- ❖ Constructivism assumes the truth of its root proposition.
- ❖ Constructivism assumes a value-free social science (Schlossberg 2005:155).
- ❖ Constituents of constructivism unjustifiably exempt social constructivism from its own relativization (ibid).
- ❖ Constituents of constructivism use logic and persuasion but disprove the truth of logic; the theorist falls prey to his theory (c.f. White 2007: 82).
- ❖ Telling others about social constructivism is meaningless, if one assumes the truth of the system.
- ❖ Constituents of constructivism attempt to include worldviews in their analysis (Berger and Luckman specifically), but fail to see their own perspective as a worldview, and removes constructivism from the criticism it levies on others (Naugle 2002: 233).
- ❖ Berger's constructivism conflates a difference in representation with a difference in the thing represented (that is, he mistakes "different worlds" for "differences in belief about the world").
- ❖ Constructivism is "hugely empowering. If we can be said to know up front that any item of knowledge only has that status because it gets a nod from our contingent social values, then any claim to knowledge can be dispatched if we happen not to share the values on which it allegedly depends" (Boghossian 2007). For the postmodern thinker "grammar is power: whoever controls the rules and ordinary usages of a language controls what can be thought" (White 2006: 99).

- ❖ Constructivism asserts that the “powerful cannot criticize the oppressed, because The central epistemological categories are inexorably tied to particular perspectives, it also follows that the oppressed cannot criticize the powerful... unless we allow a “double standard: allow a questionable idea to be criticized if it is held by those in a position of power -Christian creationism, for example – but not if it is held by those whom the powerful oppress – Zuni creationism, for example” (ibid).
- ❖ Constructivism is valuable in that it demonstrates the fact that society moulds us in many ways, but if it molded us in all ways, and we are simply the “product of the blind forces of nature and society, then so is our view that we are only the product of the blind forces of nature and society. A radical sociology of knowledge is also self-refuting” (Sire 2004: 236-237).
- ❖ The idea that we have no access to reality and that we can only have stories is self-referentially incoherent. It is an illogical axiom, or “put crudely, this idea cannot account for itself, for it tells us something that, on its own account, we cannot know” (ibid). Likewise, if it is true that all discourse is a power play and should be questioned (a la Foucault) then should not that proposition also be questioned? For it only makes sense if that one sentence is excluded from being a power play (ibid: 236).
- ❖ The answer to the question “Is Constructivism True?” can never be answered in the affirmative. From within the system, the constructivist accepts relativity, so it can bet true (but only in a pragmatic sense; that it is instructive perhaps), but not *True*. From outside the system, no one would accept it as true without being subsumed by the system.
- ❖ Social constructivism as a system is largely internally consistent in that it is strong enough to redefine everything according to the theory itself. But like any other worldview, it has certain basic propositions that are un-provable, that must be accepted simply on faith. One of the main problems with this worldview is that it terminates in the relativization of Truth to perspectival truths. There can be no True facts in this system, only pragmatic facts. This is self-refuting in

that scientific data, argumentation, and logic are used to demonstrate and “sell” a worldview that denies the Truth of those types of arguments. Secondly, it is not ultimately a livable and viable system – hard sciences reject it outright as no facts can be generated in the system, no one can fly to moon if we socially construct physics. In the end an inability to determine what is True must inevitably result in a breakdown of culture as opposed to a protection of *all* from the power of others over them, as post moderns typically seek.

Numerous other criticisms have been levelled against the constructivist epistemology. The most common one is that it either explicitly advocates or implicitly reduces to relativism. This is because it takes the concept of knowledge or truth to be a socially constructed (and thereby socially relative) one. This leads to the charge of self-refutation: if what is to be regarded as true is relative to a particular social formation, then this very conception of truth must itself be only regarded as being true in this society. In another social formation, it may well be false. If so, then social constructivism itself would be false in that social formation. Further, one could then say that social constructivism could be both true and false simultaneously. Another criticism of constructivism is that it holds that the concepts of two different social formations be entirely different and incommensurate. This being the case, it is impossible to make comparative judgments about statements made according to each worldview. This is because the criteria of judgment will themselves have to be based on some worldview or other. If this is the case, then it brings into question how communication between them about the truth or falsity of any given statement could be established.

According to Von Glasersfeld (2002), social constructivists often argue that constructivism is liberating because it either (1) enables oppressed groups to reconstruct “The World” in accordance with their own interests rather than according to the interests of dominant groups in society, or (2) compels people to respect the alternative worldviews of oppressed groups because there is no way of judging them to be inferior to dominant worldviews. As the Wittgensteinian philosopher Gavin Kitching (2000) argues, however, constructivists usually implicitly presuppose a deterministic view of language

which severely constrains the minds and use of words by members of societies: they are not just constructed by language on this view, but are literally determined by it. Kitching notes the contradiction here: somehow the advocate of constructivism is not similarly constrained. While other individuals are controlled by the dominant concepts of society, the advocate of constructivism can transcend these concepts and see through them. A similar point is made by Mariyani-Squire (2005) who notes that even if social constructivism were true, there is nothing necessarily liberating about entities being socially constructed. There is not necessarily any political advantage to be gained by thinking of nature as a social construct if, as a political agent, one is systematically trapped, marginalized and subdued by means of social construction (Mariyani-Squire 2005). Further to this general critique, when one looks at much social constructivist discourse (especially that informed by Foucault) one finds something of a bifurcation between the theorist and the non-theorist (Foucault 1998). The theorist always plays the role of the constructor of discourses, while the non-theorist plays the role of the subject who is constructed in a quite deterministic fashion. This has a strong resonance with the point already made about solipsistic theism - here the theorist, conceptually anyway, "plays God" with his or her subject (whatever or whoever that may be). In short, while it is often assumed that social constructivism implies flexibility and indeterminism, there is no logical reason why one cannot treat social constructions as fatalistic.

The above critique clearly reveals that social constructionism falls toward the nurture end of the spectrum of the larger nature versus nurture debate (Boghossian 2007; Sire 2004). It generally ignores biological influences on behaviour or culture, or suggests that they are unimportant to achieve an understanding of human behaviour (Hacking 2002). In contrast, some psychologists and most social scientists believe that behaviour is a very complex interaction of both biological and cultural influences. Other disciplines, such as evolutionary psychology, behaviour genetics, behavioural neuroscience, epigenetic, etc., take a nature-nurture interactionism approach to understand behaviour or cultural phenomena.

CONCLUSION

This discussion paper has shown that according to the social constructivist epistemology, culture and the social context in which learners operate have an impact on the way they learn. The discussion has also revealed that the role of social interaction in the process of co-constructing knowledge is quite invaluable as it helps learners to transform their lower mental functions to higher ones particularly if the mediation is carried out in the learners' ZPDs. The use of tools (material, psychological and semiotic forms) helps to scaffold learners to higher order cognitive skills. From a constructivist point of view this clearly shows that knowledge is indeed a social construct and not a given entity. It is clear in as reflected in the examples of Piagetian and Vygotskian perspectives of constructivism that three elements are essential for the effective social construction of knowledge in educational environments: active educators, active learners and an active socio-cultural environment.

RECOMMENDATIONS

In view of the observed strengths, weaknesses, opportunities and emerging threats of social constructivism, the authors would like to make the following recommendations for education practitioners especially those who embrace it in their classroom pedagogy to construct and share knowledge, our first recommendation is that constructivism as a concept or paradigm should be adopted with caution since it is a multifarious perspective used in many disciplines with very different meanings some of which make it appear 'like a *chimera*'. Given the strengths of Constructivist teaching are reflected in this discussion paper, educators need to be fully aware of the tenets of the constructivist learning theory whose thrust is that learning should always build upon knowledge that the learners already have. Educators thus need to recognize their learners' prior knowledge or schema as a building block if they are to scaffold their learners to higher mental functions. However, educators do not need to be over-reliant on the constructivist paradigm since in some instances a rigid observance of this teaching philosophy can lead to learners losing focus. Since the perspective advocates a child-centered approach, educators need to provide worthwhile guidance so that their learners

are kept in check as opposed to leaving them at the mercy of their desires. The dictates of the social constructivist paradigm over-empower learners to such an extent that it recommends they be located on the same wave length with their educators in the process of co-constructing knowledge. This tends to undermine the role of the educator as an authority in authority and also curtails the loco-parentis role as the educator begins to be viewed by learners as an equal partner in the co-constructions of knowledge. Where learners and educators regard each other as equal partners, chances are that the levels of respect and discipline are not strictly adhered to and as a result chances are that disciplinary problems are likely to be high. Educators thus need to ensure that a clear cut line and chain of command are carefully demarcated so that an ideal social distance is kept between the educators and learners without necessarily repelling them. If not carefully adopted views from the constructivist epistemology can make learners fail to observe school rules and regulations by unnecessarily construing themselves as equal partners with their educators, culminating in a breakdown in the social relations of production in the school and classroom.

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