Applicability of Constructivist Theory in Qualitative Educational Research

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Abstract

This article explores constructivism as a theory in qualitative educational research. The framework of applicability of constructivism as a theory includes the guiding principles of applying it as well as the various types of constructivism in qualitative educational research. It aims at revealing the applicability of constructivism and classroom practice. The article recognises that constructing meaning is learning, there is no any other kind of learning other than constructing meaning. Knowledge is acquired through involvement with content instead of imitation or repetition. Drawing from literature, this study explored the various types of constructivism such as social, psychological, personal, radical and contextual constructivism. Constructivism is used for research, learning and teaching. Educational curricula and teaching methods are ever changing as well as educational policies on teaching and learning. Constructivism is a theory about teaching and learning which involves essential aspects such as culture, context, literacy, language, learners' interests and needs, personal experiences, interpretation of reality, as well as application of knowledge, which the researcher can analyse to determine their impact on teaching and learning policies.

Keywords: Construction, knowledge, creativity, conversations, observations, learners

1. Introduction

Anyon (2009:3) argues that theory and educational research bridges the old-age theory divide by demonstrating how researchers can use theories to determine appropriate empirical research strategies, and extend the analytical, critical and sometimes emancipator power of data gathering and interpretation. Dressman (2008:9) further states that theory circumscribes methods of thinking about educational problems and inhibits creativity among researchers, policy makers and teachers. According to Suppes (1974:4), there are five kinds of arguments for using theory in educational research: i) argument by analogy (although the argument that the success of the natural sciences in the use of theory provides an excellent example for educational research, it does not follow that theory must be comparably useful as we move from one subject to the other); ii) reorganisation of experience (a more important way to think about the role of theory is to attack directly the problem of identifying the need for theory in a subject matter); iii) recognition of complexity (one of the thrusts of theory is to show that what appear on the surface to be simple matters of empirical investigation, on a deeper view, prove to be complex); iv) Deweyan problem solving (inquiry is the transformation of an indeterminate situation that presents a problem into one that is determinate and unified by the solution of the initial problem); and v) triviality of bare empiricism (recording of individual facts and with no apparatus of generalisation or theory).

According to Maxwell (2010:2), no fact, investigation, or conclusion can be theory free. The issue is whether one is aware of the theory one is using and whether one is using it critically or uncritically. In order to understand any educational phenomenon, one needs to also look at the larger social, economic and political contexts within which that phenomenon is embedded, and seek out theories that connect there. Theories can be used not just to understand the individuals, situations and structures studied, but also to change them. One needs to avoid simply citing theory to support one's argument, and to actually incorporate theory into the logic of one's study and use it to deepen one's research process.

Formal learning and instruction strategies are inseparable. Yet learning theories only describe how learning occurs, but do not describe the specific methods and activities to follow in order to accomplish the intended learning outcomes. For example, learning theories may describe the age at which a learner may learn punctuations, but the instructional theories will provide guidelines on how to execute the teaching of punctuations.

2. Understanding Constructivism

Constructivism is an epistemology (theory of knowledge), a learning or meaning-making theory that offers an explanation of the nature of knowledge and how human beings learn (Abdal-Haqq 1998:1). An increasingly dominant constructivist view focuses on the cultural embeddedness of learning, employing the methods and framework of cultural anthropology to examine how learning and cognition are distributed in the environment rather than stored in the head of an individual (Duffy 2006:11). Constructivism is a theory of knowledge (epistemology) that argues that humans generate knowledge and meaning from an interaction between their experiences and their ideas. As a theory of learning, constructivism is relevant in this study as the researcher wished to establish how learners learn and teachers teach.

Hein (2007:1) mentions that constructivism refers to the idea that learners construct knowledge for themselves, each learner individually and socially constructs meaning- as he or she learns. It maintains that individuals create or construct their own new understandings or knowledge through the interaction of what they already know and believe and the ideas, events, and activities with which they come in contact. Constructing meaning is learning, there is no any other kind of learning other than constructing meaning. Knowledge is acquired through involvement with content instead of imitation or repetition. Teachers must provide the learners with the opportunities to interact with sensory data and construct their own world. Constructivism is thus a theory of learning that likens the acquisition of knowledge to a process of building or constructing. Each learner should actively participate in the learning processes as everyone constructs his or her own knowledge.

Learning activities in constructivist settings are characterised by active engagement, inquiry, problem solving, and collaboration with others (Abdal-Haqq 1998:1). Learning is an active process of constructing rather than acquiring knowledge, and instruction is a process of supporting that construction rather than communicating knowledge (Duffy 2006:2). Learning therefore, is simply the process of adjusting our mental models to accommodate new experiences (Wilson 1996:3). Hein (2007:1) argues that learning is not understanding the 'true' nature of things, nor is it remembering dimly perceived perfect ideas, but rather a personal and social construction of meaning out of the bewildering array of sensations which have no order or structure besides the explanations which we fabricate for them. Rather than the dispenser of knowledge, the teacher is a guide, facilitator, and co-explorer who encourages learners to question, challenge, and formulate their own ideas, opinions and conclusions. Constructivists maintain that when information is required through transmission models, it is not always well integrated with prior knowledge and is often accessed and articulated only for formal academic occasions such as examinations. Learning is an active, constructive process. The learner is an information constructor. New information is linked to prior knowledge. In constructivism learning is an active, contextualised process of constructing knowledge rather than acquiring it.

According to Duffy (2006:3), learning involves activity and a context, including the availability of information in some content domain. Knowledge is not passively received but actively built up by the experiential world, not the discovery of ontological reality (Hein 2007:1). The constructivists view learning as an activity in context. Constructivists typically substitute some notion of viability for certainty, that is, we judge the validity of someone's knowledge, understanding, explanation, or other action, not by reference to the extent to which it matches reality but, rather by testing the extent to which it provides a viable, workable, acceptable action relative to potential alternatives (Duffy 2006:3). Knowledge is in the constructive process rather than a finding. Knowledge is not in the content but in the activity of the person in the content domain. The active struggling by the learner with issues of learning constitutes more learning. The instructional methods used include: inquiry, experimentations, observation, interviewing, literature search, summarising and defence of opinion. The learners are involved in the construction of their own understanding, and the social interaction in the classroom is essential to the constructive process. Constructivism is a theory of learning based on the idea that knowledge is constructed by the knower based on mental activity. Knowledge is constructed based on personal experiences and hypotheses of the environment. Learners are considered to be active organisms seeking meaning.

The learner is not a blank slate (*tabula rasa*) but brings past experiences and cultural factors to a situation. According to Martin (1994:45), the philosophy of constructivism proceeds from the premise that:

- Knowledge does not exist outside the bodies of cognising beings (that is, outside the mind of a learner);
- Knowledge is the construction of reality;
- Individuals actively construct knowledge by connecting prior and newer learning while working to solve problems.

Learning is an active process of constructing rather than acquiring knowledge, and construction is a process of supporting that construction rather than communicating knowledge (Duffy 2006:17). In other words, learning should be an activity in context. Though learning is construction of knowledge, sometimes learners can also learn by imitation and repetition. This can be done by constructing meaning on what is already known. Acquiring knowledge can also be seen as learning because learners shall have known what they did not now.

2.1 Guiding Principles of Constructivism

According to Hein (2007:2), the following are the basic guiding principles of constructivist thinking that teachers must keep in mind:

- It takes time to learn: learning consists both of constructing meaning and constructing systems of meaning. Each meaning we construct makes us better able to give meaning to other sensations which fit similar patterns;
- Learning is an active process in which the learner uses sensory input and constructs meaning out of it: learners need to do something because learning involves the learners engaging with the world;
- People learn to learn as they learn: learning consists both of constructing meaning and constructing systems of meaning. Each meaning we construct makes us better able to give meaning to other similar patterns;
- The crucial action of constructing meaning is mental: physical actions, hands-on experience may be necessary for learning, especially for children, but it is not sufficient, we need to provide activities that engage the mind as well as the hands (Dewey called this reflective activity);
- Learning involves language: people talk to themselves as they learn, and language and learning are inextricably intertwined. The language we use influences learning;
- Learning is social activity: our learning is intimately associated with our connection with other human beings, our teachers, our peers, our family as well as casual acquaintances, including the people before us or next to us at the exhibit. Progressive education recognises the social aspect of learning and uses conversation with others, and the application of knowledge as an integral aspect of learning;
- Learning is contextual: we do not learn isolated facts and theories in some abstract ethereal land of the mind separate from the rest of our lives. We learn in relationship to what else we know, what we believe, our prejudices and our fears. Learning is active and social. We cannot divorce our learning from our lives;
- One needs knowledge to learn: it is not possible to assimilate new knowledge without having some structure developed from previous knowledge to build on. The more we know, the more we can learn. Therefore any effort to teach must be connected to the state of the learner, must provide a path into the subject for the learner based on that learner's previous knowledge;
- Learning is not the passive acceptance of knowledge which exists out there: learning involves the learner engaging with the world and extracting meaning from his/her experiences;
- Motivation is a key component in learning: not only is the case that motivation helps learning, it is essential for learning.

In this study the researcher was guided by the above principles in critically analysing how learners learn and interact with learning activities, that is, learning at own pace, language of learning and teaching, types of learning activities as well as how learners are motivated to construct meaning.

According to Wilson (1996: 23) the following are the guiding principles of constructivism:

- Knowledge is constructed, not transmitted;
- Prior knowledge impacts the learning process;
- Initial understanding is local, not global;
- Building useful knowledge structures requires effortful and purposeful activity**.**

These principles guided the researcher in this study to establish how teachers impart knowledge to the learners.

Furthermore, Brooks and Brooks (1993:8) state that the constructivist view of education advocates that teachers should do the following:

- Use cognitive terminology such as "classify, analyse, predict and create";
- Encourage and accept student autonomy and initiative;
- Use raw data and primary sources, along with manipulative, interactive, and physical materials;
- Allow student responses to drive lessons, shift instructional strategies, alter content;
- Inquire about students' understanding of concepts before sharing their own understanding of those concepts;
- Encourage students to engage in dialogue, both with the teacher and with one another;
- Encourage student enquiry by asking thoughtful, open-ended questions;
- Seek elaboration of students' initial responses;
- Engage students in experiences that might engender contradictions to their initial hypotheses and then encourage discussion;
- Allow wait time after posing questions;
- Provide time for students to construct relationships and create metaphors;
- Nurture students' natural curiosity through frequent use of the learning cycle model.

There are commonalities in principles as indicated by the above authors. They all emphasise the importance of learning tempo, self-discovery problem solving, as well as the acquisition of knowledge through activity and initiativeness.

3. Constructivism and Classroom Practice

According to Gray (2008:6), a constructivist teacher and a constructivist classroom are distinguished from a traditional teacher and classroom by a number of identifiable qualities: the learners are actively involved, the environment is democratic, the activities are interactive and student centred, and the teacher facilitates a process of learning in which the students are encouraged to be responsible and autonomous. The constructivist classroom is an environment in which student will have enough time to develop mental models of the content, which will assist in moving that knowledge away from primary content area, so that it can be applied elsewhere (Spiro 2006:9). Matthews (2007:61) states that the teacher is seen as a facilitator of learning, where learners are permitted to move around freely, use of time is flexible rather than structured, and evaluation compares learners to themselves rather than to peers, with de-emphasis on formal testing. Teachers need to recognise how learners use their own experiences, prior knowledge and perceptions. The constructivist classroom should be an environment based on inquiry which will leads the learners to deep understanding of the concepts under scrutiny. Social interactions and context is necessary for learning to occur. Constructivist classrooms are structured so that learners are immersed in experiences with which they may engage in interactions, invention and meaning-making inquiry.

Martin (1994:47) argues that although teachers do not necessarily follow a deliberate constructivist approach to teaching in their classrooms, a number of implications for teaching practice can be derived from it, namely:

- A constructivist approach recognises the value of a child's inherent curiosity;
- Science is viewed as a dynamic, continual process of increasing a person's understanding of the natural world;
- Knowledge construction occurs within each individual through interaction with other people and the environment;
- The teacher following a constructivist approach largely functions as a facilitator of knowledge construction and takes the following alternative roles: presenter, observer, question asker and problem poser, environment organiser, public relations coordinator, documenter and theory builder.

In teaching and learning environment the learners' curiosity to learn should be aroused. This can be done by using attractive teaching and learning aids. As facilitators of learning teachers should guide learners to discover for themselves as they interact with the learning process. Knowledge can be regarded as an individual construction of reality through interaction with other people and the environment they live in. Constructivism is a theory of learning, not a theory of teaching. Therefore, instructional theories should translate the learning theories into instructional strategies. These instructional theories should prescribe series of strategies the teacher should follow in order to produce certain types of learner learning.

4. Types of Constructivism

Today there are various forms of constructivism theories. Of these, social, psychological, personal, radical and contextual constructivisms are related to this study and are expounded below.

4.1 Social Constructivism

According to Kim (2006:27), social constructivism emphasises the importance of culture and context in understanding what occurs in society and constructing knowledge based on this understanding. Au (2005:297) argues that in social constructivism school literacy learning of students of diverse backgrounds will be improved as educators address the goal of instruction, the role of the home language, instructional materials, classroom management and interaction with students, relationships with the community, instructional methods and assessment. Knowledge is actually constructed or developed by humans.

Language and writing systems are the cultural tools developed and available to people in different societies. Learners of diverse backgrounds should be encouraged to use their home language skills as the basis for developing literacy in schools. In the social constructivism learning environment, teachers are not to leave the learners to their own devices, but are to appraise what is important for true understanding of the content and move among the learners to assist with strengthening the quality of learners' constructs. The teacher's role is to support the learners to make ideas and practices of the learning community meaningful at their respective individual levels.

Kim (2006:33) states that there are four general perspectives that inform how we could facilitate the learning within the framework of social constructivism, namely, cognitive tools perspective, idea-based social constructivism, pragmatic or emergent approach, and transitional or situated cognitive perspectives. In cognitive tools perspective the emphasis is on the learning of cognitive skills and strategies while the idea-based social constructivism focuses on science, mathematics and literature. Pragmatic or emergent approach asserts that the implementation of social constructivism in class should be emergent as the need arises. In transactional or situated cognitive perspectives the focus is on the relationship between the people and their environment.

Au (2005:28) argues that the school literacy learning of students of diverse backgrounds can improve as educators recognise the importance of students' home languages and come to see biliteracy as an attainable and desirable outcome. Schools are the sociocultural settings where teaching and learning take place and where "cultural tools" such as reading, writing, mathematics, and certain modes of discourse are utilised (Abdal-Haqq 1998:2). This theory assumes that theory and practice do not develop in a vacuum; they are shaped by dominant cultural assumptions. Teachers should use forms of assessment that reduce sources of and reflect learners' literacy achievement. Social constructivists actually view learning as a social process and knowledge as a human product. The thinking abilities of young children can be developed by interacting with adults.

From a social constructivist perspective, five explanations for the literacy achievement gap appear: linguistic differences, cultural differences, discrimination, inferior education and rationale for schooling (Au 2005:51). Both success and failure in literacy learning are the collaborative social accomplishments of school systems, communities, teachers, students and families. In constructivism, communication or discourse processes are compared to processes of building. The emphasis is on generative acts, such as those of interpreting or composing texts. Themes in constructivist work include active engagement in processes of meaning-making, text comprehension as a window on these processes and the varied nature of knowledge, especially knowledge developed as a consequence of membership in a given social group (Au 2005:53). Social constructivism includes the idea that there is no objective basis for knowledge claims, because knowledge is always a human construction. The emphasis is on the process of knowledge construction by the social group and the intersubjectivity established through the interaction of the group. Social constructivist research on literacy learning focuses on the role of teachers, peers, and family members in mediating learning, on the dynamics of classroom instruction, and on the organisation of systems within which children learn or fail to learn (Au 2005:300). According to Vygotsky's theory, every day and scientific concepts are differentiated, that is, the child gains everyday (or spontaneous) concepts through daily life, whereas he or she learns scientific concepts through formal instruction and schooling.

4.1.1Assumptions of Social Constructivism

Jackson (2006:7) argues that social constructivism is based on specific assumptions about reality (constructs through human activity), knowledge (human product, socially and culturally constructed) and learning (social process). On the other hand, Lindgren (2009:26) points out that a social constructivist perspective is explicitly based on assumptions of ontology, epistemology and ideology. Anderson (2009:5) further states that the following are interrelated assumptions of social constructivism:

- Maintaining scepticism: holding a critical and questioning attitude about knowledge as fundamental and definite;
- Avoiding the risks of generalisation: though knowledge such as the dominant professional discourses and theoretical truths can be generalised and applied across all peoples, cultures, situations, or problems, the usefulness of such is doubtful;
- Knowledge as an interactive social process: knowledge is produced within and through social discourse;
- Priviledging local knowledge: local or home grown knowledge created within a community of persons (family, organisation, classroom) who have first-hand knowledge and experience of themselves and their situation is important;
- Language as a creative social process: language in its broadest sense is the medium through which we create knowledge;
- Knowledge and language as transforming: knowledge and language are relational and generative, and therefore intrinsically transforming.

Teachers' knowledge and general understanding of what is really happening in the classroom situation need to be investigated.

According to Kim (2006:31), social constructivism is based on specific assumptions about the following:

- Reality: social constructivists believe that reality is constructed through human activity; reality cannot be discovered, it does not exist prior to its social intervention;
- Knowledge is also a human product, and is socially and culturally constructed. Individuals create meaning through their interactions with each other and with the environment they live in;
- Learning is a social process. It does not take place only within an individual, nor is it a passive development of behaviours that are shaped by external forces. Meaningful learning occurs when individuals are engaged in social activities.

Knowledge is derived from interactions between people and their environments and resides within cultures. The construction of knowledge is also influenced by the intersubjectivity formed by cultural and historical factors of the community. When the members of the community are aware of their intersubjective meanings, it is easier for them to understand new information and activities that arise in the community. Without the social interaction with more knowledgeable others, it is impossible to acquire social meaning of important symbol systems and learn how to use them. Young children develop their thinking abilities by interacting with adults. It would be interesting to note how these assumptions play out in school classrooms.

4.2Psychological Constructivism

The purpose of education is educating the individual child in a fashion that supports the child's interests and needs: consequently, the child is the subject of study, and individual cognitive development is the emphasis (Abdal-Haqq 1998:2). Piaget (2001:9) states that learning is interplay between two mental activities, namely, assimilation (interpretation of new information in terms of pre-existing concepts, information or ideas) and accommodation (revision or modification of pre-existing concepts in terms of new information or experience. Psychological or Piagetian constructivists generally regard the purpose of education as educating the individual child in a fashion that supports the child's interests and needs, consequently, the child is the subject of study, and individual cognitive development is the emphasis (Digest 1998:31). Wales (2010:58) sees constructivism as an epistemological premise grounded on the assertion that, in the act of knowing, it is the human mind that actively gives meaning and order to that reality to which it is responding. Learning is taken to be primarily an individualistic enterprise. This approach assumes that learners come to classroom with ideas, beliefs, and opinions that need to be modified by a teacher who facilitates this modification by devising activities and questions that create challenges for the learners. Knowledge construction occurs as a result of working through these challenges. According to Abdal-Haqq (1998:2), characteristic instructional practices include the following:

- Discovery learning and hands-on activities such as using manipulatives;
- Student tasks that challenge existing concepts and thinking processes;
- Questioning techniques that probe students' beliefs and encourage examination and testing of those beliefs.

This approach assumes that development is an ingrained, natural, biological process that is pretty much the same for all individuals, regardless of gender, class race, or the social or cultural context in which learning and living take place (Abdal-Haqq 1998:2). Internal development is the focus of the teaching environment. However, this approach does not emphasise the social and historical context, as well as issues of power, authority, and the place of formal knowledge in the learning environment. Psychological constructivism is essentially a decontextualised approach to learning and teaching.

4.3Personal Constructivism

Personal constructivism, otherwise known as personal construct psychology, originated from George Kelly's work of 1995 which postulated that people organised their experience by developing bipolar dimensions of meaning or personal constructs (Neimeyer 2006:29). This is also supported by Raskin (2002:6) who also indicates that people organise their experiences by developing bipolar dimensions of meaning, or personal constructs. They rationally examine their experiences as a basis for improving their knowledge. Leitner and Thomas (2005:17) argue that interaction with the environment implies making sense of the environment and using the new experience generated from this interaction to restructure existing knowledge structures. This theory claims that people learn by constructing meaning to their personal experiences as they interact with their environment. For people to learn effectively, they must be exposed to experiences which also impact on them. New concepts are being formulated to replace old once in order to attach improved meanings to events as people continue to interact with their environment. Both the viability and validity of constructions is valued.

4.4Radical Constructivism

According to Hardy and Taylor (1997:137), radical constructivism refers to both a type of learning theory and a pedagogical model, that is, mental constructs, constructed from the past experience, help to impose order on one's flow of continuing experience. People use the understanding they created to help them navigate life, regardless of whether or not such understanding matches an external reality (Mohrhoff 2006:17). The radical constructivists' view is that people operate in their own very private, self-constructed worlds (Von Glaserfeld 2007:21).

Von Foerster (2006:11), expanded on Piaget's configurative development theory and claims that human knowledge is a construction built through adaptation of cognition. This theory promotes the idea that human knowledge is a construction built through adaptation of cognition. Since cognition involves thinking, human beings keep on thinking until they arrive at a better interpretation of that reality. Learning will be more meaningful when learners are allowed to think about principles and concepts that are presented to them so that the concept is a reality in the learners' own environment. Learners should engage in activities that involve thinking and reflecting on their own thoughts.

4.6 Contextual Constructivism

According to Patten (2009:11), social problems are socially constructed or subjectively interpreted. Contextual constructivism is concerned with the social construction of knowledge and the application of the knowledge. Ranee (2006:14) notes that true knowledge should aim at yielding calculations, which agree with the problems that the scientific community feels it should address, otherwise an alternative paradigm, which promises to solve those problems should be sought. Human beings have the ability to arrange perceptions on the basis of constructs. Furthermore, human beings can perceive different events in similar or different contexts (Cobern 2007:28). It emphasises meaning making and the application of the meaning in real life situation. Teaching and learning should aim at connecting theoretical concepts with real life applications. Contextual constructivism also makes reference to the concept of situated cognition, which links learning to the activities used and the context in which they are used.

5. Conclusion

In unpacking essential aspects of teaching and learning policies it enables the researcher to examine how educational processes and practices are constructed. In this study constructivism assisted the researcher in determining how learners learn. Constructivism is used for research, learning and teaching. Educational curricula and teaching methods are ever changing as well as educational policies on teaching and learning.

The researcher looked at the various teaching methods which are based on constructivist learning theory. Constructivism is about teaching, learning and knowledge and as such an analysis of the teachers' knowledge of constructivist teaching methods is imperative. The researcher can investigate how teaching and learning policies promote constructivist claims that constructivist teaching foster critical thinking and create active and motivated learners. The kinds of teaching and learning resources can be analysed to establish how they promote the kind of knowledge constructivist theory envisages.

Constructivism promotes problem solving and collaboration in order to make construct meaningful knowledge. Interaction with teachers can enable the researchers to establish how they develop various teaching and learning activities. The environment in which teachers and learners find themselves can be analysed since learning and cognition are distributed in environments. Principles of constructivism encourage learners to learn at their own pace. Such principles are analysed to establish how they promote appropriate implementation of teaching and learning policies. Theories need to be analysed as to how they are implemented in real classroom practice. Constructivism is a theory about teaching and learning which involves essential aspects such as culture, context, literacy, language, learners' interests and needs, personal experiences, interpretation of reality, as well as application of knowledge, which the researcher can analyse to determine their impact on teaching and learning policies.

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