

Realising Constructivism in Classroom Context: Challenges and Practises in Tanzania

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Abstract:

The increasing emphasis on the concept of constructivism as the best way of creating knowledge based on learner's own experiences, has motivated the investigation reported in this study. The paper unveils the pragmatic value of constructivism approach in the classroom context in Tanzanian educational institutions. Documentary review was employed in addressing the study objectives. The findings show that a shift from teacher centred approach to collaboration with autonomy vested onto learners justifies the argument of liberating learners. However, its implementation is confronted by shortages of teaching and learning gears. Maintaining and ensuring availability of teaching and learning resources is necessary in ensuring effective implementation of constructivism and learning practises.

Key Words: *Constructivism, learners, classroom, collaboration, Tanzania*

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I. Introduction

The increased use of constructivism was acknowledged in teaching and learning institutions. Constructivism considers learners as active constructors of knowledge and who play a responsible role in the learning process. It allows learners to construct their own views of the subject matter as they are engaged intensively in the learning process (Holmes, 2019). It allows learners' participation and achievement of deeper knowledge of the subject matter. However, the approach has not been well applied since its principles were not implemented in all aspects of teaching, learning, and assessment leading to inefficient learning (Shah, 2019).

Fosnot (1996) proposes four principles in defining constructivism. First, learning depends on what an individual already knows. Thus, it concurs with the idea that human mind is not a blank slate. Second, new ideas occur as individuals adapt and change their old ideas. Third, learning involves inventing ideas rather than mechanically accumulating a series of facts. Lastly, meaningful learning occurs through rethinking old ideas and coming to new conclusions about new ideas, which conflict with learner's old ideas.

In explaining teaching and learning, constructivism assumes that first knowledge is constructed from experience. Second, learning is an active process developed based on experience and third, learning is a personal interpretation of the world (Seydrezaia & Barani, 2017). Hence, in itself, constructivism refers to a philosophy of learning founded on the assumption that, by reflecting on our experiences, we construct our own understanding of the universe. It also defines the way students can make sense of the materials and how the materials can be taught effectively (Holmes, 2019). Moreover, it also refers to a set of learning theories that lies between cognitive and humanistic views. It is an epistemological theory that explains the nature of knowledge and how human beings learn (Ismat, 1998).

Teaching and learning for a creation of meaningful epistemic values among educational institutions in Tanzania has generated academic discussion among scholars given the challenges of its implementation. Despite that constructivist learning environment requires learners to be challenged by ideas and problems that create cognitive conflicts, its' realization is still problematic (Mitu, 2014; Andrew, 2015). This study focuses on aspects and mechanisms of implementing constructivism approach in the Tanzania classroom context while addressing challenges and practical difficulties encountered in the process. Constructivism insists on learner's personal experiences in creating meaning. In constructivism, teachers assume the role of facilitators, thus abandoning lecturing while allowing students to construct their own knowledge through cumulative experiences (Matriano, 2020). Therefore, the study contributes in improving teaching and learning in Tanzania schools. It is also in line with Tanzania Education and Training policy of 1995 and 2014 and Education Sector Development Plan 2016/17 -2020/21, which emphasize on improving teaching and learning and the quality of education (URT, 1995; URT, 2014; 2018a). The study specific objectives were first, to examine constructivism approach in the classroom context, secondly, to analyse constructivism based pedagogy, lastly, to examine teacher's role and the challenges encountered in implementing constructivism in the classroom.

II. Theoretical Framework

Guided by constructivism theory, this study explains how constructivism is realised in a classroom context and the experienced challenges. Constructivist theory of learning is from the study of the two cognitive psychologists (Jean Piaget and Vygotsky) in their extensive study on how knowledge develops with child's age. The theory involves complex cognitive processes such as thinking, problem solving, language, concept formation, and information processing. Hence, in constructivism, learners are consciously engaged in the construction of knowledge (Liu, & Zhang, 2014; Ertmer, & Newby, 2013). In the same realm, constructivism insists that learners have to be treated as human beings and not as machines that wait for an operator to give instructions (Gordon 2008).

Under constructivist epistemic principle, knowledge is constructed physically, symbolically, socially, and theoretically by learners. Activities are modelled on learner's current knowledge and match their appropriate developmental stage, and challenge them so that they continue to make progress. Group works centred on problem solving and project works are appropriate strategy towards realising constructivism while abstract thoughts are spared for older students (Fosnot, 1996). Amineh & Asl (2015) maintain that, in constructivism, learning becomes an ever-ending constructive process in creating meaning. Vygotsky suggests for a *Zone of Proximal Development*, where activities are made available with the aid of a facilitator or knowledgeable peers, learners will then be able to do what they cannot achieve alone (Vygotsky, 1986). In this context, learning is vividly an active process in which experience has an important role in understanding and grasping the meaning. In the words of Amineh and Asl, this view of knowledge does not necessarily reject the existence of the real world, instead it agrees that, reality places constraints on the existing concepts, and contends that all individuals' knowledge of the world is the interpretations of their experiences. Constructivism-learning theory discards the traditional teaching mode that takes teachers as the centre, which merely focuses on conveying knowledge, regarding students as the object for receiving knowledge. A constructivist regards a learner as the centre under the facilitator's guidance. Facilitators are responsible for guiding and organizing the teaching process in classroom (Applefield, Huber & Moallem, 2001).

III. Methodology

This is a review study on realisation of constructivism in classroom context. The review was done to explore constructivism and its implementation in a classroom context. Majority of the reviewed information was obtained from research databases including Google Scholar and web of Science. Thus, the study relied on educational literature such as books, published articles and theses. In addition, policy documents, information from the Ministry of Education Science and Technology and other Government institutions were also consulted. Therefore, the review involved both written and electronic materials to realise the study purpose and objectives. Gap analysis was done to identify areas which need to be focused in future research.

IV. Results and Discussion

Realising constructivism in classroom context

Constructivism emphasises on facilitating learning through facilitators as oppose to teachers. Constructivists teaching approaches insists on reciprocal teaching, peer collaboration, cognitive apprenticeships, problem-based instructions, web quests, anchored instruction, and other methods that involve learning with others (Shunk, 2000). The constructivist facilitator/teacher sets up problems and monitors learner's exploration, guides the direction of their inquiry, and promotes new patterns of thinking. These facilitators are tasked to provide humanism care for students and create a favourable teaching environment for students to be able to create meanings out of their own experience. In that regard, Amineh and Asl (2015) maintain that constructivism as a learning approach requires teachers to consider student's knowledge first in their teaching and learning contexts. The considered knowledge is incorporated into practice to create the desired complex knowledge.

Constructivism is also viewed as one of the leading theoretical positions in education. It emphasizes on the initiatives and interactions in teaching and learning, a focus on exploration and cooperative learning based on previous knowledge and experiences by means of interactive learning activities education (Mvududu & Thiel-burgess, 2012). This endeavour discourages rote learning of facts while anticipating learners to build and improve their cognitive ability progressively. It also discourages teaching which is authoritative in nature, rather classes under constructivists teaching offer learners with an autonomy to direct their own explorations (Jia, 2010). Therefore, constructivist teacher's role inside a classroom remains that of inspiring and guidance towards effective knowledge creation.

Liu and Zhang, (2014) suggest four basic views on teaching under constructivist theory of learning, first, learners as the centre of focus in the classroom, are in charge of the responsibility of processing information and constructing meaning. Learners are not viewed as passive receivers of external stimuli. Under

constructivist mode of learning, teachers are tasked with facilitating, organizing, guiding, counselling, and helping learners to construct knowledge based on their own experience (Wang & Zhang, 2012). Second, teaching and learning are carried out in actual situations. Facilitators motivate learners towards creating grounds for an effective construction of knowledge and skills through problem solving technique in relevant contexts (Ismat, 1998; Hakverdi-Can & Sonmez, 2012).

Third, collaboration and communication between teachers and learners altogether is emphasised with considerations basing on problem solving techniques among learners (Christie, 2005; Lam, 2011). Collaboration is important at creating cooperative consciousness among learners (Jia, 2010). Collaborative learning activities engage students' participation, and interaction, working together toward a common academic goal, and increasing the level of satisfaction and feelings of connection and community. Learners understand the same problem from different viewpoints thus cooperation among learners enhances comprehensive understanding of knowledge in question (Zhan, 2008; Khan, 2019). Fourth, large quantities of learning resources are provided to help students make use of a variety of information to achieve a comprehensive and incisive understanding of knowledge. Therefore, the importance of availability of materials, other resources and classroom activities influence learner's motivation in constructivist classes (Westbrook, et al., 2013).

Despite the importance of facilitator's respect to students, other aspects such as trusting, giving more chances, experiments, praises, meaningful criticisms, and harmonious relation with students are required in implementing constructivists learning. Reproducing a series of facts is not acknowledged under constructivist learning. Rather probing one another among learners in the presence of facilitator is done as the best strategy of assessing the manner in which various activities have enriched student's understanding. Modern teaching media are also helpfully in realising constructivists teaching as they help students to explore and discover new epistemic values (Mtitu, 2014; Khan, 2019).

Curriculum content

Constructivism emphasizes big concepts, beginning with the whole and expanding to include the parts as oppose to traditional approaches that begin the other way round. Facilitators are instructed to compare and analyse the curriculum standards and textbooks to confirm the teaching targets. Then practises strive to eliminate the standardised curriculum inherent in traditional teachings (Jia, 2010). Several reading sources or choices are given for students to choose what to read. If learners/students are not constructing knowledge as expected, the facilitators should quickly analyse the reasons and change the curriculum to suit their new needs (Brooks, 1986). Hence, constructivist approaches to curriculum development and delivery is contingent on the thoughtful mediation of the facilitator. The constructivist teachers resist being tied to fixed static curriculum sequences thus; they seek opportunities for developing a curriculum consistent with their expanding knowledge of learners (Brooks, 1986).

Assessment

Lam (2011) calls for two-way process involving interaction between teachers and learners inextricably linked with the teaching and learning process to find out learning achievements and quality of learning experiences. Assessment in constructivist classroom goes beyond testing as they employ observation, student's views, and the works they have performed. Other assessments include pre-testing to diagnose learner's epistemic capital before creating new knowledge, open discussion, mind mapping where learners categorise concepts and ideas in relation to the topic under discussion, portfolio, and hands on activities with the aid of facilitator's observation checklist. Assessment employs cognitive terminologies such as classify, analyse, predict, and create which are highly usefully in the assessment under constructivist approach (Khan, 2019; URT, 2018b).

Constructivism based pedagogy/Teaching Modes

The constructivism has a number of approaches and pedagogies towards its realisation in the actual teaching and learning contexts. The four most influential teaching modes are random access, scaffolding instruction, anchored instruction, and top – down (Liu1 & Zhang, 2014). *Random Access* means that learners can have random access to the learning objects in different ways and forms. This is purposefully done to gain the understanding and interpretation of the question from varied perspectives (Liu1 & Zhang, 2014).

Moreover, *Scaffolding Instruction* represents any kind of support for cognitive activity provided by an adult when the child and adult are performing the task together. Scaffolding is more systemic approach in supporting learner, focusing on the task, the environment, the teacher, and the learner (Khan, 2019). It allows "reciprocal learning" where learners work together in groups and enable weak learners to get assistance from their peers. In this process, teachers guide the learners to master, construct and internalize the knowledge and skills, so that learners can pursue their cognitive activities at higher levels. However, under scaffolding, learners

can extend beyond the limitation of physical maturation to the extent that the development process lags behind the learning process (Lam, 2011).

Another mode is *Situated or Anchored Instruction*. This uses typical authentic facts and examples as anchors, leading learners to feel and experience in the real situation, in solving problems and thus learners are expected to develop deep perception of the object's nature and connection they have with other objects. The fourth mode is *Top-down Instruction*. Based on constructivists this mode is only effective when holistic tasks are presented at first time. Learners are then provided with tools to facilitate their understanding and the problems solving technique. However, the traditional bottom-up instruction is criticized by constructivists, who believe that it is the source of over-simplified teaching (Liu1 & Zhang, 2014).

Other pedagogies towards realising constructivism in classroom include modelling, coaching and debates. Field trips, films, research projects, experimentation and class discussion, among others, account for the activities that best define constructivist practises towards learning. These activities require alignment to foster for critical perspectives among learners in the quest to create a meaningful constructivist classes (Tuerah, (2019).

Teacher's Role and Challenges Experienced in Constructivist Classroom

Constructivism is best understood in terms of how individuals use information, resources, and help from others to build and improve their mental models and their problem solving strategies. The teacher's role under constructivism is more of facilitating academic activities in the classroom than teaching (Woolfolk, (2007). In these classes, teachers ask questions, support, provide guidelines, and create an environment for learners to arrive at their own conclusions. Continuous dialogue with learners is favoured more while the teacher's task is confined at challenging the learners. In a constructivist's session, it is even difficult to tell which is the back or front of the classroom because everything is centred on students in their separate group discussions. Teachers are helping learners to build their knowledge and to control student's existence during the learning process in the classroom (Tuerah, (2019).

A constructivist teacher has to value learner reflection and cognitive conflict and encourages peer interaction. Teachers allow student responses to drive lessons, shift instructional strategies, and alter the subject content towards targeted academic objective. Collaborative learning is as well encouraged for practices inside classroom while assigning learners with the task of providing opportunities for collaborative work and problem solving techniques. In the constructivists classes therefore, teachers are only for facilitative purposes in the learning processes while learners assume the responsibilities of self-governing. However, the approach is time consuming. Students may require enough time to engage in class work participation. In addition, it requires teachers to be dedicated and to adhere to its requirements (Khan, 2019; Tuerah, 2019).

Constructivism in Tanzanian teaching and learning context - Challenges and practices

In view of the foregoing discussion, understanding of constructivism may thus be regarded as a shift in instructional approach from teacher to student-centred, which favours mental process in knowledge construction through interactions with nature or one another in a struggle to understand different phenomena. The Tanzanian Institute of Education has insisted the adoption of the curriculum that emphasises teachers' use of inquiry-based methods geared at enhancing students' fundamental skills such as critical thinking, problem solving, and communication (Mtitu, 2014). However, the practises have largely become unrealistic due to shortage of teachers and teaching and learning resources in Tanzanian schools (Dachi, 2017). Unavailability of laboratories and laboratory facilities has impeded scientific experimentation among students in Tanzanian schools. Experiments are rarely done and when they are done, teachers carry out experiments while students become spectators of the demonstrations displayed by teachers. Most lessons and sessions in secondary schools are theoretically oriented with lectures dominating the sessions (Mafumiko, (2006).

Tanzanian teachers especially in sciences subjects are rarely doing experiments in classes (Osaki, 1999). Even in those rare cases, the endeavour remains the insistence to verify/prove the already established facts, which contrast constructivism. Students would rather let to test their own concepts, the practise that denies rote learning. Much of what is practised is more of a traditional than it is of a constructivist (Msonde & Van, 2014). In addition, collaborative learning and discussion methods were rarely used thus, students were minimally involved. Instructors used neither problem based teaching approaches to situate a purposeful learning activities nor students' involvement in any activity that would have enhance their inquisitiveness.

In their study, (Msonde & Van, 2014) observed four instructors with an extensive power point presentations reading the slides line by line with very few stops to clarify concepts, and seldom flipped back to previous slides where students had not been able to grasp the arguments raised. In this way, learners were not empowered and the learning results would likely be rote. Andrew (2015) added that, classes were not manageable; others had pupils ranging from 80-97 in a single room, the situation that affects organization and eventually the collaborative teaching and learning is as well put in jeopardy. Mtitu (2014) suggests the need for

addressing the dilemmas in the implementation of learner centred approaches. He included class size, curriculum design and teacher shortage, shortage of instructional resources and facilities and medium of instruction as the dilemmas impeding the implementation of constructivists learning pedagogies in Tanzanian classes. Internet-based tasks need to be considered as well since they are potential in allowing students to construct their own meaning rather than being spoon-fed by instructors. Distinguishing constructivist's practices in learning from traditional one is worthy adhering to cement our intelligences and skills towards planning for collaborative learning activities (Msonde & Van, 2014).

Contrast between Constructivist and Traditional Teaching and Learning Approaches

The distinctions between constructivists and traditional approaches are summarised in Table 1 to simplify understanding:

Table 1: Contrast between Constructivist and Traditional Teaching and Learning Approaches

Traditional Classroom	Constructivist Classroom
➤ Begins with parts of the whole emphasizes basic skills	Begins with the whole expanding to parts
➤ Strict adherence to fixed curriculum	Pursuit of student questions or interests
➤ Textbooks and workbooks	Primary sources/manipulative materials
➤ Instructor gives/students receive	Learning is interaction-building on what students already know
➤ Instructor assumes directive, authoritative role	Instructor interacts/negotiates with students
➤ Assessment via testing/correct answers	Assessment via student works, observations, points of view, tests. Process is as important as product
➤ Knowledge is inert	Knowledge is dynamic/changes with experiences
➤ Students work individually	Students work in groups

Source; Thirteen Ed Online (2004)

Table 1 shows that constructivist classroom allows collaboration and flexibility in teaching and learning. It encourages various assessment methods that allow efficiency and effectiveness in teaching and learning process. In addition, it allows interactions and encourages the use of learner's experiences.

V. Conclusion and Recommendations

Conclusion

Teaching and learning practises that are in favour of constructivism approach are highly advocated given the pragmatic values they exhibit in academia. Problem solving skills aiming at developing active, critical, and cognitive thinking skills of a learner add to its utility. Learners are trained to be liberal and humanistic in nature as opposed to base on traditional learning tendencies. Constructivism encompasses balancing cognitive with humanistic views towards conception of the world reality. Therefore, in the mission of realising constructivism learning in Tanzania, availability of teaching and learning resources is essential, and curriculum content that focus on big concepts and the interactive teaching and assessment are equally important.

Recommendations

Teachers have to play a facilitating role in a dialogue style in helping students create their own knowledge out of experiences they have gathered from the environment. Efforts of furnishing Tanzanian classes to a desired level while maintaining the proposed proper teacher student ratio are necessary for implementing constructivism and eventually achieving educational goals.

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