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Developing metacognition in pre-primary childhood education in Nigeria and Uganda

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ABSTRACT

Education is a process designed to develop skills and attitudes in learners, among these skills is metacognition. Societies have faulted educational institutions on its inability to produce graduates who can reason and decide rationally, this had prompted the search by scholars to resolve this challenge. This paper examined metacognition as a concept and how teachers can develop this skill in learners especially, those in the pre-school classes in Nigeria and Uganda. Metacognition is the ability to reflect on issues and personally take decisions that are rational and result in beneficial actions. The paper discussed various methods and theories of imparting this skill in early childhood learners which include the play-way, dramatisation and story-telling methods of teaching while the theories of learning considered include the Stimulus-Response and Cognitive theories. Models of learning like the Reggio Emilia and Friedrich Froebel's were enumerated as means by which the skill can be imparted. The paper concluded that the skill is indispensable if the process of education is to produce graduates competent in critical thinking and logical reasoning. It recommended that professionals should be employed to handle children's education, conducive environment be provided, while young learners should be encouraged to carry out independent actions with supervision from teachers.

Keywords: Metacognition, Methods of teaching, Theories of learning, Models of learning, Education

Introduction

Education involves activities of teaching and learning intended to build learners in critical thinking and logical reasoning so as to be able to take rational decisions and be responsible for their actions according to the philosophers like Jean Paul Sartre and Simeon de Beauvoir. The need for critical thinking has become necessary due to incidences of wrong decision taking resulting in negative consequences. Societies had criticised such attitudes in learners and graduates of educational institutions particularly, in Africa and especially, in Nigeria and Uganda, this therefore necessitated the search for how to build learners to become rational in decision making and actions. This is believed can be achieved by the educational process through development and acquisition of certain skills and attitudes which include metacognition in young learners.

The norms, beliefs, values, attitudes and traditions of societies are usually passed from one generation to another through impartation of knowledge in children for holistic development. For this to be successfully achieved, there is the need for educational process to among several other things, develop various domains of learning which include the affective, psychomotor and cognitive domains in learners right from their childhood stage. Cognitive domain of learning involves the development of mental skills through acquired knowledge. Knowledge is simply an awareness or understanding of skills, facts or objects obtained through various sources which can include experience, reason, memory, inquiry and practice. It is considered as the ability to recall facts and/or information. The cognitive domain deals with the intellectual aspect of learning and comprises of six categories which are; knowledge, comprehension, application, analysis, synthesis and evaluation commonly referred to as the Bloom's Taxonomy. The goal of using the Bloom's taxonomy is to encourage higher-order thinking in students, and it is simply the classification system used to define and distinguish different levels of human cognition which are thinking, learning and understanding (https://fctl.ucf.edu>blooms-taxonomy). Cognitive skills are therefore expected from learners as they undergo educational process. These skills are required to be demonstrated by each learner independently, in other words, little or no interference is expected in the exercise of these skills by learners. This necessitated metacognitive skills in learners which can help them in personal rational decisions and actions. When metacognition is developed in learners right from the tender age, it is expected to build the socially desired individuals capable of critical thinking and logical reasoning as they grow. Hence, this study intends to find out how metacognition, a concept that is pertinent for the achievement of holistic development of the child and the goals of education in general, can be developed in learners right from the elementary school age. The holistic development of young learners will involve their social, emotional and intellectual development. This in essence is what childhood education entails; education of the child during the formative years.

Education in Nigeria and Uganda

The system of education in several pre-independent African countries was an offshoot of the colonial administration. It fell short of expectations after independence in many of the colonised of which Nigeria and Uganda are part. The discovery of an education system working in consonance with the desires of western colonisers but to the detriment of host societies ignited the need for a change. Nigeria took a bold step through the 1969 Curriculum Conference to prompt emergence of a new educational system. Uganda came very much later to provide a road map for another educational system which took effect in 1997.

Nigeria and Uganda realised the need for increased enrolment of citizens to learn therefore, the idea of Universal Primary Education (U.P.E.) was raised and nurtured to provide the needed impetus for a successful take off of larger participation and enrolment of population in the process of education of the two countries. Both Nigeria and Uganda desired a long term policy goal of providing quality education that will be able to equip learners with the skills required to promote good economy and engender good political administration as well as atmosphere in their societies. This desire led to the massive investment in education by both countries. According to Nigeria's National Policy on Education (2013) and the World Education News Reviews (2020), the strategic plans led to the awareness of the gap and inadequacies in the systems of education which provided an expanded role for the process of education as a means for the survival and development of both countries economically, socially and politically.

For these to be achieved, the need for the development of the educational process became imperative in order to build the full capacities and potentials of human resource as well as the development of competent work force to acquire the skills relevant to the world of work and social relationships, necessary for the 21st century. Therefore, the goal of providing the child with various mental skills and knowledge to contribute to social development of their societies became necessary in both Nigeria and Uganda. Thus, the child is to be trained and imparted such that the young learner can develop manipulative skills that can ensure his/her effective and meaningful participation in the society. These has made both countries to have great similarities which prompted the consideration of the concept of metacognition in pre-primary childhood learners in the countries.

The Concept of Metacognition

There are several concepts connected and related to the process of education. Among these related concepts is metacognition. Metacognition is a combination of two words; 'meta' and 'cognition'. 'Meta' is a word that connotes self-referential, it symbolises personal efforts or influences in actions or decision making. 'Cognition' on the other hand is the process of knowing or understanding through the sense or thought. Therefore, metacognition can be explained as the self or personal development of the act of knowing or understanding by personal reflection on things or issues. Flavel (1987) defines metacognition as a regulatory system that includes knowledge, experiences or regulation, goals, and strategies. This implies that the concept involves the ability to apply one's sense to utilise acquired knowledge in handling issues or resolving problems without any influence from another person/individual or external body. According to Dawson (2008) metacognitive regulation/experiences are conscious cognitive or affective experiences that concern any aspect of an intellectual undertaking. That is, it is a self-regulatory activity of cognition as well as learning experiences through a set of activities that help people control their learning (Adeyemo and Ayeni, 2016). In other words, learners become responsible for what they learn and the application of the knowledge they acquired. Therefore, self-regulation in metacognition will enable the use of cognitive processes that activate and sustain thoughts, behaviours and affects in order to attain goals according to Schunk and Zimmerman (1997) in Adeyemo and Ayeni (2016). Thus, the skill of self-regulation will involve valuing learning and its resultant or anticipated outcomes. From all these, it can be deduced that metacognition, in relation to this discourse, can be considered as the skill required to make learners process acquired/imparted knowledge in ways that will make education worth its while and achieve its objectives as well as make recipients of knowledge apply such knowledge rationally and positively with limited influence from external bodies/individuals through critical thinking and logical reasoning.

Concept of Child Development

Child development entails the process by which a child changes over time. It covers the period of childhood to the period when a child becomes fully independent. It is the period of physical, cognitive, and social growth that begins at birth and continues through early childhood (Dance-Schissel, 2015). Basically, there are three broad stages of child development; the early childhood, middle childhood and adolescence. However, the definitions of these concepts are organised around the primary tasks of development in each stage though, the boundaries are malleable. Jean Jacque Rousseau identified four (4) stages of education as stated in his book Emile, through which the child can be educated and developed. The stages are; Infancy stage (ages 1-5 years), Childhood stage (5-12 years), Boyhood stage (12-15 years) and Manhood stage (15-20 years). On the other hand, Jean Piaget identified the Sensori-motor stage (0-2 years), Preoperational stage

(2-7 years), Concrete operational stage (7-11 years) and Formal operational stage (11-adulthood). For the purpose of this study, the Childhood stage in the basic three (3) broad stages, that is, the Infancy stage in Rousseau, and the Sensori-motor as well as Preoperational stages in Piaget shall be taken into consideration. This is because the stages covered ages 0-7 years which is considered as the childhood stage. This stage requires childhood education which is the education given to a child during formative years, this is to ensure holistic development of the child intellectually, socially, emotionally and physically which are considered to be inter-dependent and related to one another. Therefore, how the childhood education can be used to develop metacognition using the selected stages above shall be the focus of the next section of this paper.

Developing Metacognition through Childhood Education

Generally, childhood education entails different strategies or methods of teaching as well as learning theories to impart knowledge and skills in young learners, these strategies include the play-way, storytelling, songs and rhymes, simulation and game, field trip and dramatisation methods among several others, while the learning theories comprise the Stimulus-Response (S-R) theory as well as the Cognitive theory.

Play as a concept in early childhood care and development is considered as one of the primary needs of a child which is crucial to his/her growth and development. This is because it is through play that children learn many things about the world around them (Adejobi, 2005) and performs significant roles in the physical, social, emotional, linguistic and cognitive development of the child. Play can be considered as the spontaneous actions and reactions of children to people and things that appeal to them in their environment. The play-way method is the strategy by which caregivers/early childhood educators engage leaners in educative play activities while in the school to acquire knowledge and skills. Children are made to learn by playing with different materials and items which often involve both the gross and fine motor skill activities (Adejobi, 2005).

Thus, when a child encounters issues or things of interests, he/she begins to engage in activities that encourage exploration and derive some fun in it. When young learners explore their environment through the issues or things they encounter, their cognition is developed. This method is necessary since learners at the childhood stage love to play therefore, what appeals to them most are employed to impart knowledge.

Applying the Stimulus-Response (S-R) learning theory, this theory promotes learning as a result of the association between the stimuli and responses. Metacognition can be developed in young learners using the play-way method of teaching and the S-R learning theory when children are exposed and allowed to engage in play activities which are otherwise known as learning experiences (the stimulus). Reactions are expected from them, this can either be negative or positive (the response). Learning is the relatively permanent change in behaviour of learners as a result of learning experiences according to the psychologists. When the teacher sees that a child responds/reacts brilliantly and intelligently to a play activity, such can be reinforced and strengthened by rewards as many times as the child repeats the brilliant or intelligent actions. The positive reactions are often associated with critical thinking and logical reasoning which the child can display continually as circumstances demand. Therefore, when the child repeats the good actions/attitudes several times independently, the rewards will strengthen the positive actions/attitudes. This will help the young leaner to develop the special skill of metacognition because he/she can continually reason and personally reflect on things, situations or issues at hand to take rational decisions and actions. This is why it is always encouraged that pre-school learners are allowed to carry out activities or do things on

their own in an enriched environment under the supervision of the teacher/care-giver. Cognitive theory of learning on the other hand stresses latent learning, and places learning as involving experimentation, exploratory, perception and cognition theoretically (Adejobi, 2005). This theory can develop metacognition in young learners when the play-way method of teaching is employed in a rich environment where children are stimulated cognitively through their interactions with the play activities and allowed to observe, explore and discover knowledge independently. The positive cognition is developed when learners are motivated to exercise the same and similar cognitions via independent decision making just as it obtains in the S-R theory. Children love listening to stories. Some stories can keep the listeners in suspense, this is capable of arousing curiosity in the child which can lead him/her to develop interest and subsequently aid his/her learning. Thus, the story as a stimulus, can encourage certain responses from the learners, which if they are positive and socially desired, can be rewarded to encourage repetition of such responses. Such method of teaching can be used to impart good moral attitudes, values, beliefs and good relationship, so that when learners found themselves in similar situations, they can apply the knowledge independently thereby utilising metacognition as a skill. The cognitive theory of learning will ensure what can be termed interpretation of sensory information received through the story heard which goes a long way in developing metacognition in learners. The stories they listened to can be ruminated on and enable the young learners take similar positive responses and actions that earned accolades and rewards from their teachers in the past. In similar situations in the future, the child can make references to such past experiences and choose decisions and actions that are rational.

Songs and rhymes as a method of teaching can be used to teach different concepts that are important in educating the young ones. These concepts are deep with meanings which can be used to teach values and beliefs. Reactions to understanding of lessons from songs, rhymes and folklores can be reinforced through rewards or punishments as the case may be to encourage or discourage similar actions subsequently. All these are possible through the cognition of the child.

Dramatisation is another method or strategy of childhood education can be used to develop metacognition in learners. Dramatic plays whereby young learners imitate or mimic role models and display their roles is capable of building little children in repeating similar acts when faced with real life situations. They are capable of doing this by their enquiry minds and acts of independent decision making at the appropriate times by their ability to learn from what others do. This enables the young ones to be rationally dynamic and constructive in their thinking and decision making process. In other words, sense of value and commitment to display of skills and attitudes are entrenched in them. Dramatisation method provides children with opportunities to freely express themselves as they play the roles of other people for example, personalities in the society. Creativity is encouraged as children act spontaneously thereby reacting and revealing emotions to people and situations. As the children mature, recall of such actions, emotions and reactions are easily made because the method of teaching develops the power of imagination and can shape their characters.

These teaching strategies are however, best employed and complemented by different models in early childhood care and development. Among these models are the Reggio Emilia model, which embraces a community-based approach to teaching and learning (Sulaiman, 2019). It relies on the natural development of the child which lays emphasis on the worth of the individual, responsibility and community education. Constructivism forms the basis of this model.

With this model, all the sense organs in children are involved in the process of learning, this enables them to discover truth that is, knowledge by themselves. The model also emphasised social skills like cooperation, team spirit and collaboration.

Friedrich Froebel's model lays premium on play which according to him drives learning. His curriculum made prominent the use of blocks for mental development which in essence promotes fine motor skills in little children. As an idealist, he believed that education should be able to draw out powers of development and aid the unfolding of inner potentialities in children. Sulaiman (2019) identified features common to all these models; they all strive to develop the whole child and placing emphasis on play as well as self-directed learning activities.

The various models identified environment as important in the development of a child therefore, the adequate and friendly environment provided will assist the child to personally construct knowledge thereby developing the sense of the child for instance, in the area of independent imagination and memory. In developing metacognition among young learners the following studies become handy among others. Ukwueze, (2014) Onu, Eskay, Igbo, Obiyo and Agbo (2012), carried out a study on effect of training in mathematics metacognitive strategy on fractional achievement of Nigerian School children. The result of the study showed that training in mathematics metacognitive strategy improved pupils' achievement in fractional mathematics. The study also revealed a significant gender difference in the achievement of pupils in fractional mathematics. The study recommended that training in mathematics metacognitive strategy should be introduced in preparation of teachers in order to remedy the prevalent mathematics fear and failure in Nigeria. Ekwueze (2014), examined counselling for epistemological beliefs and metacognitive awareness: a psychological innovation for transforming students' study behaviours in Nigerian secondary schools. At the end of the paper, the author posited that students need to be aware of metacognitive process in order to be useful to themselves in the area of knowledge acquisition and that the students need self-denial, habit cultivation, self-directed, problem solving, explicit instruction and mentoring strategies of counselling in order to achieve.

Lewis (2018), investigated the development of young children's metacognition through the use of stimulated reflective dialogue. This involves using a video clip as a scaffold for dialogue. The children decided who and what to film and which aspects to discuss about. They worked in pairs, on how to use the video camera. The children watched and made one short video of children in their class doing 'good thinking' and discussed it with their teacher, talking about why they thought it was a good example. This promoted their own thinking – in the justification of decisions. The result of the investigation showed that children's understanding of thinking changed over time. By the end of the study, children were able to describe 'good thinkers' with more reference to strategy and understanding. This implies that the metacognition of children improved.
Rizqi and Fauzi (2017) investigated the development of materials based on metacognitive approach to improve mathematical reasoning ability and emotional intelligence students of SMP Sabilina Tembung. The research objectives include: describing the validity, praticallity and effectiveness of metacognitive approach-based materials to improve students' math reasoning skill and emotional intelligence; to improve students' math reasoning skill through developing materials; and improve students' emotional intelligence through developing materials. Modification of 4-D development model was utilised in order to achieve the above mentioned objectives. Four phases were involved in the execution of the programme which are; defining,

designing, developing, and disseminating. Children who participated in the experiment were in grade VIII-7 and VIII-8 comprising 37 children of Private Junior High School SMP Sabilina Tembung. The findings of the study showed that after experiment I and II, the validity of material was valid based on the experts and there was a significant improvement of students' math reasoning skill and there was also a significant improvement of students' emotional intelligence by using metacognitive approach among others. The implication of the above underscores the importance and necessity of application of metacognition among young learners.

Conclusion

The skill of metacognition in learner is indispensable if education process would realise its goals. Lack of metacognitive skills in learners had led to the denigration of educational institutions globally and had resulted in difficulty of learners to engage in critical and logical reasoning to take rational decisions and actions. The skill of metacognition is best developed in learners from the childhood stage hence, the need for study on how this can be achieved. The various methods of teaching and theories of learning are pertinent in this endeavour therefore; it is needful for early childhood educators and caregivers to be knowledgeable in these methods and theories. The need for logical, critical reasoning and rational decision making is highly imperative for learners to fulfil aspirations, goals and objectives of the educational sector in every society. This can be achieved as teachers encourage development of the power, attitude and skill of metacognition in learners through the teaching/learning interactions at every stage and level of education most importantly, at the early childhood education stage.

Recommendations

It can therefore, be recommended that professional early childhood educators and caregivers are employed to handle the education of little children at such tender age because it is a critical stage where the basis of what the child will become is established. Friendly and conducive environment that can encourage or promote exploration and exercise of cognitive skills are provided in the process teaching the young learners. Learners should be encouraged to act and take decisions independently when interacting with learning materials. This will enable the attitude of self-reflection and independent decision making. Adequate preparation by pre-school owners and supervision as well as supervision of such institutions before approval for operations and admitting pupils are ensured by the responsible government bodies and agencies are ensured.

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