



# Imperativeness of Indigenous Games on the Development of Cognitive Skills for African Learners and Learning: Pedagogic Implications for Cameroon Adolescents

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**Abstract:** This empirical study explores the efficacy of indigenous games as a component of African Indigenous Knowledge system (AIKS) in enhancing cognitive development skills amongst Cameroonian adolescent learners. The education system in Africa and Cameroon in particular, is still too academic and distant from the developmental challenges of African local communities. The study was anchored on Jean Piaget's Theory of Cognitive Development (1952) and the Socio-Cultural Theory of Lev Vygotsky (1978). The ethnographic research design was used and for the quantitative aspect, the correlational survey research design was used. The two were then triangulated with the aid of the convergent parallel mixed method design. This study used the Convergent Parallel Mixed method also termed concurrent triangulation design to gather data with the aim of finding out the influence of African indigenous games on cognitive skills development and learning. The qualitative data can assume any of the following forms: interviews, observations, documents and records. The qualitative data can be instrument data, observational checklists, or numeric records, such as census data. The instruments used for data collection in this study were an interview guide for the qualitative process and a questionnaire for the quantitative process. Findings show that indigenous games have a great impact of the development of cognitive skills for learners and learning with weight of 90.7%. The integration of African indigenous knowledge systems (AIKS) such as indigenous games into the educational system could improve its relevance. This is due to the holistic, community-based nature and approach of indigenous games to education and knowledge production process. However, this requires an African indigenous theoretical framework of knowledge to guide the integration process. The framework should also clarify the relevance of African indigenous games in knowledge production and sharing in the area of learning and cognitive skills development. There is also need for a strong institutional support system for a sustainable integration of African Indigenous Knowledge Systems (AIKS) in Cameroon. The Promotion of competitions and games was highly recommended. Promoting activities, festivals and competitions during which traditional practices are central would help in preserving and promoting indigenous practices. There are a lot of competitions in the secondary schools. If indigenous games become part and parcel of the competitions and not just imported games, the indigenous games would be preserved.

**Keywords:** Indigenous Games, Development, Cognitive Skills, African Learners And Learning: Pedagogic and Cameroon Adolescents

## 1. INTRODUCTION

Games are an imperative resource to facilitate learning in schools (Zirawaga et al., 2017) because they are played in a place or space that is familiar to children. Indigenous games offer an alternative to dominant cultures because of their environmentally friendly nature and close connection to the cultural education found in indigenous contexts. However, Western versions of games specifically manufactured and digitalized by industry (Almeida & Simoes, 2019) dominate learning in schools. This is despite the evidence of the usefulness of indigenous games (Moloi, 2015; Mosimege, 2020; Mweli, 2018), especially in the subject of Mathematics Education. It is for this reason that lately, there is increasing research in indigenous games. This empirical study explores the efficacy of indigenous games as a component of African Indigenous Knowledge system (AIKS) in enhancing cognitive development skills amongst Cameroonian adolescent learners. This study does not necessarily focus on a specific game. Research on the role of indigenous games in accelerating cognitive development skills is lacking. While the study focuses on Cameroon, it is obvious that it has value for other indigenous contexts around the globe.

Cameroonian learners have experiences connected to their socio-cultural milieu and the environments they play and interact with their siblings and friends, are taught by parents and grandparents, and other community members (Tani, 2021). In Cameroon, before colonisation, indigenous peoples engaged in indigenous games to entertain and educate themselves, and to keep their environments clean (Tani, 2021). In light of the transformation of education in Cameroon and elsewhere, there is a need to bring indigenous games and knowledge into teaching and learning situations to ascertain its implication on cognitive skills development.

Indigenous games amongst indigenous people of South Africa, such as Morabaraba, have not faded (Moloi, 2015; Moloi, 2013), motivating their inclusion in the curriculum (Nkopodi & Mosimege, 2017). Mosimege (2020), explores the reintroduction of indigenous games by the South African Sports Commission as part of the social transformation agenda – there are dedicated festivals to play indigenous games in different provinces. It is insufficient to limit these games to the external social settings without bringing them into the classroom.

Inquiry into the educational role of indigenous games in this article will contribute to their sustenance and ensure that they do not fade away with the disappearance of the aging knowledge holders, particularly elders. Some games played by indigenous people no longer exist (HeavyShield, 2021); the incorporation of indigenous games in teaching and learning promises to revitalize them again and make learning more meaningful, especially to indigenous learners. The scope of non-indigenous learners can also be expanded.

Indigenous games are resources/tools through which to socialize; they are part of indigenous knowledge systems (IKS) which are unique to any community or culture (Nyota & Mapara, 2008). Indigenous games engage learners' minds, eyes, hearts, and hands. The games offer authentic praxis activities where learners can use their senses, ingenuity, muscles, hearts, and brains to learn (Matsekoleng, 2021). Woolfolk (2010) alludes that play is an active form of learning that unites the mind, body, and spirit. It is a way to help learners learn things in a fun and challenging way (Ritsumdaeng, 2021; Ritsumdaeng et al., 2021). Indigenous games incorporate educational and environmental relevance to learners. TE mainly targets critical and creative thinking skills, and develops ergonomics in learners, as well as their positive attitudes toward the environment as they work with materials and manufacturing in their design activities. Indigenous games could fit well in their activities.

### **1.1. African Indigenous Games and Cognitive Skills Development**

Amlor (2016) of the Centre for African and International Studies, University of Cape Coast, Ghana in a research titled "Imparting Indigenous Knowledge through Traditional Forms of Entertainment: The Role of Ewe Play Games", shows how young adults develop cognitively through participation in indigenous games. According to Amlor (2016), Indigenous knowledge, perceived as cultural norms and values that collectively inform, educate and give identity to people in a society, still remains an African cultural legacy. Unfortunately, Western culture in contemporary Ghana, is speedily competing with, and almost stunting the growth and survival of African indigenous knowledge systems. This unpleasant situation has led to a re-awakening among the Ewe ethnic society to go back to her roots to revive indigenous entertainment forms like play games to promote the teaching, learning and preservation of indigenous education. The major concern of Amlor (2016) was to identify some popular Ewe play and singing games and describe how activities in terms of their forms, participants, equipment, rules/codes of play, socio-cultural settings within which they are performed help to educate, nurture, shape and equip the youth or children to take up future adult roles in the society.

The author undertook an ethnographic study by employing three main approaches to gathering data: conducting personal interviews with both the elderly and the youth whose ages fall within the age brackets of 40-70 and 14-39 years respectively, engaging in focussed group discussions with few selected elders who have in-depth knowledge of the indigenous play and singing games which were the focus of the research in the study area.

From the research, Amlor (2016) was able to realize that the extent to which foreign culture is stifling native Ghanaian values has led to a re-awakening among Ghanaian Ewes to go back to their roots and

revive youth or children's indigenous entertainment forms such as play games to promote the teaching, learning and acquisition of indigenous education that can nurture them to maturity, and empower them to assume responsible future adult roles in the society. The performance of each game is governed by a set of rules. The rules, though simple, help in developing the cognitive and effective domains of the participants. The games which often incorporate music and dance performances, offer the youth or children the opportunity to unconsciously learn lessons and societal ethics very quickly in a playful manner.

Other values acquired from participating in these play games include: the ability of the young to cultivate good behaviour, tolerance, discipline, healthy spirit of co-existence, leadership qualities, hard work, and competitive spirit. In other words, the relevance of indigenous Ewe play games give children cultural identity that enables them to acquire norms, values and societal skills that foster self-usefulness and help them to perform expected future roles as adults. The games that involve running, jumping, squatting and other body movements are indirect forms of physical and mental exercises that keep the bodies and minds of the children healthy. These varied forms of activities underpin the old adage that states: "a sound mind in a healthy body". All these go in line with the Vygotskian theory of early childhood development which states that "children do not only practise what they already know but also learn new things" (Vygotsky, 1978).

Since Ewe, constitutes the core language of communication in the games, Amlor and Alidza (2009:120) point out an important value that children derive from the use of their mother-tongue as they participate in these play games: "language comprises difficult words including tongue-twisters. Tongue-twisters as important cultural elements employed in recitative or declamatory style of singing during children's play games, enhance their diction and eloquence and, as well, provide them the opportunity to gain easy and quick mastery of difficult words and phrases that occur in songs or in ordinary speech". From the research, Amlor (2016) calls for more research that will produce African centred school curricula for use in schools. The incorporation of folklores; play and singing games, music and dance, cultural values to constitute part and parcel of formal education and be taught from pre-school to higher institutions of learning in contemporary Ghana.

Equally, in research carried out by Mohlago (2012) on 'The importance of the Indigenous Games among the Ba-Phalaborwa of the Limpopo Province.' According to Mohlago, the indigenous games in Africa have been an expression of local people's culture and social realities. According to Bellard (www.Sacs, 2004) participation in indigenous games emphasizes physical development, skill training and maintenance, re-enforcement of values and interaction between communities. Booth (1988:68) says that each population group have their own geopolitical home kind to develop their talents and skills from birth. The indigenous games have always acted as a vehicle of change in the reclamation of peoples' culture; unfortunately, African indigenous games are neglected. According to MacMillan and Schumacher (1993: 6) in the early centuries, before reading and writing were common, individuals developed knowledge of the world around them through two means. One way was through personal experiences and observations of others' experiences. They then passed their knowledge to the next generation in the form of story-telling. The second way was by means of games. The knowledge of games too was passed on orally and in the form of play from generation to generation.

The research process was qualitative in approach where little information existed on the topic. Through qualitative approach, the researcher was able to define the importance of the indigenous games. From the study, description, investigation, interpretation and evaluation of the various games was done. The research was done mainly through interviews. The researcher equally used participant observation for the data collection. And for the sampling, the researcher's sampling consisted of elderly people who have experience in the indigenous games and selected individuals for observation while the game was played as well as regular spectators. From this the researcher was able to arrive at the conclusion that indigenous games are very important for the people in Limpopo.

From the research the following conclusions were arrived at: The indigenous games serve as an entertainment phenomenon among Ba-Phalaborwa. They bring people together to share their ideas of games and learn to move about other cultural aspects. The vanishing of these games denotes the vanishing of some pivotal aspects of culture in the black communities. The games need to be protected, promoted and developed within the communities in which they are found and played. These games enhance cultural values, political values and create cohesion in the communities.

Another research by Segwapa (2019) on the “Participation of Indigenous Games by Youth in Ga-Ledwaba Village in Lebowakgomo in Lepelle Nkumpi District in South Africa”, reveals the important part indigenous games play in the African cultural set up. The main purpose of the study was to explore factors that contribute to the extinction of traditional games in Lepelle Nkumpi District, Limpopo Province. This study utilized a qualitative approach to identify factors that contribute to the disappearance of indigenous games in communities. Semi-structured face-to-face interviews were used for data collection and data was analyzed using thematic approach. The population was comprised of youth from Ga-Ledwaba village who played the games before or watched them. Purposive sampling was used to select five youths and five knowledge holders. The study found that young people at Ga-Ledwaba village do not play indigenous games like they were played before. Furthermore, the study revealed reasons that hinder young people from participating in indigenous games such as loss of interest because games are not properly introduced and facilitated in the village, knowledge holders have lost interest in transferring their skills and being role models to youth, technology is taking over, young people spend most of their free time on electronic devices that allow them to access most of the social media and games.

From the three studies above, Amlor (2016) researched on “Imparting Indigenous Knowledge through Traditional Forms of Entertainment: The Role of Ewe Play Games”. His research focuses on education through indigenous games. Mohlago (2012) on ‘The importance of the Indigenous Games among the Ba-Phalaborwa of the Limpopo Province,’ shows how indigenous games bring cohesion and enhance political and social values among the people of the said locality. In his own study, Segwapa (2019) on the ‘Participation of Indigenous Games by Youth in Ga-Ledwaba Village in Lebowakgomo in Lepelle Nkumpi District discovered how indigenous games were disappearing and sought means of keeping them alive.

None of these researchers, however, centred on the cognitive development of the indigenes. They are all centred on different aspects of the human development and the impact of the games on the indigenes. It is in this light that the present research finds relevance, since it capitulates on the importance of the indigenous games on the cognitive development of late adolescents in Oku Sub Division, an area not yet ventured into before.

## **1.2. Indigenous Games for Learning**

In indigenous cultural contexts, learning is an experiential process in which constant and continuous exposure and response to environmental conditions develop the knowledge of dealing with them (Ford et al., 2020). The theory of practice considers the practice to be more than an individual’s actions; it also includes social and cultural relations, systems and structures, and the meaning the practice has in the individual’s life. The dualistic relationship between the individual (embodied) and the social world (objective) is inherent in all of Bourdieu’s theoretical constructs (Beckman et al., 2018).

Intrinsically, GBL comprising Morabaraba can provide opportunities for learner-centered teaching and allow for innovative teaching methods using indigenous technology (Shu & Liu, 2019). Although research has shown that indigenous games can be used to connect classroom activities with real-life environments, there has not been enough research on this connection to achieve this (Mosimege, 2020) in many TE classrooms. This is despite the fact that indigenous games have an important role to play in land management, environmental conservation, and environmental clean-ups. Most resources that children use to play are found in their immediate surroundings, for example, small stones of various sizes, empty boxes, and discarded/unused stuff such as bottle caps, electrical cords, pantyhose, bricks, polish tins, and shoe boxes. Children intentionally or unintentionally clean the environment when they collect such materials (Malobola-Ndlovu, 2018) for use in their games.

In line with the ongoing debate on decolonizing education in Africa, studies have been conducted to examine the use of indigenous games within the school and/or school subjects. For instance, Morabaraba in the teaching of Mathematics (Nkopodi & Mosimege, 2009); uses of indigenous games to improve problem-solving skills (Moloi, 2015; Moloi, 2013); indigenous stories and games as classroom teaching strategies (Mweli, 2018); the value of indigenous games in the teaching and learning of word problems (Moloi et al., 2021). Many studies, including some of the above, focused

on applying Morabaraba in Mathematics education. The literature searches in this article failed to yield studies on the use of indigenous games in TE and EE. Annexure 1 describes indigenous games (Tswio, Morabaraba/Mmela, Moipolai, Kgwele, and Lekusha) as teaching methods and resources in the teaching of TE. They offer context to the article considering that they may be termed differently elsewhere.

Bourdieu's theory states that learners' practices within a school field are shaped by their varied habitus (broader experiences and circumstances), which means that learners perceive and engage in experiences differently (Beckman et al., 2018). Indigenous games as described above provide a wide range of experiences and states of affairs to learn. For example, learners playing Tswio may learn about waste processing by making marble from plastic using fire and, as a result, raise their awareness about litter. This also alleviates the shortage of resources in schools because waste materials will be used for learning instead of being thrown away. Gumbo (2020b) thinks that poorly resourced schools are sometimes wrongly labelled as such when there are indigenous resources lying around that can be used.

### **1.3. Indigenous Games as an Indigenous Practice**

In modern society technology has seemingly taken over games and sports. Children are more glued to tablets, television, laptops and hand phones than to play time or games. The amount of time spent using the gadget makes the motion, touch, and relationships in the child disappear so that there will be developmental barriers to the child and the emergence of problems concerning up to 7-year-olds (Rowan, 2013; Christakis et al, 2004).

Parents often take advantage of gadgets so that children do not play outdoors, because parents have the assumption that they will feel calm when they are at home. Through playing outdoors, aspects of development can grow optimally. Playing is an activity where children demonstrate their extraordinary abilities in exploring, imagining, and making decisions. Game is described as 'children work' which is very fun for them (Kennedy, 2009). One type of game that can stimulate child development that includes cognitive, language, social-emotional, religious and moral values, and physical-motor is a traditional game. That traditional lore extends not only nation-wide but internationally, and that children in very different cultural settings possess their own traditional lore (which may bear many resemblances to that in other, sometimes totally different, cultures) is a fascinating extension of the study of children's lore (Durojaiye, 1977). Traditional games have humanity and cultural values, beliefs translated by the basis of motor skill development (Akbari, 2009). It is a reference that traditional games can have an important role in their lives such as improving motor skills, emotion, and becoming an alternative activity that can be applied in the process of learning about the culture. There was high regard for traditional games in the past but children in the modern era rarely engage in such activities especially with the gradual intrusion of the internet and globalization.

The generation of parents today is still very familiar with the traditional games, but not their children. The traditional games have a great significance and have left their mark on the childhood of all who have played them. Traditional games do not require expensive props and everyone can play them, regardless of age or gender (Kovačević and Opić, 2014). These games were taken over from the earlier generation and passed on to the young generation through oral, sound, or presentations. Traditional children's songs and games as a form of indigenous knowledge systems are facing possible extinction in some areas. However, a good number of them are still extant among the Oku people.

Games might be seen as a necessity for children, because through playing they will gain knowledge to develop their ability and important components in early childhood learning activities (Dockett and Flear, 1999; Gmitrova et al., 2009). Skills that can improve through playing such as thinking ability involve language that encourages the use of new vocabulary, involves physical activity, helps children channel their emotions, the improvement of children's creative power, and in playing means the child socializes with others (Stegelin, 2005).

In addition, playing is also a way for children to assimilate and integrate life experiences. Games also help children to begin to understand the world. When playing, the children will feel comfortable and

happy. According to Petrovska et al. (2013). Games also provide benefits, based on the kind of games engaged in. For instance: Games that offer role-play with main characters permit self-affirmation and self-acknowledgment. Games that are dynamic, that is, those games whose content has enough action help in the development of Motor skills and fast intellectual reaction to solving the task.

#### **1.4. Games that offer a Spark of Children's Healthy Humour Create a Good Mood**

The most useful games are the ones that have the combination of the above-mentioned qualities. Therefore, game activities made in such a way by teachers can improve all aspects of child development.

African traditional games are often inherited from the forbears and handed down to the next generation. These games contain local wisdom, morals and enhance social values and cognitive development. These games can be played both in the nursery and primary schools as well as at home with adults. Moreover, these games involve role playing and the children pick up different roles at different times. At one point a child is holding a rope for jumping and at another he is jumping the rope. Most of the traditional games include physical activities; require cooperation and intellectual engagement (memorization). This stratification also motivates children to choose these games. Through these games children are active in all seasons (Games in the grass, forest, on fresh air). They bring children joy, a feeling of happiness and satisfaction, a favourable effect of the sun's rays as well as durability and immunity. Children develop responsibility and obligation to keep their things and requisites, and to understand and accept the established or agreed upon rules of the games. Traditional games in Oku are very numerous, and engaged in by preadolescents, adolescents and late adolescents.

#### **1.5. Jean Piaget's Theory of Cognitive Development (1952)**

Jean Piaget who lived between (1896 –1980) was a Swiss psychologist known for his work on child development. Piaget's theory of cognitive development and epistemological view are together called "genetic epistemology". Jean Piaget (1952) is well known as a distinguished twentieth century psychologist who constructed the most comprehensive theory of the development of cognition and intelligence. There are some characteristics in Piaget's cognitive developmental theory.

A primary characteristic of Piaget's theory is the definition of knowledge or the intelligence of human beings. He grasps the development of intelligence as the changing process of cognitive construction. To know is to act upon the object by either physical activity, intellectual activity, or both. According to Piaget, the development of intelligence is not a record of knowledge, but the process of acting on objects. In addition, Piaget states that the process of development is the same regardless of culture, and he did not have to think about the strong influence of external factors, such as culture including race, gender, society, language, and so on. These external factors just influence human cognitive development quantitatively, but not qualitatively. Although the developmental speed of intelligence might be different depending on what kind of environment the infant is in, the process of development must not differ due to external factors. In short, Piaget believed in the universality of development, which is that development occurs over time regardless of culture and society, and parallel development occurs in all areas, that is, development occurs spontaneously through all areas of cognition and perception, such as depth, time, number, volume, and so on. One of the traditional debates in developmental psychology is how development occurs, whether it continuously develops with small changes, or develops step by step. Piaget favours the latter idea. According to Piaget, development does not proceed rapidly, but develops gradually. The developmental curve gradually rises and maintains equilibrium until it reaches the perfection of a stage, then it again starts to rise to construct the next stage. Furthermore, each stage has distinct characteristics which define the period. It is well known that Piaget divided the process of cognitive development into four periods and subordinate stages: the period of sensory-motor intelligence (ages 0-2), preoperational period (ages 2-7), concrete operational period (ages 7-12), and formal operational period (ages 12-14) (Piaget, 1952, 1969; Piaget & Inhelder, 1969). He clearly characterized each stage. This stage theory was universal and indicated a direction: one stage always precedes the other to support its development and this relation never changes.

In the concrete and formal operational periods, children start to understand the concept of conservation. Children in the concrete operational period have not yet reached a perfect level of cognitive development. Though they can understand the relationship of concrete phenomena in the

environment with some assumptions, they cannot understand abstract phenomena. In the formal operational period for the first time children can think about and solve a problem with their assumptions based on concrete phenomena in the environment. According to Piaget, the approximate age in which each stage occurs is just a standard, but the order of occurrence of each stage is regular and has a direction. For example, the sensory-motor period prepares the child to move to the preoperational period through the six subordinated stages; however, the sensory-motor period never directly leads to the concrete operational period. The construction of cognitive development is qualitatively universal even though it is not quantitatively universal. This means that even though the speed of developing from one stage to the other might be different due to the different ethnic and cultural background children have, the direction of development is the same regardless of the background. Hardiman and Zernich (1988) claim that not many art educators adopt Piaget's developmental stage theory besides Arnheim (1954) and Lowenfeld (1957) who believe stage theory provides an adequate interpretation of artistic growth. However, it cannot be ignored that many art teachers in practice seem to use this theory as the standard to judge children's artistic ability and activity.

The various principles of assimilation and accommodation are equally important for a better appreciation of the Piaget's thoughts. Assimilation is how humans perceive and adapt to new information. It is the process of fitting new information into pre-existing cognitive schemas. Assimilation in which new experiences are reinterpreted to fit into, or assimilate with, old ideas and analysing new facts accordingly. It occurs when humans are faced with new or unfamiliar information and refer to previously learned information in order to make sense of it. In contrast, accommodation is the process of taking new information in one's environment and altering pre-existing schemas in order to fit in the new information. This happens when the existing schema (knowledge) does not work, and needs to be changed to deal with a new object or situation. Accommodation is imperative because it is how people will continue to interpret new concepts, schemas, frameworks, and more. Piaget believed that the human brain has been programmed through evolution to bring equilibrium, which is what he believed ultimately influences structures by the internal and external processes through assimilation and accommodation.

The Piagetian theory of cognitive development especially the formal operational, stage makes meaning for the late adolescents in the context of the indigenous practices such as traditional medicine, games and proverbs. It is at this stage that the children develop abstract reasoning. In the formal operational level, Children develop abstract thinking and can easily conserve and think logically. Children are now able to think abstractly and utilize metacognition. Along with this, the children in the formal operational stage display more skills oriented towards problem solving, decision making, social competence and often in multiple steps. The children are able to think and adopt new ways of playing games, develop their own proverbs and equally learn their own combination of herbs and experiment with them for healing.

### **1.6. The Socio-Cultural Theory of Lev Vygotsky (1978)**

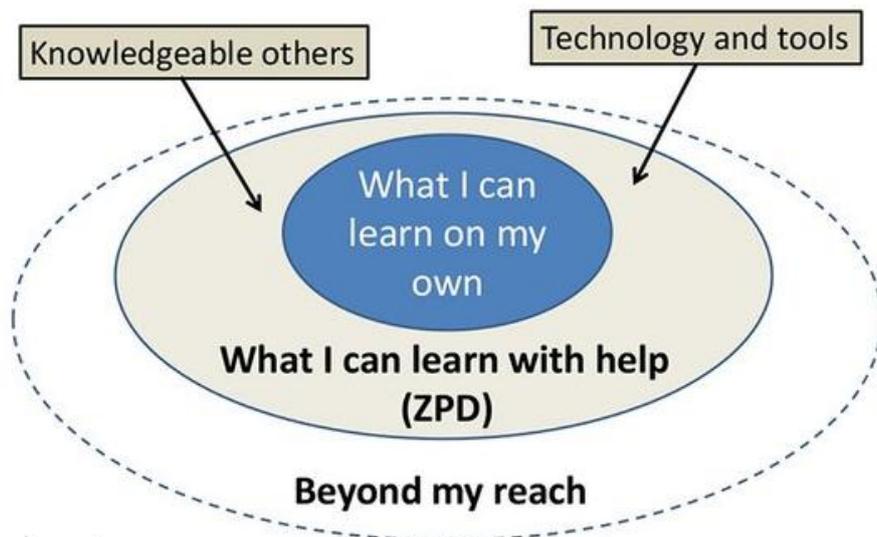
Lev Vygotsky was a Russian Psychologist who lived between 1896- 1934 (Yasnitsky, 2018) and founder of a Marxist theory of human cultural and bio-social development 'the cultural-historical psychology also referred to as socio-cultural theory (Yasnitsky et al., 2014). He was the leader of the Vygotsky circle also referred to as the 'vygotsky-Luria circle' (Yasnitsky, 2018). The work of Lev Vygotsky (1934) has become the foundation of much research and theory in cognitive development over the past several decades, particularly of what has become known as Social Development Theory. Vygotsky's theories stress the fundamental role of social interaction in the development of cognition (Vygotsky, 1978), as he believed strongly that community plays a central role in the process of "making meaning."

Zone of Proximal Development (ZPD). The zone of proximal development is a term Vygotsky used to characterize an individual's mental development. He originally defined the ZPD as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Cole, M., 1978). He used the example of two children in school who originally could solve problems at an eight-year-old developmental level (that is, typical

for children who were age 8). After each child received assistance from an adult, one was able to perform at a nine-year-old level and one was able to perform at a twelve-year-old level. He said “This difference between twelve and eight, or between nine and eight, is what we call the zone of proximal development” (Cole, 1978).

According to Vygotsky, the ZPD “defines those functions that have not yet matured but are in the process of maturation, functions that will mature tomorrow but are currently in an embryonic state” (Cole, 1978). The zone is bracketed by the learner's current ability and the ability they can achieve with the aid of an instructor of some capacity.

Vygotsky viewed the ZPD as a better way to explain the relation between children's learning and cognitive development. Prior to the ZPD, the relation between learning and development could be reduced to the following three major positions: 1) Development always precedes learning (e.g., constructivism): children first need to meet a particular maturation level before learning can occur; 2) Learning and development cannot be separated, but instead occur simultaneously (e.g., behaviourism): essentially, learning is development; and 3) learning and development are separate, but interactive processes (e.g., gestaltism): one process always prepares the other process, and vice versa. Vygotsky rejected these three major theories because he believed that learning should always precede development in the ZPD. According to Vygotsky, through the assistance of a more knowledgeable other, a child is able to learn skills or aspects of a skill that go beyond the child's actual developmental or maturational level. The lower limit of ZPD is the level of skill reached by the child working independently (also referred to as the child's developmental level). The upper limit is the level of potential skill that the child is able to reach with the assistance of a more capable instructor. In this sense, the ZPD provides a prospective view of cognitive development, as opposed to a retrospective view that characterizes development in terms of a child's independent capabilities. The advancement through and attainment of the upper limit of the ZPD is limited by the instructional and scaffolding-related capabilities of the more knowledgeable other (MKO). The MKO is typically assumed to be an older, more experienced teacher or parent, but often can be a learner's peer or someone their junior. The MKO need not even be a person; it can be a machine or book, or other source of visual and/or audio input (Yasnitsky, 2018). According to Vygotsky (1978), much important learning by the child occurs through social interaction with a skilful tutor. The tutor may model behaviours and/or provide verbal instructions for the child. Vygotsky refers to this as cooperative or collaborative dialogue. The child seeks to understand the actions or instructions provided by the tutor (often the parent or teacher) then internalizes the information, using it to guide or regulate their own performance.



**Figure1.** A Pictorial Representation of the Zone of Proximal Development and Scaffolding

Source: University of Plymouth (Wheeler, 2013).

Like Piaget, Vygotsky claimed that infants are born with the basic materials/abilities for intellectual development - Piaget focuses on motor reflexes and sensory abilities.

Lev Vygotsky refers to ‘elementary mental functions:’ Attention, Sensation, Perception, Memory. Eventually, through interaction within the sociocultural environment, these are developed into more sophisticated and effective mental processes/strategies which he refers to as ‘higher mental functions.’

In the light of the indicators considered, the socio-cultural theory of Vygotsky aids the understanding of the role of the more knowledgeable other in the acquisition of skills as far as traditional medicine is concerned, the learning of indigenous games and proverbs. The adolescent learns from a peer, parent, herbalist or more knowledgeable other. Through observation and practice, the adolescent learns from peers and others how to play games and equally, from adults and others the proverbs in use.

**2. METHODS**

**2.1. Research Design**

This study utilized a mixed method. For the qualitative aspect, the ethnographic research design was used and for the quantitative aspect, the correlational survey research design was used. The two were then triangulated with the aid of the convergent parallel mixed method design. This study used the Convergent Parallel Mixed method also termed concurrent triangulation design to gather data with the aim of finding out the influence of African indigenous games on cognitive skills development and learning.

Data collection. The qualitative data can assume any of the following forms: interviews, observations, documents and records. The qualitative data can be instrument data, observational checklists, or numeric records, such as census data. The key idea with this design is to collect both forms of data using the same or parallel variables, constructs, or concepts. The Quantitative data is then collected and the two kinds of data are compared or related. It is assumed that the results should be the same.

**2.2. Research Instruments**

The instruments used for data collection in this study were an interview guide for the qualitative process and a questionnaire for the quantitative process. The interview guide was divided into four sections of A, and B. Section B concentrated on traditional games. This section targeted adults and elders who transmit knowledge to the adolescents. The items focussed on identifying traditional games, the learning and practice of these games, values fostered through the practice of these games and how cognitive skills are developed through the practice of the games.

**3. FINDINGS**

**Table1.** *Adolescents Characterization of their Knowledge of Indigenous Games*

Items	Items				Items	
	Strongly Disagree	Disagree	Agree	Strongly agree	Disagree	Agree
Traditional games can improve on one’s ability to do mathematical calculations	3.8% (6)	5.8% (9)	48.1% (75)	42.3% (66)	9.6% (15)	90.4% (141)
Traditional games can help to develop one’s sense of estimation	2.6% (4)	7.7% (12)	42.3% (66)	47.4% (74)	10.3% (16)	89.7% (140)
Traditional games help in developing kinaesthetic abilities	3.8% (6)	5.1% (8)	45.5% (71)	45.5% (71)	9.0% (14)	91.0% (142)
Traditional games can help in career choices	2.6% (4)	10.3% (16)	47.4% (74)	39.7% (62)	12.8% (20)	87.2% (136)
Traditional games help me to improve my relationship with others	2.6% (4)	4.5% (7)	51.3% (80)	41.7% (65)	7.1% (11)	92.9% (145)

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I can use knowledge from traditional games in other areas	1.9% (3)	8.3% (13)	50.0% (78)	39.7% (62)	10.3% (16)	89.7% (140)
The skills gained from games help me in decision making	3.2% (5)	5.1% (8)	54.5% (85)	37.2% (58)	8.3% (13)	91.7% (143)
Playing and singing help to foster my ability to multitask	1.9% (3)	8.3% (13)	51.3% (80)	38.5% (60)	10.3% (16)	89.7% (140)
I love playing	1.9% (3)	3.8% (6)	44.9% (70)	49.4% (77)	5.8% (9)	94.2% (147)
Playing games is part of my community's daily activities	2.6% (4)	7.1% (11)	49.4% (77)	41.0% (64)	9.6% (15)	90.4% (141)
MRS	2.7% (42)	6.6% (103)	48.5% (756)	42.2% (659)	9.3% (145)	90.7% (1415)

Adolescents generally agreed that indigenous games impact on the development of their cognitive skills with weight of 90.7%. They mostly agreed to the fact that they love playing 94.2% (147). That traditional games help to improve their relationship with one another, 91.7% (143) that the skills gained from games help in decision making. 91.0% (142) were for the fact that Traditional games help in developing kinaesthetic abilities. 90.4% (141) had a bracket with the views that Playing games is part of the community's daily activities and that Traditional games can improve on one's ability to do mathematical calculations. 89.7% (140) appearing twice Playing and singing help to foster the ability to multitask and the ability to use knowledge from traditional games in other areas. 87.2% (132) were of the opinion that Traditional games can help in career choices.

### 3.1. Do You Play Traditional Games

**Table2.** Adolescents Use to Play Traditional Games

Adolescents use to play traditional games	Frequency	Percent	Cumulative Percent
Not at all	8	5.1	5.1
Rarely	15	9.6	14.7
Often	78	50.0	64.7
Very often	55	35.3	100.0
<b>Total</b>	<b>156</b>	<b>100.0</b>	

Most adolescents stated that they have been often used to traditional games with proportion of 50.0% (78), 35.3% (55) were used to them very often, 9.6% (15) rarely while 5.1% (8) never used them. Cumulatively, just 14.7% never or rarely used traditional games.

### 3.2. Research Hypothesis Two: There is no Significant Relationship between Adolescents' Involvement in Traditional Games and the Development of Cognitive Skills

**Table3.** Traditional Games and the Development of Cognitive Skills of Adolescents

	Spearman's rho	Development of Cognitive skills from traditional medicine
Use traditional games	Correlation Coefficient	0.488**
	Sig. (2-tailed)	.000
	N	156

\*\**. Correlation is significant at the 0.01 level (2-tailed).*

There was statistical enough evidence that youth usage of traditional games significantly and positively impact the development of their cognitive skills ( $R=0.488$ ;  $P=0.000$ ). The null hypothesis here stated is then rejected.

**3.3. Elders’ Perspectives of Traditional Games and Development of Cognitive Skills**

**Table4.** *Promotion of Traditional Games Culture among Children*

Games		Description	Impact on the development of cognitive skill
English name	Oku name		
	<i>Eytaah shangse</i>	A game played by two persons with black seeds. It is played either on a carved board or on the ground. It is a game played by two persons and the winning is based on even numbers. The seeds are used to fill the holes on the board and even numbers less than 10 are considered as the winning seeds.	The game enhances the power of estimation and mathematical or arithmetical intelligence.
Hide and seek	Kelenlelen	A game played by many persons. One or more persons hide and the rest have to go looking for them until they are found. The winning or losing depends on whether the ones hiding are found or not. If not found, then those who are seeking them lose.	The game awakens awareness and the ability to seek, utilize intelligence and the ability to use one’s ability to estimate, memory and to think.
	<i>Kenyiagheleh</i>	A game played with stones. Usually 5 stones only. The game is played by picking up these stones in increasing order from 1- 5 successively. When one person fails, the next then takes over.	Enhances mathematical or arithmetical intelligence Enhances the sense of turn taking
Tug of war		A game played with hands. An equal number of people say 4, stand in two groups. The two groups hold hands and usually with the most powerful being in front. Hands are held and those behind hold the others on their waists. Then the pulling is done. Those who pull the others across a line drawn are considered the winners. A rope could also be used for this exercise.	Enhances team spirit
Racing		Racing is done and with prizes as motivation. The fastest runner has a prize which could be food, money or other items.	Enhances competitive spirit, endurance

Five main traditional games were identified by the adults. These are the following:

*Eytaah shangse* was described as a game played by two persons with black seeds. It is played either on a carved board or on the ground. It is a game played by two persons and the winning is based on even numbers. The seeds are used to fill the holes on the board and even numbers less than 10 are considered as the winning seeds. The game could have a positive impact on the development of cognitive skills of adolescents as it enhances the power of estimation and mathematical or arithmetical intelligence. These potentials are also found in *Kelenlelen*, called hide and seek in English. This other game is played by many persons. One or more persons hide and the rest have to go looking for them until they are found. The winning or losing depends on whether the ones hiding are found or not. If not found, then those who are seeking them lose. The game awakes awareness and the ability to seek, utilize intelligence and the ability to use one’s ability to estimate, memory and to think. The same as the previous two games, *kenyiagheleh* enhances mathematical or arithmetical intelligence, enhances the sense of turn taking.

Tug of war on its part is a game played with hands. An equal number of people say 4, stand in two groups. The two groups hold hands and usually with the most powerful being in front. Hands are held and those behind hold the others on their waists. Then the pulling is done. Those who pull the others across a line drawn are considered the winners. A rope could also be used for this exercise. It enhances team spirit in adolescents, the same as racing which develops in the adolescent competitive spirit, endurance. This game is done and with prizes as motivation. The fastest runner has a prize which could be food, money or other items.

**Table5.** *Children in Oku Learn and Practice Traditional Games*

Code	Code Description	Grounding	Quotation
Practical experience	Through practical experience as they play with others	12	“the games are learned from peers and practiced at once with the peers” “they grasp the games through playing with peers”
Observation	Children learn games by observing senior or experienced ones playing	2	“The games are learned through observation as elders play them”

Children in Oku learn and practice traditional games by practicing with experienced ones and by observing the senior and experienced ones playing.

**Table6.** *Traditional Values Fostered through Traditional Games and Development of Cognitive Skills*

Code	Code description	Grounding	Quotation
Problem solving ability	Through practicing various games and ability to solve the various problems posed by the games, adolescents develop the ability to solve problems in life.	3	“The games enhance problem solving by enhancing mathematical reasoning, thinking, correct reasoning, exactitude.”
Decision making ability	In playing games, the participants are constantly making quick decisions. These help to sharpen the ability to make decisions in life.	2	“The games enhance decision making, helps the adolescents to become flexible and avoid timidity.”
Team spirit	Through games, adolescents easily learn how to work with others in teams.	1	“the games teach team work”
Singing	Some games that are accompanied with songs can develop musical abilities in the child	1	“the games teach singing since some of the games are accompanied by songs”
Dressing	Some games are accompanied with special dressing can develop dressing abilities in the child. The child can become a model	1	“some of the games teach dressing since the participants have to dress in a particular way before engaging”
Multitasking	Some games where the child sings, acts or does many things in coordination at the same time can enhance the multitasking ability of the child	1	“Games teach multitasking”
Social competence	Since many people are generally involved increase the ability of the child to interact with people thus developing his social competence	1	“games improve social competence”

Elders highlighted a good number of traditional values fostered through traditional games ranging from problem solving ability as it is perceived that the practicing of various games and the challenges faced to solve the various problems posed by the games, adolescents develop the ability such as adequate reasoning, thinking and sense of perfection needed to solve problems in life “*The games enhance problem solving by enhancing mathematical reasoning, thinking, correct reasoning, exactitude*”. Problem solving going with decision making, elders were right to equally see decision making ability as one of the major impact of games on adolescents “*The games enhance decision making, helps the adolescents to become flexible and avoid timidity.*” By highlighting timidity, the elders raised the question of self-confidence and determinism. Flexibility is a major ingredient in decision making.

Team spirit was another major traditional value fostered through traditional games highlighted by the elders. This aligns with social competence since many people are generally involved and this increases the ability of the child to interact with people thus developing his social competence.

The complexity of some games can enhance multi-tasking ability in the child. For instance in some games where the child sings, acts or does many things in coordination at the same time his multitasking ability can be enhanced.

Singing and dancing were other traditional values elders emphasized as seen from their quotations *“the games teach singing since some of the games are accompanied by songs”*; *“some of the games teach dressing since the participants have to dress in a particular way before engaging”*.

**Table7.** *Suggestions to Sustain the Practice of Indigenous Games*

Code	Code Description	Grounding	Quotation
Promotion	Promotion indigenous games so as to enhance interest in them	6	“intentional promotion of culture through games”
Competition	Through competitions one can enhance the interests of youths in indigenous games	2	“Promote competitions”
Allowing adolescents to play	Allowing adolescents to play indigenous games will enhance interest and knowledge	1	“Allow the adolescents to play when they want to.
Introduction in school programmes	Introducing games in school programmes will enhance the learning, sustainability and transfer of benefits to the youth	1	“Games should be taught in the curriculum”
Motivation	Motivation and appreciation of youths that practice games through prize giving ceremonies will enhance the interest of others	1	“Motivation and appreciation through prize giving ceremonies”
Institutionalisation	Institutionalising indigenous games so as to increase awareness in their values and benefits, their teaching and practicing	1	“Cultural institutes could be created to promote games and other activities”

Elders suggested several ways through which one can sustain the practicing of indigenous games among Oku youths. These include the following: the promotion of indigenous games as to enhance interest in them, even up to international level *“intentional promotion of culture through games”*. This promotion could be done through competitions because through competitions one can enhance the interests of youths in indigenous games, introduction in school programmes as emphasized by this elder *“Games should be taught in the curriculum”*, through the motivation and appreciation of youth that practice games through prize giving ceremonies will enhance the interest of others and institutionalising indigenous games so as to increase awareness in their values and benefits, their teaching and practicing as explained in this quotation *“Cultural institutes could be created to promote games and other activities”*.

#### **4. DISCUSSIONS**

##### **4.1. Role of Indigenous Games in the Development of Cognitive Skills and Enhancement of Learning**

It is evident that adolescents develop certain skills through their involvement in games. These therefore showcase themselves as the result of the games and some of these include the following: problem solving abilities, the ability to make decisions with ease, the ability to develop team spirit, singing, multitasking, dressing, and social competence. These are developed easily in the process of involvement in traditional games.

These findings are in conformity with the findings of Amlor (2016) which attest to the fact that youth indigenous entertainment forms such as play/ games could be used to promote teaching, learning and acquisition of indigenous education. These could help to nurture them to maturity and empower them to assume responsible leadership roles as adults in the society. In his findings, performance of each game, governed by rules, though simple, help in developing the cognitive and effective domains of the participant. The children easily learn lessons and societal ethics very quickly in a playful manner. The participants according to Amlor (2016), easily acquire values such as good behaviour, tolerance,

discipline, and leadership qualities. From the findings, it is clear that indigenous games play a strong role in the development of cognitive skills in late adolescents. These games enhance decision making, social competence and problem solving in late adolescents.

## **5. RECOMMENDATIONS**

Based on the findings of this study, the following recommendations were made:

- a) Formal education should include indigenous practices like traditional games. These will help promote and popularize these indigenous practices which are often considered primitive and thus relegated.
- b) Promotion of culture and traditional practices especially by the ministry of arts and culture. The ministry in charge of arts and culture has to do more in terms of promoting indigenous arts and practices rather than importing foreign cultures which could help to inundate the dwindling indigenous practices in Cameroon.
- c) To preserve and promote indigenous practices books have to be written to document present practices for future generations. Authors and publishing houses, researchers ought to write and publish works on indigenous practices, processes, meaning and relevance of these practices. Without a good understanding of these practices either by Cameroonians or foreigners, their value and relevance will continuously be relegated and replaced by other games considered modern.
- d) Promotion of storytelling. The art of storytelling helps to transmit language and values found in them are taught, understood and handed down from one generation to another. Promoting story telling will inevitably promote the learning of indigenous languages. Indigenous languages need to be taught in school for better transmission of knowledge and values. Proverbs, games and indigenous medicine are transmitted through the medium of language. If indigenous languages are not taught formally and documented, they will disappear gradually and values will be lost.
- e) Promotion of competitions and games. Promoting activities, festivals and competitions during which traditional practices are central would help in preserving and promoting indigenous practices. There are a lot of competitions in the secondary schools. If indigenous games become part and parcel of the competitions and not just imported games, the indigenous games would be preserved.

## **6. CONCLUSION**

This piece sheds light on how indigenous games are a resource that can help in cognitive skills development for learning and learners. The purpose of this article was to find out the efficacy of indigenous games on the development of cognitive skills for learning and learners in adolescents. This study revealed that indigenous practices such as indigenous games play a significant role in the development of cognitive skills for learning amongst adolescents. It is therefore evident from the study that traditional or indigenous practices have a great impact on the development of cognitive skills. This is signalled by a mind that discriminates, a sense of caution, precision, development of mathematical abilities, problem solving, decision making, team spirit, multitasking, social competence, alertness, respect, critical thinking, imagination, language learning, speculation, morality, etc. these are all aspects of cognition. These are quickly developed through the practice of traditional games and other indigenous activities. Two theories were reviewed and adopted in this study namely: cognitive theory of Jean Piaget and the cognitivist theory of Vygotsky. The application of these theories posit a theoretical framework that indigenous practices such as games can be used to enhance not only learner's cognitive development but learner's perspectives on African Indigenous knowledge systems.

In this examination on the role of African indigenous games in promoting cognitive skill development for learners and learning in Cameroon, the paper concludes that the western approach to education in Africa is too academic. It has created a contradiction between learning and living among learners by making education too distant from the developmental challenges facing the surrounding communities.

Learners tend to be inadequately prepared to meet these challenges. The paper suggests that the holistic and community-based nature of African Indigenous Knowledge systems (AIKS) could help to mitigate this contradiction due to its emphasis on the merger between theory and practice including the importance of using indigenous games and local languages in social practice, teaching, and learning.

This puts knowledge production and sharing at both community and global level in its cultural context by involving the community knowledge holders as producers and users in the core business of higher education. It is on the basis of this consideration that the paper suggests the following: (i) the core business of education, should be participatory by involving community knowledge holders in the core business of education; (ii) in order to provide guidance to the process of integrating AIKS into the core business of education, the promoters of AIKS should produce an African indigenous theory of “knowledge” based on the rich history of ideas and intellectual development in Africa. This indigenous theoretical framework should also clarify on the role and relevance of African indigenous languages in knowledge production and sharing in the era of globalization; (iii) the experiences of integrating IKS in formal education will demonstrate the sustainable development of the process required for strong institutional commitment in terms of a conceptual understanding with regard to the importance of AIKS in education; human capital, finance and material support for the development of the various activities associated with AIKS in education.

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