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Developmentally-Appropriate Materials for Enhancing Cognitive Development in Young Children

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Abstract
Cognitive development is the process of acquiring, understanding, organizing, and learning to utilize information from birth through eight years. It involves the way young children explore and interact with and better understand the world around them. Although teachers can deliberately enhance cognitive skills in leaners by incorporating materials in daily learning activities, children are engaged in this all important learning task with little or no instructional materials. Materials for cognitive developmental activities should be developmentally appropriate; that is, they should be carefully selected to suit each child's age, interest, and cultural background. This paper focuses on describing some developmentally appropriate materials that teachers can utilize for counting, singing, sound discrimination, letter identification, colour learning, literacy activities, and pretend play activities in order to effectively develop cognitive skills in young children.

Introduction
Cognitive development is the mental or intellectual processes that occur in humans. It is the construction of thought processes that involve remembering, decision making, problem solving from birth to adulthood (Encyclopedia of Mental Health, 2022). It involves the changes that take place in children's mental activities such as thinking, remembering, problem-solving, reasoning, and creativity (Akintunde & Ojile, 2016). Cognitive development thus, means information processing for problem solving. It is characterized by the way children learn, acquire knowledge and interact with and better understand the world around them (Peronto, 2014). Development in the cognitive domain can be deliberately enhanced in leaners by teachers by incorporating appropriate materials into young children's daily learning activities.

Young children are individuals who are in the early childhood stage of human development. They are in the age range of birth to 8 years and are in the learning programmes of crèche to primary three. Young children are in Jean Piaget's developmental level of preoperational to concrete operational stages of cognitive development. One of the requirements for effective cognitive developmental success for young children is intentional provision of concrete learning materials for children to

explore, manipulate and make sense of (Korb & Selzing-Musa, 2019) in developmentally appropriate ways (Copple & Bredekamp, 2008).

Developmentally appropriate practice is a teaching-learning approach that promotes each child's maximum development through playful, joyful and engaging activities (National Association for the Education of Young Children [NAEYC], nd). According to the Lego Foundation and United Nations Children's Fund [UNICEF] (2018), it is an approach of teaching children that is rooted in research on how children learn and develop following four key elements; individual appropriateness, age appropriateness, cultural appropriateness, and meaningfulness to the child. Thus, developmentally appropriate materials for the enhancement of children's cognitive development are materials that suit each child's individuality, age, cultural background, and interest (meaningfulness).

Children's learning materials are found to be developmentally-inappropriate; little or no concern is given to children's uniqueness in learning needs and style (The Lego Foundation and United Nations Children's Fund [UNICEF], 2018). Instructional materials which will involve engaging activities are not employed in children's daily activities (Haggai & Shwamut, 2016). Thus learning is boring and frustrating for children.

Children in the early years are in care programmes in which they are learning personal and academic skills (Reference.com, 2017) which are new and hence stretch their cognitive abilities which develop differently in every child (Phillips, 2017). Hence intentional efforts need be put into all that is required for children to learn and develop.

Children learn in playful and interactive ways because they are inquisitive about their environment, they exhibit imaginary and pretend play, and articulate well enough to be understood as they speak. When provided with appropriate materials indoors and outdoors, optimal cognitive development takes place.

Cognitive characteristics of children in the early years

An important cognitive trait of young children is the development of symbolic thought. Symbolic thought is the ability to mentally represent concrete objects, actions, and events (Seefeldt & Wasik, 2010). The most obvious sign of the development of symbolic thought is the evident increase in their use of make-believe or pretend play, which becomes more elaborate as they grow.

Nursery pupils are considered pre-operational thinkers (Epstein, 2014). This means that the children rely solely on the concrete appearance of objects rather than ideas; they focus on only one relationship at a time, and they have good memories for things in their immediate experiences. Berk (2006) suggests that children have not developed effective strategies for recalling information over longer periods of time; therefore, structure and routines are important in the instruction of children as this allows them to anticipate and predict what they will be doing and what is expected of them. Children's wonder at this age for things that they have repeatedly experienced is related to their underdeveloped

memories (Seefeldt & Wasik, 2010); they repeatedly do an activity and still show the same delight as they did the first time they were engaged in the activity.

Children are beginning to problem-solve and they think about cause-and-effect relationships, and express these ideas to others. They think and reason concretely, and they typically reason from the particular to the particular as opposed to the particular to the general (Seefeldt & Wasik, 2010). At this age, children presume a causal relationship if two events are closely associated in time or in some other way. A child may think that people on the street live on the street, because they meet them there and leave them there.

Children achieve concept development (Henniger, 2005); when classifying objects into categories, they focus on one aspect of the object and ignore the other features; they are beginning to understand part/whole and orders of relationships, but they have difficulty comprehending that objects can be in more than one class. Also at this age, when children are asked to sort objects into specific categories, they sort objects on the basis of one attribute and have difficulty comprehending the concept of time (Seefeldt & Wasik, 2010). They view time as events occurring immediately or taking a very long time.

Children are developing their memory skills. With some prompting, they can remember what they did a few days ago. They remember with ease events such as children's funfairs, excursions, or an unpleasant discipline experience. A child can remember main events in a story and can retell a story with some degree of accuracy of the sequence. When information is presented in a context that is meaningful to the child, the child remembers easily, but when information is presented in bits and in isolation, learning and remembering becomes difficult.

Children are also beginning to develop a sense of what is real and what is not (Berk, 2006), and also what is a dream and what is not a dream. Seefeldt and Wasik (2010) suggest that nursery pupils think about things; they wonder and ask questions about what things are, why things are the way they are, and so forth. This reflects children's interest in understanding the world around them. Their imagination continues to develop, and their play centres on pretending as they imitate adult roles. However, they begin to make distinctions between when they are pretending and when they are not. Also, most of nursery pupils' cognitive development occurs in tandem with language development (Life with Little Children, 2007), so that talking to them will teach them how to reason and analyze.

Given the diverse nature and structure of young children's cognitive developmental characteristics, for their teaching and learning to be effective enough to facilitate mental development, a wide range developmentally appropriate materials which are both locally sourced and purchased should be provided for fun and engaging learning experiences.

Developmentally-appropriate materials for young children's cognitive development

Developmentally appropriate materials that children can engage with to enhance mental development are numerous. For the purpose of this paper, the materials that will be

discussed are counting materials, singing of songs and music, sound identification and discrimination materials, letters of the alphabet, literacy materials, and pretend/dramatic play materials.

a) **Counting materials**

Objects like stones, seeds, plastic bottle covers, different objects and animals drawn and cut out from card boards, improvised and manufactured building blocks of all sizes can be brought into the classroom.

b) **Singing of songs and music**

Singing of old and new songs for and with children sets the stage for literacy and language development which are integral parts of cognitive development (Tompkins, 2011). Materials like compact discs and CD player, radios, child sized musical instruments (improvised and manufactured) are in this category. Local musical instruments from children's local communities like clappers, drums, and kacha-kacha (rattles) can be brought into the classroom for children to engage with.

c) **Sound identification and discrimination materials**

Materials for sound identification include different seeds of grains in different covered cans. These grains in cans can be shaken to determine the different sounds each makes. Transparent bottles with different levels of water poured into them, with a piece of stick to gently strike each bottle in successive speed to produce sound at different pitches, provide fun experiences for children. Listening to various environmental sounds helps children to identify, discriminate, or associate such sounds to situations and objects. Also, within a lesson or school hours, children may be engaged with paying attention to environmental sounds like vehicles' sounds, rain sound, the sound of the wind, sound of footsteps, tweets of birds in trees outside and a lot more. In this way, children will begin to understand how sounds relate to objects in their environment, and also associate each sound with different circumstance.

d) **Letters of the alphabet**

Materials for practice of letters of the alphabet include large coloured pieces of letters of the alphabet, puzzles of letters of the alphabet, cardboard papers of different colours and scissors, letters of the alphabet books, blocks, and audio visuals with the letters of the alphabet, seeds or sand with gum for sticking onto letters written on paper or cardboard. Water is also a rich resource. Teachers can engage pupils in the identification of letters of the alphabet by singing along to the A B C Song, reading through books about letters of the alphabet and playing with alphabet puzzles, blocks, jigsaws, colouring, cutting letters with scissors, writing letters of the alphabet on plain sheets or easel with child-size pencils and crayons or paint/poster colours, sticking of materials (like seeds or sand) onto written letters of the alphabet on paper or card board with gum, and identifying and saying of letters of the alphabet that are boldly written or pasted on the walls in the classroom or around the school.

e) **Colours learning materials**

Colouring materials include child-sized crayons of different colours on plain sheets. Also, transparent used plastic bottles can have water poured into them, and different poster or water colours (preferably food colouring for safety in case of ingestion) poured into them and beautifully displayed on tables for children to identify and play with. Some materials for colouring activities are water colours, poster colours, water, turmeric (traditional spice

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and food colouring substance), brushes, plain papers, transparent plastic bottles, crayons, cardboard papers and easels.

f) Literacy activities

Children's journey towards literacy involves learning skills in speaking, listening, reading, watching, drawing and writing. The foundation for building these skills begins at birth. Materials for literacy activities include story books, picture books, paper, child-size pencils, crayons, easels, sand, boards, leap pad (manufactured toy with pencil-like object for writing), music, radio, television, toy computers, and tablets.

g) **Pretend play materials**

Pretend play, a play type characterized by an "as if stance," helps to develop young children's mental abilities of problem solving, imagination and creativity. Teachers should provide all props necessary for children to choose from and direct their activities. Some common materials that can be provided for pretend play activities include all safe tools and materials that can be found at home, school, workshops, offices and so forth. Materials for pretend play include phones, table, books, mats, spoons, dishes, sand, sieve, knives, shovels, toy cars, blocks and clothes. They also include junks, and improvised objects.

Conclusion

Young children's brains are rapidly growing, and for that reason, their mental structure is also significantly advancing. When developmentally-appropriate materials are entrenched into the teaching-learning activities of young children, their intellectual potentials are greatly harnessed and they are better prepared for primary education and the rigours that accompany it.

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