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A critique of silent pertinent demand of learning theories applicable in early childhood education system

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Abstract*: A critique of learning theories that are believed to have soundless dynamics and serve as catalysts to aid learning and education is an entity. Learning is perceived to require the regulations and systems that the great influence in education today. The contemporary learning process, a variety of theories of learning, is a very different conception of the self or person. Some of this variety is summarized, and some of the different forms of self are explored. It is argued that in teaching and learning, we may create the learners as certain kinds of selves', or run into resistance from pre-established selves different from the ones we assume. Finally, the current learning and education today have some sense of progression over time in the kinds of selves we envision through our theories of learning that are explored, and our choices in supporting this progression are archived onto the theory as advanced in the normative construction of the education system.*

Keywords: Cognitive theories, education system, scientific needs, progression

Introduction

The article provides a critique of cognitive theory and learning theory applicable in early childhood education institutions. These theories are school of thoughts that aid learning in early childhood education system (Bodrova & Leong, 2024). The paper gives a general critique of the Piaget's cognitive theory of learning while highlighting its main stages which include: the sensorimotor, preoperational, concrete operation and formal operational stages of development through which learning takes place (Bess & Dee, 2023). In the second part of the presentation I shall explain the principles of the cognitivists' theory propounded by Piaget. Using illustrations the paper shall show how the principles underlying the cognitivist theory can be applied to the teaching and learning situation and highlight some of the limitations (Xin et al., 2022), (Cao et al., 2024). Finally, the author shall give some criticisms of the cognitive theory and how it aids learning in early childhood education system.

Definition of a Theory

The term theory has several divergent meanings in the different fields of knowledge deepen subject of discussion. Ordinarily, the word theory signifies an opinion, or speculations (Akpan & Kennedy, 2020). In this usage, a theory is not necessarily based on facts; in other words, it is not required to be consistent with true descriptions of reality. True descriptions of reality are understood as statements which would be true independently of what people think about them.

In scientific usage, a theory is a mathematical or logical explanation or a testable model of the mode of interaction of a set of natural phenomena, capable of predicting future occurrences (Habib, 2024). The observation of the same kind theory is capable of being tested through experiment or other falsified through empirical observation. Basing on this definition, it can be educed that for scientists, theory and fact are closely linked (Barnes & Shattuck-Hufnagel, 2022). For example, it is a fact that an apple dropped on earth has been observed to fall towards the Centre of the planet, and the theories commonly used to describe and explain this behavior are Newton's theory of universal gravitation, and general relativity (Ghosal, 2024).

According to Akpan & Kennedy, (2020) a good theory must accurately describe a large class of observations on the basis of a model which contains only a few arbitrary elements. The theory serves as catalysts or stimulator that induces one and it must make definite predictions about the results of future observations (Parr et al., 2022),(Mordukhovich et al., 2023).

He goes on to state that, any physical theory is also provisional, in the sense that it is only a hypothesis; you can never prove it no or how many times the results will not contradict the theory. On the other hand, he asserts that you can disapprove a theory by finding even a single repeatable observation which disagrees with the predictions of the theory (Medicine, Affairs, et al., 2019).

In sum, theories exist not only in the so-called hard sciences, but in all fields of academic study such as philosophy, music, psychology and literature. A theory is a logically self-consistent model or framework describing the behavior of a related set of natural or social phenomena originates from or is supported by experimental evidence (MacInnes, 2016). However, in this sense, a theory is not only a systematic and formalized expression of all previous observations which is predictive, logical and testable. Besides all that some theories may not be able to yield results as expected based on individuals, and environment where is applied (Wardana, 2023). For instance what works in western world may not make sense in African context based on the environment and the policies therein and facilitations in situation. In principle therefore, scientific theories are always tentative and subjective to corrections or inclusion in a yet wider theory perspective (Engeström, 2016).

The cognitivist's theory (Piaget)

The cognitivists' theory arose out of the need to minimize the weaknesses of the behaviorists theory. Cognitivists associate learning

with mental processes. Jean Piaget, a Swiss psychologist and biologist, while recognizing the contribution of environment to learning explored changes in internal cognitive structure (Arai, 2021), (Taku & Shackelford, 2024). The article identified four stages in children development cognitively known as the sensorimotor, preoperational, concrete operation and formal operational. It refers to cognitive development as the process whereby a child understands of the world changes with variations in age and experience (Medicine, Division, et al., 2019). Cognitive development emphases learning through discovery resulting from age and gained experience assortment.

Piaget had a strong biological orientation, after observation of many children he suggested that children progress through the four stages in a fixed order. He was mainly interested in influences on how we come to know what we know. He believed that what distinguishes human beings from animals is our ability to do abstract symbolic reasoning, assuming that animals have no reasoning ability (Casagrande, 2023). He was particularly interested in knowing how children think aided by schemes which he termed as mental organizations or systems. He asserted that infants are born with schemes operating at birth called reflexes. The child uses these reflexes to adapt to the environment (Radesky & Kistin, 2024). He proposed that children are incapable of understanding the world until they have reached a certain stage in the development process. This implies at movement from one stage to the next occurs when a child has reached an appropriate level of maturation and has been exposed to relevant types of experiences. Without experience, children are assumed incapable of reaching the highest level of cognitive ability (Manglik, 2024a).

During these stages the child is able to assimilate, accommodate change in structure when new information does not fit, and to organize (putting ideas into coherent systems thus build.in theories. By inference, accommodation and assimilation comprises a process where the child's perspective is changed from egocentrism to objectivity (Casagrande, 2023). The four stages of cognitive development are described below.

The Sensorimotor Stage (birth to 2 years)

According to Piaget, the very young infant moves through several phases of sensorimotor evolution. The phases appear to involve the progressive differentiation and the integration pattems into increasingly complex behavior (Edna & Weber, 2014). At an earlier phase, an infant engages into a multiplicity of reflex actions such as sucking, grasping, and turning his head. As he or she practices these reflexes, they are refined and improved. The infant gradually begins to coordinate them into simple habits, for example, turning his head to find a nipple so as to breast feed (Clark & Bryant, 2020).

Children acquire object permanency at the age of 7 months meaning that their memory is limited only to things that they can see. As the baby grows, he progresses through various phase and moves toward a early childhood phase of differentiation of the parts of his global excuse (Andemariam, 2024). Physical development in terms of mobility allows the child to begin developing new intellectual abilities. Some symbolic abilities in form of language are developed at the end of this stage. In all these phases the infant does something as a means of achieving something else. For example, a child may kick and cry as a sign of discomfort intending to draw the mother's attention to change the beddings (Hoover, 2021).

By the end of the sensorimotor period, the infant is able to test mentally the suitability of various means. He has progressed from mere reflex action to some level of intellectual capability. For , if an infant is facing a problem whereby a ball is out of reach on a table, in of activating a whole series of schemes, such as kicking, shaking the table, crying. In this article an effort to get the ball rolling on the infant learning of about 18 months may sit still for a moment, presumably seeking a solution to the problems available (Curren, 2022). Suddenly, he reaches for the table cloth and pulls it, in the process retrieves the ball. In this case, the ability to perform mental integrations of various behavior patterns displays the beginning of true intelligence in the infants.

Preoperational Stage (2 to 7 years)

During this stage, children acquire representational skills in the area of mental imagery. The most important development at this stage is language. Intelligence is demonstrated through the use of symbols, language use matures, and memory and imagination are develop , but thinking is less logical and no eversible (A. Experts, 2020). They are very self-oriented and e an egocentric view, that is to say, they view the world from their own perspective. At this stage, the child is unable to coordinate more than one perceptual feature at a time. Although a good deal of differentiation has taken place, it cannot be coordinated well to ensure appropriate learning of the children and leave a lot answered.

The child has vents of symbolic thought at his disposal he must learn how to organize them in sematic programs (Barnes & Shattuck-Hufnagel, 2022). Piaget calls such organization operations. The preoperational child is learning how to use perceptual cues as symbols for more general concepts. Children learn by making perceptual strategies to discover new concepts, this is often referred to as discovery learning (*Sensory Neuroscience Editor's Pick 2021*).

Concrete Operations stage

Operations are essentially groupings of schemes or mental organizations. They are called operations when the groupings have special interrelationships. The beginning of the concrete operations stage is marked by mastery of the principle of conservation in terms of numbers, length, liquids, mass, weight and volume (Bess & Dee, 2023). Children develop the ability to think more logically and they begin to overcome some of the ego-centric characteristics of the pre al stage. As opposed to preoperational children, children in the concrete o rations stage are able to take another's point of view and take into account more than one perspective simultaneously. They can also represent transformations as well as static situations (Shehade & Stylianou-Lambert, 2021).

Intelligence is demonstrated through logical and systematic manipulation of symbols related to concrete objects. At this stage, they learn the idea of reversibility. This is the idea that some changes far be undone by reversing the earlier action. Piaget used a ten

pebble illustration in the learning theory (D. Experts, 2024). A small child had ten pebbles in a heap. He put them in a row and counted them from one up to ten. He then counted in the reverse order, they were still ten. He put them in a circle and still counted ten. In so doing, the child had discovered a property of the action of ordering. The action of putting together and counting enabled the child to discover that the sum was independent of the ordering (Overton, 2012).

Through many experiences, a child develops certain basic rules of thinking logically. One such rule is the idea can be the same in different forms. In so doing, the child masters the principle of conservation characteristic of this stage. The conservation principle enables the child to solve various kinds of problems (Geist, 2025). At this level, the child can easily create associations and identify between variables. Piaget would argue that children at this stage have limits to their abstract thinking, and that they do not consider all of the logically possible outcomes (Stern et al., 2024). This leads to the formal operation stage in early child education, growth and cognitive development.

The Formal operation stage

Formal operations stage begins in most people at the age of 12 and continues into adulthood. Children, attain the formal operational stage are capable of thinking logically and abstract can also reason theoretically. Thinking is no longer tied to events that can be observed (Burton & Radford, 2022). Intelligence is demonstrated through logical use of symbols related to abstract concepts. A child can think hypothetically and use logic to solve problems Piaget considered this the ultimate stage of development. It states that although the child would still have to revise their knowledge base, their way of thinking was as powerful as it would get (Manglik, 2024b).

Piaget maintains that a formal operational child, who is 13 or 14, is free of concrete tendencies, and can use other abilities to solve problems. He/she can think reason, and also face reality b the beginning contradictions may occur between imagination and reality that often reflected in egocentric thought. As (Bon, 2021) when the young adolescent mind discovers its new logical wings ...it may fly off in all directions at once until the urge to consolidate takes over". This implies that the formal operational stage progresses over a life time in order for the individual to fully develop the mental capabilities (Jansen et al., 2024). One· could easily say that in modem terms this stage is based on the principle of life-long learning.

Principles of the cognitivist theory

There are several principles upon which Piaget based his cognitivists theory of learning. Three main factors that seem to underpin these principles are the children' s ability to assimilate, accommodate, and to organize information as earlier sited (Mehdi, 2017). The principles of cognitive development are explained below. The phrases that I have used are not standard formulations of these principles but are intended to present the overall idea in summary form. The principle of conservation: Under this principle the child learns that ideas remain the same under changing circumstances (Ross & AI, 2025). This principle requires that instruction be well organized. Well org ·zed materials are easier to learn and remember. Sensitivity to this principle is paramount especially at the preoperational stage where the child's accommodative or coordination ability is not yet fully developed (Surgeons (AAOS), 2022).

The principle of differentiation and integration: Piaget suggests that instruction should be clearly structure because children learn by progressively differentiating and integrating sub-pa into complex behavior (Stern et al., 2024). This calls for logical relationships between key ideas and concepts that link parts together.

The principle of perceptual orientation: Children learn by making perceptual strategies to discover new concepts. Learners attend selectively to different aspects of the environment. This requires a careful display of important features of the problem to learners (Ross & AI, 2025)

The principle of prior knowledge· Piaget asserts that prior knowledge aids understanding. This is because states that children progress through the stages of development in a fixed order. He proposes that new ideas must fit with what is already known if they are to be learnt because preconceived knowledge is used to judge between entities. Learners use mental formations or ideas in a logical manner to derive solutions to problems (Medicine et al., 2018).

The principle of cognitive feedback: Since cogmt.J.ve learning is basically discovery learning, learner to be informed of their success or failure in order to progress logically. Medicine et al., (2018) affirms what is intended to encourage development of new concepts and discourage misconceptions at the different levels □f the child's cognitive development.

Application of the principles underlying to teaching/learning

In applying the principles of learning stated above, it is important to distinguish between what the child is capable of learning and what teachers may want to teach him or her. According to Piaget's theory of learning, all children pass through a series of stages before they are able to understand and reason in a mature way. He suggested that throughout the development processing person constructs his/her own knowledge and understanding of the activities performed personally, in which case prior knowledge aids understanding (Alkin et al., 2024). Through activities of learning are performed personally, in which case prior knowledge aids understanding. For example, the infant is not only content to suck when he nurses; he also does so at the random. He sucks his fingers when he encounters them, then what ever object is presented to him. Finally, the infant coordinates the movement of his aims with the sucking until he is able to introduce his thumb into his mouth systematically (Sutton, 2024).

The principle of prior knowledge therefore necessitates that teaching proceeds from known to unknown or simple to complex concepts. Brain storming as part of lesson review is encouraged to enable the telemeters' capability. However, at this stage parents need to be concerned about items that are within the child's reach, for the child will automatically suck whatever he lays his hand

on.

Piaget's theory provides an insight into discovery learning and supports the developing interests of the child (Hayes, 2023), (Brough, 2024). He emphasizes child-centered learning whereby a child learns by being personally involved in the activity. It is therefore recommended that parents and teachers the child's abilities, but not present material or information that is too beyond the child's level (OECD, 2021). For example, a preoperational child could be given the task of differentiating between sizes of balls ranging from the smallest to the biggest or matching colors but not abstract problems that require logical interpretation. Such activities will build what has been termed as the principle of differentiation (Brooks & Chance, 2024).

Conceptual development builds on actions. The young child must be physically involved if his mind is to grow. Provide the children with opportunities or materials that interest them and guide them in recognizing important cues, but do not drill them into rote learning (Bushnell et al., 2023). Let them make their own discoveries by doing. For example, counting by stamping the feet and clapping of hands and manipulation of all sorts of objects will build brain as well as body. Words have greater impact on children's understanding than images alone. It is even better to have a combination of word, picture and action in the learning process (Sumarlam et al., 2021). However, the teacher needs to remember that the preoperational child can easily be distracted and misled by visual materials, hence the need to select teaching materials with care (Sutton, 2024).

The principle of conservation suggests that instruction be well organized to enable the learner to know that even when circumstances change, ideas remain the same. For example, if a child is presented with two glasses of the same size with equal amounts of water and then this water is poured into two different glasses; one shorter and larger, the other taller and thinner (Zola, 2023). The preoperational ·1d when asked which one has more liquid, will choose the taller and thinner gloom. Basing on this conservation experiment, Piaget suggests that the child fails to conserve quantity if the shapes of his containers change. This is an indication that a good deal of differentiation has taken place, but it cannot be properly coordinated. Understanding this principle helps teacher not to rate children as stupid or slow learners (Fogelberg, 2024).

To facilitate learning the teacher needs to involve children in practical activities where they learn to manipulate objects in a way that develops coordination abilities. This may come as a result of and encouragement from the teacher (Bureau et al., 2023). The only challenge to teachers is that such a teaching strategy requires time and availability of teaching aids which are often lacking in schools.

Considering the principle of perceptual orientation, the child learns to attend selectively to different aspects of the environment (Congress & Policy, 2002). For example, a child at preoperational stage may have perceived that something early childhood is usually more than something lower. Therefore, uses this preconceived knowledge to judge between the two glasses of water as discussed earlier (Douglass et al., 2020). Using that particular rectal piece is a mistake in this case, but it is a odutuitive guess that leads to efficient use of symbols. The child is taking a very important step toward mature symbolic thought. At this stage, a child's iconic thinking is not yet fully developed. The child cannot see relationships, for example. The child is limited in what he/she can learn at this stage (Barnes & Shattuck-Hufnagel, 2022). Even if the child must perform differentiations and integrations for himself, the teacher can help by eliminating environmental confusion. For example, a teacher can set a table with a single task on it instead of several tasks or write key points on the board so as to facilitate coordinated learning. Environment is designed to reduce perceptual distractions (Ahmia, 2024). The teacher's role therefore is to organize the teaching materials in such a way that will enable progressive acquisition of complex ideas as a child matures intellectually. For example, at the formal operations stage, students could be taught broad concepts through discovery learning by engaging them in activities that require cognitive memory.

Since cognitive learning is basically discovery learning, learners need to be informed of their success or failure in order to progress logically (McGregor, 2025). Feedback that is intended to encourage development of new and discourage misconceptions at the different levels of the child's cognitive development L is often missing. Instead what is common in most schools is a high level of academic assessment that fosters rote learning and rates low achievers as failures. This has been reflected by the increasing number of school drop-outs especially under Universal Primary education in Uganda.

In summary, the overall principles provide us with an account of the age-related changes in cognitive development. Piaget suggests that cognitive performance cannot be attained unless cognitive development is brought maturation (*Africa's Radicalisms and Conservatisms*, 2021). This is instrumental in determining the structure of the education curriculum and teaching methods and strategies.

Some criticisms of the theory

Contemporary theorists suggest that a better description of how children develop cognitively can be provided by approaches that do not employ concrete fixed stages as Piaget suggested (Butler & Huang, 2022). This is to say that children are not always consistent in their performance of tasks at each stage. There could either be a regress or progression of tasks expected to be performed at asp1ed time (Korol, 2019), (D. Experts, 2024). It is now thought that not every child reaches formal operational stage: Development psychologists also debate whether children do go through the stages in the way that Piaget postulated.

Piaget's emphasis on cognitive development as aid to learning seems to underrate other' possibilities through which by observation and reinforcement (Zapata-Cortes et al., 2022). It also ignores social-cultural influences in the learning process However, whether Piaget was correct or not, the theory of cognitive development has had a tremendous influence on all modem development psychologists.

Piaget does not take into account differences in learners' cognitive development.

He presumes that they all mature me rate which is a misconception. To compound this problem, often teacher use predetermined

ideas to assess learners.

Conclusion

In this article concludes that, a theory is a school of thought that showing how it is comprehended under different contexts and leads to discover realty or arrive at a given assertion. Author gave a general critique and an overview of Piaget's cognitive theory of learning by highlighting its main stages and how it aids learning (Butler & Huang, 2022). It clear identifies several stages a child undergo and how one learns at particular stage which included: the sensorimotor, preoperational, concrete operation and formal operational stages of development through which learning takes place. The author explained the principles of the cognitive theory and using illustrations showed how they could be applied to the and learning situation. He finally critiques Piaget's theory of learning has been criticized as being rigid in the processes and how it aids learning to a given extent. Learning does not always seem to follow such a structured sequential order because it takes place any time and in every place (Awrejcewicz et al., 2020). In order to teach effectively it is advisable that a teacher could employ several theories to overcome the weakness imbued in a specific theory. He presumes that, theories mature learning process leading to realities of misconception. Theories are compounded and arched on grounds leading realization of realties (Nagaoka, 2020). However, it is notable that theories apply depending individuals, situations and conditions where they are applied.

In conclusion article gave a general overview critique of Piaget's cognitive theory of learning on its main stages which included: the sensorimotor, preoperational, concrete operation and formal operational stages of development through which learning takes place (Medicine et al., 2020). The article explained the principles of the cognitive theory and using illustrations showed how they could be applied in a given learning situation. Piaget's theory of learning has been criticized as being rigid to the learners' ages and its does not go beyond the limited age limit. Learning does not always seem to follow such a structured sequential order. In order to teach effectively it is advised that a teacher employs several theories to overcome the weakness imbued in a specific theory.

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