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THE PIAGET THEORY OF COGNITIVE DEVELOPMENT :AN EDUCATIONAL IMPLICATIONS

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Introduction

The Piaget's theory focus on development and learning theories. Development focus on the learner's capabilities and the learning focuses on the realization of such capabilities and the education within the theory is extrinsic. The cognitive theory, the behavior reflects the emergence of various psychological structures, organized units or patterns of thinking that influence on how children interpret the information. Kendra Cherry. (2014) The cognitive developmental theories explain the change in reasoning level of a child acquiring new ways of understanding their world. Piaget's theory of implication assumes that all children go through the same sequence of development, but they do so at different rates. Teachers must make a special effort to provide classroom activities for individuals and small groups, rather than for the total class group. Assessment should be based on individual progress, rather than on the normal standards of same age peers. Individuals construct their own knowledge during the course of the interaction with the environment.

Piaget, J. (1983) An important implication of Piaget's theory is adaptation of instruction to the learner's developmental level. The content of instruction needs to be consistent with the developmental level of the learner. The teacher's role is to facilitate learning by providing a variety of experiences. Teacher should obviously provide opportunities for learners to explore and experience, by doing so is encouraging learner's new understandings. Piaget emphasizes the Opportunities that allow learners of different cognitive levels to work together and encourage less mature students to advance to create understanding. Piaget, J. (1983) The further implication for instruction is the use of concrete hands on experiences to help learners learn additional suggestions. Piaget also emphasizes that teachers should allow opportunities to classify and group information to facilitate assimilating new information with previous knowledge. Present problems that require logical understanding.

Schemas - (The building block of knowledge)

Piaget, J. (1983) The schema is actually the different sensory motor map that the learner constructs about their world on their knowledge development. Gradually as learner develops the ability to represent the outer world in the internal

images and thoughts. At this point the operations which are logical thoughts become possible for a learner to perform. A child's schemas are constructed through the process of assimilation and accommodation. A schema describes both the mental and physical actions involved in understanding and knowing. Schemas are categories of knowledge that help learners to interpret and understand the world. In Piaget's view, a schema includes both a category of knowledge and the process of obtaining that knowledge. As experiences happen, this new information is used to modify, add to, or change previously existing information or schemas.

Adaptation process that enable transition from one stage to another.

Kendra Cherry. (2014) The adaptation process is the inborn tendency to adjust more attuned to conditions imposed by the environment. Piaget sees the learner as the actively engaged in an ongoing process of adaptation or transformation. Learners adapt by continually organizing and reorganizing the information and experiences they get in their everyday life. The process creates the better fit between the world as the learner experiences it and the new information and the way he/she understands it. Learners are constantly challenged by the new information from their environment around them from infancy onwards, learners construct more complex cognitive structures of their world in their mind to organize, understand and adapt to it.

Equilibrium

Piaget, J. (1983) Equilibrium is when the learner moves towards more complex or effective way of organizing and dealing with the world. Equilibrium according to Piaget is regarded as the engine that drives the development of a learner. It is actually the cognitive structures that accommodate the familiar information instead of the new knowledge, we say the learner equilibrates. In the equilibrium the assimilation and accommodation interact continuously and accommodation opens up possibility of assimilation and vice versa in an ever expanding cycle. Bukatku, D & Daehler, W. (1995). The changes or expansions in learners' mind have to be organized and kept in order and dynamic balance across the learner's cognitive structures. The cognitive conflicts occur when the learner is confronted with the information which he/she cannot deal with it in terms of the current cognitive structures.

Kendra Cherry. (2014) The cognitive conflicts are actually the positive developmental experiences within a learner. The cognitive conflicts challenges the learners to modify the cognitive structures in order to equilibrate the learner reaches the key point in development when he /she can be able to solve the range of more complex problems than he/she was able to solve earlier. Then Piaget described it as point constituted new level of adaptation and the point where the learner's cognitive development 'shifts up gear'. The child will use new gear/information but will continue to use the old gear/information also. The more learner use the new information the more the learner grow in the ability to adapt effectively to the situation.

Assimilation

Piaget, J. (1983) According to Piaget Assimilation is the components of the adaptation when the information arises that can fit into the learner existing knowledge is added into the learners cognitive structures. This information adds to extends the learners mind structures or cognitive structures.it actually occur if the knowledge that learner is learning is not too dissimilar to learners existing knowledge; it can be assimilated or added to the existing cognitive structures. Then the learner's cognitive structures is extended 'meaning the new knowledge add to what learner is already know'.

Example: In mathematics Grade 9 .the lesson highlight the very basics of linear equations considered in grade 8 .learners are familiar with this type of equation where solving x require the use of Additive inverse and dividing by co-efficient of x .

Then in lesson 2 learners are given the unknown values on both sides of equal signs, learner move all the unknown values to the left by cancelling value values on the right using Additive inverse and solve x as done in lesson 1.when the lesson two is introduced learner can use existing knowledge of lesson 1 as link to better understand and interpret the content of lesson 2.this process does not actually change but expands the cognitive structures of a learner

Accommodation

Piaget, J. (1983) According to Piaget the accommodation is the component of the adaptation and is actually when the new information arises that contradicts or conflicts with the learners cognitive structures .in accommodation learner

have to adjust and reshape his/her cognitive structures so that the new information can be fitted or accommodated in learners mind .It is actually occur if the new knowledge is very dissimilar to the existing knowledge and it cannot be linked with the existing knowledge ,the disequilibrium occur meaning the learners cognitive structures is modified or changed in order to accommodate the new knowledge.

Example: if the Grade 10 learners are first time exposed to the Quadratic equations. On the lesson 1, the teacher ask them to solve x and learners try to use the grade 9 existing knowledge of linear equations but learners answers will be incorrect .learners first need to understand that this are two different two equations and require different methods to solve them, so the teacher have to assist learners to change their cognitive structures. The teacher and a learner can change the learner's cognitive structures through teaching and learning for understanding the new concepts of quadratic equations to change the learner's cognitive structures.

Stages of development

Piaget believed that all children progress through four stages and they do so in the same order. Bukatku, D & Daehler, W. (1995) During each stage of cognitive development there is unique level of analysis, internal organization and the understanding of the environmental information and events.Piaget's theory shows clearly that the child's understanding is only dependent on the stage that he/she has reached and teachers ought to take this into account as they teach learners at different levels of intellectual development .Bukatku, D & Daehler, W.(1995).

Sensorimotor Stage birth to 2 years (infancy)

Lazarus,S.(2010)Is the first stage in the growth and development of a child .children have the basic structure of organizing and adapting to their environment and their behavior tend to be circular and also develop an elementary understanding of the things around. It is the stage where child acquire language ,which enhances their social and intellectual development This stage is actually the form of thought or intelligence as observed in the child's actions. The child's schema is simple and limited to what the child can explore through the body and senses. The stage last from birth of a child to the age of about two years. Kendra Cherry. (2014) Child inherent tendency to organize its world as it develops. Some methods of classifying objects and experiences, although basics take shape as a results of

secondary circular reactions. The object permanence develops at this stage whereby child understand the objects, whether is hidden or visible. It is also at this stage that children only look at the world through their own perspective. The child, has the physical interaction with his or her environment, builds a reality and how it works.

Preoperational stage two to about seven years

Lazarus,S.(2010)The child on this stage is able to reason and give logical train of thoughts. The child use the objects and symbols to represent something which exist in a concrete form for example: child play with a car as if it is a real car. At this stage the child is not yet able to conceptualize abstractly and needs concrete physical situations. Is also the development of semiotic functions which develop the language. During this stage the child language, thinking, imagination and problem solving develop faster as child can be able to work with images and symbols. The child can recognize the properties of the object even if they might be changed around and look different. The child at this stage find it too difficult not to accept the evidence in their eyes. Children's vocabulary increases and their sentences progress from one and two word phrases to complete full sentences. Children can take in other points of view, and take into account more than one perspective. The pre-operational stage child can be characterized by the, animism, egocentrism, transductive reasoning, syncretism, lack of decentring, lack of classification, lack of seriation and conservation skills and the rapid acquisition of language.

Concrete operational stage: from seven to eleven years

Lazarus,S.(2010)Child is capable of using logical processes of reasoning on the basis of concrete evidence. Children who attain formal operations are said to reason in terms of theories and abstractions, as well as concrete realities. It is in this stage that problem solving and reasoning is powerful enough to last the rest of life. Child is capable of creating logical structures that explain his or her physical experiences and Abstract problem solving is also possible at this stage. For example, arithmetic equations can be solved with numbers, not just with objects.at this stage the child becomes capable of engaging in a logical thinking on the basis of the past experience and concrete evidence. During this stage the child is able to succefully perform task relating to the conservation of matter, the transitive form of reasoning and classification of objects.

Formal operation stage: from eleven years upwards.

Lazarus,s.(2010)Thinking is not only abstract but also logical. The reasoning engaged in is not driven necessarily by the presence of the concrete objects. Children's can now generate the potential solutions to the problems in a systematic fashion. The social context is more important in this stage. Lazarus,S.(2010)The concrete examples are required to help child understand the abstract relationships. The stage occur during early adolescence and at this stage the child engage in more abstract thin thinking By this point, the child's cognitive structures are like those of an adult and include conceptual reasoning. This is the highest level of thinking stage and child is capable of going beyond the concrete evidence. The learner at this stage is able to concentrate their thoughts on things that have no existence. The child can now perform the variety of task involving use of hypothesis. The learner's thoughts can be fostered by placing learner in a situation where they have to solve problems

Educational implications

Lazarus,S(2010)Active engagement and exploration-inheritance and maturation as well as experience alone cannot explain the cognitive development. Cognitive development based on learner's active engagement with exploration of their physical and social world. Teaching and learning need to be active, exploratory processes if the teacher optimizes things out, to experiment and discover things, to question, discuss and to reflect and solve problems themselves.

Unevenness of cognitive development, cognitive development is uneven process, different learner make gear shift at different time and different learning area social context in which child is developing and the demands of that context influence the learners progression.teacher interpret Piagetian stage in terms of limitation than in progressive potential.emphasis on potential make teaching very different process from an emphasis on limitation.quality of thinkingdifference between adult and child's thinking has to do with difference in thinking quality and have important implications for understanding moral,social and emotional aspects of development and those aspect relate to child's understanding of social relations and affect how they deal with moral,social and emotional issue as they develop.

Conclusion

Mwamwenda,T,S.(2009)It is absolutely possible to incorporate Piaget's theory in the classroom. Piaget takes a constructivist point of view and believes that learners are not passive in their knowledge. Piaget's theory suggests that students need a curriculum that supports their cognitive development by learning concepts and logical steps. He also suggests that children are only capable of learning specific material in specific stages of cognitive development.Piaget emphasizes that learning take place as a result of active engagement of learners is important, so teachers have to see the learners take an active role by participating in whatever is being taught and learned.Piagets theory acknowledges individual difference in cognitive development.teacher should arrage activities that learners intellectual development.Pieget shows thatchild's understanding is restricted by stagesthat he or she has reached and teacher should take this into account as they teach children with different levels of intellectual developments.

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