Piaget's Theory of Learning

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Abstract

Learning is an agent necessity process for man; man is born on this earth weak, incapable and helpless. Through learning man can be graded until he become able to face life's problems and his inability turns to be innovate impossible things. Any stage of human growth depends on the learning and the more he is growth, his knowledge and his mind expand and become more able to think and innovate. There is no doubt that the process of learning in its humanitarian concept is a continuous process that begins at birth and end with the individual dead and are subject to the school of life, so it is the process of adaptation and building beginning a few and simple even to become a towering building. Therefore, learning and its strategies was and will always be the base of thinkers and scientists research. Thinkers in their research and in their numerous experiences hardly try to explain and improve the learning process, and there were many trends and differed in opinion but they were agreed on one thing and that is the interpretation of the learning process, and then find the best ways and means to learn. Because Piaget's theory was one of the learning theories that explain the learning process, the researcher conducted this study to shed light on it and explained its concepts and how it interpret learning and the circumstances surrounding them in that cumulative structural interpretation also interpreting ages identified by Piaget for cognitive growth finally it mentioned the educational applications of this theory. Piaget was able to draw a clear picture of the learning process, relying on biological experiments in the field of applied sciences, let us look how Piaget answered the question how we learn?

Keywords: Piaget's Theory ; Learning

Introduction

Piaget was born in 1896 and was a creative thinker since obtained a Bachelor's degree is in the age of eighteen that was in 1915 from University Niuchatel in Switzerland and his Ph.D. in applied science when he was twenty-first.

Piaget influenced by biological psychology, where his studies led him to reach a significant result which was the basis of his theory, that is biological upgrade is not caused by of biological

maturity and genetics but also gets as a result of maturity and genetics and environment variables.[1]

Piaget has developed a theory of knowledge about how the process of thinking is gradually becoming a tangible deal to abstract deal according to this theory, there are three aspects of intelligent growth which they are construction and content and function, when a child develops the construction and content are changing but the function remains the same. The regulation and adaptation process create a series of stages, each stage provides psychological structures that will determine the thinking capacity at the student so intelligence according to Piaget is the sum of structures available to the individual at a particular point on the way of growth.

In order to understand the perception of Piaget about cognitive growth it should be understand his vision of knowledge, Piaget assumes that knowledge are structures or mental construct and these structures and compositions are the rules for dealing with information or events, so through them events are organize in a positive way and cognitive growth is only change of this mental construct and it depends on experience.

Piaget believed that when a human born his mind is not a white page, but he born provider with certain beliefs and inherited potential help him to start growth. Also, he believed that there are two types of genotypes transmitted to the child through the genetic media and these two types are:

1- Physical structures: These structures are eye and the hands and the nervous system and senses and these physical structures help the organism to adapt to the surrounding environment.

2- Involuntary behavioral reactions: Like reflections that occur automatically, when a particular incident in the vicinity of the environment, such as sucking and baby's screaming, when he is hungry also initial reactions as well as, these do not need education or train, but considered inevitable for direct contact with the environment, these responses have a great importance in the early years of a child's life, and these reflections are subsequently modified and converted into mental and psychological constructs that form the basis of mental activity later.[2]

This is tackled in some detail in the coming pages

1-(Abdul Hadi - Jawdat 2000, p 188), (Wordsworth 1990)

2-(Ghanem - Mahmoud 2002 p 84.85)

The relationship between intellectual activity and biological construction

Piaget doesn't separate between intellectual and biological construction, [3]but he believes that the main principles of the intellectual progress are the same principles of biological construction, just as biological acts are acts adapt to the environment and the organization of the cognitive acts are also organize and adapt to the perceived environment.

Piaget's opinions about individuals' cognitive learning are influenced by his biological interests and studies, and he learned from his study that man is always trying to adapt to the surrounding environment, when the intensity of the light increasing the iris is narrowing slightly and is expanding when the man in a dark place this is a sort of (biological) acts done by the individual to adapt to the surrounding environment.

Human adaptation to the environment does not include the collection of biological acts only but also doing group of acts which means that adaptation is biologically and mentally, the emergence of exciting leads to questioning and observation and these two of the mental processes carried out by an individual with interesting environmental and these mental acts that lead to the growth of individual knowledge about this exciting.

Adaptation and regulation are tendency inherited by organism and Piaget believed that they are complementary processes not separate to one mechanism regulation forms the inner side of this mechanism while the adaptation forms the outer side the organization is an innate tendency make us as human do the work which is the correlation between the images - mental plans - more efficiently and therefore he finds that cannot separate the intellectual activity from biological function of the organism, Piaget considers intellectual function is a special form of biological activity, and both of biological activity and intellectual activity is part of the overall process that organism adapts to its environment and organize experience[4] and to clarify that see the following example:

The human when biologically adapt to the environment, he uses a number of physical structures such as teeth and the molars which he uses them to break up food and uses the stomach for digestion.

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[3] -(Jaber - Jaber 1984. P. 172)

4-(Wordsworth 1990) (Sharif - Kausar p 108) (Abdul Hadi - Jawdat 2000, p 189)

As well as, his situation in the cognitive adaptation is as the case in the biological adaptation also he needed a set of cognitive or mental structures within the human mind, but there is a difference which is the cognitive construct cannot be observed directly, but is inferred from the behavior of human like gravitation, one of the cognitive structures that cannot be observed, but can be inferred when the some things fall on the ground.

In addition, he considers that cognitive or mental compositions may originate of fungal simple construct born by the individual (pictures and maps public or total) and is subject to continuous change process leads to the formation of new mental structures or systems knowledge[5].

Factors affecting the cognitive construction

The cognitive construction is not just add information to the stock of learner cognitive Piaget believes that thought processes are slowly changing from birth to maturity, but get to the combined group of factors are:[6]

First: Inheritance

Piaget acknowledges in every upgrade and intellectual life of the importance of inheritance and he believes that inheritance affect cognitive construct from two sides:

- Construct nerve: The inherited nerve construct as Piaget believed may be somewhat impede intellectual function or may facilitated it, but cannot itself be the cause of the same intellectual function.

- Functional constants[7]: Are processes of the organization and an adaptation of the general characteristics of intelligent activity or use functional properties, the person may use assimilation more than harmonization or vice versa or he uses them by the same percentage and the contrast between the relative amounts of representing and functional harmonization formula, and this formula remains constant over the life of the individual as each individual has unique functional formula must genetically

Second: Content Function Construction

Piaget believes that intelligence consists of three components:

5 -(Sharif - Kausar p 107)
6- (Bili - Mohamed 1997 p 49) (Wordsworth 1990) (Abdul Hadi - Jawdat 2000, p 188)
7-(Jaber - Jaber 1984 p. 171-172)

Content: means behavioral patterns, observation and perceived kinetic that reflect intellectual activity, the intelligence's content is different for some reason according to nature of the content from time to time and from one child to another. It thus refers to the qualitative behavior of the child and that float on the surface such as the responses given by the child of the problems and the different positions like in the ability to change the trial from early childhood to late childhood, ethical behavior and wisdom, understanding the child to the outside world, and understand natural phenomena.

- Function: indicates the characteristics of intellectual activity, which is a representation and harmonization which continuing throughout the intellectual upgrade, means the processes that are resorted to by the individual when he interaction with environmental stimuli the changes of quality construct in cognitive function are clearly changes in intellectual function, which is generally defined as intelligent, which way that made the child through intelligently progress.

-Constructions indicate extracted educational characteristics; they are plans (knowledge and information) that explain the emergence of special behavioral techniques. A wider meaning the case of thinking at an individual in some stage of development.

When a child faced the problem of incompatible with perception, intellect or logic, the child chooses perception, but in the end he biases to the intellect or logic, but that only happens when the change active adopt, these changes are to upgrading the intellectual itself.

And we can express content, function and structure in brief as follows: (construction and content changes but the function does not change).

Third: Activity

The cognitive growth of the child requires activates with the environment and exercise action within it, the cognitive upgrade construction gets when a child is stimuli in the environment. Activity is one of the interactive factors that affect cognitive growth.

Fourth: Maturity

Piaget believes that maturity is one of the factors of cognitive development and the main contribution of the maturity in the cognitive develop is in neurodevelopment and endocrine system, and the maturation of the nervous system does not do anything more than determine the total number of potential, whether or not done at a certain stage, and social environment remains

essential in achieving this potential. Achieving it can accelerate or impede the impact of cultural and educational conditions.

There is no doubt that physical maturity is important in the activity; this growth leads to an increase in the movement and interaction with the surrounding educated from it.

Fifth: Social interaction

Social interaction considered another factor in the development, Piaget means by social interaction is the exchange of ideas between people, social interaction could be in many styles like dealing with comrades, parents and teachers, the events occurring in the classroom are often the interaction between the students themselves and between students and their teachers and all of this is important to the cognitive development .

Intellectual development

Mental development means acquire a new mental capacity, which did not exist in the previous. Piaget believes that cognitive development is the result of the interaction between the individual and the environment, the child does not learn through this interaction between direct experiences only, but also he learns how to deal with the environment, and so child acquires new patterns of thinking integrates them in his cognitive organizing, which means they fall before less-sophisticated patterns and adjust them to organized within the new style. Thus After all, cognitive is not a quantitative change in thinking, but it is also a qualitative change so that there is a difference thinking between children and adolescents, as well as between children pre-school and primary school children.

Piaget believes that people are born with a tendency to generate their intellectual process to become psychic structures, and these structures are our systems to understand the world around us and deal with it.

The combination and formatting are continues between simple construction become more complex and sophisticated and efficiency, infant for example could either catch something or see them when he touches his hand he cannot coordinate and reconcile between looking for something and catching him at the same time and the more this child grows and develops he

regulates these separated behavioral structure to become the construction of a higher level consist of looking at the thing and catching it.

As the cognitive acts are organizing perceived environment, understanding the processes of organization and adaptation requires us to identify four of the key concepts: plans, representation, harmonization, and equalizer (balance). (Bili - Mohamed 1997 pp. 50-53) (Wordsworth 1990) (Abdul Hadi - Jawdat 2000, p 190 191 192) (Ghanem - Mohamed 2002 p 87.88).

Mental plans

Are intellectual structures organize events as perceived by the organism in the totals structures based on common characteristics and they therefore, represent cognitive structures which individuals adapt intellectually, and organize their environment (Wordsworth 1990) they are formatting growing knowledge continually as a result of the processes of representation and harmonization (Alian - Hisham 1986 p 124) they are a consistent systems of actions and ideas that allow us to represent things or events around us mentally to become a part of the cognitive components (Bili - Mohamed 1997 p 51).

Development plans

When a child is born he has a few plans and gradually these plans are increase during his growth until he becomes more capable of understanding, and these plans increase by three trends:

-Increase quantity with change and upgrading precision and accumulation

- Increases quality with age

- Increase in number with age, too.

To illustrate this concept look at the following example: If a child saw a giraffe for the first time at the zoo, and he said to his father: see Dad how beautiful this camel! we find the child in the presence of exciting (giraffe) because he had not watched a giraffe before, so he tried to inferred this exciting by return to the plans in his the cognitive construction, in light of the things that he diagnosed and learned, this exciting is like camel more than anything else, for this baby considered the giraffe is camel because he linked the plan of camel, because of the similarity between the giraffe and camel.

Child when he is in the early stages of his growth, his plans are characterized by sensory and few in number and be less discrimination. when the child progress in age, these plans become more differentiated and less sensual and more numerous and complex and that we can sum up the charts in the following points:

1- Starts a few sensual and less discrimination

2-Plans are structures of variable intellectual upgrading so you should be allowed them to grow and upgrading.

3- Reflects the response of child at any time, the nature of concepts or plans at that time.

4- Plans can be determined from the behavior of the child because the behavior reflects these plans.

5-Plans are synonyms structure of concepts.

Assimilation

Is a cognitive process that converts whereby the individual perceived new topics or exciting events to plans or behavioral models so that it can be said that the child experiences (Wordsworth 1990) is the process of receiving new information makes intervention in the context of familiar activities(Alian - Hisham 1986 p 124), Kothar Sharif believes that the assimilation is mentality process responsible for receiving information from the environment and put it in cognitive structures of the individual. (Sharif Kausar p 108).

Jawdat Izzat Abdul Hadi says that assimilation is the mental way, by which individual integrate cognitive things or exciting events in his mental plans, which is the process of transforming experiences and new ideas into something to suit cognitive organization owned by the individual, and integrate into this organization. (Abdul Hadi - Jawdat 2000, p 190)

How are assimilation happen

Child sees new things or old things in new ways or hears things, he tries to combine these new concepts to concepts in his memory(plans), a child who saw giraffe for the first time and said it's camel he checked the total plans for animals until he found one seems fit the giraffe, it seemed to him that he can be combined giraffe with camel plan, new stimuli giraffe represented in the scheme that already exists a camel scheme and the assimilation process can be summarized in the following points:

1- Assimilation is an ongoing process; the human should handle the constantly increasing numbers of stimuli at a time.

2- Assimilation does not lead to change schemes but affects over them and lead to the development.

3- Assimilation is the final product, which the learner aspires to it actively.

4-Through assimilation forced stimuli on the appropriateness of the intellectual structure of the individual

Harmonization

Is a process of creating new schemes or modulating the old schemes, (Wordsworth 1990), a process responsible for modify cognitive structures to suit other new stimuli (Sharif - Kausar p 108) It specializes on focus attention on the new attitudes (Alian - Hisham 1986 p 124).

How is harmonization

Child when he faced new stimuli, he tries firstly to assimilate in his the available plans, if it's not able to find fit plan to this exciting he takes one of two things:

1- He changes and adapts the scheme that exists in a way that allows for stimuli to join.

2-To create a new scheme to put exciting on it

Both are type of harmonization. And when harmonization happens the child can be assimilate to stimuli the results from both processes change and improve the knowledge structures (schemes).

From the foregoing we conclude:

1-Through harmonization individual forced to change his plans to suit the new stimuli.

2- Harmonization express a qualitative change in the intellectual constructions (schemes)

Equalizer and balance

It's a feature manifested by stress the learner to positions that have not yet understood, and ending with adaptation based on the processes of assimilation and harmonization together. (Alian - Hisham 1986).

Equalizer is a balance between assimilation and harmonization and lack of it is a loss of balance, means the processes of assimilation and harmonization are essential for the growth of knowledge and its upgrade to the harmonization and amounts budget equally important equalizer is cognitive equilibrium could be reached through the assimilation, to be harmonization and

balance amounts equally important, equalizer is cognitive balance could be reached through the assimilation. .(Wordsworth 1990)

The balance state as seen by Piaget are as follows: when the child is exposed to a new stimuli or old stimuli for the second time he:

1-He tries to assimilate this stimuli in the scheme if he successes get balance state.

2- If he failed in the previous steps he tries to convert a schemes or to create a new scheme is represented exciting and you get balance state.

The relationship between harmonization and assimilation

The assimilation and harmonization are complementary cumulative processes contribute to the growth of cognitive structures and upgrade it, when an individual is in the case of unbalance cognitive the individual in front of two options the first is the harmonization and the second is assimilation, this means that stimuli are being forced on the appropriateness of individual's intellectual structure this leads to the assimilation is (quantitative) upgrading, which means upgrading is increase quantitative change to existing structures.

In contrast, what is happening among harmonization is the opposite where the individual forced to change his plans (intellectual structures) to suit the new environment, it expresses upgrading or qualitative change in the intellectual and cognitive structures (schemes) (Jaber - Jaber 1984 p 173).

How learning happens?, And how cognitive structure consist?

After showing the theory of Piaget in some detail, it should be illustrate how a cognitive structure (learning) happen, Piaget believes that the individual when a faces an stimuli or a problem becomes in the case of the lack of balance, and the state of unbalance this make the individual in the case of thinking about the situation and try to link this situation with cognitive structure of the individual in order to explain it. Or find a solution, then comes the role of assimilation through it the individual tries to link this situation with the concepts of cognitive structure, if the individual could assimilate this position through similar concepts in his memory, he can understand the situation and add it to the cognitive structure.

And if that did not happen, the individual resorts to harmonization as noted above which the individual tries to modify a structure similar to the position and change to suit the current situation.

If he cannot he can harmonize to create new cognitive structure for this position. In all three cases, assimilation, adaptation and change or modification harmonization creating new concepts and principles of the individual up to a solution and therefore up to the desired equilibrium which stimulate at the beginning position.

Thus, we can arrange learning processes according to Piaget as follows

Equalizer and balance through them the stimuli displays on the learner's memory in order to absorb it, and then comes assimilation through which the learner tries to represent the position and put it in the appropriate mental construct. Assimilation represents by add new information to the existent mental construct, it may not get direct assimilation, where no one finds the mental construct he resorts to the harmonization and the learner tries to create assimilation, here we find that if he does not get direct assimilation it have to come after harmonization either modification or new mental construct.

There is no doubt that the construction of knowledge with the learning process will grow hierarchically and remains capable of building, Whenever human learning increased his hierarchical mental construct become more able to solve problems, holds up the pyramid.

And what I see in the mental construct inverted pyramid begins few builders shoots that learner increases in science and life quantity quality and number.

Types of knowledge according to Piaget

A-Formal knowledge

It refers to the stimuli knowledge in its literal sense. Baby sees stimuli represented in the nipple feeder so he begins to suck the bottle. Knowing this formation depends on identifying the general form of stimuli hence its name is formal knowledge and this knowledge doesn't origin from mental judgment.

B- Knowledge of the procedure (the mind)

A knowledge that involves reaching inference in any level (Abdul Hadi - Jawdat 2000, p 186).

Stages of cognitive growth according to Piaget

The concept of stage considered the basic concept in growth, the nature of this phenomenon raised a long controversy about whether the growth continues, which mean gradually being without severe or sudden shifts as the case of a leaf that growing and increasing in size and at the same time preserving their shape and identity, or not continuous which mean involves stages or levels vary among themselves on some qualitative as is the case for silkworms that develop from egg to cocoon stage then to butterfly stage.

The researchers in psychology of growth believe that the growth of the human being includes properties of continue and not to continue, it going continuously through specific stages where coincided the properties of continuous growth with human during its growth maintains its shape and identity, and passes at the same time at different stages occur during sharp changes on the different patterns of behavior.

Uses the concept of phase to refer to the acute changes that dealing with the patterns of behavior during different periods of growth, thus the stage refers to a set of phenomena or behavioral patterns that are associated together when they occur, so it can be grouped logically and traceable to a specific growth phase, the concept of stage has been used by some psychologists such as Piaget, Freud, Brunner, Kohlberg and Ericsson to describe aspects of cognitive growth or psychological or moral.

To understand this meaning according to Piaget, one must take into account the following:

1- Each stage consists of formation and collection period, collection period characterized by continuous regulation of mental processes in a particular stage, also be the starting point to form the next stage.

2- Each stage consists in the same time of the collection period to that phase and the starting point and the formation of the next stage, but this stage is not separate from each other.

3- The order of appearance of stages invariably, but the age of the collection phase is changed to some extent, by the motivation, training and cultural and civilizational factors, and this means that the years identified by Piaget for each phase are subject to change.

4- The sequence of growth continue from earlier stage to a later stage according to the law like the law of integration, which meaning that previous mental construct is an integral part of the subsequent mental construct that meaning that subsequent phases contain what came before.

The physical and cognitive growth in children is surprising, and perhaps the most exciting aspect in this context, is the extent of progress in cognitive abilities and mental that occur in childhood. When the child nears access to adolescence, it may be possessed enormous wealth of knowledge, in addition to learning facts and concepts, the child becomes able to learn strategies to help him survive and adapt to what surrounds it.

Piaget believed that all children, regardless of culture to which they belong, they get their cognitive growth through four phases, starting with phase of sense mobility, and end with stage of abstract processes, and once up the individual to any of these stages, the regression to an earlier stage cannot happen, also Piaget believes that it is expected to reach all individuals to abstract operations phase. Studies have shown that underwent through Piaget's theory of experimental investigation, that all children in different cultures pass all types of heuristics that are talked about Piaget.

According to Piaget, the process of transition from one phase to another is not a sudden, as it is possible that the child at some stage in terms of some appearances, and in another stage in terms of some other aspects, presumably Piaget that cognitive development occurs through four basic stages, is the sense of phase kinetics, and pre-processes, and the stage of physical processes, and abstract stage of processes, and confirms that the ages associated with these stages are approximate and not rigid, and these stages are: (Abdul Hadi - Jawdat 2000 pp. 194-199) (Bili - Mohamed 1997 pp. 55 - 68) (Abu Jadu - for 2000 pp. 106-112) (Ghanem - Mahmoud 2002, pp. 89 – 98).

First phase of kinetic sense

During this phase the child does not have any knowledge of the world around him, and all that he owned by a group of reflexes that breed with him, such as captured and sucking and others. During interaction of these reflexes with the external environment develop specific behavioral patterns, and reflexivity is a move muscles of baby automatically and involuntary, and through that he shows number of responses that help him to adapt to the outside world, and there are some reflections of preventive prescription such as eye lash, coughing, and choking to expel food or water, for example, from the trachea. The reflections of pain make him withdraw from the source of the pain, and at this stage the child recognize objects through the senses and build knowledge through perceptions and kinetic acts, the child discovers the world first for a way senses and movements such as a finger in the mouth also formed in response the child to the environment during this period through the process of sucking the same and therefore called this stage Phase sense mobility and mental development starts from the level of a material as the follow-up to solve problems include movements body instead address ideas of the mind and Piaget divides this stage to six sub-stages, occur first four sub-phases during the first year of life, the duo occur during the second year of life. these sub-stages are:

1 - Use reflexes from birth – month:

The child uses during the first month of life reflections that he born with him and these reflections grow through the use, which mean that these reflections changed because of the experience, representation and harmonization associated with these reflections, and he can adapt himself to some of these demands such as searching for milk bottle

2 - Circular primitive reactions of (1-4 month):

At this stage reflexes develop and organize gradually also reflected emerges from innate genetic framework due to repetition, a child circulate sucking reflex he sucking all the things that fall under his hand and this is known as generalized assimilation and harmonization, which mean transition experience to things and other items and when he realizes of these elements he becomes assimilation then cognitively.

The child can repeat actions that he made them before and feel happy in such acts which is called (circular primitive reactions), he re-acts actions that achieve satiate to him before, and when he already re-acts action many times become a habit, Piaget calls these practices functional assimilation which is repeating acts or repeating use of the knowledge acquired by the newly child.

In this period child combines between acts catch him and puts it in his mouth and become a regular which helping the child to assimilate and harmonize, while he was in the first stage caught things or seen it, but at this stage he look at things and caught them at the same time and in this period he does not realize the concept of continuing thing and absent thing does not exist.

3- Secondary circular reactions (4-8 months)

This stage characterized by his interest in the features of things, for example the child, when he hits his hand puppet and graduated votes and he seems attentive to this sound, but he repeated it several times deliberately so as to get on the same interesting events and this is called (reactions ring secondary) which is different from the reactions primitive previously noted it, a child in secondary reactions ring, an emerging focus on the outcome in the external environment one goal is to maintain, but a ring primitive reactions are those acts by the child for no apparent incentive is happiness that derives from doing acts

4 - The overall consistency of secondary images (8 - 12 months)

New developmental appearance in this period is that the child is no longer just trying to duplicate or extend the impact of what has discovered or observed by chance, but he seeks to achievable direct goal and he tries to access it by means of different intermediate for example: if a child sees the game he would extend his hand to reach it, so he practices ancient skill but if you put your hand or a piece of cloth on the ball to obscure the vision for the child, he pushes cloth to reach the ball and pushed the cloth is not his goal, but it's purpose to get the game.

5 - Third circular reactions (12 - 18 months)

For the first time the child adapts at this stage with new situations without resorting to the use of past experience, but the search for new ways show the birth of intelligence act and think at the child according to Piaget's studies, also he can understand the relationship or link between things he uses the stick for example to reach something.

6 - Start thinking (18 - 24 months):

During this phase the child replaces acts by thinking, if he faces a problem, we find that he comes to many of the acts until he finds a solution to the problem and consists mental images if no longer sees something, we find that he knows that this thing still exists neither he doesn't see it and at this stage appears his ability on the use of symbols at the end of this stage, the child considered himself as something due to the simulations child becomes able to see the body as something by comparing it with the body of another person, and when the child reaches the end of the kinetic sense he has acquired several achievements

The main characteristics of this stage:

1-Thinking mainly occurs through acts

2-Improve synergies process kinesthetic sense

3- Develop self-awareness.

4- The evolution of the idea of the survival of thing.

5- Begin the process of language acquisition.

Second: Pre-operations:

This phase includes the period between the end of the second year and the seventh year and Piaget considers it transitional phase and not clearly understood, it has not been characterized by a steady level and clear in terms of cognitive development, despite the evolution of many appearances during cognitive, such as discipline kinesthetic capacity, and increased ability to use language, and the emergence of the ability to category. Perhaps the phenomenon of language development is considered as one of the most important characteristics of cognitive development at this stage. Other phenomenon manifests during this phase, is the phenomenon of centralization

on self, he not aware the views of others and he do not believe in the exists of their views, and he cannot put himself in the others position to understand their point of view, and he cannot imagine that the realization of things can vary by the situation that realize things.

Child has not acquired at this stage what is called consistently perception, whether this stability in terms of size, color or shape, that is, it has not yet acquired the ability to recognize that things remain constant despite changing external characteristics.

The child in this stage give the spirit to the things, which is called bio, child focuses in this stage on one dimension during his thinking or ranks things, so he classifies them according to shape, size, or color. Piaget has been divided this stage into two phases:

1- Stage before concepts from (2-4 years): where the child can at this stage carry out classification process by the appearance of one and the obvious contradictions like pop up large something, light and sinking small and heavy something, do not bother the child.

2- Intuitive phase (4-7 years): The child at this stage does some of the most difficult intuitively categories, without a known base, and at this stage begins gradual awareness in steadily characteristics or the so-called retention phase.

This can be summarized characteristics of cognitive development in before-processes including the following:

1- Increase in language development and use of language codes more.

2- State sovereignty centralization on self

3- Starting composition concepts and classifying objects.

4- Failure to think in more than one way.

5- Visual perception is advanced to think logically

Third: The stage of physical process

This phase includes the period between (7-11 years old), Piaget uses the term processes to describe the works or mental activities that constitute the cognitive system, the child can at the stage of physical processes practiced operations that indicate the occurrence of logical thinking, it is linked closely with tangible physical acts, the child becomes at this stage able to think about

the implications on the children of the results and to predict future incidents, but on a tangible physical level.

And the case of centered on the self tend to the weaknesses in the stage of physical process, the child becomes able to understand the views of others, also child's language characterized by social nature increasingly, and decreases the frequency of ego in the folds of this language. Also develops at this stage the concept of staying in terms of mass and weight size. And the child get rid of at this stage of focus thinking on one dimension and be able to classify things in light of the multiple dimensions of one thing at the same time

The most important characteristics of the stage of physical process are:

1- The transition from self-centered language to the language of a social nature.

2-Children's thinking occurs through the use of physical objects and subjects tangible.

3- Develops the concept of staying or retain the mass and weight and size.

4- Evolution of the concept of inverted

5-Develop thinking processes in more than one way or one dimension.

6- Develop of the operations of collection and classification and configure concepts.

7- Failure to think of the future prospects without direct experience in physical topics.

Despite thinking the child at this stage compared with the previous stages, but he suffers, but he suffering from some of the difficulties that hinder the right thinking, and these difficulties:

1- Limited access to the logical inferences

2- Poor child's ability to discover logical fallacies.

3- Inability to deal with the hypothesis that variation reality.

Fourth: The stage of abstract thinking.

This phase includes the age period in more than 11 or 12 years and appears at the beginning of this stage symbolic abstract inference and at this stage most children can develop and test hypotheses and he can also deal with the problems and develop strategies to solve them. Teenager are thinking at this stage abstractly also he will reach logical conclusions without referring to material things or direct experience, as long as he acquired the concept of inverted

and he will think abstractly and solve problems. The child thinks this stage as a scientist puts hypotheses and suggests possible solutions within the available alternatives. This is the ability of adolescents to exercise abstract operations, and thinking about the future potential and predicate them, the most prominent characteristics of this stage are:

This stage is characterized by the following:

1- Individual perceives that the ways and means in the previous phase is not sufficient to solve his problems so his adoption less to handle physical objects.

2- The processes of assimilation and harmonization balance and the individual reaches a high degree of balance.

3- There inferential thinking is main test to signify access to abstract thinking.

4- Develop the capacity to imagine the possibilities by providing practical solutions to this situation.

5- Think beyond the present, and focuses on relationships more than the content, and less adoption on facts and material things.

6- The ability to develop hypotheses, examine it and note the results and put them in logical ways.

7- The ability to deal with things by compositional logic operations, it is able to install all the factors and change one of them for examination, and unable to understand the proportionality realize geometric things.

8- The transition from self-centric, to thinking about the social relations of mutual. He knows things as they relate to human values system.

Educational principles derived from the theory of Piaget.

Here are some educational principles derived from the theory of Jean Piaget: (Abu Jadu - Saleh 2000 pp. 117-119) (Abdul Hadi - Jawdat 2000, p 200-201)

1- The provision of tangible materials in the classroom, is essential in organizing children's learning, because of its value in the discover of children in the ways of thinking.

2- The need to build educational positions characterized by reasonable challenging for cognitive abilities of children, so these challenging positions do not reach to the extent of incapacitate students and thus frustrated and failure.

3- Does not correspond to differentiate between play and work with the thinking of the lower elementary grades children in particular, for this we must provide educational games and vaccinate educational activities in the spirit of play that represent liberty and spontaneity and fun.

4- The child should not face the problems require mental processes that much superior to the stage of cognitive development as it should give him the opportunity to practice activities that qualify his cognitive growth to practice them.

5- Need to take advantage of the students' errors in the construction of educational learning positions, go beyond weaknesses in their performance.

6- You should not listen as teachers to what they want to hear from children, but to listen to everything they say, and should not resort to the interpretations may be improper to what children deformed say so their real meaning.

7- We must not classify children answers to our questions to the correct answers and wrong answers, because much of what we believe wrong answers considered true with reference to the frame of reference for the children's thinking.

8- The availability many of the opportunities for interaction between the child and his natural or social environment help a lot on their cognitive development.

9- The child's progress speed affected from one stage to another , genetic and environmental factors and what the associated with it from personal experience factor, also studies indicate that there were differences between children from age one in their cognitive development up to three four-years, scientists believe that the child does not think in the same level for all positions.

10- Piaget not seen to a child as a small man, because his own methods of thinking that distinguish it from the developmental stage to another stage, the children think of their own ways, and children make mistakes which are difficult for adults to predict them.

11- Interact with others plays a prominent role educationally in the cognitive and affective domain and in the social sphere.

12- The learners should proceed in this pattern of sequence according to their abilities and speed of each of them and the student should play an active role in organizing the steps without coercion contrasted with his willingness to learn, and this refers to the importance of singular

education, which allows to each learner to learn individually, and to suit his interests and therefore, the teacher here does take the role of regulator and activator and facilitator.

13- New experiences interact with which students are exposed with his mental construct to raise his interest and develop his ability to understanding and comprehension, and it should be adapted to new experiences with those previously and reasonably acquired.

14- Focusing on the characteristics of cognitive growth and its levels make the teacher knows the nature children's thinking in various stages of their development, and he can therefore be pay the attention to associated responses with these stages, and he determines his objectives in the light of the expected performed behavior at this stage.

15- As the process of cognitive growth mainly based on finding a balance between the child and the environment which requires interaction between the child and its surroundings, so it should be put the child in an active and effective environment to facilitate the learning process and the practice of self-discovery methods for experience.

16- Stages of cognitive growth and their characteristics help curriculum designers to develop course materials consistent with the nature of the mental processes of children of different educational levels.

17- Cognitive growth properties provide the possibility of developing tests measure the level of mental growth with learners to replace the traditional IQ tests, and teachers are able to focus on the stage of cognitive growth reached by their students.

Conclusion

This is the theory of Piaget's, a theory that I see reflected us the reality of human evolution from birth to become a man. There is no doubt when we trace this theory that it represents the reality of life, that we are witnessing in our homes and schools of the evolution of mental construct of our children and our students, our children are born with very little mental construct with their progress in life we touch breadth in their mental construct little by little.

Other topics that I wanted to introduce in the field of application this theory :

- The need for previous information
- Cognitive age and determine grades and taking into account the characteristics of students knowledge.

- Confirm the guiding role of the teacher in the learning process.

Piaget confirmed in his interpretation of the learning process on the previous information, each growth stage depends on learned information from the preceding stage, there is no doubt that the earlier information constitutes a indispensable thinking process consists of four elements, namely the reality and senses, this reality transferred to the brain, and then the previous information that explain the fact.

Thinking process can be defined as the transfer of reality by the senses to the brain with information from previous explain this fact.

The Quran confirmed the need for previous information in the interpretation of reality as Allah says in The Cow Sura" And He taught Adam all the names, then showed them to the angels, saying: Inform Me of the names of these, if ye are truthful* They said: Be glorified! We have no knowledge saving that which Thou hast taught us. Lo! Thou, only Thou, art the Knower, the Wise."

This emphasizes the need for the previous information in the learning process

On the other hand the cognitive age set by Piaget enable him to determine the characteristics of students that fit each stage and this turn leads us to choose the curriculum fit those stages. In case of superiority of one learner at one stage, this leads us to adopt the accelerator system that can be applied within Piaget thought in the construction of knowledge.

The revving system means transfer the learner at one stage to a higher stage or grade in the case of represents cognitive construction of the stage where he is now without studying.

In light of this theory also we get another result, which that there must be a director to the learning process, and here highlight the role of the teacher as a guide this process as the learner needs to the direction and guidance when he reaches the stage of harmonization and without this guidance the student may reach to wrong harmonization process lead to a weak mental construct.

In addition, this theory confirms that harmonization should be based on understanding and therefore emphasizes learning based on the understanding that could constitute a good mental construct can be constitute upon in the future.

This theory has been truly scientific theory explains the process of science also I has introduced this theory some of authors' insights in the application of this theory, but I prefer the previous applications of what I have seen of their importance and clarity in this theory.

References

1- My. G Wordsworth 1990 Piaget's theory to the upgrading of knowledge, translation Fadel Mohsen Aloazjaoa, Saad Qassem al-Asadi, Salih Mahdi Hamid. Reviewing and providing d. Muwaffaq al-Hamdani. House of Cultural Affairs. First edition. P (12.39).

2- D. Jaber Abdul Hamid Jaber 1984. Intelligence and measurements, Renaissance House. Cairo. P (171-182).

3- Jawdat Izzat Abdulhadi 2002. Educational psychology, international scientific House. Amman. P (84-101).

4- Saleh Mohammed Abu Gado 2000. Educational Psychology, Dar march. P (102-119).

5-Kausar Sharif: http://www.emoe.org/ftp/training/conference%2010-2-

6- Mohammed Abdullah, Bili, Abdul Qadir Abdullah Qassem, Ahmad Abdul Majid Smadi 1997 Educational Psychology, farmer Library. First edition. P (48-53).

7- Mahmoud Mohammed Ghanem 2002. Educational psychology, international scientific House. First edition. P (186-2001).

8- Hisham Amer Alian and Saleh Diab Hindi 1986, Educational Psychology. Second edition p (123-131).