ROLE NEUROPSYCHOLOGY APPROACH IN ELEMENTARY CLASSROOM FOR GIVING STUDENTS MOTIVATION THROUGH ARCS MODEL

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Abstract. Each learner is born with intelligence respectively. Therefore, prior to the development of the intellect, then an educator should be able to identify the various intelligences that exist in every learner. Most of the learners have characters *promising* and others have characters that are at risk. This identification process is one of role the neuropsychology approach that important carried out by an educator. This article provides that purpose of this step is to estimate and implement learning strategies are suitable for the whole class or sub-groups or individuals in the classroom. So that learners are motivated in learning activities in the classroom. The authors wanted to apply the approach of neuropsychology in the classroom for students' motivation show through ARCS The author provides a Keller and Kopp about ARCS theory; provides strategies to give a motivation to achieve for students with ARCS Models, Implementation in classroom step by step and how this implement can be reviewed from neuropsychology approach. As for the result is Giving Motivation through ARCS model is rooted in many theories and concepts of motivation, his trademark is the hope - value theory with Attention, Relevance, Confidence and Satisfaction. ARCS as a model approach to learning developed by Keller and Kopp is expected to affect the achievement motivation and learning outcomes of children.

Keywords**:** Neuropsychology Approach, ARCS Models, Motivation

I. INTRODUCTION

Learning is a deliberate attempt, aimed, and controlled so that others learn or change relatively settled in others. This business can be done by individuals or groups that have the ability and competence in designing or developing learning resources. In this case the business can be done by teachers, as educators should be able to accommodate all sorts of differences of learners in the classroom. (Amato & Wang, 2015) [1]

This is because that every man is born with the potential (nature) of the same. Included in this is that every human being has the potential (nature) intelligence the same one. (Armstrong, 2002) [2] Intelligence has many types. However, among the various intelligence of man would show different degrees of development. (Gardner, 2011) [3]. Potential intelligence possessed by humans will evolve in accordance with the environment in which the human being. Therefore, the intelligence will have a different pattern of development between one individual to individual.

Each learner is born with intelligence respectively. Therefore, prior to the development of the intellect, then an educator should be able to identify the various intelligences that exist in every learner. According to Gardner, basically most of the learners have characters promising and others have characters that are at risk (Jasmine, 2007) [4]. This identification process is important carried out by an educator. Learners are said to be promising if the students have the ability to very specific and prominent. The capability is the crystallization of various experiences, very deep emotional responses that focus and efforts of these individuals to moving towards specific. Meanwhile, students who have character risky meant is that a learner can be helped by providing intensive assistance. For example, that a learner who is weak in terms of linguistics, they can be assisted in learning to read and write even though he was not going to be a poet or a writer. (Hoerr, 2000) [5]

The purpose of this step is to estimate and implement learning strategies are suitable for the whole class or sub-groups or individuals in the classroom. So that learners are motivated in learning activities in the classroom. One of the challenges in solving the problem of motivation is that the primary motivation of learners could be too high and too low. (Park, 2015)[6] If it is too low, their achievements will be low because they have little motivation to achieve and they will not expert enough effort. If their motivation level is too high, then the quality of their performance declined due to excessive stress that causes them could not remember the information. In addition to the effect on motivation, appropriate learning strategies is also not out of conformity with the development of cognitive and motor development of children on stage, the goal is for the formation of memory and reasoning power that entered the domain of long term memory. This is an important role for the development of disciplines science for Neuropsychology Brain-based learning. (Conference, 2016) [7]

II. DISCUSSION

After finding several issues that often appear in the classroom, the authors wanted to apply the approach of neuropsychology in the classroom for students' motivation show through ARCS, ARCS is a design motivational design for learning and performance. (Amato & Wang, 2015)[8]. This design is expected to facilitate learning in the classroom so they can develop all the intelligence of the students so that learning in the classroom more attention to things (excess) owned by each learner and optimize learning motivation. (Hoerr, 2007)[9].

A. Conception Approach Neuropsychology Classroom Learning

Stages of cognitive development of children describe the level of children's ability to think, cognitive development is influenced by the growth of brain cells and the development of the relationship between brain cells, the increasing age of a person the more complete for cell structure and nerve and increasing the ability. When individuals are developing towards maturity will experience a biological adaptation to the environment that will lead to a qualitative change in structure cognitive. (Damon, Lerner, Kuhn, & Siegler, 2006)[10]

In the theory of Piaget, cognitive development occurs in a sequence of four phases:

1) *Phase sensorimotor:* from birth to age 2 years (baby build an understanding of the world by coordinating sensory experience with movement and gain understanding permanent object,

2) *pre-operational stage* : age 2-7 years (children understand the reality on the environment by using a symbolic function (symbols) or signs and intuitive thinking. characteristics of thinking was not systematic, inconsistent and illogical.

3) *concrete operational stage*: 7-12 years of age (the child is mature enough to use logical reasoning or surgery, but only to physical objects that exist today.

4) *formal operational stage*: age 12 years and over (children are able to use concrete operations to establish operations more complex, fundamental feature of the development is hypothetical, abstract, deductive and inductive as well as logical and probability.

Piaget proposed a theory of cognitive development of children involving critical processes that scheme (how children perceive their environment), assimilation, accommodation, organization, and equilibration, (Damon et al., 2006) [11]. An individual in his life is always interacting with the environment. Interact with them, one will obtain the scheme. Schemes such as the category of knowledge that helps in interpreting and understanding the world. The scheme is also described acts both mentally and physically involved in understanding or knowing something. Thus, in view of Piaget, the scheme covers both categories of knowledge and the knowledge acquisition process. Along with the experience of exploring the environment, newly acquired information is used to modify, add, or replace the previously existing schemes. For example, a child may have a schematic of animal species, such as birds. When the child's early experiences related to canary child will likely assume that all birds are small, yellow, and squeaking. One time, a child may see an ostrich. Children will need to modify the scheme which he had before about birds to enter this new bird species.

Assimilation is the process of adding new information to the existing scheme. This process is subjective, because the person will tend to modify experience or information obtained in order to enter into a pre-existing schemes. (Damon et al., 2006)[12] In the above example, see the canaries and label them "bird" is an example of the beast assimilate the scheme birds child.

Accommodation is another form of adjustment involves changing or replacement of the scheme as a result of new information that is not in accordance with the existing scheme. In this process can also occur appearance of the new scheme altogether. In the above example, see the ostriches and change the scheme of the bird before giving him the label of "bird" is an example of the animal accommodate the birds schemes child.

Through both of these adjustment processes, systems change and develop cognition someone that can increase from one stage to the above. This adjustment process carried out an individual because he wanted to reach a state of equilibrium, in the form of a state of balance between the structure of cognition with environmental experience. Someone will always strive to make things balanced is always achieved by using both the above adjustments. Thus, a person cognition grown not because of receiving knowledge from outside passively but that person is actively construct knowledge.

This theory is classified into a stream of constructivism which means, unlike the flow of nativism (which describes the cognitive development as the appearance of knowledge and an innate ability), this theory argues that we build our cognitive abilities through actions supported by itself on the environment

Cognitive development involves the development of thinking and how activities think it works. (Hampe, 2005)[13] In life, the child may be faced with problems that require solving. Solve a problem is a step more complex in children. Before children are able to resolve the issue of children need to be able to find a way to resolve. The process of cognitive development is a continuous process, but the results were a continuation (continuation) of the results that have been achieved before. The results are qualitatively different from each other. Children will pass through the stages of cognitive development or development period. Each period of development, a child trying to find a balance between cognitive structures with new experiences. The imbalance requires new accommodated and is next to period of transformation.

Most high-level cognitive functions involve processes or executive cognitive control functions, such as attention, planning, problem solving, and decision making. So that the intended function of the executive above is associated with some cognitive functions such high levels. These functions, including selective attention and executive, inhibition, and memory, which is thought to increase with age and training, as well as according to individual differences in intelligence or motivation. The process of cognitive control is evidenced by the supervisory attention system is a system to inhibit or

routine or reflexive behaviour in favour of the primary in order to more controlled or situational or adaptive behaviour.

Duncan explains that the system as a bias of attention that provides a mechanism for presenting relevant information simultaneously to inhibit irrelevant information. The ability to override a dominant response or ignore irrelevant information is important in everyday life. As is the non-executive function is the function of human concern involving more basic processes, such as maintaining statements and oriented to stimuli in the environment. While these functions can process a reflex or well controlled. Vigilance process allows the brain to prepare stimuli that may come up that may require decision-making and / or behavioural response. Alertness or arousal improve performance behaviour in ways that are not specific or focus (Horton, Arthur M; Wedding, 2008)[14]

B. Conception Design Model ARCS

Model ARCS identify four concepts is important for motivating learning: (Amato & Wang, 2015)[15]

1) *Attention* (attention): is a form of a briefing to centralize power and psychic energy in the face of an object. The emergence of the attention is driven by curiosity. This one's curiosity arises because stimulated by new elements, the strange, the other with the existing ones, and contradictory. Learners are expected to be able to generate interest, namely the tendency to feel attracted to a particular subject or the subject and was pleased to learn the material that gave birth to a new spirit and can play a positive role in the learning process further.

2) *Relevance* (relevance): namely the relationship shown between learning materials, learners needs and conditions. There are three strategies that can be used to demonstrate the relevance of learning, namely: Present the objectives to be achieved after studying the learning materials. Explain the benefits of knowledge / soft skills be studied. Give examples, exercises / tests that directly relate to the condition of learners or specific professions. Relevance suggest a link between the material being studied with the needs of learners conditions. Learners are motivated when they feel that what will be learned meet personal needs or beneficial for them.

3) *Confidence* (confidence): namely feel them selves competent or able is the potential to interact with the environment. Motivation will increase in line with rising expectations for success. There are a number of strategies to increase self-confidence, is as follows:

- Increase the expectations of learners to succeed with emphasis on experience.
- Develop learning into smaller parts, so that learners are not prosecuted learn many concepts at once.
- Raising expectations for successfully using the requirements to succeed.
- Using a strategy that allows control of success in the hands of students.
- Growing confidence develop learners with statements that build.
- Give constructive feedback during the learning, so that learners know the extent of their understanding and learning achievement.

4) *Satisfaction* (satisfaction): is a sense of joy, this juice can be positive that arise when people get an award in itself. This feeling increased to a sense of self-esteem in the future, evoking the spirit of learning including by:

- Saying good, nice and give you a smile when learners answer or ask questions.
- Non-verbal show positive attitude when responding to questions or answers the learner.
- Praise and encouragement with a smile, a nod and a sympathetic view of the achievements of learners.
- Provides guidance on learners to be able to give the correct answer.
- Give simple guidance to make the students gave the correct answer.

C. Application Neuropsychology approach in Classes For Students By Giving Motivation ARCS Model

Cognition is understood as processes mental as cognition reflect the thoughts and can not be observed directly. Therefore cognition can not be measured directly, but through behaviour that is displayed and can be observed. For example a child's ability to remember the numbers from 1-20, or the ability to complete the puzzle, the ability to assess the behaviour that is worth and not for imitation.

To learn more about cognition that develops was cognitive psychology investigating about the human thinking process. The thought process must involve the brain and the nerves as a tool of human thinking therefore to investigate the functioning of the brain in thinking then developed cognitive neuropsychology. Cognitive process combines the information received through the senses of the human body with the information that has been stored in long-term memory. Such information was processed in working memory that serves as the information processing. This processing capability is limited by the capacity of working memory and the time factor. The next step is the implementation of measures that have been selected. Measures taken include cognitive processes and physical processes with members of the human body (fingers, hands, legs, and voice). Actions may also be a passive action, namely to continue the work that has been done before.

Factors that affect the difficulty and speed selection and implementation of the response was the complexity of the decision, the estimation of response, speed and accuracy, and feedback obtained. The complexity of the decision is influenced by the amount of action that may be selected, which also affects the length of time to make decisions. Estimates of the response is influenced by the information received. If the information received has been estimated before, the information processing will be faster than the unexpected. The linkage between speed and accuracy is a negative correlation between both the selection and implementation of the response. In some situations, the sooner a person chooses response, failure could be increased. Feedback is an effect which is known by a person as a

verification for their actions. The time span between the action with feedback should be minimized.

In the relationship between perception and cognition, field Lewin theory stated that the process of perception and cognition means the reform process of cognition unstructured terrain into structured fields. (Hampe, 2005)[16] Perception and cognition of environment is a component of the orientation and imaging environment by the community. Perception and cognition of environment in parallel with the term "environmental awareness" so that it interacts with the evaluation process that includes components cognitive, emotional, and psychomotor. (Chatib, 2011)[17]

According to Piaget, children are born with some sensorimotor schemata, which provide the framework for children's early interaction with the environment. The initial experience of the child will be determined by this sensorymotor schemata. (Gunawan, 2006)[18]. In other words, only events which can be assimilated into the schemata that can be responded by the child, and therefore the event will determine the limits of the child's experience. But through experience, this initial schemata modified. Every experience contains unique elements that must be in the accommodation by the child's cognitive structure. Through interaction with the environment, the cognitive structure will change, and enable the development of continuous experience. But according to Piaget, this is a slow process, because it is always developing new schemata of a pre existing schemata. In this way, the intellectual growth that began with reflexive response of the child to the environment will continue to evolve to the point where the child is able to think of potential events and mentally capable of exploring the possibility of consequences. Internalization operation resulted in the development of children freed from the need to deal directly with the environment because in this case the child is able to do symbolic manipulation. The development of operations (actions Internalized) give children a complex way to deal with the environment, and therefore, children are able to perform more complex intellectual act. Because a child's cognitive structure is articulated, as well as the physical environment of the child, so it can be said that the child's cognitive structure to construct the physical environment. This indicates that the child is given a lot of stimulus capable of attracting cognitive attention then the child will have the motivation to a learning process in the classroom, other than that relating to basic education, the children are also able to enhance motor development according to age stages perfectly. (Chatib, 2009)[19]

D. Results

The steps of the implementation of the model ARCS can be done by educators to enhance learning motivation associated with the approach of neuropsychology in Class Primary School as :

1) Step 1 : Obtain Information. This step is taken to select and develop tactics motivation appropriate in learning , things that need to be considered in this step is the characteristics of learners, objectives to be achieved, as well as the timeliness and cost. To avoid the counterproductive effects of the influence of the above it is necessary to gather information on the objectives of the study will be implemented. Step 1 focuses on the characteristics of learning and how implement, an overview of activities and learning objectives, time planning, lesson planning and design before teaching it. This will help decide how much effort in designing motivation strategies that will be done.

Likewise with the characteristics of the learners have to be considered when designing and developing learning materials, such as the style of personality, knowledge, and experience has a strong influence on the field and determination of motivational strategies that will be developed. There is no one best way to increase student motivation, the best approach is to understand the personality and preferences of individual learners and to develop methods and style that is comfortable as a learner. (Syamsi, 2015)[20]

2) Step 2: Obtain Information learners. This step focuses on a number of factors that have a strong influence on the initial motivation of learners and how they will respond to the content and learning strategies that will be applied, for example, the characteristics of the learners, the extent of the similarities and differences in their academic ability, choose the method to assign the learners to help anticipate the decline motivation of learners. Information on the first and second steps of this will provide a basis for analysing the learners will be done in Step 3.

3) Step 3: Analysis of learners. learners analysis is an important step in the process of designing a model of ARCS. The decisions taken will have a direct influence in defining the goals and choose strategies of motivation in learning. The purpose of this step is to estimate what the motivation strategies that are suitable for the whole class or sub-groups or individuals in the classroom.

One of the challenges in solving the problem of motivation is that the primary motivation of learners could be too high and too low. If it is too low, their achievements will be low because they have little motivation to achieve and they will not exert enough effort.

If their motivation level is too high, then the quality of their performance declined due to excessive stress that causes them can not remember the information. By analysing the learners can be assigned a specific type of motivation that exist. It also helps to avoid problems arising from having too few or too many motivational strategies.

4) Step 4: Analyse the Existing Materials. The purpose of this step is to analyse the current learning materials, which can be a unit, module, learning programs, or any segment of instructions intended to identify weaknesses and strengths motivational strategies. The important thing to consider is check the ingredients instructions to determine what motivational strategies are required, including the characteristics of learners, learning materials that are being used or considered for adoption.

On the other hand, it is also necessary to consider whether the existing materials have drawbacks that will lead to demotivation. First, if the material is not relevant, it is necessary to add, what parts are needed. Second, if the material contains too many motivational element or inappropriate activities, such as games that are not suitable for learners, it is necessary to repair as needed. In situations where students are highly motivated to be ready for learning included within a narrow vote, sought to not insert unnecessary activities such as games or simulations.

5) Step 5: List of Interest Motivation and Assessment

This step is to write the design goals of motivation and assessment. In goal will be described behaviour motivation wish observed in learners. When writing your goals, consider the difference between closing the gap motivation and maintain motivation.

In some settings, as shown by the analysis of audience, there will be a certain motivation problems that require attention. Try and include a sufficient motivation strategies to avoid becoming boring learning, such as increasing the confidence learners with challenging activities.

6) Step 6: List of Potential Strategies

This step requires the ability to analyse learner through discussions / brainstorming, not only relating to the purpose in Step 5, but also includes a strategy that will help maintain the motivation of the learners in the learning activities. The result of this step is the list of as many motivational strategies in accordance with the creative thinking of learners.

Furthermore, the next step will be reviewed the possibility of the most appropriate strategy that will be used. This steps in choosing strategies. To do with the initial selection by setting up a list of plans or solutions motivational strategies that will be developed, which relates to a specific purpose and the general situation. Then, in Step 7, will apply a set of selection criteria to select, combine, and set the strategies that will actually be used.

7) Step 7: Select and Design Strategy

In this step the learners will choose the strategy of motivation to actually put into teaching materials. In addition to a variety of potential strategies newly created, learners also have the information about the instructional environment, characteristics of learners, materials analysis, and motivational purposes, including the criteria that will help choose the strategy that is most needed in the learning process.

Typically, in selecting and designing strategies that will be included in the learning activities are not just pick one of the existing strategy but made by combining one or more strategies into a single strategy that meets multiple learning needs.

8) Step 8: Integrating Strategy Motivation by Learning Design. This step is done to integrate motivational strategies that have been designed into the main elements of teaching, which includes learning objectives, content and learning activities. The first suggestion is to review the instruction unit that is being developed and a list of all its elements. Then, review the chosen strategy and motivation and put them in learning situations appropriately. It is necessary readiness to make decisions.

This step is very useful because it is a combination of all previous steps that do together. Teachers who have had much experience will strongly consider this step more seriously. They are usually more expensive internal and external conditions in a comprehensive learning environment.

9) Step 9: Selecting and Developing Materials

In this step, will be identified type of motivational strategies that would be incorporated into the learning materials. Some strategies may not require a search strategy because it can be applied directly, or only requiring the modification of existing learning content.

But, if you want to use the games, simulations, or activities learning experience and do not have a specific strategy in mind, it can be done by looking for strategies can be adjusted or, at least can serve as a model to be developed.

In this step do not forget to note (as documentation) result of decisions already taken the actual strategy will be developed and integrated into the lesson.

10) Step 10: Evaluation and Revision

In designing formal learning design, this step is part of a process whose aim is to evaluate how well the material motivational strategies that do have influence towards learners. But sometimes, evaluation related activities may not be necessary.

If you are developing a lesson that will be used in the classroom, so teachers will know how well the implications for learners, for discussions that could be done with them. If the design of the learning activities carried out by others, or asked for concrete evidence of reaction motivational design results that have been designed so formal evaluation needs to be done.

CONCLUSIONS

Cognitive development involves the development of thinking and how the activities thought it worked. Stages of cognitive development of children describe the level of children's ability to think, cognitive development is influenced by the growth of brain cells and the development of the relationship between brain cells, the increasing age of a person the more completely nerve cell structure and increased in capacity.

Learning in the classroom in a child may be faced with problems that require solving. Solve a problem is a step more complex in children. Before children are able to resolve the issue of children need to be able to find a way to resolve.

Giving Motivation through ARCS model is rooted in many theories and concepts of motivation, his trademark is the hope - value theory with Attention, Relevance, Confidence and Satisfaction. ARCS as a model approach to learning developed by Keller and Kopp is expected to affect the achievement motivation and learning outcomes of children.

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