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ANALYSIS OF LEARNING CALISTUNG IN TERMS OF THE STAGES OF BRUNER'S LEARNING THEORY

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Abstract

The purpose of this study is to describe the stages of Calistung learning based on Bruner's learning theory. The type of research is quantitative. The research subjects were teachers and lower grade students in SD Negeri Balerejo 02 and SD Negeri Garon 02 Madiun. The data source is Calistung learning in the lower grades of elementary school. Data collection techniques with observation. The results of the study are the implementation of learning in the iconic and symbolic stages. Bruner's discovery learning model cannot be implemented optimally, because the stage of manipulating objects to become ideas for building concepts and not connecting counting material with set theory. In conclusion, Calistung learning has not realized the learning stages of Bruner's theory because the learning directly enters the iconic stage.

Keywords: Learning, calistung, Bruner's learning theory

Introduction

Bruner's learning theory provides an understanding of the stages in learning and learning. Bruner's learning theory is oriented towards the development of the cognitive domain as a form of development of the behaviorism theory stream. Sutarto (2017) explains that the theory oriented to the cognitive domain emerged from criticism of the theory of behaviorism. This theory is considered still simple because the learning process focuses on the stimulus-response relationship. Meanwhile, cognitivism theory has an understanding that the learning process involves all components of complex thinking based on psychological principles, namely active learning through personal experience and social interaction.

There are three things that become the focus in developing the cognitive domain, namely: personal experience, active exploration, and social interaction with the environment. These three things, in combination, become the basis for developing students' knowledge. Picauly (2016) explains that Bruner's theory in developing the cognitive domain is based on two assumptions, namely: developing knowledge through the interactive process of learners with the environment actively; the construction of knowledge owned after being active is the relationship of knowledge before and after the learning process which ultimately becomes a meaningful knowledge structure. These two assumptions are reinforced by the view that knowledge development goes through several processes. Anidar (2017) explains that in Bruner's theory, learning is a

cognitive development process that takes place in learning, namely: the process of acquiring new information, the process of transforming information, the process of evaluating or testing the relevance and accuracy of knowledge.

The stages of learning according to Bruner's theory, namely the stages: enactive, iconoc, and symbolic. Ramadani, et al, (2019) explained that the Enactive stage is the stage when students first build concepts through the concept of relationships with concrete objects, through manipulation, arrangement, lining up, tinkering and other forms of motion; Iconic stage is the stage of imagining objects by being identified by converting, marking, storing in the form of mental images; and the Symbolic stage is indicated by the ability of students to describe or interpret mental images in the form of symbols.

The knowledge acquisition stage is related to the learning applied by the teacher. Learning methods, learning strategies, and learning models, become the focus of building knowledge development for students. Ervayani, et al, (2016) explained that the storytelling or lecture method, the application of strategies by listening to reading and copying work, and the application of learning models, such as: problem-based learning models (Problem Based Learning), discovery learning models (Inquiry or Discovery Learning), and project-based learning models (Project Based Learning), are forms of one way of learning in acquiring knowledge. Ekawati (2019) explains that information transformation is interpreted as a phasing of cognitive processes starting from the level of understanding, the level of digesting, and the level of analyzing new knowledge and continuing with the transformation of new forms resulting from the combination with pre-existing knowledge. Furthermore, Nurhadi (2020) explains that the activity of evaluating or testing the relevance and accuracy aims to determine the level of truth of the transformation results. The next step after evaluating is giving value so that the level of usefulness of the knowledge obtained can be known.

One of the most important things in building knowledge is at the transformation stage. Buto (Sundari and Fauziati, 2021) explains that in Bruner's theory, knowledge that is transformed to students needs to see: 1) knowledge structure. The most important part of knowledge is to make a connection between the concept of material before and to be taught, as well as the concept of material taught with facts in the students' environment, the structure of material content to match the psychological development of students; 2) readiness. The readiness factor is a concern to see the form of skills needed and the maturity of previous knowledge so that there is a unification process between old and new knowledge learned; 3) intuition value. The definition of intuition value is an intellectual technique (application of methods based on experience) to new knowledge to reach tentative formulations or conclusions that have truth value; 4) motivation. Learning activities are prioritized to generate motivation from within learners so that they are able to encourage understanding of knowledge and are ready to continue new knowledge through further learning.

The definition of learning needs to be described by researchers in order to equalize the perception of the concept of learning in this article. The notion of learning cannot be separated from the notion of learning. Djamarah and Zain (2018) explain that learning is essentially a change that occurs in students and is permanent as a result of an activity interacting with the environment. From the understanding of the concept of learning, researchers need to describe the concept of learning. Trianto (2019: 19) explains that

learning is a conscious effort of a teacher to provide lessons to students with methods and selection of models so that the objectives can be achieved. Faizah and Kamal (2024) explain that learning has meaning as a form of activity that proceeds through the stages of planning, implementation and evaluation. In this process, teachers need to formulate methods, strategies, media selection or utilization of environmental learning resources, in order to realize goals. Based on the above understanding, researchers can synthesize that learning is a conscious effort from the teacher in choosing the right methods, strategies, and media selection in building knowledge for students.

The current learning pattern is often still transmissive, where students passively absorb the knowledge structure given by the teacher or in the textbook. As according to Hudojo (Pane, 2017) states that the learning system in the constructivist view provides a real difference. The characteristics are: (a) students are actively involved in their learning. Students learn material meaningfully by working and thinking, and (b) new information must be linked to previous information so that it blends with the knowledge previously possessed by students. The above understanding can be emphasized that current learning (according to the Merdeka curriculum) needs to change, namely: from teacher-centered to learner-centered, from textual to contextual forms (lesson material is related to facts in the learner's environment), from passive recipients of messages to active seekers or discoverers of messages (exploratory learning).

Changes in the form of learning in accordance with the Merdeka curriculum, for lower grade students, need to pay attention to the developmental characteristics of students from Piaget's theory. Juwantara (2019) explains that the developmental characteristics of students aged 7 to 12 years, among others, are: the operational form is concrete, likes to be in groups, and play. These characteristics direct teachers to the selection of learning models and the utilization of environmental learning resources (media) in mastering the concepts of reading, writing, and counting (Calistung) for lower grades in elementary schools (SD). Rahmawati, et al, (2022) stated that calistung ability is a basis for an individual to recognize letters and numbers. According to Rahayu (2018: 43), literacy skills have a good impact on a person's language and logic development, especially elementary school-age children. Reading and writing skills can help learners to understand and convey the information they receive. Meanwhile, numeracy skills can help learners to develop logical aspects of thinking.

The definition of Calistung in this study was put forward by Hendrayani (2018: 69) who explained that reading is the process of parsing and understanding writing using certain letters or symbols. Reading can also be interpreted as a process carried out to understand a message both implied and explicit contained in the text. Dalman (2019) explains that writing is a communication activity in the form of delivering messages (information) in writing to other parties using written language as a tool or medium. Similar to reading, writing is also one aspect of language skills. Raghubar (Sari, 2020) explains that counting skills are related to numbers in which there are activities to mention numbers, identify numbers and operate numbers.

The implementation of the Calistung program in phase A at SDN Balerejo 02 Madiun as a driving school and SDN Garon 02 Madiun as a supporting school is the focus of this research. The utilization of environmental learning resources and the application of exploratory learning are the basis for the application of the

discovery learning model. The concept of discovery learning in this study is not a new discovery, but the discovery of new concepts in accordance with the understanding or definition according to students. Learning from the two elementary schools, researchers analyzed from Bruner's learning theory. The learning process carried out was analyzed according to Bruner's theory with its stages, namely: enactive, iconic, and symbolic stages.

Research relevant to this study, namely research from Nur Aisah (2018) with the title Learning Calistung Early Childhood Education and Elementary School Calistung Entrance Examination in Bandar Lampung. The results of the study are early childhood education calistung learning and elementary school calistung entrance exams in Bandar Lampung still leave a lot of homework, especially for the Education and Culture Office of Bandar Lampung City, where most of the kindergartens/RAs are not correct in implementing learning that should be given according to the phases of children's development. Likewise, with the application of the calistung entrance exam for elementary schools, most schools still hold a calistung entrance exam even though it is secretly considered incorrect even though the exam is not a determinant of whether or not prospective students pass the elementary school. The similarity with research is on Calistung learning. Nur Aisah's research focuses on Calistung learning based on memorization, while the researcher's research on matching Calistung learning based on the stages of Bruner's theory.

Research from Rachman (2019) with the title Reviewing Calistung Policy in Early Childhood. The result of his research is that PAUD institutions apply the calistung learning model also motivated by the provision of selection for entering elementary school (SD) with a calistung test. The practice of selection tests in the form of calistung for new student admissions to elementary schools is a violation. Calistung lessons taught at the age of under 7 years are feared to eliminate the golden ages of children. Before children reach school age, playing is a natural way for children to discover new things around them, including themselves. So all calistung activities should be packaged in the form of games combined with other methods, so that children do not feel bored in learning calistung. Calistung learning in PAUD is not given in a hurry or force, but only introduces Calistung through the introduction of letters, numbers with simple concepts, gradually through play, and fun learning for children. The research equation is learning about Calistung. The difference is that Rachman's research focuses on the effects of Calistung learning in PAUD. Meanwhile, the researcher's research focuses on gradual learning using Bruner's theory.

Based on the description above, the researcher can formulate the problem formulation as follows: how is the analysis of calistung learning in terms of the stages of Bruner's learning theory at SD Negeri Balerejo 02 and SD Negeri Garon 02 Madiun? The purpose of this research is to describe the stages of Calistung learning at SD Negeri Balerejo 02 and SD Negeri Garon 02 Madiun based on Bruner's learning theory.

Research Method

This type of research is descriptive qualitative. The research time began in August to December of the 2023/2024 academic year. The research subjects were teachers and grade 1 students at SD Negeri Balerejo 02 and SD Negeri Garon 02 Madiun. The research focuses on the stages of Calistung learning based on the stages of learning from Bruner's theory. The source of data is Calistung

learning in grade 1. Research data is the result of observation and diligent observation of researchers.

The degree of trust is an activity to describe the results of research on the actual object description. Moleong (2019: 48) states that techniques to test the degree of trust can be through: extension of participation, persistence of observation, triangulation, peer checking, adequacy of reference, negative case analysis, member checking. The techniques used to test the degree of trust in this study are observation persistence, peer checking, and triangulation. Data analysis uses interactive analysis from Miles and Huberman's theory.

Results and Discussion

Results

Teachers inventoried pictures as learning media. The order of inventorying is as follows: 1) objects with the prefix of one vocal letter, such as: pestle, fire, yam, oma; 2) objects with the prefix of consonant and vocal letters, such as: cow, book, shirt, deer, pig, hat, horse, sugar cane, foot, eye; 3) objects that have the suffix of consonant letters, such as: rat, snake, fly, motorcycle, orange, blood, eat, cucumber, market, cashier, counter, house, tongue, skin; 4) objects that have the suffix "ng", such as: mountain, cat, nose, bone, hole, necklace, empty, sarong, screwdriver, shell; 5) objects that have middle and back endings, such as: goose, beetle, hedgehog, cage, lamp; 6) objects that have three spellings, such as: giraffe, pigeon, field, rambutan, durian, coconut, longan.

The learning sequence implemented is as follows: 1) the teacher shows the picture or object as the media. This shows aims to connect the knowledge that the learners already have about the name of the object; 2) the teacher says the name of the object. The purpose of saying the name of the object is to emphasize the knowledge that learners already have is the correct answer; 3) the teacher writes the name of the object according to the spelling, such as eyes written ma-ta; 4) the teacher says the spelling of the object name followed by learners. The purpose of spelling is to equalize the form of speech and emphasize how to spell; 5) the teacher rewrites the name of the object and the learners continue to imitate; 6) learners do tasks from books or learner worksheets (LKPD).

The introduction of number symbols, starting from the introduction of ordinal numbers. The teacher introduces ordinal numbers starting from 0 to 9. The learning sequence implemented is as follows: 1) the teacher shows the shapes of numbers 0 to 9 written on sheets of paper, the aim is to show that learners are able to see and analyze the shapes of numbers; 2) the teacher says the name of the number for each number card shown. The purpose of the number card game is that learners are able to distinguish and correctly name the numbers; 3) the teacher writes the number symbol. Learners copy the number shapes given by the teacher; 4) the teacher writes the number name and pronounces it based on the spelling. This aims to emphasize the correspondence between the number symbol and the mention of the name of the number symbol; 5) learners practice making number symbols through thickening and writing smoothly the name of the number symbol.

The meaning of numbers is linked or correlated with the number of objects. The learning sequence is as follows: 1) the teacher shows a picture of the "number" of objects and is associated with a number symbol; 2) the teacher shows a picture of the first object "added" to a picture of a second object with a different picture. The purpose of this "sum" is to adapt the math operation, namely the addition

operation; 3) the teacher shows the picture of the first object minus the picture of the second object, but different pictures. The purpose of this learning is to adapt the concept of mathematical operations, namely the operation of subtraction; 4) the teacher writes the name of the object and the learners copy and pronounce the name of the object. The purpose of this learning is to provide a habit in pronunciation so that when entering the abstract stage learners are able to pronounce correctly; 5) to give the meaning of the number 0 (Zero), the teacher shows a picture of a building without any objects in it and says "how many objects are in the building?". The purpose of showing a picture of a building without objects in it is so that students are able to analyze and then synthesize what is the focus of their attention. The results of the analysis are then drawn to draw conclusions or build concepts; 6) students practice writing names and number symbols through books or student worksheets (LKPD).

The formative assessment given to recognize mathematical operations is limited from 0 to 9. Giving examples of problems begins through the form of images which are then correlated with numbers. Meanwhile, the formative assessment is in abstract form. The formative assessment materials are: 1) $4 + 2 = \dots$; 2) $2 + 4 = \dots$; 3) $3 + 5 = \dots$; and 4) $4 - 4 = \dots$. This is so that students are able to follow the counting material for further levels.

Discussion

The use of object images in Calistung learning in the lower grades in the stages of Bruner's learning theory is included in the iconic stage. Sundari and Fauziati (2021) explain that iconic is the stage of development of students in obtaining knowledge not directly with concrete objects or real situations in the surrounding environment, but through verbal visualization and images. So that students learn through a form of parable or comparison. This is also emphasized by Wulansari and Rianti (2014) who explain that the iconic stage is realized in the form of a presentation that is carried out based on internal thoughts, namely knowledge is presented through a series of mental images or graphs that are images of the objects they manipulate. This statement emphasizes that students do not directly manipulate objects as in the enactive stage. Meanwhile, Umbara (2017: 85) explains that at the Iconic stage, students carry out a description of the objects manipulated by applying / visualizing them to concrete objects.

Paying attention to the description of the discussion of the sequence of stages of Bruner's learning theory, researchers can underline that learning using images is learning at the iconic stage. So, it can be said that the learning carried out by the teacher has eliminated the enactive learning stage. The loss of the enactive stage can be suspected that the implementation of the discovery learning model cannot be carried out in accordance with the cognitive development of students. Umbara (2017: 85) explains that the Enactive stage, students perform activities directly seen in manipulating objects, using real objects or situations. Understanding leads to an understanding that the process of manipulating concrete objects needs to be done by students in order to find ideas for the next stage of learning. The loss of idea discovery affects the iconic and symbolic stages. Umbara (2017: 85) explains that the iconic stage is a form of depiction of the manipulated object. Meanwhile, the symbolic stage is the manipulation of symbols from the iconic stage.

At the learning stage of counting, the teacher develops the concept of not connecting with set theory. The word amount when

symbolizing from many objects to number symbols is the realm of the concept of cardinal numbers. Mahmud, et al, (2020: 10) explains that Cardinal in a finite set, defined as the number of members in a set and expressed by $n(P)$ reads the number of members of the set P. If the cardinal number is only owned by a finite set then the cardinal number of the empty set is zero, and the cardinal number of the infinite set is undefined. The description above suggests that in learning counting, teachers experience misconceptions in making statements when the stage is still concrete or semi-concrete by saying the word "number" which should be the word "many".

The occurrence of misconceptions in learning counting due to not connecting the concept of counting with the concept of sets with cardinal number material, has an effect on the teacher's role in learning counting. Supposedly, the role of the teacher as described by Wahyusi and Sinaga (2021), namely the role of the teacher according to Bruner's theory, is 1) the teacher acts as a facilitator and does not dominantly control the learning process; 2) the teacher needs to be wise in stimulating or raising problems through trigger questions, so that students are able to solve the solution themselves; 3) and the teacher guides and motivates students in finding concepts, finding relationships between parts of the material structure and making conclusions.

The loss of the enactive stage is also missing the stage of students in manipulating concrete objects to be used as ideas in finding concepts. Buto (Sutarto, 2017) explains that according to Bruner, discovery learning theory is a process of learning activities for students in understanding meaning, concepts, and relationships through a process of intuition, until finally they can find a conclusion that is in accordance with the cognitive development of the students themselves. Noting the description above, the researcher found and concluded that Calistung learning at SD Negeri Balerejo 02 and SD Negeri Garon 02 Madiun, is included in the iconic and symbolic stages. Thus, the discovery learning model cannot be implemented optimally because students do not receive a form of stimulus from concrete objects, are unable to manipulate to find problem identification ideas, and students are unable to collect data gradually. The learning deficiency is because the implementation of learning does not trace from Bruner's learning theory which is basically discovery learning. Ariyana, et al, (2019) explained that the stages of Bruner's discovery learning model, namely: 1) stimulation, 2) problem statement, 3) data collection, 4) data processing, 5) verification, and 6) generalization.

For this reason, researchers provide suggestions as described by Ekawati (2019), namely according to Bruner's theory, teachers should provide opportunities for students to become scientists, problem solvers, historians or mathematicians, find concepts and meanings which then describe them in language or definitions according to what students understand.

Conclusion

Calistung learning at SD Negeri Balerejo 02 and SD Negeri Garon 02 Madiun, is included in the iconic and symbolic stages, in the study of Bruner's learning theory, is included in the Inactive and Symbolic stages. This emphasizes that the enactive stage which functions for manipulation activities to find concepts according to the cognitive development of students cannot be optimal. This non-optimality shows that the discovery learning model of Bruner's learning theory cannot be implemented optimally. For this reason, the learning applied for the next stage is to prepare materials that

are adapted to the enactive, iconic, and symbolic stages, and connect the counting material with the concept of sets.

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