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Design of the Five Fastest Strategies to Create the Principle of Fairness for Students in Mathematics Learning

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Abstract

A review of aspects in the cognitive, affective, and psychomotor domains of students will be able to support the assessment process in learning, which is supported by the objectivity and fairness of teachers in providing assessments. Objective can be interpreted as an assessment based on facts without the influence of other factors such as likes or dislikes. While fair can be interpreted as equal treatment in accordance with the proportions that should be and appropriately. In learning mathematics there are stages that provide opportunities for students to present their work in front of the class. There are two possible conditions faced by the teacher when providing the stages of this session, namely that none of the students took the initiative to come forward, there were few students who were interested, and there were many students who were interested. The implementation of the five-fastest strategy can be used as an alternative to create the principle of fairness for students, especially the opportunity to appear in front of the class to convey the results of their work or answers to math problems given by the teacher.

Keywords
justice; interest; motivation; learning

I. Introduction

Learning is a process of interaction between teachers and students as students which involves learning resources. In learning the teacher provides assistance as a facilitator to students in order to explore their abilities and gain knowledge. According to Gagne, learning is an external treatment that is used to help the learning process that takes place internally. Learning is intended to build activities that support internal processes that occur in learning. Learning is a change in teaching paradigm which previously focused on a more active teacher role, but now has shifted to a more active student role. In the teaching paradigm the teacher conveys the material and expects students to be able to master the subject matter given, this is related to cognitive abilities. Then students are also expected to have skills related to psychomotor abilities and be able to change attitudes towards more that is related to affective abilities. But on the other hand, the teaching paradigm makes the teacher's role more dominant, in contrast to learning that prioritizes the active role of students and interactions between teachers and students as well as between students and students. The quality of learning is determined by the teacher's role as a facilitator and the role of students who are actively involved in the learning process. The active role of students will be realized if there is interest and motivation in student learning, which is also supported by adequate learning facilities. All of these things will lead to success in achieving optimal learning outcomes.

Learning programs need to be designed by teachers in order to achieve learning objectives, because the success or failure of teachers in learning can be seen from student activity, student understanding, and students' ability to apply the knowledge that has been learned. The formulation of learning objectives must also be clear so that they can be used in evaluating the effectiveness of the learning process that has been implemented. Indicators of learning success can be determined starting from the design and implementation of learning carried out by the teacher.

Guide to learning activities for students can be goal-oriented which is supported by the preparation of actions and activities carried out by teachers and students in learning. Clear learning objectives will greatly support the making of learning designs, especially providing assistance to teachers in choosing materials, methods, learning strategies, media, teaching aids, or learning resources. In addition, the control function in determining the mastery of knowledge and understanding of students can be more focused if the learning objectives are clearly formulated. The learning process also needs to be supported by the readiness of students to participate in learning, especially student activity and creativity. The creation of a pleasant learning atmosphere will greatly support this. Based on interviews with students in class XIPA Lab 1 at SMA (SLUA) Saraswati 1 Denpasar, information was obtained that there are several factors that support students' motivation and interest in learning mathematics including 1) communicative teachers, 2) teachers who are not too fast in giving explanations, 3) teachers whose explanations are easy to understand, 4) fair teachers in providing opportunities for students to come to the front of the class completing practice questions, 5) a learning atmosphere that is not stressful. Based on the interview information, it is necessary to try a strategy that is able to create the principle of justice in providing opportunities for students to come to the front of the class in completing the practice questions given by the teacher. The strategy that can be applied is the five-fastest strategy, which provides the opportunity for the 5 fastest students to collect the results of their work completing the practice questions given by the teacher, then one of them is chosen to write down the results of their work in front of the class. This will support the maintenance of student motivation and interest in learning, because there will be no impression of favoritism made by the teacher and the teacher does not need to be confused about appointing students who are entitled to come to the front of the class when many students raise their hands to come forward.

II. Research Method

This research uses a qualitative approach with literature study and descriptive methods. The first step is to search for reference sources in the form of articles related to learning in general and mathematics in particular. In the second stage, the data obtained is then synthesized according to the needs in designing learning strategy designs. Furthermore, in the third stage, the design concept of the five fastest strategies was designed and described to create the principle of justice for students in learning mathematics.

III. Results and Discussion

Learning is a process that involves the thoughts, feelings, and active movements of students with the aim of understanding in the form of behavior change, mastery of knowledge, understanding, and being able to apply what is learned. Learning produces renewal that leads to the development of students' individual self that occurs from the learning process. Theoretically there are several theories regarding learning, namely: 1) behavioristic theory, 2) cognitive theory, 3) humanistic theory, 4) constructivist theory, and 5) social learning theory.

3.1 Behavioristic Theory

Behavior means behavior either individually or in groups in the individual's internal and external environment. Behavioristic theory is a theory that emphasizes changes in behavior caused by the relationship between stimulus and response. If it is associated with learning, then learning is a change in behavior that occurs as a result of the stimulus from the teacher through the learning process which is indicated by the responses given by students in the form of learning activities and achievements. Behavioristic theory was put forward by several experts including Ivan Pavlov, Watson, Thorndike, and Skinner. According to Pavlov, in the process of forming the desired behavior, it is necessary to give repeated stimuli, the theory is known as the theory of *respondent conditioning.* Another character, Watson, believes in human reflexes and emotional reactions. According to Watson, the stimulus and response given continuously will become a habit that will lead to observable behavioral changes. Watson was the first person to use the term behaviorism. While Thorndike conveyed the theory which states that learning is an interaction that comes from a stimulus and response, both of which can be thoughts, feelings, and movements, both observable or not. Thorndike expressed his opinion about the law in learning, namely the law of readiness, the law of effect, and the law of practice. The law of readiness or the *law of readinness* states that the learning process will be successful if there is readiness. The *law of effect* states that to please someone in learning, it is necessary to give a gift so that the person will show the same positive response over and over again. While the law of exercise or the *law of exercise* states that exercise will strengthen the stimulus and response given in the learning process that leads to mastery and understanding of the learning material. Another behavioristic figure, Skinner, put forward a theory about *Operant Conditioning* which states that the formation of behavior needs to be specified in the form of a sequence of behavioral components. For example, one component of behavior that has been carried out needs to be given a reward or *reinforcement* in order to increase the next behavior change. So based on the opinions of these figures, behavioristic theory emphasizes changes in student behavior so that it leads to a positive response.

3.2 Cognitive Theory

Cognitive theory is a theory which states that learning can change perceptions and understandings, both of which can be observed and measured. Cognitive theory emphasizes the process of students thinking in learning. According to this theory, the teacher has a very important role in helping the development and thought processes of students by making adjustments to the level of students' cognitive development. The figure of the theory of cognitive development, namely Piaget, which was preceded by a statement about intelligence. Intelligence is the movement of cognitive functions that are demonstrated by a balance of actions through physical experience and also the influence of

environmental conditions. Intelligence will produce logical thinking if it is balanced with social interaction in which discussions occur to provide clearer input and thoughts. According to Piaget cognitive development is a process to build meaning resulting from experience and social interaction, where cognitive development consists of four stages, namely 1) the sensorimotor stage (0-2 years), 2) the pre-operational stage (2-7 years), 3) concrete operational stage (7-12 years), and 4) formal operational stage (after 12 years). At the sensory-motor stage, intelligence is formed by behavior in the form of movement and observation without language. In contrast to the pre-operational stage which has begun to appear the function of symbols in the form of language or speech. While at the concrete operational stage, intelligence is shown by the ability to recognize and distinguish concrete objects. Then at the formal operational stage, it is no longer just an introduction to concrete objects but has started on objects that are abstract. Overall in cognitive theory there is an affirmation that stages of human cognitive development can be awakened if it is supported by social interaction and the influence of the surrounding environment.

3.3 Humanistic Theory

Humanistic learning theory is a theory that states the importance of self-actualization and human freedom in developing abilities and applying them in life. In this case, cognitive and affective have a very important role, especially in the learning process which is supported by the motivation to learn. The principles of humanistic theory are: 1) the natural ability of humans to learn, 2) the relevance of the material to its usefulness in life, 3) changes in self-perception, 4) meaningful learning is obtained from activities in learning, 5) the importance of active student involvement in learning, and 6) the importance of self-confidence in learning. Humanistic theory figures include Abraham Maslow, Carl Sam Rogers, and Arthur Combs. Maslow's theory states that in individuals there is an effort to develop themselves and the ability to accept or reject development. Maslow also conveyed the theory of basic human needs, namely 1) self-actualization, 2) esteem needs, 3) social needs, 4) safety and protection needs, and 5) physiological needs. Another figure, Carl Sam Rogers, states about the theory of individual needs which consists of 4, namely: 1) maintenance, 2) self-improvement, 3) positive appreciation, and 4) positive self-esteem. Rogers also emphasizes the importance of continuous learning and openness to support individual change from the experiences gained. On the other hand, Arthur Combs states that if learning occurs and is successful if there is meaning that is obtained by the individual without any coercion. This is in accordance with the humanistic view that everyone is different in terms of feelings, thoughts, and beliefs to achieve their goals in the learning process.

3.4 Constructivist Theory

Constructivism theory emphasizes the process of constructing knowledge independently formed by individuals. In this case the teacher is not an intermediary in providing knowledge, but students who must form their knowledge in the learning process. The teacher is a facilitator who helps students in building a thinking structure to understand the meaning of the material being studied. Students' knowledge will be constructed by itself if students play an active role in the learning process. Figures who convey views on this constructivist theory are Piaget and Vygotsky. Piaget stated that constructivism theory emphasizes the process of discovering and constructing knowledge construction through a balance process of assimilation and accommodation supported by schemata. Meanwhile, Vygotsky stated that the theory of intellectual development will be supported by experience, social interaction, and environmental influences. Constructivism theory has

positive implications for learning such as learning directed at linkages with real life so that students' learning experiences become more meaningful. The learning process according to constructivist theory has characteristics, namely 1) learning is an activity of seeing, hearing, and thinking; 2) there is construction and reconstruction; 3) there is a development process not just gathering facts; 4) there is interaction between individuals and groups in the learning environment; and 5) learning outcomes are determined by the individual himself.

3.5 Social Learning Theory

Social learning theory is a development of behavior theory which emphasizes more on the influence of behavior and internal processes in individuals mentally. This theory also states that new behavior can be formed if there is a process of observing and imitating the behavior of others in which there is a social cognitive role. In addition to observation and the process of imitating behavior will also be able to change if there is a reward or punishment given. Rewards in the form of gifts or the like if given continuously in accordance with the positive behavior shown will be able to result in the maintenance of that behavior. In contrast to when punishment is given continuously, it will result in the disappearance of unwanted behavior. The theory of social learning was first expressed by Neal Miller and John Dollard. These two figures state that learning motivation is the originator of imitation activities, which go through the stages of seeing, learning and then trying.

Another figure who supports social learning theory is Albert Bandura who states that individuals will respond differently when observing a group given different treatments such as rewards or punishments. Bandura emphasizes the cognitive aspects of the learning process in which there is a process of direct observation and experience. The focus in social learning is the modeling that becomes the object of observation. There are two types of learning through observation, namely through conditions experienced by others, and through the use of imitation models. The social learning theory approach also emphasizes the need for habituation to respond and imitate. According to Bandura, natural learning situations will have different conditions and consequences, which are not only about stimulus and response but also new responses that may arise from observing the behavior of others in the learning process.

3.6 Interest and Motivation to Learn

Interest is a condition where there is a feeling of liking that comes from self-awareness of an object or activity. Interest is related to the internal relationship of individuals or groups to external factors. The stronger relationship will determine the amount of interest. Interest, apart from being an attraction from external factors, is also supported by internal factors. The amount of interest is one of the factors in achieving individual goals. Crow and Crow express opinions about the relationship between interest and the drive to face various experiences experienced by individuals. Learning is the process of changes in thinking and behavior that can be observed as a result of individual interactions with groups and their environment. Learning whether planned or not will always lead to changes that can lead to positive or negative changes. So learning interest is an individual's interest to know and explore objects in the learning process that leads to changes in behavior in accordance with learning objectives.

Motivation comes from the Latin word movere which means drive or driving force (Purba and Sudibjo, 2020). Motivation has an influence on the individual's way of doing things, which can arise from within or from outside the individual. Motivation can be

interpreted as a force that arises from within the individual to act in order to achieve the desired goal. Motivation is very influential on every activity that will be carried out by individuals such as learning motivation. The success of students in learning can also be influenced by the existence of motivation, both from within and outside students. So learning motivation is everything that encourages individuals to follow the learning process in order to change behavior and ways of thinking, including understanding of learning materials and achievement of learning achievements. For students, getting good learning achievement will be a matter of pride that will always be maintained and even improved by students if it is supported by learning motivation.

3.7 Principles of Justice in Learning

The education system will be good if it is supported by the participation of all parties involved in education, including teachers. Students' interests and talents can certainly be developed if the teacher's role can be optimized according to his duties and functions as educators. The development of students' interests and talents is generally oriented towards the achievement of general learning objectives, namely intelligent students, students who have personalities and attitudes, and are useful for others. All of these goals will work well if they are supported by an effective learning process, from planning to evaluating the learning process.

A review of aspects in the cognitive, affective, and psychomotor domains of students will be able to support the assessment process in learning, which is supported by the objectivity and fairness of teachers in providing assessments. Objective can be interpreted as an assessment based on facts without the influence of other factors such as likes or dislikes. While fair can be interpreted as equal treatment in accordance with the proportions that should and should be. Student performance in the learning process can be the basis for teachers to apply the principles of objectivity and fairness to students, which is supported by independence. Teachers need to avoid assessments that are subjective, especially those that have nothing to do with the learning outcomes that have been shown by students. The principle of justice is also closely related to the ability of teachers to provide equal opportunities for all students in participating in all activities in the learning process.

3.8 Implementation of the Five Fastest Strategy in Mathematics Learning

Strategy can be interpreted as a way to achieve certain goals that involve the stages in it. The learning strategy is the method chosen and used by the teacher in the delivery of learning materials. The purpose of the learning strategy is to make it easier for all students to understand the learning material and to optimize the active role of students in the learning process. The learning strategy requires thinking related to planning and implementing strategies including the use of various media as learning resources. The estuary of the learning strategy is the achievement of learning objectives, especially the success of students in learning.

In learning mathematics there are stages that provide opportunities for students to present their work in front of the class. There are several possible conditions faced by the teacher when providing the stages of this session, namely that none of the students took the initiative to come forward, there were few students who were interested, and there were many students who were interested. If faced with the first condition, of course the teacher can freely appoint students who come forward, but if faced with the next two conditions, a dilemma will arise for the teacher to choose students who come forward. This problem can certainly cause jealousy for students who are rarely given the opportunity to come to the

front of the class to convey the results of their work. Students who rarely or never even get the opportunity to appear will be able to decrease their interest and motivation in learning mathematics. This of course will also affect the learning atmosphere that is not conducive.

Based on this, a strategy that emphasizes the principle of fairness is needed for students to present their work in front of the class. This strategy is called the five fastest, which provides more and fairer opportunities for students to come to the front of the class. The five fastest strategy can be applied to various learning models. The stages of the five fastest strategy are as follows:

No	Stages	Activity
1	Learning process	According to the model used
2	Stage I	The teacher gives practice questions to students individually and conveys the time provided according to the level of difficulty of the questions. At this stage the teacher also conveys that the 5 fastest people can collect their work (answers) in front of the class
3	Stage II	Students do the exercises given by the teacher
4	Stage III	The 5 fastest students collect their work. If 5 students' work has been collected, the teacher says that the quota for collecting has been fulfilled. Other students continue to work until the allotted time limit runs out. At this time the teacher checked the work of the 5 fastest students.
5	Stage IV	The teacher calls 1 of the 5 fastest students to work on the results of the work on the blackboard while explaining to other students.
6	Stage V	The teacher returns the results of the student's work then together with the students evaluate the results of the student's work (answers).
7	Repeat stages I to V	Stages I to V can be repeated according to the time available. So in session II of the practice questions, the 5 fastest people in the previous session were not allowed to collect again, to give other students an opportunity.

The advantages of this five-fastest strategy are 1) students have the same opportunity without waiting to be appointed by the teacher, 2) students will compete to do practice questions quickly, 3) students' interest and motivation to learn will be maintained and even increased, 4) help mapping of student abilities, 5) teachers are fairer in providing opportunities to students, and 6) can be applied to various learning models.

V. Conclusion

The principle of fairness in learning is needed so that students' interest and motivation in learning are maintained and even increased. The implementation of the five-fastest strategy can be used as an alternative to create the principle of fairness for students, especially the opportunity to appear in front of the class to convey the results of their work or answers to math problems given by the teacher.

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