Roles Model Of Teachers In Facilitating Students Learning Viewed From Constructivist Theories Of Learning

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Abstract. Human learning has been understood as a complex process because human learning involves not only physical senses, but also cognitive processes. This paper aimed at describing and explaining teacher’s role model in facilitating students learning. The description and explanation were developed based on constructivist learning theories which explains learning as the process of construction of knowledge by individual student or learner in respond to new learning experiences. The discussion results described three different roles of teacher in conjunction to the characteristics of students’ response in learning process. The characteristic of students can be classified into three, namely excited students, unresponsive students, and struggle d students. The roles of the teacher in respond to the characteristic of the students are as a learning supporter for excited students, as a learning motivator for unresponsive students, and as a learning model for struggled students. These roles facilitate all students to learn joyfully and meaningfully through cycles of learning involving assimilation, accommodation, and equilibration processes.

Keywords : Role Model Teacher, Constructivist, Learning Theories

1. Introduction
The definition of leaning has been shifted from what is known as knowledge transfer to knowledge transform or knowledge construction. Previously, educators believed that knowledge can be transferred from teachers to students. In this case, teacher determines the kinds and amounts of knowledge learned by student as well as the way to learn. This idea is influenced by the “tabula rasa” theory of John Locke (1632-1704). Based on this theory, it is assumed that students just like a blank or white paper which is performed in accordance with teacher’s action [1]. Unfortunately, this idea has been left out by educators since only small evidence proved it. Many evidences revealed that student’s knowledge cannot be determined only by teacher’s action. Oppositely, many evidences showed that students construct various knowledge from similar learning process. Based on these evidences, learning is defined as the transformation or construction of knowledge happened within the students’ mind [2] [3].
There are various phenomena of students learning at schools, such as listening to teacher, reading textbook, conducting experiment, and discussing with peers. Although teacher set out similar learning experience in a classroom, the knowledge gained by individual student is different. This indicates that student’s knowledge is not only obtained from learning materials presented by the teacher, but also gained from other students’ experiences. Other evidences show that although a group of students is taught similar material by similar teacher in similar classroom utilizing similar method, the obstacle of learning and learning achievement of student are also different. Some students find no problem to learn a certain lesson, but other students find difficulties. Some students may achieve high score, but other students achieve low score.

These learning phenomena show that each student has different obstacle in learning. In general, the obstacle is caused by internal and external factors. The internal factors include students’ interest, students’ motivation, and students’ prior knowledge. The prior knowledge of students is considered as the main factor influencing students’ learning process because it determines what the student will learn during the process of learning [4]. The external factors include teacher, learning materials, learning resources, learning environment. Among the external factors, teacher is considered as the importance factor because teacher manages and facilitates students to learn [5]. This learning phenomenon is explained by different learning theories, such as behavioristic learning theory, cognitive learning theory, and social learning theory [6] [7].

As mentioned above, human learning has been understood as a complex process utilizing all of their senses, such as seeing, hearing, smelling, touching, and tasting of physical phenomena. Therefore, no single theory of learning is able to explain the process of learning of human being comprehensively. It seems that each theory is appropriate only to a small part of learning evidences. The development of learning theories was initially formulated based on an experiment involving animals, such as dog, ape, cat, and mice. Ivan Petrovich Pavlov (1849-1936) used dog to develop the so-called classical conditioning theory to see the relationship between stimulus and response. Based on his observation of dog salivation response towards meet and bell, it was concluded that response can be conditioned by a certain stimulus [8]. This simple experiment result has been used to explain how the process of learning is occurred. This simple theory influences many aspects of learning management until now. For example, many schools still managing study time by ringing the bell. It seems that this school management is inappropriate to facilitate human learning. Edward Lee Thorndike (1874-1949) as well as Burrhus Frederic Skinner (1905-1990) enlarged the experiment by using different animals to finally develop the so-called Stimulus-Response (S-R) Theory or known as the basic of behavioristic theory of learning [8]. This theory concluded that learning can be seen as a series of interaction between stimulus and response. Since a human response is not as simple as an animal response towards a given stimulus, this behavioristic theory cannot explain comprehensively the process of human learning.

The second group theory of learning is a cognitive learning theory. This theory explains human learning from cognitive processes. The most known theory in cognitive learning theories is the constructivist theory of learning. Jean Piaget (1896-1980) explained that the development of learning of human being is in accordance with their physical development. Since the child born, the process of learning is occurred and gradually increased in line with the physical growth of the child. Piaget classified the development of learning of the child into four stages, namely a sensory motor stage from age 0 to 2 years old, a preoperational stage from age 2 to 7 years old, a concrete operational stage from age 7 to 11 years old, and a formal operational from after 11 years old [6] [7]. The most important explanation of learning is that learning is seen as an interaction process between learner previous knowledge (prior
knowledge) and new experiences obtained from environment [9] [10]. Based on this theory, there are two main factors influencing learning, namely the prior knowledge and the experiences of students. The process of learning within students’ mind is occurred through assimilation, accommodation, and equilibration processes [11].

The third group of theory of learning is a social learning theory. This theory explains how learning process is occurred in social context, such as at schools or at work places. Basically, this theory is in accordance with the constructivist theory of learning. This theory explains that the construction of knowledge is also influenced by social interactions. The construction of knowledge is made by individual learner, but it can be supported by peers or teachers as learning environment in social context. Lev Simenovich Vygotsky (1896-1934) explained that the process of construction of knowledge can be accelerated by social environment, such as learning peers or teachers. Furthermore, it is mentioned that learning process is occurred optimally on zone of proximal development (ZPD) of students and supported by more knowledgeable others (MKO) [12]. In this case, students’ peer or teachers play role as a scaffold to help learner to achieve the goal of learning [5].

Every student has different style of learning. This phenomenon even makes learning process more mysterious. Some students may learn by actively participating in the process of learning, some may learn passively due to the influence of their cultural background. Psychologically, these two types of students are classified as extrovert and introvert learners in general. The extrovert learner usually responds learning material actively, such as ask questions, give comments, and propose ideas. The introvert learner usually responds learning process passively, just by listening or watching without giving any expression. On the previous case, the teacher may facilitate learning process easier. However, the teacher will find difficulties to facilitate students learning on the latter case.

This paper discusses the role of teachers in facilitating students to learn optimally in the classroom viewed from the constructivist theories of learning. A model of faces expression of students is used as the basis argument to explain student’s cognitive processes.

**Faces Expression Model**

Based on constructivist theories of learning, the process of learning can be figured out in the form of faces expression model as follows.
Figure 1. Faces expression model of learning responses

A is the initial face of students, B is the face of excited students, C is the face of unresponsive students, D is the face of struggle students, E, F, and G are the roles of teacher in learning process.

The above figure explains that students receive information from different resources of learning, such as seeing, hearing, smelling, touching, and tasting. The process of learning involves three different stages, namely assimilation, accommodation, and equilibration [11]. The assimilation stage is the process of connecting new information received by students with their appropriate prior knowledge. This process is occurred if the information received in accordance with the existing schemata on student’s mind. In this case, students have no problem with the lesson and may follow the lesson enthusiastically. The accommodation stage is the process of creating new schemata due to the information received is not in accordance with the existing schemata on student’s mind. This process often results cognitive disequilibrium and create student’s anxiety. The equilibrium stage is the process of associating new schemata into student’s mind to be used for further learning process. These processes undergo on and on known as a cycle of learning to enhance student’s knowledge. In general, student’s response towards new information can be classified into three, namely good response, no response, and bad response. Good response is given by students who finds that the lesson is useful for them. No response is given by students who do not find the importance of the lesson. Bad response is given by students who find difficulties in the process of learning. In further process of learning, the second and third responses should be given a particular attention by teachers. The teacher should facilitate all students to find the importance of the lesson, so they will learn enthusiastically to enhance their knowledge as a new equilibration stage.

Result and Discussion

When a student learns, he or she receives information from different learning resources and uses his or her five senses, such as seeing, hearing, smelling, tasting, and touching in accordance with the nature of learning materials to understand the lesson. Before receiving information, the student’s mind has fulfilled with the previous knowledge called prior knowledge obtained from previous learning experiences. During the process of learning, the new information received is interacted with the prior knowledge of students and produces student’s responses which are figured out as three different reflections of faces, namely happy (B), unresponsive (C), and sad or unhappy (D).

The first face expression (B) is the student look happy or exited. This student will follow the lesson enthusiastically. Based on the constructivist learning theories, this indicates that the assimilation process is occurred within the student’s mind. The new information received by the student is in accordance with his or her prior knowledge [9]. So, this student has no problem in following learning. For examples in chemistry learning, when students learn about electron configuration, they already have good understanding of atoms and subatomic particles, such as electron, proton, and neutron. The new information learned (the electron configuration) is easily connected to their prior knowledge (the knowledge of atom and subatomic particle). In this case, the student may learn joyfully and find out the meaning of the lesson in relation to their previous knowledge or learning [4].

The second face expression is the student look unresponsive or has no response. This student does not demonstrate any particular expressions. His or her face is unchanged or similar as previously. This face expression is not easy to be interpreted. However, at least two different interpretations can be made. First, it can be interpreted that the student is already understood the lesson and he or she is not exited any more with the lesson. He or she may think that he or she may follow the lesson and pass the exam easily.
Second, it can be interpreted that the student has no attention with the lesson. He or she may think that the lesson is not important at all for him or her. In the case of chemistry learning, he or she may think that chemistry is not one of his or her interest in learning because he or she already has other vision for his or her future. This will not result an assimilation or accommodation processes in student’s mind [11]. These two conditions should be found out well by teacher before taking further learning actions.

The third face expression is the students look unhappy or sad. It seems that this student has an effort to learn the lesson, but he or she finds obstacles or difficulties in learning. To understand the lesson, he or she should struggle and work hard. One of the reasons of this condition is the students may be left out with new information presented due to lack of prior knowledge or his or her prior knowledge is not connected to new information. Based the constructivist learning theories, an accommodation of new information has occurred on student’s mind and a new schema is created [13]. Taking the above example as an analogy, in this case the student is really interested to learn the electron configuration, but he or she left out of the knowledge on atoms and subatomic particles. Therefore, when the electron configuration topic is discussed this student struggles to understand electron, proton, neutron, as well as electron configuration.

These three different conditions of learning acquire different guidance of learning. Teacher as a learning manager should aware of these learning conditions and carefully manage the lesson to facilitate students to learn. Base on the constructivist learning theories, teacher is responsible to bridge the students to achieve new equilibrium state of knowledge in every stage of learning. All students need a help from teacher to confidently understand the lesson. Therefore, those three different kinds of students in respond to new learning materials should be facilitated well in learning process. In this case, teacher plays as a peer learning or as a more knowledgeable friends who is able to help students to learn [14].

Teacher facilitates students to learn by playing different roles in accordance with student’s learning responses. Three different roles of teachers in relation to students’ response towards the process of learning are as follows.

1) The role for excited students. These students are those who receive advantages from the process of learning (B). The most important advantage for the students in learning is when the lesson learnt is interesting for the students or the students think that the lesson is important and meaningful for them. The interest of students towards the lesson is influenced by several factors, both internal and external factors. The internal factor is caused by the student’s cognition. The external factor is caused by the way the teacher facilitates student learning. One of the internal factors is the connection between the lesson learned with the prior knowledge of students. When the prior knowledge of students is in accordance with the lesson, they will obtain support from the lesson to learn more and more. This group of students have no problem in learning and they may continue their learning process by themselves joyfully. In this case, teacher’s roles may be very efficient. Teacher may take position as controller to control the process of learning from behind or push the students to learn.

Since the students already found out the excitement of learning, the learning process will run efficiently. However, it should be remembered that the students are learners and they will learn what the teacher ask to learn. The competence to be developed or knowledge to be learned by the student is organized by the teacher in accordance with the requirement of curriculum. In general, the students do not know what it is expected by the curriculum. Therefore, the teacher needs to controls and supports the process of learning. The control is required to justify the process and product of learning. If the process of learning goes wrong, then the teacher may direct the student learning to the correct way of learning. It is assumed that if the process of learning is correct, the result of learning will have good
quality. The support of learning can be given by providing learning access, challenge, or guidance to maximize students learning [15] [16].

2) The role for unresponsive students. These students are those who feel that they do not receive any advantages from the process of learning (C). So, they do not respond on the lesson actively as the previous students (B). This can be occurred due to the mastery of students to the lesson or they completely ignore the lesson. If the students already mastery the lesson, the teacher may challenge student’s understanding of the lesson, for example by asking questions. This will make students to participate in learning and develop their further understanding of the lesson. If the students ignore the lesson due to unclear the importance of the lesson for them, then the teacher may play role as motivator to motivate student to see the importance of the lesson, either in connection to the previous lesson or to daily life experiences at large. Once the students see the importance of the lesson, they will start following the lesson enthusiastically. In this case, the teacher should work a little bit harder than the first learning event. Two things that the teacher can do here are first the teacher should find out the reason why the students do not respond to the lesson and second the teacher should prepare appropriate solutions or methods to solve student’s problems. By doing that, the students will learn joyfully and may enhance their knowledge.

3) The role for struggled students. These students are those who receive disadvantages from the process of learning (D). This can be occurred when the lesson learnt has no connection at all to the previous knowledge of students. The lesson maybe too difficult for them because their prior knowledge insufficient to be related to the lesson. Therefore, these students will feel unhappy or insecure in learning. These students need full teacher’s attention in learning process, otherwise they will be left out from the classroom. In this case, teachers should work harder to facilitate students learning compare to the first and second learning events.

The most important role of teacher in facilitating students learning is in the third learning conditions (D). The bad or unhappy response of students indicate that the process of learning is occurred, but the students find difficulties. In this case, the teacher should be able to play roles in accordance with students’ difficulties. If the students find a gap between their prior knowledge and the lesson, the teacher may build a scaffold or bridge to fill the gap of student’s knowledge. If the students find no connection between their prior knowledge and the lesson, the teacher may start the lesson from the beginning to create new schemata on student’s mind. For examples, teacher attends as a model of learning that can be followed by the students. Here, the teacher may play roles as a learning peer or as more knowledgeable friends who help students to understand the lesson [14].

All learning activities conducted by the teacher in those learning processes are aimed to help students to achieve new equilibrium state of learning as an indication of the competence of students. The smaller problem the students have, the smaller effort of teacher is required in learning process and vice versa the biggest the problem the students have, the biggest effort of teacher in learning process. It can be mentioned that teacher is required more for less vaporable student in classroom.

Based on these three possibilities of student’s response towards learning process, the major role of teachers in facilitating students learning can be classified into three, namely as learning supporter, as learning motivator, as learning model.
1) **Teachers as learning supporter.** When students learn joyfully, teachers do not need to work very hard to facilitate students to learn because they may learn or follow the lesson by themselves. This can be understood by looking at the student’s face expression. Usually, students who learn joyfully have a happy mood of learning that can be seen from his or her face. These students do not need motivation or a lot of instruction from teachers. However, they need support for their process of learning. The support provided by teachers can be in the form of appreciation, encouragement, recognition, as well as direction [15] [16]. In this case, teacher should support the students process of learning from behind. Correction or guidance can be given to students based on students’ requirement. In addition, teacher may also challenge students to accelerate their learning process, for example by asking questions [15] [16]. This is important for the students to achieve new equilibrium state of learning in which they arrive in new knowledge level as the progress of their learning [13]. This process is figured out by E process (see Figure 1). For example, when the students work enthusiastically on finishing the task of electron configuration of atoms, the teacher does not need to give any instructions or interruptions. The teacher may just observe them and give supports as required.

2) **Teacher as learning motivator.** When students do not respond to the lesson, they may not learn anything new or completely ignore the lesson. Although they stay in the classroom, they may not be connected to the lesson. This can also be seen from his or her face expression which is unchanged or no response at all. In this case, teachers should work hard to find out the reason and prepare an appropriate stimulus to encourage them to learn. If it is found out that students think that they do not learn new things, the teacher should motivate the students to learn, for example by asking questions. If it is found out that the students ignore the lesson due to they do not find out the importance of the lesson, the teacher should motivate the students, for example, by showing the connection between the lesson and their previous learning, the lesson and their daily life, or the lesson and their future learning [4]. These kinds of motivation help students to find out the meaning of the lesson and they will learn the lesson meaningfully and joyfully. This process is also lead to student’s cognitive equilibrium. In this case, teachers play role as learning motivator to push students to achieve new equilibrium state of learning. This process is figured out by the F process (see Figure 1). For example, in the case of doing task of electron configuration, if the student does not work on the task, the teacher may ask the student to work under teacher’s close observation. By doing this, the teacher will know exactly the student’s condition. By knowing the real condition, the teacher may take further action.

3) **Teacher as learning model.** When students find difficulties in learning, they may also not learn anything as well and they may feel stressful in learning. This learning condition can also be seen from his or her face expression showing unhappy mode. In this case, teachers should also work double, first to find out students’ problems and second to provide appropriate solutions. Some students feel unhappy in learning due to a gap between student prior knowledge and the information received. For example, students are given tasks to conduct experiment whereas they have no experience in conducting experiment, even they do not know the kind of equipment used and they way to use it. In this case, teacher should start the lesson from the beginning. When it is necessary, the teacher should demonstrate how to use equipment. In this case, teachers will play a role as a model that students can observe and follow [15] [16]. Therefore, teachers help students to accommodate new schemata and achieve new equilibration state of learning happily. This process is figured out by the G process (see
Figure 1). In the case of doing task of electron configuration, the teacher may give an example of writing electron configuration of atoms while explaining to them step by step.

Based on the above explanation, it can be mentioned that whatever the students’ situation in learning happy, no response, or unhappy, teacher should facilitate students to achieve new equilibrium state of knowledge as a result of their learning process. The process of learning will have no end or will go circularly through the assimilation, accommodation, and equilibration processes. The main role of the teacher is to help student to enhance their level of knowledge as an indicator of student’s competent. Although every cycle of learning should end with new equilibrium stage, the role of teacher should be different for different student’s characteristics.

Conclusion

Human learning is a complex process of human interaction with learning resources involving not only physical senses, but also cognitive processes. Based on the constructivist theory of learning, there are three cognitive activities occurred during learning process, namely assimilation, accommodation, and equilibration. The first and the second processes produce responses depending on the state of new knowledge learnt and the state of students’ prior knowledge. Those responses can be classified into three different students, namely excited students, unresponsive students, and struggled students. Different kinds of students should be treated differently in learning because each of them has different problems in learning. Therefore, teachers should play different roles in facilitating each kind of students. The first is the role for excited students. Here, the role of teacher is mainly as a supporter which supports students to learn from behind. The second is the role for unresponsive students. Here, the role of the teacher is mainly as a motivator which motivates students to learn to find the importance of the lesson. The third is the role for struggled students. Here, the role of the teacher is mainly as a model of learning which provides guidance to the students to learn.

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