APPLICATION OF ARCSI LEARNING MODEL WITH A SAINTIFIC APPROACH IN MATHEMATICS LEARNING

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ABSTRACT

This paper provides guidance for the implementation of the ARCSI learning model with the Scientific Approach in mathematics learning. This learning model was developed based on the learning conditions in SMP / MTs. in the of Bukittinggi and Agam district of West Sumatera which require a model of learning based on Islamic values, ARCS motivation strategies, and scientific approaches mandated in the curriculum of 2013. This learning model is designed to shape the character of learners in an Islamic way, and the process of learning mathematics fun, and train students to think critically and comprehensively through a scientific approach.
Synonymous ARCSI learning model with scientific approach, namely: (1) attract the attention of learners by inviting praying / pleading to Allah swt. (2) convey the purpose / benefit of learning and its application in everyday life, (3) group deliberation to establish ukhuwah Islamiyah in group, (4) Deliberation Class to establish ukhuwah Islamiyah classically, (5) give satisfaction to the learners by sincerely intending to learn because following the commands of Allah Ta'ala. and sunnah of the Prophet Muhammad Saw. (s), (6) evaluate the process and results of problem solving, (7) close learning by inviting students to read hamdallah, and say greetings.

Keywords: Learning Model, ARCS Motivation Strategy, Scientific Approach, ARCSI Learning Model with Scientific Approach.

I. Introduction

The ARCSI Learning Model with the Scientific Approach is a new learning model developed through a study entitled "Development of ARCSI Learning Model with Scientific Approach" at SMP / MTs. in the city of Bukittinggi and Agam district of West Sumatra. In order for educators to understand and apply this model, ARCSI learning model book with the scientific approach is developed. This model integrates the ARCS motivation strategy and Islamic values that teachers need in mathematics learning, so as to shape the characteristics of learners in an Islamic way, and can increase the involvement, motivation, and learning outcomes of learners' mathematics.

This paper introduces teachers / educational practitioners about the ARCSI learning model with the Scientific Approach, namely: (a) Rationale of model book compilation; (b) Characteristics of ARCSI learning model with an saintific approach, (c) Social system, reaction principle, and support system , as well as the expected instructional and accompanist impacts in the ARCSI learning model with a scientific approach.

II. DISCUSSION

A. Rationale

The compilation of ARCSI learning model book with scientific approach is based on; (1) Government Law and Regulation related to education, (2) theoretical study related to ARCSI learning model with scientific approach, and (3) learning facts that occur in SMP/MTs.

1. Formal Platform

Some of the formal foundations underlying the preparation of this model book include:

a. Law of the Republic of Indonesia Number 20 of 2003 on National Education System.
b. Government Regulation of the Republic of Indonesia Number 19 of 2005 on the National Education Standards of Education.
c. Regulation of the Minister of National Education of the Republic of Indonesia number 22 of 2006 on Content Standards for Primary and Secondary Education units.
d. Regulation of the Minister of National Education of the Republic of Indonesia number 23 of 2006 on Graduate Competency Standards for Basic and Secondary Education Units.
e. Regulation of the Minister of National Education of the Republic of Indonesia number 41 of 2007 on Process Standards for Basic and Secondary Education Units.

2. Theoretical foundation

The theoretical foundation in the development of the ARCSI learning model with the scientific approach is as follows.

a. Theory Social Constructivism of Vygotsky's
b. David Ausabel's meaningful learning theory
c. Learning Theory Piaget
d. Learning Theory of Jerome Bruner.
e. Motivation Theory
f. ARCS Motivation Strategy (attention, relevance, confidence and satisfaction)
g. Theory of Islamic Values
h. The Scientific Approach in Mathematics Learning

3. Learning Facts

The facts of learning in the field of data from the results of the initial analysis of the implementation of the learning process in SMP / MTs. namely: (1) the learning process has not been done well, (2) the learning process conducted by the teacher is still conventional, (3) the absence of serious effort from the teacher to change the pattern of learning with the application of learning models that can motivate and activate learners during the learning process as mandated by the 2013 curriculum. The facts in this field are further explored and processed in the form of a dissertation entitled Development of ARCSI Learning Model with the Scientific Approach (Studies at SMP / MTs in Bukittinggi and Agam districts).

4. Purpose

This model book is structured with the aim of increasing the understanding of teachers / education practitioners about the ARCSI learning model with the developed Scientific Approach.

5. Usefulness

The usefulness of this model book is:

a. This model book is prepared in the hope that it can help teachers / education practitioners in order to perfect the learning process.
b. This model book is supposed to be an additional reference for teachers in crafting a fun lesson. The model is designed to integrate ARCS motivational strategies, Islamic values, and scientific approaches in line with the demands of the 2013 curriculum.

B. Characteristics of ARCSI Learning Model with Scientific Approach

Learning models relevant to mathematical characteristics and mathematics learning objectives are numerous, such as (1) problem-based learning models, (2) contextual learning, (3) cooperative learning and many other learning models. However, the existing learning model has not been designed to make the learning process fun, and the teacher in the learning process has not applied the values of the character sourced Alqur'an, and hadith, and the learning process of mathematics concept has not followed the scientific approach mandated by the curriculum 2013.

The process of learning mathematics with ARCSI learning model with this scientific approach will form the ability of learners in presenting abstract concrete ideas and knowledge, solving abstract problems related, and practicing rational, critical and creative thinking. As part of the Curriculum 2013 that emphasizes the importance of balance of attitude, knowledge and skill competencies. The required mathematical skills are shaped through continuous learning, which begins by increasing the knowledge of mathematical methods, followed by the skill of presenting a problem mathematically and solving it, and leading to the formation of honest, critical, creative, meticulous, and principled attitude.

ARCSI learning model with this scientific approach describes the minimum effort that teachers and learners should do to achieve the expected competencies. Learning with a scientific approach in accordance with the mandated curriculum 2013, learners are encouraged to seek from other sources of learning available and stretched around it. The role of teachers is very important to improve motivation and adjust the absorption of learners with the availability of activities on the syntax of this learning model. Teachers can enrich it with creation in the form of other activities that are relevant and relevant to the social and natural environment.

Based on the theoretical basis, the design of the ARCSI learning model with the scientific approach applied follows the 5 main components of the learning model, ie syntax, social system, reaction principle, support system, and instructional and accompanist effects (Joyce and Weil 1992: 14-16) as described below.

1. Syntax:

a. Draw the attention of learners by inviting praying / pleading to Allah swt. so that science can be claimed to be closer to God Almighty.

The activities performed in this syntax are:

1) Conditioning the class by asking students to read the Qur'an or pray (Islami).
2) The teacher reminds the students that we are obliged to always expect the pleasure of Allah SWT. in learning, because only Allah SWT. which will give understanding to his servant to the knowledge learned (Islami).
3) The teacher displays the student's environment phenomenon related to the learning material, and asks some questions that aims to explore students' knowledge (Islami, Attention).

(Platform Theory: Ausabel Theory, Keller Motivation Theory (Attention), J. Bruner Theory, Alqur'an and Hadith).

b. **Convey the purpose/benefits of learning and its application in everyday life.**

Activities performed on this syntax are:

1) The teacher displays the learning objectives to be achieved, and explains the learning process that the learners will do according to the ARCSI Learning Model with the Scientific Approach (Islami, Relevance).

2) Teachers outline about learning materials and problem-solving steps with varied methods and attractive appearance (Islamic, Relevance).
3) Teachers distribute teaching materials, students group work sheets (LKKPD), and object models to be observed (Attention, Confidence).

(Theory of Theory: Ausabel Theory, Keller Motivation Theory (Attention, Confidence, Relevance) The Scientific Approach, J. Bruner Theory, Alqur'an and Hadith)

c. Group deliberation to establish ukhuwah Islamiyah in the group.

Activities performed on this syntax are:

1) The teacher assigns / asks the learners to observe, study, and formulate questions about the phenomena observed in LKKPD (Islami, Attention, PS 1, and PS 2).
2) The teacher assigns students to group meetings to gather information from various learning sources, as well as from the knowledge that the students have mastered to answer the questions that have been formulated, and the teacher acts as a mentor and supervisor in deliberation. Teachers always remind and motivate learners to foster cooperation in groups (Islami, Attention, Satisfaction, PS3, PS4).
3) The teacher assigns students who already understand the learning materials, to help their uninformed friends. The help given to someone will be rewarded from Allah SWT. (Islami, Satisfaction).
4) Teachers are always going around in each group to motivate, monitor learners' work, and provide help when needed with great sincerity and affection. The teacher should always remember that the learners are new learners, do not know, and expect the attention and guidance from the teacher.
5) The assistance and attention given by teachers with full sincerity will not be in vain, for Allah Almighty. will always take into account all the actions of his servant (Islami, Attention, Relevance).
6) Teachers provide motivation to always cooperate and help each other, patient and eager in work (Islami).
7) Teachers provide guidance to learners when needed (Islami, Attention)

(Basis Theory: Piaget Theory, J. Bruner Theory, Keller Motivation Theory (Attention, Relevance, Satisfaction), Alqur'an and Hadith)

d. Deliberation Class to establish ukhuwah Islamiyah in classical.

Activities performed on this syntax are:

1) The teacher provides facilities, and assigns classical deliberate participants, to communicate the results of the group meetings by asking each group's representatives to present their work (Islami, PS5, Attention, Relevance)
2) The teacher assigns to different groups to respond to the answer of the presenter group, and the teacher as a mediator in the deliberation (Islami, Relevance, Confidence).

(Basis Theory: Piaget Theory, J. Bruner Theory, Keller Motivation Theory (Attention, Relevance, Satisfaction), Alqur'an and Hadith).

e. Giving satisfaction to the learners by sincerely intending to learn because following the commands of Allah Ta'ala. and the sunnah of the Messenger of Allah Ta'ala.

Activities performed on this syntax are:

1) Teachers provide confirmation (reinforcement) of learning materials to eliminate learners 'doubts, and inculcate students' beliefs about the correctness of the concluded concepts based on the results of deliberation (Islami, Satisfaction).
2) The teacher asks / assigns the learners to formulate the conclusions of the material already discussed, and to give affirmation.
3) The teacher guides the learner to conclude the lesson by asking learners to express what important ideas have been learned from teaching material (Islami).
4) The teacher distributes gifts to the group that has worked properly and correctly (Islami, Satisfaction).
5) (Platform Theory: Piaget Theory, J. Bruner Theory, Keller Motivation Theory (Satisfaction), Alqur'an and Hadith).

f. Evaluate the process and results of problem solving

The activities performed in this syntax are:

1) Teachers give individual evaluation using LKIPD (Confidence, Satisfaction).
2) Master reminds learners to always be honest and sporty, because honesty and sportsmanship will make us people who appreciated (Islami).

g. close learning by inviting students to read hamdallah, and say greetings

Activities performed on this syntax are:

1) The teacher assigns / instructs the students to do the task at home based on teaching materials or handbook of learners (Islami, Confidence).
2) Teachers need to remind / motivate learners to always learn with sincerity, because Allah SWT. Will elevate the degree of the believer and knowledgeable knowledge of some degree (Islami). 3) The teacher asks the students to thank God again. For learning activities that have been done, may Allah SWT. Give understanding to the science that has been studied today (Islami).
3) The teacher closes learning by inviting the students to say Alhamdulillah (Islami).

B. Social System

Organizing learners during the learning process apply cooperative learning patterns. In the socio-cultural interaction among students and friends, teachers always instill Islamic values in the form of Islamic ukhwah values among learners by: (1) mutual respect, (2) mutual benefit, (3) mutual help, (5) not degrading other friends, (6) not feeling right, (7) working together in solving problems, (8) asking each other / deliberation between weak and intelligent learners, (9) freedom of expression, dialogue and debate, and (10) are helpful and mutual help to produce an agreed solution.

While other social systems are designed to emerge is the cooperation and mutual help in understanding the concepts of matter by learners, the attitude of responsibility individually and in groups.

(Platform Theory: Joyce & Weil (2011), Kardi (1997), Director General of PMD PSMA (2013), Alqur'an and Hadist)

C. The Principle of Reaction

The principles of reaction that are designed and expected to appear in the ARCSI learning model with the scientific approach are: (1) the teacher provides support by using good words, (2) the teacher provides guidance if there are students who are experiencing difficulties, (3) (4) the teacher gives the learner the opportunity to reconstruct and express the thought, (5) the teacher gives explanation / help by using good words, and (6) the teacher evaluates.

To realize these behaviors, the teacher must provide the opportunity to learners to express the results of his thinking freely and openly, examine the learners 'understanding of the mathematical objects derived from the process and outcome of the problem, show weaknesses in learners' understanding and provoke them to find a way out to get a real solution to the problem.

If any learner asks, before the teacher gives an explanation / help, the teacher first gives the opportunity to other students to respond and summarize the results. If the entire student has difficulty, then it is time for the teacher to give explanations or help / give instructions until the learners can take over the problem solving in the next step. When learners work to complete the tasks, teachers control the course of deliberation and provide motivation for students to keep trying to complete the tasks. (Platform Theory: Joyce & Weil (2011), Kardi (1997), Director General of PMD PSMA (2013), Alqur'an and Hadist).

D. Supporting System

ARCSI Learning Model Support System with Scientific Approach developed in the form of Model book, Teacher Work Guidebook (PKG), and Handbook of Student Work (PKPD), teaching materials and learning media based on ARCSI learning model with scientific approach.The PKG book is a guidebook for teachers in managing the learning process outlined in the form of a Lesson Plans (RPP). While PKPD Book is a guidebook about learning process steps which will be done by learners which consist of Student Group Work Sheet (LKKPD) and Individual Student Worksheet (LKIPD), and teaching materials and instructional media that adapted to model component ARCSI learning with a scientific approach.
(Platform Theory: Joyce & Weil (2011), Kardi (1997), Director General of PMD PSMA (2013), Alqur'an and Hadist).

E. Impact of Instructional and Companion Expected

Social impacts and companions designed in the ARCSI learning model with the Scientific Approach, namely:

1. Instructional impact: (a) the ability to reconstruct concepts and principles, (b) logical and critical analytical skills, (c) the ability to collaborate among learners.
2. Impact accompanist: (a) rediscover the concepts, (b) the scientific tentative nature, (c) the skills of the scientific process, (d) autonomy and freedom of thought, (e) tolerance values, and (f) motivation; (g) ketahuidan teacher and learners, (h) sincerity in doing, (i) teacher patience and patience learners. (Platform Theory: Joyce & Weil (2011), Kardi (1997), Director General of PMD PSMA (2013), Alqur'an and Hadist).

III. Conclusion

Based on the above explanation, it can be concluded Learning Model Structure ARCSI with Scientific Approach in Figure 1 below.

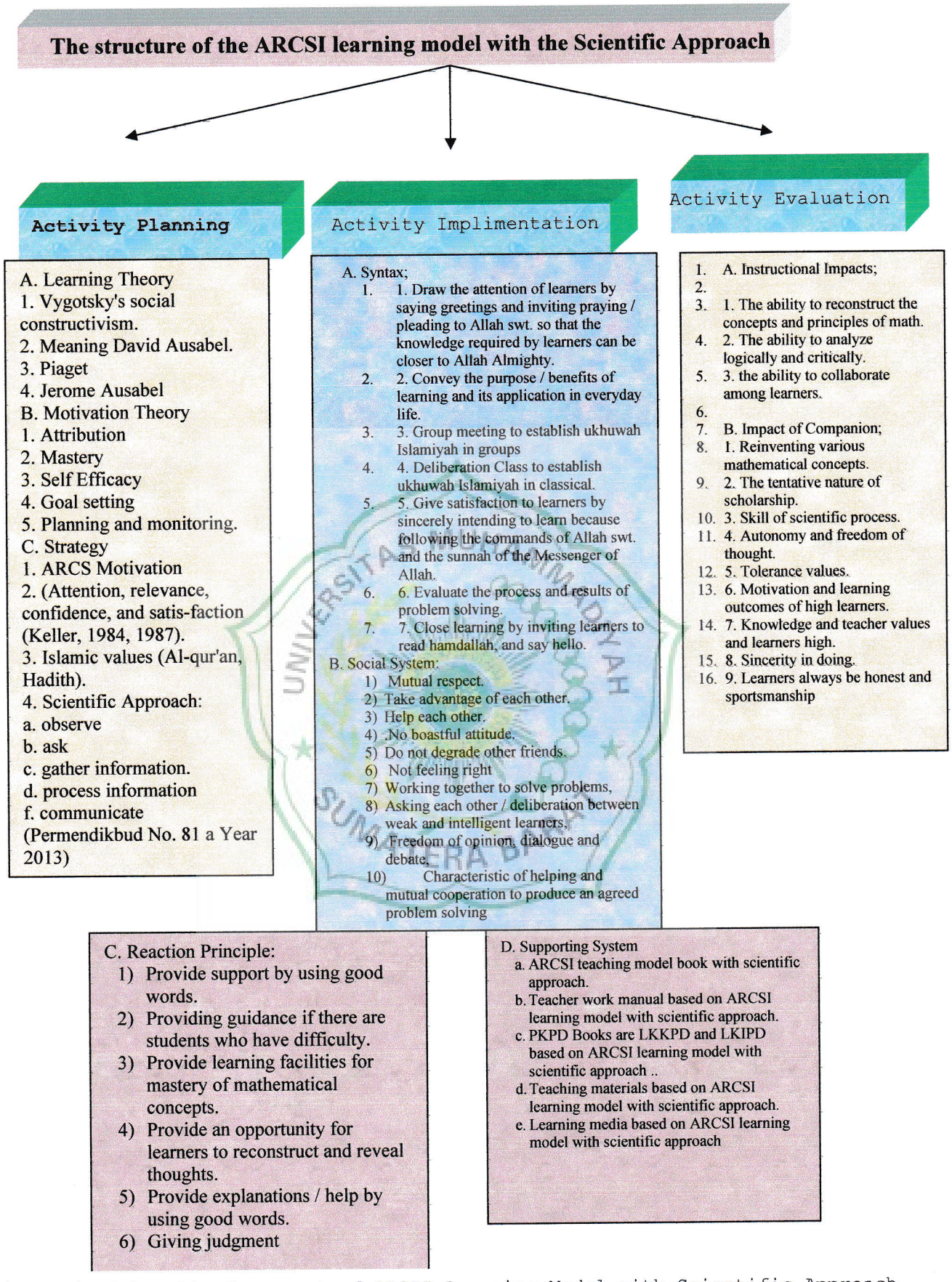

Figure 1. Schematic Component of ARCSI Learning Model with Scientific Approach

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