Social Learning Models Based on Metacognitive Strategies for Growing Self Efficacy

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Abstract. The research aims at finding out how the development of social learning model based on metacognitive strategies or PS MEDIM model fosters the mathematics self-efficacy of students which is valid, practical, and effective. The product of this research is a social learning model based on metacognitive strategies that can foster self-efficacy in mathematics. The development is conducted simultaneously. This research is research development which refers to the modification of the development of Tjeerd Plomp model with 4 phases of development. There is also a trial test of PS MEDIM learning model that is conducted in class XI at SMAN 9 Makassar. The results of research. First, the model, instruments, and the learning tools of PS MEDIM are valid. Second, the model of PS MEDIM is eligible to apply in the classroom. Third, the model of PS MEDIM does not meet the criteria of practicality. It indicates that the components of the model of PS MEDIM has not been implemented as expected and does not meet the criteria of effectiveness. The student's activity has not been as expected. In addition, the teacher's ability for teaching and learning management is still in "medium" category.

1. Introduction
Several problems which mostly occurred in a formal education students from elementary to university level are they cannot show their academic achievement optimally appropriate with their ability. One reason is because of low self efficacy. Confidence is closely related to mathematics learning achievement. The low self-esteem in students has a linear effect on their ability to learn and to face questions or math problems. Based on the results of research done by [1] which stated that self-efficacy and mathematics achievement have a positive correlation. A positive correlation means that the higher the self-efficacy of mathematics in a student the better the mathematical achievement, and vice versa. [2] said that a person's belief in their ability to organize and run the program of action necessary to produce a given achievement is called self-efficacy. To foster self-efficacy in students is closely related to student activities during the learning process. One such learning model is a social learning model based on metacognitive strategies. This learning model can make the learners able to construct knowledge, and indicated can grow the self-efficacy of the learners.

The social learning model is not sufficient in achieving the objectives of this research, so an appropriate strategy is developed, that is metacognitive strategy. [3] stated that metacognitive ability is potent enough to increase the meaningfulness of mathematics learners in the classroom and the creation of the mathematical culture in the classroom are best to help developing metacognitive abilities.

Through the social learning based metacognitive strategies with its characteristics, it is supposed that the learning model will increase the students' self-efficacy. In order for the learning process to run properly, then it required a learning device. Learning tools provide convenience and can assist teachers
in preparing and implementing teaching and learning activities in the classroom. Therefore, to implement the learning of mathematics of social model based on this metacognitive strategy, appropriate learning tools are needed, in this case include, Lesson Plan, Textbook Book (Module) and Test Result Learning. Based on the description of the above background, the purpose of this study is to produce a valid learning tool based on social models of mathematics based metacognitive strategies, practical and effective.

2. Social Learning Models Based On Metcognitive Strategies

According to [4] that the model of social learning is a learning model that emphasizes the approach of learning to the relationship of individuals with society or others. This model is focused on improving the ability of individuals in dealing with others, engaging in democratic processes and working productively in society.

| Stage                     | Teachers Behaviour                                                                 |
|---------------------------|-----------------------------------------------------------------------------------|
| Stage 1 Orientation       | The teacher explains the points of the simulation themes and concepts that will be poured into the simulations that will be handled and modeled in simulations and games as well as provide a preliminary explanation. |
| Stage 2 Participation in Training | The teachers prepare for the implementation of scenarios (rules, procedures, judgments, types of decisions to be taken), point out the role and enhance practical sessions. |
| Stage 3 Implementation of the Simulation | Carry out simulation activities and administrating players. Gain feedback and evaluation of the appearance of decision effects, and explain the concept of distortions as well as continuing the simulations. |
| Stage 4 Consolidation     | Summing up events and perceptions. Summing up difficulties and observations. The process of analysis. Compare simulation activities with the real world. Linking simulation activities with lesson content |

Furthermore, learning with metacognitive strategy is divided into several types. The first metacognitive learning strategy that is, underlining. The purpose of the underlining activity is to direct the attention of learners to the most important readings to note. By marking the bottom line, the learner will read more and when read back, they will get a large number of important ideas in reading [5] The survey reveals that 92% of learners use their own variety of ways to mark important sections in reading while learning. Research on self-directed underlining activities (student generated underlining) has been done long enough [6] They found that 50% to 90% of learners have by themselves undertaken the technique of underlining the textbook they are reading. The goal is to make it easier for students and students to understand the contents of the textbook and learn it again. The second metacognitive learning strategy, note-taking. According to [7] that making notes contains two activities at once namely, processes and products. They claim that before records materialize, there is a process (encoding) that precedes what happens in the mind of a person for the record to materialize and take the form of external storage. [8] which proves that just being there and manifesting a record does not guarantee that learners will understand textbooks better, but rather lies in how notes are made so not on how to make notes but how to have their own notes. The dependent variable that will be studied in this research is self-efficacy. [9] stated that self-efficacy is an important variable for students to evaluate because it focuses on their beliefs about the effectiveness of their learning methods. The same opinion is also expressed
by [10] which mentions “self efficacy is the belief that one can master a situation and procedure positive outcomes”. [11] “Self-efficacy is our belief about our personal competence or effectiveness in a given area and important variable for student to monitor.

[2] used the term self-efficacy that refers to beliefs about one's ability to organize and execute actions in the achievement of results. In other words, self-efficacy is a self-assessment belief with regard to one's competence to succeed in his tasks. According to Bandura, self-efficacy beliefs are a key factor in the source of human agency, "what people think, believe, and feel influence how they act”

3. Method
3.1 Kinds of Research
This type of research is development research. Called the development research since the main purpose of this research is to produce the learning tool of social model of mathematics based metacognitive strategy which consists of Lesson Plan, Textbook Book (Module) and Test Result Learning.

3.2 Location and Subject of the Research
This research is planned to be conducted in SMA Negeri 9 Makassar in the even semester of the academic year 2015/2016 and the subject of research is the students of class XI A, with the number of students is 21 people consisting of 12 female students and 9 male students.

3.3 Research procedure
This research is a development research that develop learning tool of social model of mathematics based metacognitive strategy which refer to Plomp model. This model consists of 4 stages, namely phase I: initial investigative phase; phase II: design phase, stage III: realization phase, and stage IV: test phase, evaluation and revision.

3.4 Research Instruments
The instruments in this study were: (1) the learning device validation sheet, (2) the observation sheet, (3) the students' control test on the limit of the function material, and (4) the student's response questionnaire.

3.5 Data collection technique
To collect data in this research, conducted in the following way: (a) Validator validation data (expert). (b) Data management and implementation of learning. (c) Activity data of learners. (d) Learning result data. (e) Students response data.

3.6 Data analysis technique
The data have been collected using instruments quantitatively analyzed and directed to explain the validity, practicality and effectiveness of social model of mathematics based metacognitive strategy learning tool are being developed. Data obtained from the validation results by the validators (experts) are analyzed to explain the validity and validity of learning tools of social model of mathematics based metacognitive strategies in the classroom. The classroom test results are used to explain the practicality, and the effectiveness of social learning tools based on metacognitive strategies.

3.7 Learning Tools Development Design
Mathematics learning design that will be developed in this study refers to the learning model proposed by [12]. The steps or phases to be followed in the process of developing the desired model follow the phasing proposed by [13] which consists of (1) the initial assessment phase; (2) design stage; (3) realization / construction stage; (4) test phase, evaluation, and revision, and (5) implementation phase.
4. Results and Discussion
The results obtained in each of the development phases in relation to the process of developing the PS MEDIM model are described as follows.

4.1 Phase 1 Preliminary Assessment
Based on the results of monitoring and observation (either directly or indirectly) about the current conditions related to the learning of mathematics in the classroom, the following information is obtained: (1) Mathematics learning by teachers in the classroom has not systematically considered aspects of self-efficacy mathematics that can support the achievement of learning objectives, both in terms of products and processes; (2) In the learning tools used, nor have there been any emphasis on aspects that foster self-efficacy of mathematics. Almost entirely charged cognitive domain as seen in the lesson plan used; (3) Some teachers have not yet set up innovative tools, such as classroom instruction materials in the form of commercialized print books. Likewise other devices, student activity sheets have not been prepared. (4) The condition of self-efficacy of mathematics is low. Students at the school have been much influenced by the environment that does not support the achievement of learning objectives. Uncomfortable classroom atmosphere as a result of the influence of school and community environments, has also been implicated.

4.2 Phase 2: Design
The results of the development in this phase of the initial design include 3 things, namely (1) the initial design results of the PS MEDIM model, (2) the initial design result of the learning device according to the PS MEDIM model, and (3) the design result of the instruments to be used to obtain the data needed in the development process.

In the section discussing the implementation of learning, the syntax implementation consists of 4 phases, namely: phase-1 affection and motivate students, phase-2 cognitive strategy and problem solving knowledge construction, phase-3 role selection and the formation of group-4 phase discuss and self-training, and the 5th phase of recitation and generalization.

In the Lesson Plan (LP) phase, which was successfully designed based on the PS MEDIM model syntax, it also considers its association with other components of the PS MEDIM Model, namely the principles of reaction, the social system, and the impact of instructional and companions. The design of the LP contains aspects of (1) the general purpose of learning, (2) the specific objectives of the lesson, (3) the subject matter (4) prerequisite materials, (5) learning activities (teacher and student activities), and (4) Completeness of learning.

Effectiveness instruments designed in this phase include: (1) Student activity observation sheets, (2) Observation sheets of teachers' ability to manage learning, (3) Questionnaire responses, and (4) evaluation of learning outcomes.

4.3 Phase 3: Realization
Phase-3 is to prepare / realize more PS MEDIM Model along with the appropriate learning tools and instruments needed. The products obtained in this phase include (1) the PS MEDIM model book, (2) learning tools in accordance with the PS MEDIM model, and (3) the validity, efficacy, and effectiveness of the PS MEDIM Model.

In the supporting theories of the PS MEDIM model the relevant core theories / support the PS MEDIM model. Theories include (1) self-efficacy of mathematics, (2) constructivism theory, (3) Vygotsky theory, (4) behaviorist theory, (5) Bruner theory, and (6) Gagne theory.

4.4 Phase 4: Testing, Evaluation and Revision
In Phase-4, this is followed up by conducting validity testing activities of the PS MEDIM Model, validity test of the device, and test of validity and some related instruments. The results of the development of these instruments are presented as follows:

4.4.1 Instrument validity
The validity instruments include: (a) the PS MEDIM model assessment sheet, (b) the feasibility assessment sheet of the PS MEDIM model, and (c) the validation formats. The instruments are modified from similar instruments developed by [14]. All of these instruments can be seen in Appendix A. Modifications are made as necessary through the results of discussions with peers. The summary of revisions / modifications can be seen in Table 2 below.

**Table 2. Revised / Modified Instrument Results PS MEDIM Model**

| No | Type of validity instrument | Before Revision | After Revision |
|----|------------------------------|----------------|---------------|
| 1  | PS MEDIM Model Assessment Sheet | There is a General Assessment option (not yet usable, can be used with major revisions, etc.) | Dispensed |
| 2  | Validation Format of Observation Sheet of PS MEDIM Model implementation | 1. There is a general assessment option 2. Using a rating scale of 1 to 4 | 1. Dispensed 2. Using a scale of 1 to 5 |
| 3  | Format Validation Student Activity Observation Sheet | 1. There is an option of General Assessment 2. Using scale / score 1, 2, 3, 4, 3. There is no Aspect of Practicality | 1. Dispensed 2. Using scale / score 1, 2, 3, 4, 5. |
| 4  | Validation Format of The ability of teachers to manage PS MEDIM Model Learning | 1. There is a general assessment option 2. Using a rating scale of 1 to 4 | 1. Dispensed 2. Using a scale of 1 to 5 |
| 5  | Validation Format of Lesson Plan | 1. There is an option of General Assessment 2. Using a scale of 1 to 4, 3. There are three aspects 4. Aspects of objectives include 3 parts 5. There is a language aspect 6. There is no aspect of the method | 1. Dispensed 2. Using a scale of 1 to 5 3. There are 5 aspects 4. Aspect Objectives include seven parts 5. Language Aspects were Dispensed 6. There are aspects of methods and learning facility |
| 6  | Validation Format of Student Response Question | 1. There is a general assessment option 2. Using a rating scale of 1 to 4 | 1. Dispensed 2. Using a scale of 1 to 5 |
| 7  | Format Validation Material Sheet | 1. There is an option of General Assessment 2. Using a scale of 1 to 4, 3. There are 4 aspects of assessment | 1. Dispensed 2. Using a scale of 1 to 5 3. There are 3 aspects of assessment |

4.4.2 Instrument of Practicality

Practical instruments include observation sheet of PS MEDIM model implementation and appraisal feasibility sheet of PS MEDIM model. These instruments have been validated by two experts / practitioners in the field of education.

Instrument reliability calculation result of feasibility assessment sheet of PS MEDIM model
obtained from two validators is PA = 86.0%. While the reliability coefficient of the observation sheet of the implementation of PSED MEDIM model calculated after tested is R = 0.860.

4.4.3 Instrument of effectiveness
The average value of the total validity of the PS MEDIM Model obtained is V = 3.6. Referring to Criteria (i) the validity and Model PS MEDIM can be concluded that this value belongs to the category "Valid" (3.5 V <4) [15].

The average value of the validity of the PS MEDIM Model for aspects of supporting theories is V = 2.7. Based on the prevalence criteria and PS MEDIM model mentioned in Chapter III, this value is only included in the category "valid enough" (2.5 V <3.5).

The average value of the validity of the PS MEDIM Model for syntactic aspects, social systems, and the principle of successive reactions is 4.3; 3.7; and 4.1. Based on the criteria (ii) the validity of the PS MEDIM Model, these three values fall within the "valid" category (3.5 V <4.5)

5. Conclusions
Based on the results of the research, it can be concluded as follows: (1) The self-efficacy of mathematics in learners through the PS MEDIM model is in the "high" category. (2) The PS MEDIM model meets the valid, practical and efficient criteria, namely: (a) The PS MEDIM model meets valid criteria, ie all validators say that the PSMEDIM model is based on the theoretical foundations and strong model components associated with PS MEDIM and is linked consistently; (b) The PS MEDIM model meets the criteria of practicability, ie all validators (experts and practitioners) state that the PS MEDIM model can be implemented and can be used in learning with high level of implementation. Almost all aspects of the PS MEDIM model components are fully implemented; (c) The PS MEDIM model is also declared efficient, because the learning completeness has been achieved, the student activity as expected, the ability of the teacher to manage the learning is in the "good" category, and the student's response to the learning has been positive, and the students' self-efficacy have increased.

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