Integration Model Development of Emotional Intelligence In Mathematical Problem-Based Learning

Ahmad Syawaluddin[1], Ramlan Mahmud[2], and Naimah Paronda[3(*)]
[1] Makassar State University, South Sulawesi, Indonesia,
[2] Makassar State University, South Sulawesi, Indonesia,
[3]Makassar State University, South Sulawesi, Indonesia,
[(*)]unmsyawal@unm.ac.id , ramlan.mm@gmail.com

Abstract
This research includes research development (Research and Development). The purpose of this study is to obtain an overview of the mathematics learning model in junior high schools at this time and to obtain an emotional intelligence integration model in a valid, practical, and effective problem-based mathematics learning to improve student learning outcomes through a development process. The desired product in this study is a model of integration of emotional intelligence in validation, practical, and effective problem-based math learning. The development phases are: (a) the initial investigative phase, (b) the design phase, (c) the realization phase, (d) the testing phase, evaluation and revision, and (e) the implementation phase. Furthermore, based on expert judgment and practitioners of emotional intelligence integration model in problem based mathematics learning is valid and ready to be tested. The results are: (a) this model is considered practical, since almost all aspects of the model component are fully implemented, and (b) the model is declared effective, because the completeness of classical learning has been achieved, the student activity as expected, learning is very good, and students' responses to learning are positive. Thus the development of an emotional intelligence integration model in problem-based mathematics learning meets valid, practical, and effective criteria.

Keywords: Learning Model, Math Learning, Emotional Intelligence, Problem Based Learning.

Introduction
The expected objectives in mathematics learning by the National Council of Teachers of Mathematics (NCTM, 2016) set out five standards of mathematical ability that must be possessed by students, namely problem solving skills, communication skills, connection capabilities, reasoning ability, and representational ability.

Student mathematical problem solving skills are important to develop. The importance of problem solving is proposed by Branca (Branca, 2006), stating that problem-solving ability is the heart of mathematics. This is in line with (NCTM, 2016) which states that problem solving is an integral part of mathematics learning, so it should not be released from mathematics learning. Furthermore, (National Research Council, 2001) also suggests that problem-solving skills are essential in mathematics, not only for those who will later learn or study mathematics, but also for those who will apply them in other fields of study and in everyday life.

Based on some of the above opinions, problem-solving skills must be possessed by students to train in order to be familiar with problems, whether problems in mathematics, problems in other fields of study or problems in everyday life are increasingly complex. Therefore, the student's ability to solve mathematical problems needs to be continuously trained so that he can solve the problems he faces.

The facts mentioned above provide clues for immediate repair weaknesses of the learning process of mathematics in the classroom. Because, if such weaknesses are not anticipated and not fixed then will always happen and will hinder the achievement of goals further math learning. For that, an

alternative is needed learning mathematics quality, namely learning mathematics which provides more opportunities for students to develop its potential as a provision in the present life and the life to be come.

(Henningsen & Stein, 1997)suggest that in order to develop students' mathematical abilities, learning must be an environment where students are able to be actively involved in many useful mathematical activities. Students must be active in learning, not just copying or following examples without knowing the meaning.

One of the learning alternatives that provides an opportunity to achieve the purpose of mathematics learning, which is able to actively involve students is problem-based learning. Problem-Based Learning (Problem-Based Learning, hereinafter abbreviated as PBL) is a learning that begins by exposing students to a problem(Dos Santos, Figuerêdo, & Wanderley, 2013). In the context of mathematics learning, (Verschaffel, Depaepe, & De Corte, 2015) state that PBL is a mathematical learning strategy in the classroom with problem-solving activities and gives students more opportunities to think critically, creatively, reasonably, and communicate mathematically with their peers. In PBL students are required to solve that problem deliberately given by the teacher with knowledge, ability, andexperience of the students.

However, according to (amri, 2010), problem-based learning has advantages and disadvantages. Some of the advantages of problem-based learning (PBL), can be described as follows:

1. PBL is a pretty good technique to better understand the content of the lesson;
2. PBL can challenge the ability of learners and provide satisfaction to determine new knowledge for learners;
3. PBL can improve the learning activities of learners;
4. PBL helps learners how to transmit their knowledge to understand real-life problems;
5. PBL helps learners to develop new and responsible knowledge in their learning;
6. PBL is considered more fun and preferred by learners;
7. PBL can develop students' ability to think critically and develop their ability to adapt to new knowledge;
8. Provide an opportunity for learners to apply the knowledge they have in the real world;
9. PBL can develop the interest of learners to continuously learn.

From the above description it can be concluded that PBL should start with the problem to be solved. At this stage the teacher guides the learner on awareness of the gaps felt by humans or the social environment. The ability to be achieved by learners can determine or capture the gaps that occur from various phenomena that exist. In addition to excellence, PBL also has shortcomings, namely:

1. When learners have no interest or no belief that the problem learned is difficult to solve, then they feel reluctant to try;
2. Success through PBL requires considerable time and preparation;
3. Without understanding why they are trying to solve the problem being studied, then they will not learn what they want to learn.

By looking at the shortcomings of the above PBL, then this is expected to be a solution that can cover these shortcomings and this will be anticipated by presenting elements of emotional intelligence.

Mathematics is a subject that is in school, and until now still considered as a difficult subject for most students. Students' difficulties in learning mathematics may make students unhappy with mathematics. that mathematics for students is generally a subject that is hated or disliked. This hatred or displeasure will affect the success of students in learning mathematics. By looking at these difficulties, then this is expected to a solution that can overcome these difficulties.(Remillard, 2007)

In line with the above, (Boström & Lassen, 2006)study of high school IQ students in Indonesia, above 120, revealed that most student failures in math subjects at school were not due to their IQ but to their emotional control(Kilduff, Chiaburu, & Menges, 2010)

In connection with the effort to achieve the goal of learning mathematics through problem-based learning, of course requires students to use their potential optimally. Meanwhile, to create a learning process with the optimal use of student potential, (Corcoran & Tormey, 2010)states that the emotional intelligence that students have to be a concern. The emotional mood in mathematical learning in a special way will be of little help in accepting mathematics lessons. Thus, the presence of emotional intelligence can be seen as an aspect to consider, even as a basis for following the problem-based learning process well.

Based on the above description, the writer considers it necessary to conduct studies or studies that focus on problem-based learning that involve emotional intelligence, and is considered very urgent to do.

Based on the background of this problem the authors are interested to conduct research by raising the title "Development Model Integration of Emotional Intelligence in Problem Based Mathematics Learning to Improve Student Results Class VIII Junior high school".

Method

This study aims to develop a problem-based learning model that integrates emotional intelligence, therefore this research includes the type of research development (Research & Development). This research was conducted in class VIII Junior High School 7 Watampone, Bone District, as many as 27 students, consist of 11 men and 16 women. In this study, the development of the learning model was adapted from the (Plomp, 2013) development model. The instruments developed are as described in the above sections: (1) model assessment sheets and appraisal appraisal sheets, (2) observation sheets, (3) questionnaire of student responses to learning components and activities, (4) teacher response questionnaire, (5) evaluation result sheets, and (6) validation format for each instrument. The data have been collected using the instruments that have been made, then analyzed quantitatively and directed to answer the question "whether the model of Emotional Intelligence Integration in Mathematics Based Problems can improve student learning outcomes and learning tools that are being developed is valid and effective or not yet?". Data obtained from the validation results by experts and practitioners are analyzed to answer the question "whether the model and its devices are valid or not?". Likewise, to answer the question of the feasibility of applying the model, ie "whether theoretically, the learning models and learning tools being developed can be implemented in the classroom or not?

Results of Research

The results obtained at each stage of development in relation to the process of developing the Emotional Intelligence Integration model in Problem Based Mathematics Learning conducted at Junior High School 7 Watampone, are presented as follows.

Phase-1 Initial Investigation

The preliminary study was conducted in class VIII SMP 7 Watampone, south-sulawesi, Indonesia about mathematical ability and its relation to mathematics learning result. The findings indicate that the students' mathematics score is still very low, ie averaging 5.24 where the average student ability is low.

Phase-2 Design

The results of the development at this stage of the initial design include three things, namely (1) the initial design result of the model (2) the initial design result of the learning device according to the model, and (3) the design result of the instruments to be used to obtain the data required in the process of developing models and devices.

Phase-3 realization

The results at stage-1 and stage-2 are then discussed with experts or experts, and more closely observed. This is directed to stage-3 which is to realize more maturely the model and the appropriate learning tools and instruments needed. The products obtained at this stage include: (1) model book

(2) learning tools (RPP, teacher book, student book, SSW, and THB) compatible with the model, and (3) instruments of validity and effectiveness model.

Phase-4 Tests, Evaluations, and Revisions

Activity at this stage-4, which follow the model that has been realized in stage-3 is in the form: model book, learning tools, and instruments (validity and effectiveness). The results will then be given to experts and practitioners to determine the products and research instruments that have been produced already meet the criteria of validity or not.The validity instruments include: (1) model and validity sheets, the model assessment sheets and (2) the validity sheets and instruments, which include: (a) the observation sheet format validation and (b) the test validation format. The instruments are modified from similar instruments developed by(Arsyad, Rahman, & Ahmar, 2017). Overall, the total data aspect of experts and practitioners' assessment of the effectiveness of the model is 3.71, it can be concluded that the expert and practical judgment about the management of this model is stated very valid. Thus, the revision of the model book, learning tools, and instruments to be used, it was determined that the model of integration of emotional intelligence in problem-based mathematics learning along with all learning tools and research instruments has met the criteria of validity and is ready for trial.

Data analysis results shown that can be explained that the average indicator of each aspect of value is very valid. the average value of the total aspect is 3.79, if referenced to the criteria of determination of the validity level of learning device that has been determined then it can be concluded that the developed RPP has a validity level, that is very valid.the average value of the total aspect is 3.71, if referenced to the criteria of determining the level of validity of learning devices that have been established it can be concluded that the teacher book that has been developed has a validity level, that is very valid.the average value of the total aspect is 3.65, it can be concluded that the test result learning model is expressed very valid. the average value of the total aspect is 3.67, it can be concluded that the test of learning outcomes of this model is stated very valid. the mean total aspect is 3.85, it can be concluded that the student response to this model is stated very valid. Overall, the total data aspect of experts and practitioners' assessment of the effectiveness of the model is 3.71, it can be concluded that the expert and practical judgment about the management of this model is stated very valid. Thus, the revision of the model book, learning tools, and instruments to be used, it was determined that the model of integration of emotional intelligence in problem-based mathematics learning along with all learning tools and research instruments has met the criteria of validity and is ready for trial.

in terms of mastery learning there are 20 people from 27 students who scored 69 and above. Thus, according to the mastery of the test results have met the climax of completeness climax. AveragePercentage of Student Activity During PBLcan be concluded that the percentage of student activity time has met the criteria of achieving the percentage of the ideal time set. If the results of this analysis are referred to the established criteria, it can be concluded that the student's response to the application of learning with emotional intelligence integration model in problem-based mathematics learning, student book, and Sheet Student Work is positive.

Discussion

Emotional intelligence integration models in problem-based mathematics learning that have been developed, learning tools, and research instruments validated by experts and practitioners have met the criteria of validity and with some minor revisions. Thus, the overall design and development process of the model that has been declared invalid is further refined based on the record or correction of the validator by still referring to the considerations or guidance of the promoter and the copromotor.

The criteria of effectiveness in the development of the model are determined by four things in achieving the objectives, namely: (a) learning completeness klaksikal, (b) student activities and teachers, (c) student and teacher responses to learning components and activities, (d) the ability of

teachers withinmanaging learning. The test results data show that the effectiveness criteria have been met.

Emotional intelligence is part of the students' attitudes during learning activities during model trials. According to(Bott, 2014), attitude is a tendency to make choices or decisions in action. Meanwhile, according to (Kemdikbud, 2015), attitudes can be formed so that the desired behavior or action occurs. Attitudes expressed as prominent acts in this study, are empathy and communication. This empathy and communication attitude is shown during discussion, namely: students ask their friends, give opinions to the teacher or ask the teacher. Communication and empathy an integral part of the learning process. According to (Neumann et al., 2011)how to communicate with empathy is a tool or activity for effective communication execution.

Conclusions

Emotional intelligence integration model in problem-based math learning is valid by experts and practitioners and ready to be tested. Once tested this model is practicable, since almost all aspects of the model component are fully implemented, and this model is also declared effective, because the learning completeness has been achieved, the student activity is as expected, the ability of the teacher to manage the learning very well, and the student's response to the learning has been positive. Thus the development of an emotional intelligence integration model in problem-based mathematics learning meets valid, practical and effective criteria. Therefore, the goal of obtaining a model of integration of emotional intelligence in quality problematic math learning has been achieved.

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