Self-esteem in mathematics learning: How to develop it through contextual teaching and learning approach?

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Abstract. Self esteem is important in learning mathematics. Self esteem is a part of self-concept that involves students in evaluation and self-assessment. But in fact in mathematics learning, there are still students who have not looked at themselves positively so resulting in students having low self esteem or lack of self confidence. Low self-esteem or lack of self-confidence can be caused by negative experiences that they had before when they studied mathematics. Whereas, self esteem has a positive effect on mathematics learning outcomes of students. There are studies that show a positive correlation between self esteem and mathematics learning achievement. Then the question is: what can a math teacher do to help students develop their self esteem? One of possible way, teachers can help students to develop their self-esteem is by applying contextual teaching and learning approach. Contextual teaching and learning approach is learning that connecting subject matter with everyday life. This article will discuss how to develop students' self esteem in mathematics learning through contextual learning approach.

1. Introduction
In mathematics learning, self esteem is essential to be developed [1]. Rosenberg [2] define self esteem is favorable or unfavorable attitude towards oneself. For example, when students get low mathematics score on geometry. Students that has high self esteem will think that they are get low score because they are less studying. Meanwhile, students with low self esteem when they are get lower score will feel because they are less smart.

But in fact, there are still students that look at negatively at themselves on mathematics learning so cause student’s self esteem is low [3]. Low self esteem or can be said that self-confidence of students can comes from previous negative experience when they are learning of mathematics [4]. So, with decreasing student’s self esteem can cause learning outcome is low [5]. Low learning outcomes cause students has low achievement [6].

The question is what can do by teachers to help their students to develop student’s self esteem? One of possible way is by implementation contextual teaching and learning approach. Berns and Erickson [7] stated that contextual teaching and learning approach as learning that connecting subject matter with everyday life. Watson and Baron [8] define that learning mathematics should use contextual that can students participate in mathematics experience. If mathematics experience is well so will help to develop student’s self esteem [4]. So, this article will discuss about how to develop student’s self esteem in learning mathematics through contextual teaching and learning approach. What the meaning of contextual teaching and learning approach? Why learn of mathematics contextually believed to be help
students develop their self esteem? There are three sub topic to discussed, i.e. (1) self esteem in mathematics learning, (2) contextual teaching and learning approach, (3) developing student’s self esteem in learning mathematics by contextual teaching and learning approach.

2. Method
This article is a literature review method about knowledge, ideas, or findings contained in the literature. So that it can provide theoretical and scientific information related to contextual teaching and learning approach to develop self esteem of students. Data were collected and analyzed in the form of literature self esteem and CTL approach. Data obtained from scientific journal and relevant studies results to get review about how self esteem can be developed with CTL approach. Data were analyzed throughout several steps. First, reducing existing data and chooses ideas about the use of contextual teaching and learning approach to develop self esteem. Second, the author identified the stages of contextual teaching and learning approach that can develop self esteem. Lastly, the authors conclude that self esteem can be developed with contextual teaching and learning approach.

3. Discussion

3.1 Self esteem
Self esteem is as a global feeling about self consist of positive or negative attitudes [9, 10]. Lawrence [11] also define self esteem is self assessment of the imbalance between reality and expectation. Engel [12] also state that self esteem is overall self-assessment. Coopersmith [13] also define that self esteem is an evaluation made by an individual person and usually relates to respect for himself, this expresses an attitude of agree or disagree and shows the degree where the individual believes that individual is capable, important, successful, and valuable. So, self esteem is self assessment from global feeling to respect for himself where there are imbalance between reality and expectation where the individual believes that individual is valuable.

Coopersmith [14] divides self esteem into 4 aspect, they are power, significance, virtue, and competence. Power show on the ability to control behavior and gain recognition of the behavior carried out. Significance show on individual acceptance in the form of attention from the social environment. Virtue indicate an obedience to rules. Competence is a high performance to achieve achievement.

From four aspect above, in mathematics, we can make some indicators. From the power aspect, the indicator is show on the ability to control themselves in the situation at hand and show self-awareness. From the significance aspect, the indicator is show on belief that they mean to others and show on belief that they can be accepted by others. From the virtue aspect, the indicator is show positive attitude in learning mathematics and show seriousness in solving mathematical problems. And from the competence aspect, the indicator is show belief in their ability in mathematics and show belief that they able to solve mathematical problems.

Beside it, Crocker and Wolfe [15] express that self esteem can arise from support of family, competition, appearance, love of God, academic competence, virtue, and agreement from others. Crocker states that individuals can increase in self esteem due to success in the aspect concerned, while failure can cause a decrease in self esteem [16]. People with high self-esteem believe that they are attractive and make people more open. Even self-esteem has an indirect effect on leadership. Because they will show dominance in groups that can increase prejudice and discrimination. However, low self-esteem in certain conditions tends to cause depression [17].

Developing student’s self esteem in mathematics learning can through choosing approach learning appropriately. One of approach in mathematics learning that theoretically and potentially developing self esteem is Contextual and Teaching Learning Approach.
3.2 Contextual teaching and learning approach

Contextual teaching and learning approach is best learning where students beliefs on process learning and they are remember new knowledge more effectively when they can connecting between the new content and their own experiences [18]. Johnson [19] stated that contextual teaching and learning approach can involve students in significant activities that help them connect academic studies to their context in real life situations. Beside it, contextual teaching and learning approach is a conception of teaching and learning that useful to teacher and students where can help teacher to relate to real situations and can give motivation to students in make connections to real life [7]. So, we can conclude contextual teaching and learning approach is approach in learning that connecting between the new content and their experience where teachers connecting subject matter content to real world conditions.

There are five essential stages of contextual teaching and learning: Relating, Experiencing, Applying, Cooperation, and Transfer (REACT). First, relating is learning connecting to real life [20]. real life presented is something that is familiar to students [21]. Then, experiencing is learning in the context of exploring and experience. In this case the students plunge themselves to do something in finding. [22, 23]. Next, the applying is students do apply the concepts to their problem solving activities from the results of exploration that has been done. In this case the teacher's task is to provide motivation to students by making problems that are realistic and relevant to student life [24]. After that, cooperating is learning in the context of sharing, responding, and communicating with other students. This is a very essential strategy. Students who work in groups usually give better progress than work themselves [23]. And the finally, transferring is learning in the new context. It is important to builds on prior knowledge of students [25]. At this stage, the teacher facilitates students in connecting what they have learned and applying it to new contexts [26].

Furthermore, contextual teaching and learning approach has many benefit in mathematics learning. Hobri, etc [27] in their studies show that learning using CTL had a significant effect on the HOTS of students where the significance value (2-tailed) is 0.000 (p < 0.05). Then, Heris, etc [28] in their study found that students; grades of mathematical communication ability and self confidence which were better in the group taught by contextual teaching and learning with mathematical manipulative. Next, Yaya, etc [29] in their studies show that the increase of mathematical critical thinking ability better with contextual teaching and learning. Krisandari, etc [30] in their studies found that by contextual teaching and learning can increasing motivation of students, student activity, students’s mastery of concept which is seen from the mean of their group mark from cycles 1 (35.8%), cycle 2 (40.6%) to cycle 3 (44.12%). From the explain above, we can find that contextual teaching and learning approach can improve students’ high order thinking skill, mathematical communication ability, self confidence, mathematical critical thinking ability, student motivation, student activity, and increase student’s mastery of concept.

3.3 Developing self esteem through contextual teaching and learning approach in mathematics learning

In relating stage, teacher relate learning materials to student daily life or previous experiences. In this stage, teacher help students to relate learning materials to real life of students or previous experiences. Teacher give scaffolding to students in early learning [31]. Scaffolding that given by teacher can potentially to show seriousness in solving mathematical problems because Wood, Bruner, and Ross [32] explained that scaffolding process can facilitate students to solving problems in beyond the effort their abilities. Next, teacher give problems to students in experiencing stage. Here, students do self to exploration in problem solving. Nawas [33] state that experience can help students to understand what they think so can potentially to show self awareness and show seriousness in solving mathematical problems. Beside it, in applying stage, teacher can give motivation to students by make problems that real and relevant with student life. Ozbay [34] state that students apply concept that had get in experiencing stage so can make students show belief that they able to solve mathematical problems. After that in cooperating stage, students discuss with groups because students not do it themselves. Nawas [33] state in the cooperating stage, students learning together with share and response opinion each, they can learning each other so potentially on students to show on belief that they mean to others, show on belief that they can be accepted by others, and show positive attitude in learning mathematics.
And finally, in transferring stage, teacher helps students to relate the knowledge that they have with new information so it can encourage students to show on the ability to control themselves in the situation at hand, show self-awareness, show seriousness in solving mathematical problems, show belief in their ability in mathematics, and show belief that they able to solve mathematical problems.

Based on the explain from stages of REACT with indicators of self esteem that influence learning can theoretically be attributed to the scheme as follows:

| Stages REACT          | Indicators of Self Esteem                                |
|-----------------------|----------------------------------------------------------|
| Relating              | show on the ability to control themselves in the situation at hand |
| Experiencing          | show self-awareness                                      |
| Applying              | show on belief that they mean to others                   |
| Cooperating           | show on belief that they can be accepted by others        |
| Transferring          | show on belief that they can be accepted by others        |
|                       | show positive attitude in learning mathematics            |
|                       | show seriousness in solving mathematical problems         |
|                       | show belief in their ability in mathematics               |
|                       | show belief that they able to solve mathematical problems|

**Figure 1.** Illustration of the relationship between stages REACT and indicators of self esteem

Contextual teaching and learning can developing self esteem to learn mathematics. There are results show that Contextual teaching and learning can developing student’s self esteem. Gamarina [35] explained that contextual teaching and learning is effective viewed from self esteem of student’s high senior school in mathematics learning. Then, Surya etc [36] mention in their studies that students’ self-confidence taught by contextual learning model is higher than students taught by expository.

4. Conclusion
In general, the results of this study that the contextual teaching and learning approach can developing students’ self esteem. In relating stage, potentially to show seriousness in solving mathematical problems. In experience stage, potentially to show self awareness and show seriousness in solving mathematical problems. In applying stage, can make students show belief that they able to solve mathematical problems. In cooperating stage, potentially on students to show on belief that they mean to others, show on belief that they can be accepted by others, and show positive attitude in learning mathematics. In transferring stage, can encourage students to show on the ability to control themselves in the situation at hand, show self-awareness, show seriousness in solving mathematical problems, show belief in their ability in mathematics, and show belief that they able to solve mathematical problems. So that it is possible that contextual teaching and learning approach can developing students' self esteem in mathematics learning.

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