



Mathematics Literacy Ability Seen From Self Efficacy Of Students On Contextual Teaching Learning Model With *Direct Corrective Feedback*

Ulfany Fitri Utami [✉], Kartono Kartono, Wardono wardono

Universitas Negeri Semarang, Indonesia

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Abstract

This research aims to describe mathematics literacy skill based on students' self efficacies on Contextual Teacher Learning (CTL) with Direct Corrective Feedback. This mixed method research with sequential explanatory design took population from VIII graders of SMP Negeri 3 Gegesik, Cirebon, in academic year 2018/2019. The sample consisted of VIII A and VIII B. The subjects of VIII A were selected based on three self-efficacy categories: high, moderate, and poor. The techniques of collecting data were mathematics literacy test of the students, self-efficacy questionnaire, and interview. The findings showed that Contextual Teacher Learning (CTL) with Direct Corrective Feedback was effective. The research also described mathematics literacy ability based on the students' self-efficacies were categorized high, moderate, and poor during CTL with Direct Corrective Feedback. The results were varied where six – high self efficacy students, three of them were categorized high, two of them moderate, and only one poor level. The moderate self-efficacy students consisted of eleven people with high mathematics literacy, nine with moderate, and only one with poor level. The poor self-efficacy students did not have high self-efficacy students but only two moderate and one poor self-efficacy students.

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[✉] Correspondence:

Jalan Kelud Utara III, Semarang Indonesia
E-mail: ulfanyfitriutamii440@gmail.com

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INTRODUCTION

According to PISA (2012), *assessment framework* draft is defined as an individual's capability to formulate, implement, and interpret mathematics in various context, including to think systematically and to use concepts, procedures, and facts to describe, explain, and predict a phenomenon or event.

Mathematics is always identic with counting ability but such skill is not enough to find out more complex problems in daily life. Thus, there is a need of mathematics thinking to be used within concepts of mathematics to be developed. Thus, there is a need of mathematic literacy to do so.

Both *hard skills* and *soft skills* are important for students (Ice A, Wardono&Kartono, 2018). They also stated that innovative learning involves *soft skill* and *hard skills*. It covers educational and character values, problem solving thinking ability, and mathematics learning ability which are expected to show positive attitudes on mathematics learning. Thus, it will contribute positively to mathematic literacy development.

Besides mathematics literacy skill, the students need to develop confidence in communicating the mathematics material by implementing strong confidence for themselves. Then, learning can be promoted properly and achieve the objectives.

According to Bandura (1997), *self – efficacy* is an assessment of individual upon himself or his belief to other people in planning or acting out an action to achieve specific purpose. Pardimin (2018), *self-efficacy* will be fostered through personal characteristic relationship and behavioral pattern plus their environmental factors.

The notion was supported by interview with the teachers of the school – SMPN 3 Gegesik, Cirebon – where the teacher said their students had poor abilities in solving daily life problems. It was due to they could not model the question into their daily life and they could not communicate it into mathematics symbols.

According to Ahyan (2014), the arranged problem given to students was mathematics problem with their daily life concerns. However,

the causes of their poor ability in completing PISA solution was they were not habitualized to solve problems during learning process.

The students were still confused to use the solution or implement a formula and model. According to interview with VIII graders, the misconception appeared when the students were given question about geometry. They were confused in solving by figuring out the already known and the questioned parts.

The students were still confused to implement what was known into a formula to get the questioned answer. They were still poor to predict the solution during thinking process and to provide reasons when the questions demanded arguments. They seemed easily working on question with direct and clear correlation to the formula so they could calculate easily.

Besides those skills, during the learning also needed feedback and motivation to the students' confidence. Then, what a teacher should do to make meaningful learning and cause learning interest is to trigger the students' *self – efficacies*. It is done by providing feedback during working on question exercises. Appropriate feedbacks in learning context is called *Directive Corrective Feedback*. It is a feedback done directly by correcting the students' works during answering the questions.

Based on the explanation, to improve the students' mathematics literacy and their *self-efficacies*, they needed a learning process to activate both cognitive, affective, and mathematics literacy aspects or called as *self – efficacy*. The model used in this research was *Contextual Teacher Learning with Direct Corrective Feedback*.

According to Nurhadi (2002), *Contextual Teacher Learning* is a learning model to facilitate teachers in correlating the taught materials to real life and motivate students to make correlation between their previous already owned knowledge to its implication in real daily life. The model will be given an assessment through *feedback* with *Directive Corrective Feedback*.

According to John Bithhener et al (2005), *Direct Corrective Feedback* is a corrective realization feedback activity directly to inform the students' mistakes on paper test and to revise the mistakes.

Thus, the correct answers will be gained and motivate the students so that their mathematics literacy and *self-efficacy* will be better in order to achieve learning objectives.

Based on the explanation, the researcher would like to investigate effectiveness of *CTL* model with *DCF* and to review how mathematics literacy seen from *self-efficacy* of the students on the model is.

METHOD

This *mixed method* research used *sequential explanatory* design. The population consisted of VIII students of Public JHS (SMP Negeri) 3 Gegesik, Cirebon, in academic year 2018 – 2019. The sample consisted of VIII A as experimental group and VIII B as control group. They were taken by *cluster random sampling*. The subjects were VIII A students taken by *purposive sampling*. They were then categorized into three *self-efficacy* categories: high, moderate, and poor.

The data used in this research was mathematics literacy ability test result, *self-efficacy* questionnaire, and interview result. The test result was analyzed to find effectiveness of *Contextual Teacher Learning (CTL)* with *directive corrective feedback*. The data was analyzed qualitatively and tested its normality, homogeneity, and effectiveness. The effectiveness test covered classical passing grade, variance test, and influence test. The qualitative data was analyzed in four stages: data validity, reduction, presentation, and conclusion. This quantitative research side was used to check effectiveness of *CTL* with *DCF* to mathematics literacy of the students. After the investigation, the data was analyzed and the normality test result showed $0.200 > 0.05$, with homogeneous significant level $0.017 > 0.05$. It showed that both classes were normal and homogeneous.

Based on classical passing grade analysis result, it was known that $z_{count} = 1.897$ while $z_{table} = 1.64$. Since $z_{count} \geq z_{table}$, then the proposition of the students' passing grade taught by *CTL* assisted by *DCF* was more than 75%.

The variance average test result showed sig score = $0.000 < sig\ score =$

0.05 . It meant that mathematics literacy skill of the experimental group students were better. Then, the significant score also showed $0.000 < 0.05$. It meant there was significant influence with percentage 66.8% or 0.668.

The qualitative research was done to describe *self-efficacy* of the students based on each category. The subjects were 30 students of VIII A. They were categorized into three *self-efficacies*: high, moderate, and poor. Based on *self-efficacy* questionnaire, it showed that 6 of them were categorized high, 21 – moderate, and 3 – poor.

After the subjects were gained, then the description analysis of the mathematic literacy skill seen from *self-efficacy* levels, such as:

Table 1. Summary of Mathematics Literacy Analysis Seen from the Students' *Self-Efficacy*.

No	Self Efficacy	Literacy Ability	
		Numbers of the Students	Categories
1	High	3	High
		2	Moderate
		1	Poor
2	Moderate	11	High
		9	Moderate
		1	Poor
3	Poor	0	High
		2	Moderate
		1	Poor

RESULT AND DISCUSSION

The effectiveness analysis of *CTL* with *DCF* to their mathematics literacy ability showed most of them passing grade. They were found in experimental group with 27 students from 30 students.

It meant the proposition of the experimental group's passing grade had reached 75%. There was also average difference between experimental and control groups and influences of *self-efficacy* to mathematics literacy skill with percentage 66.8%. This effective learning was supported by *CTL* model. According to Kurniati,

Yaya S. Kusumah, Jozua Sabandar, and Tatang Herman (2015), the principles of CTL require reflection on thinking activity. It deals with what the students have learn or done to find out what is good and what should remain still.

In this research, *self-efficacy* is grouped into three: high, moderate, and poor. Based on the analysis, within 6 high self-efficacy students, there were 3 high self-efficacy students, 2 moderate self-efficacy students, and one poor self-efficacy student. From those six students, five components out of seven were mastered only by three students. Meanwhile, the two moderate level students only mastered three components although they still had difficulties. The difficulties were in utilization of mathematics tool and utilization of formal, technical, and operative calculation symbols with imperfect symbol writing. There was one poor level student had difficulties to plan a strategy in solving problem.

Studies by Yupita Sari, Nelly & Zulkarnain, Iskandar & Kusumawati, Elli (2018) showed strong correlation between *self-efficacy* and learning achievement of students in finishing mathematics question in the form of story. Higher *self-efficacy* will influence to better learning result. It was in line with Arslan (2017) and Ramos and Hayward (2018). They showed that self-efficacy influenced learning achievement.

The moderate *self-efficacy* group, concerning with their mathematics literacy skill, showed 11 students with high level, 9 students with moderate level, and one student with poor level. In this group, the high self-efficacy level students mastered some literacy components, started from communication, meta-mathematics, representation, thinking and arguing, and planning strategy. The components were mastered properly.

The moderate level students could communicate, represent, plan strategy, use language/symbols/formal and technical calculation operation, and use mathematics means.

The low *self-efficacy* group was known not to have high literacy skill students. There were only 2 moderate level students and one poor level student. In this group, it showed that the moderate level students had master mathematics

literacy skill. They could communicate, represent, and plan strategy in learning. However, the students still had difficulties in thinking and arguing, using symbols and operating – utilizing mathematics means. Meanwhile, the poor level student showed he could finish a problem under two mathematics literacy components, by using mathematics mean and thinking – arguing.

Thinking ability is a part of mathematics literacy components. According to Sanhadi (2015), thinking skill and *self-efficacy* influence to mathematics learning achievement in which higher self-efficacy students will get better learning achievement.

According to Desmawati, Rina M, Sitti H.M (2015), good self-efficacy interaction will lead to better mathematics communication. It means that self-confidence is a determinant factor in communication skill of the students. It was in line with Yuliyani, Rahmawati & Dwi Handayani, Shinta & Somawati, Somawati (2017). They argue that there is direct influence of *self-efficacy* to mathematics problem solving ability.

It is also supported by Somawati (2018). She concluded there was significance between self-efficacy to mathematics problem solving. It meant in planning problem solving solution, higher self-efficacy leads to facilitation of problem solving solution in mathematics literacy. Conceptual mathematics understanding could be also fostered by thinking and arguing (Junaedi & Asikin: 2012).

CONCLUSION

Based on the findings, it could concluded that *Contextual Teacher Learning (CTL)* with *directive corrective feedback* was effective. The description of mathematics literacy skill seen from the students' *self-efficacy* showed six students in high *self-efficacy*. There were three of them with high level, two of them with moderate level, and only one poor level. The moderate *self-efficacy* students consisted of eleven high self-efficacy students, 9 moderate level, and one poor level. In poor self-efficacy group, there was not high level student but only two moderate and one poor level students.

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