

Implementation of Innovative Mathematics Learning Model Training to Support Differentiated Learning for Mathematics Teachers

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Abstract

The objectives of this science and technology application activity are 1) to improve teachers' understanding of the learning model, 2) to improve teachers' skills in implementing learning models. The subjects of this service are MGMP Mathematics Cluster 12 teachers of Banyumas Regency, with a duration of four months. The implementation of the activity is carried out through the provision of information through presentations about learning models, discussions, and discussing advantages, weaknesses, and evaluations. Then participants watched together the simulation/application of one of the learning models. The results of this service activity are 1) increasing teachers' understanding of mathematics learning models 2) increasing teachers' skills in implementing learning models.

Keywords: *Mathematics, Model, Training, Learning.*

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1. INTRODUCTION

The mathematics learning model is one of the innovations teachers carry out learning. However, there are still obstacles in its implementation, so teachers need to be trained on learning models. Especially for junior high school students who still have difficulty understanding abstract mathematics material. The lack of knowledge of teachers about effective learning models causes the learning made by teachers to be less innovative. The phenomenon mentioned above shows that the need for teachers to understand a good mathematics learning model is an absolute one. In order for teachers' understanding of the implementation of a good mathematics learning model, it is the task of LPTK to bridge it. LPTK as an educational institution for education personnel has an obligation to foster so that the quality of teachers in carrying out learning can improve, so that teachers can provide the best for their students.

According to Santyasa (2007) and Widayati and Muaddab (2012), it is explained that teachers have a role as facilitators, meaning that teachers have roles as scaffolders, trainers,

and supervisors. In addition, in addition to being a facilitator, teachers also have the role of *expert learners, managers, and mediators*. In his explanation, it was also stated that the learning model has five main aspects, namely *syntax, social system, principles of reaction, support system, and instructional and nurturant effects*.

According to Tibahary and Muliana (2018), it is explained that learning that has characteristics to be more meaningful is student-centered learning or *student center learning* (SCL). This approach provides opportunities for students to develop critical and creative thinking skills and be able to produce innovative works. The implementation of the SCL approach can be proven by the use of innovative learning models. The researcher provides innovative learning model solutions that are student-centered, one of which is contextual-based learning. In Sujana et al. (2020) provide several alternative innovative learning models that can be used by a teacher in classroom learning, namely inductive thinking, inquiry concept achievement learning model, *advance* organizer, social learning model, problem-based learning, project-based learning, and contextual learning.

Junior high school teachers in MGMP Banyumas Regency Cluster 12 in general have not been able to understand well the implementation of the mathematics learning model, especially in terms of (1) the syntax of the learning model, (2) the implementation of the learning model. The objectives of the application of science and technology for junior high school teachers in MGMP Banyumas Regency Cluster 12 are as follows: (1) increase teachers' understanding of the Mathematics learning model, (2) improve teachers' skills in implementing the mathematics learning model.

2. METHOD

The target audience is a mathematics teacher who is a member of MGMP Mtematika Cluster 12 Banyumas Regency. The implementation of the activity was carried out through the provision of information through the presentation of material on the making of mathematical props, providing instructions on how to make props and their use. Then, the participants were asked to make mathematical teaching aids. The material chosen to make the tool is a quadrangle. The methods used generally include collection, understanding, discussion, mentoring, reflection, and evaluation (Rahayu & Firmansyah, 2018). The details of the procession of activities carried out are as follows: 1) Opening by protocol, 2) Remarks by the Principal of SMP N 1 Sokaraja, 3) Remarks by the Chairman of MGMP cluster 12 Banyumas Regency, 4) Presentation, questions and answers, 5) Making props, and 6) Closing. The instruments used in this training activity are activity observation sheets and questionnaires. This activity also involves two observers to observe the course of the activity and the final results of the activity.

3. RESULTS AND DISCUSSION

The result of this service activity is an increase in teachers' understanding of junior high school mathematics learning models, and an increase in teachers' skills in choosing and applying learning models well. Training on learning models is an interesting topic for teachers to follow because it provides an understanding of the theoretical learning model.

The learning model training conducted by Salam et al. (2020) provided a positive activity for teachers and the enthusiasm of the teachers was seen during the training. The same thing is also explained by Pasaribu et al. (2019) that teachers' responses when given training on innovative learning models are in the good category. Even in the training, it can be seen that teachers already have basic skills regarding the characteristics of innovative learning models. In addition, from the results of the training, innovative learning models can be redeveloped by collaborating technology and *lesson study*-based.

The product of this service is the teacher's understanding of the Junior High School Mathematics learning models, and the teacher's skills in choosing and applying the learning model well. In line with the results of the training conducted by Fitriah et al. (2023), it is explained that being able to understand and apply innovative learning models correctly. This is shown by the results of the evaluation conducted by the implementer which shows data that the average evaluation score is more than 80 and participant satisfaction shows a good category. It would be better if it was done gradually, continuously over a long period of time on various model bases and various material bases. However, this will certainly cost a lot of money.

There are several things that are seen as a driver in the implementation of this service, among others, namely: 1) the need factor, as seen from the enthusiasm of the participants in the implementation of the service, 2) the proximity factor, the selection of a location that is close to the exact task of the participants as a place for service activities has convenience for the service implementers and participants because the location is easily accessible by participants from various places, 3) emotional relationships, many participants are UMP alumni so that the meeting can also be interpreted as a fun reunion and upgrade. Meanwhile, what is an obstacle in this activity is that the funds are too small to allow for a practice that requires several meetings.

4. CONCLUSION

Based on the results of observations on the implementation of service, it can be concluded that through the service for mathematics teachers of MGMP cluster 12 Banyumas Regency, the training of junior high school mathematics learning models obtained results that 1) Improve teachers' understanding of learning models, and 2) Improve teachers' skills in implementing learning models. For the next activity, it is recommended that teaching module development activities that use innovative learning models in accordance with the independent curriculum so that teachers develop their creativity.

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