



DEVELOPING CLASSROOM ACTION RESEARCH (CAR) TRAINING MODEL BASED ON MENTORING TO IMPROVE SENIOR HIGH SCHOOL MATHEMATICS TEACHERS' PROFESSIONALISM IN BREBES

Masrukhi¹ ✉, Joko Widodo², and Tri Joko Raharjo³

¹Doctorate Program on Management Education of Postgraduate, Semarang State University, Teacher's of Senior High School 1 Brebes, Indonesia

^{2,3}Management department of Semarang States University, Indonesia

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Abstract

Classroom-based action research (CAR) for high school math teachers is very important to develop their professionalism. To improve the competence of teachers, a development of CAR training model based on mentoring is needed. This study aims to produce an appropriate CAR training model based on mentoring to improve teachers' professionalism. This study employed research and development (R & D) model. The product development stages are, (a) training manuals and instructor guidelines; (B) material guidebook and module for participants; and (c) CAR training model. The technique of collecting data used interviews, documentation, observation, and questionnaires. The model validation was done by experts and practitioners. Test models included limited trial on 16 teachers and the trial was expanded to 24 high school math teachers in Brebes Regency. The result shows that: (1) the product which is validated by experts and practitioners obtains a mean score of 62.15 (good), (2) the final training model is very feasible to be used by the indication of the its mean score at 3.59 (very high) for its usefulness, the mean score of 3.48 (very high) for its practicality, the mean score of 3.58 (very high) for its feasibility. The implementation of training program is also capable of producing CAR research reports. The conclusions of research is that the final model of CAR training based on mentoring and its training instruments are very feasible to be used to improve the professionalism of senior high school math teachers in Brebes.

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✉ Alamat korespondensi:

Kampus Unnes Bendan Ngisor, Semarang, 50233

E-mail: pps@unnes.ac.id

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INTRODUCTION

Permenpan dan Reformasi Birokrasi No. 16 Tahun 2009, have outlined that a teacher must conduct several professional development activities, which include the sub element of self-development, one of which is by carrying out scientific publications on their research work. Based on the observations made by researchers in the field, it shows that the effort to improve the professionalism has been done in Brebes Regency, among others: workshop, *Bintek*, training, and IHT.

Based on the results of the preliminary study, a picture of the School-Based Action Research (CAR) training that had been implemented in Brebes are as follows: (1) the implemented training model does not use strategy of assistance, (2) the used training materials is not specifically designed for CAR academic writing, (3) the training still does not reflect the peculiarities of mathematics field so that the training is in a general area and without specific work product, (4) the recruitment of participants is done by direct appointment, (5) the training instructor is not in accordance with mathematics qualifications, (6) the training time is relatively short that is 32 hours, and (7) The competence outcome is still low.

Statistical data from the education department of Brebes Regency shows the total number of high school math teachers is 106, spreading across in 17 public schools and 15 private schools. Out of these numbers, 22 teachers (20.75%) never conducted CAR before, but only 5 people who successfully completed the study through a research report (research data in 2012)

Ideally, training should be implemented based on the training management functions by not abandoning the concept of continuous guidance. Mujiman (2011: 57) states that the function of management training consists of: needs analysis, training program planning, preparation of training materials, implementation of training, and training assessment. Continuous guidance is intended to

provide technical assistance to the participants through mentoring during the study, thus there is an attempt to empower the optimal potential of the participants.

As expressed by Abidin, Z, N (2012: 72), mentoring is part of educational training to develop professionalism of someone related to self-development, to enhance the professionalism of the person being mentored, and to develop career of people being mentored. Not the mentor only who plays a role but the people being mentored should also actively work. Based on these explanations, it is necessary to develop a CAR training model based on mentoring to improve the professionalism of senior high school math teachers in Brebes Regency.

The statements of the problem include: (1) how is the CAR training model which has been implemented in the district Brebes, (2) how feasible is the CAR training model based on mentoring for high school math teacher, and (3) how feasible is the CAR training model based on mentoring to improve professionalism.

CAR Training Based on Mentoring

Mentoring-based training is an activity to increase the competence of trainees with the help of a mentor during the training. Mentoring is implemented by giving instructions, directions, or guidance for the trainees in order to understand the training materials properly and can complete tasks that must be completed participants during the training. In the activities of mentoring-based training, the dynamic interaction happens between the trainees with the instructor to solve several challenges together.

One factor that is often overlooked in the CAR training program is mentoring. CAR training model based on mentoring will be far more effective than training in a large quantity at a relatively brief form without assistance. Mentoring in the training program can be interpreted as a follow-up action of the training provided by the primary instructor through constant interaction between the instructor who are accompanying the participant until the

participant is considered capable of developing a proposal and write a report on the results of classroom-based action research

Kamil (2010: 169) argues that mentoring is an activity that is carried out by someone who is consultative, interactive, communicative, motivational, and negotiable. Being consultative is creating a condition where the mentor and the one being mentored consult and work in solving problems together, being interactive means that between the mentor and the one being mentored must be equally active, being communicative means that what is presented by the mentor can be understood together, being motivational means that the mentor must be able to foster self-confidence and give encouragement /motivation, and being negotiable means that the mentor and the one being mentored must make adjustment to each other easily.

RESEARCH METHODS

This study employed Research and Development (R & D) method, using both quantitative and qualitative approach. The procedure in this study adopted the study by Borg and Gall (1983: 774), consisting of ten steps. Then, the researchers simplified them into nine steps namely: (1) conducting literature study to obtain reference regarding to the training model, (2) conducting a preliminary field study, (3) conducting needs analysis, (4) preparing the training model design, (5) performing validation model through Delphi process and FGD-1, (6) revising the model, (7) preparing hypothetical model of training, (8) performing limited testing and expanded trials, and (9) revising the final model through the

focus group discussion (FGD-2), experts, and practitioners to obtain the final model.

The data were collected using (1) questionnaires, (2) interview, (3) documentation, and (4) observation. Data were analyzed using: (1) analysis technique of descriptive quantitative to explore the data in the preliminary study, needs analysis, model development and validation of the model by grouping the score data category based on four guidelines conversion scale (Likert scale), and (2) analysis technique of descriptive qualitative to explore data on the model development and validation, through the stages of data display, data reduction, data verification, and conclusion.

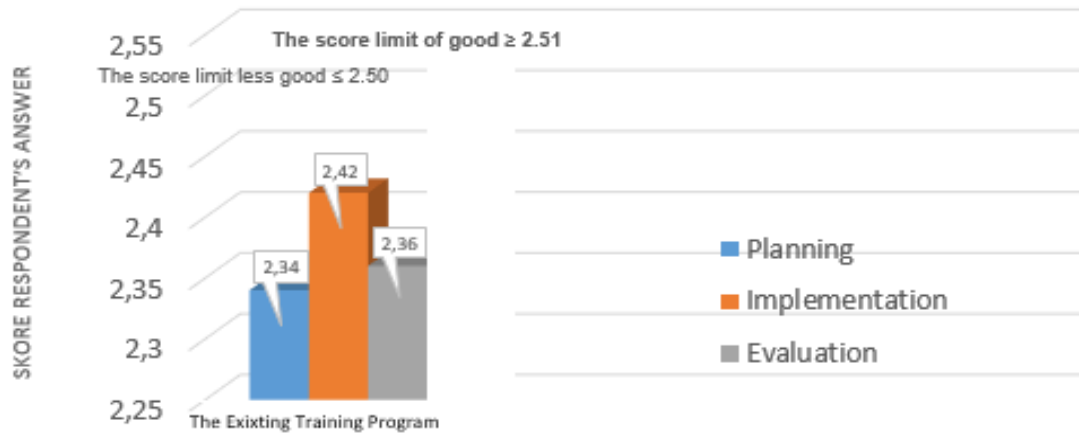
For the purposes of the training model development, limited test and expanded trial were conducted. Limited trial was conducted in 16 senior high school math teachers and expanded trial was conducted in 24 senior high school math teachers. Preliminary activity was conducted to test not only the feasibility of the model and instruments but also to determine the validity of the model, in order to achieve the expected product. The results of the model evaluation was then used to demonstrate the benefits, practicality, and feasibility of the developed model to obtain the final model of training, while another product was in the form of CAR report.

RESULTS AND DISCUSSION

(1) Description of Factual Model

Based on the preliminary research on CAR training, the implementation of existing CAR training is still generally perceived as not good by respondents.

The result of preliminary research

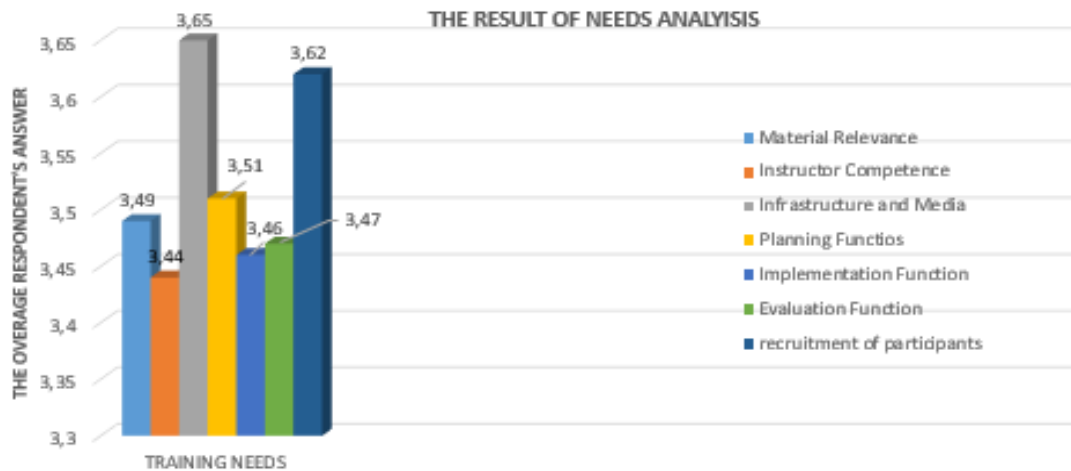


The result is based on the answers of the respondents through the questionnaires; the mean score is 2.37 with “not good” category. The category specifically shows on the following distribution: the indicator of training planning as “not good” (mean score 2.34), the indicator of training implementation as “not good” (mean

score 2.42), and the indicator of training evaluation as “not good” (mean score 2.36).

(2) Description of Needs Analysis.

Needs analysis is an attempt to find out what exactly is needed by participants in the training.

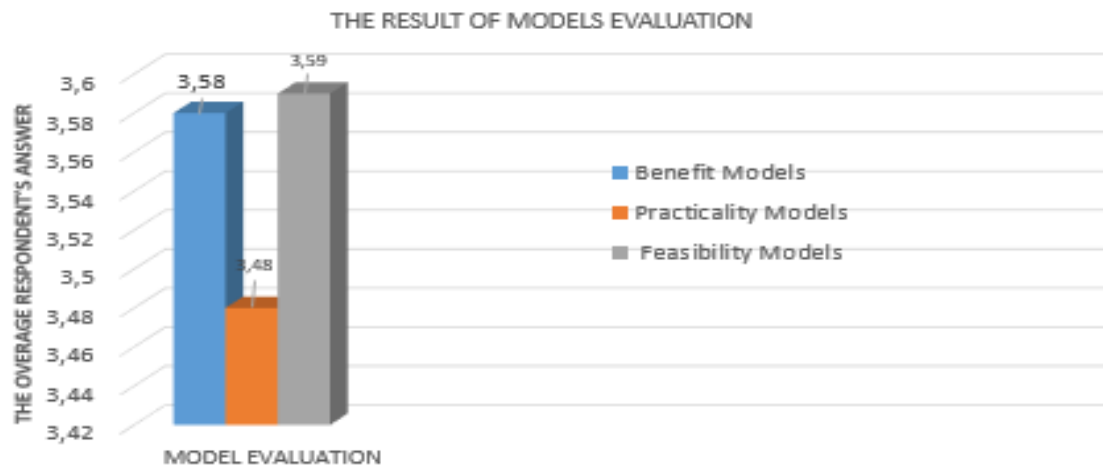


The result shows that the material is relevant to their needs and is considered as “high” (mean score 3.49), the competence of the instructor is very high (mean score 3.44), infrastructure, facilities, and media training is very high (mean score 3.65), implementation of planning functions as very high (mean score 3.51), realization of implementation function is very high (mean score 3.46), feasibility of

evaluation function is very high (mean score of 3.47), and the recruitment of participants is very high (mean score 3.62).

(3) The Evaluation Results of Training Model

After conducting an expanded trial, the model evaluation generally shows that the training model is very feasible according to responses of participants.

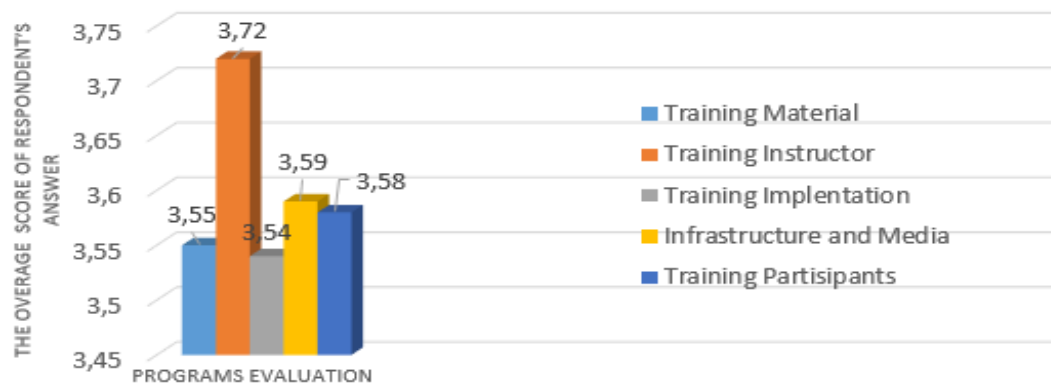


The result is shown by the mean score of 3.58 on its benefit, which is very high. And the practicality of the model training is very high with a mean score of 3.48. The feasibility of a model is very high, with a score of 3.59. And the result can result CAR report.

(4) The Evaluation Results of Training Program

Based on the data analysis of the evaluation results of the training program, participants show that the training program used in the training activities is perceived as “very good” category.

The result of Program Evaluation

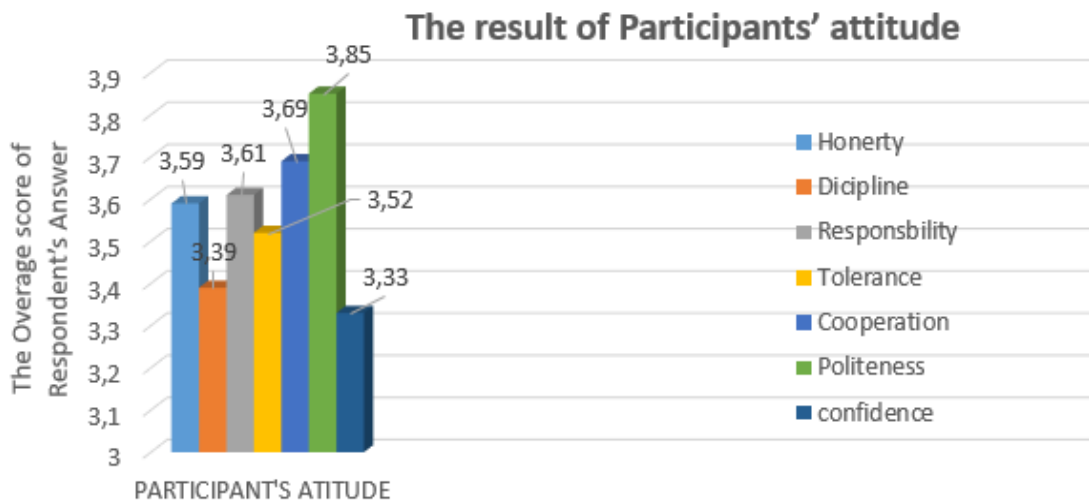


The result is indicated by the cumulative score of five variables that establish training programs amounted to 3.60 or “very good” category. The cumulative scores are the average scores from the variable of training resource/materials by 3.55 which is very good, the variable of training instructor by 3.72 which is very good, the variable of training procedure implementation by 3.54 which is very good, the variable of training facilities, infrastructure, and

media by 3.59 which is very good, and the variable of training participants by 3.58 which is very good.

(5) The Evaluation on Training Participants' Attitude

Based on the data analysis of evaluation on the participants' attitudes during the expanded trial, it is obtained that all participants have “very good” attitude,



The result is indicated by the cumulative score of seven indicators that is amounted to 3.59 ratings, which means that their attitude is in a “very good” category. The cumulative score is the average scores of the indicators of honesty at 3.39(very good), the indicator of discipline at 3.61(very good), the indicator of responsibilities at 3.52 (very good), the indicator of tolerance at 3.69(very good), the indicator of cooperation at 3.69 (very good), the indicator of politeness at 3.85 (very good), and the indicator of confidence of 3.33 (very good).

(6) Final Model

CAR training model based on mentoring for high school math teacher is generated from model design which has been validated by specialists/experts, practitioners, and feasibility of studies through FGD-1 to be a hypothetical model. The model is then tested on a limited and expanded trial. And the model is finally evaluated. The evaluation result is consulted to specialists/experts and discussed through the FGD-2 to be improved so that the model can be the final model.

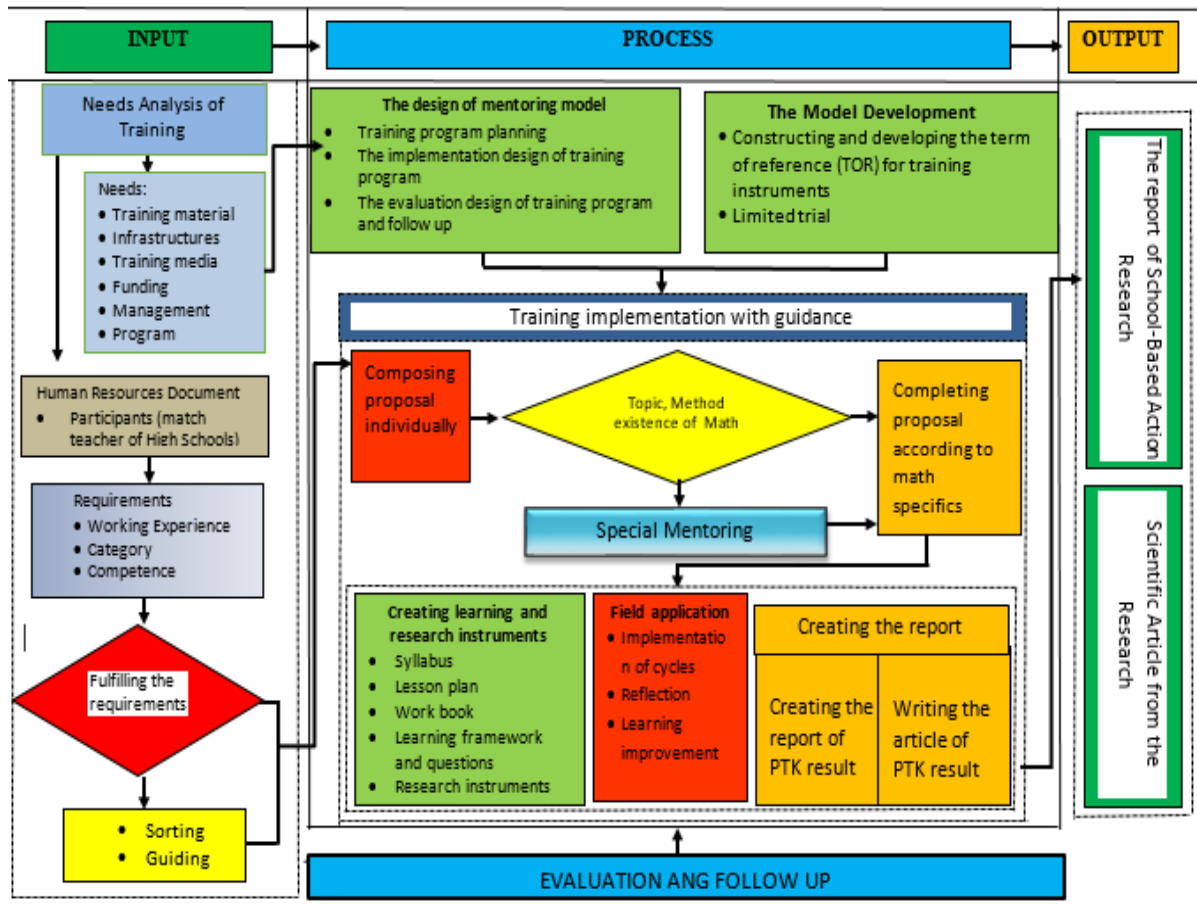


Figure 1. Final Model of CAR Training based on Mentoring for Math Teachers of Senior High School in Brebes.

The components in the model include: (1) training guideline, (2) instructor guide; (2) guidebooks for participants, (3) training material module; (4) CAR training model, and (5) evaluation instruments.

The training materials are adapted to the needs of the teacher in writing CAR scientific papers. The relevance of the material is very important because math teachers need the materials which are in line with the field of mathematics. As described by Karso (2007: 1.42), the relevance of the materials for teachers of mathematics lies in the peculiarities of the mathematical characteristics and properties where mathematics is the science of deductive but uses inductive approach. Therefore, the material which is considered relevant to math teachers is classroom action research material with mathematics learning problem in the classroom.

Competent instructors are selected based on the qualification standards of education and experience. For the minimum educational qualifications for the instructors is magister, while the minimum qualification of experience is supervisor, a training instructor also functions as a mentor. Mentoring is needed to assist the participants in developing its professionalism. In his role, the mentor must be consultative, interactive, communicative, and motivational.

The result of this study is consistent with the findings from Kamil (2010: 169) that mentoring is an activity which is carried out by someone who is consultative, interactive, communicative, motivational, and negotiable.

Being consultative means that the mentor is able to create a condition where both the mentor and the one being mentored can consult and solve the problem together. Being interactive means that the mentor and the one

being mentored must be active. Being communicative means that what is presented must be understood by both the mentor and the one being mentored (mutual understanding). Being motivational means that the mentor must be able to foster participants' self-confidence and give encouragement/motivation for the one being mentored. And, being negotiable means that both the mentor and the one being mentored must be able to make adjustments to each other.

The training participants are selected based on class room training and work experience. For class /category of participant profession, they must at least from III/B category, and their working experience must be 8 years at the minimum.

The training infrastructures and media are tailored to the needs of the teacher training activities such as comfortable training room, presentation equipment (LCD), and other equipment for the fulfillment of training.

The training plan is tailored to the needs of the teacher training program namely planning of training program, planning of training implementation, and planning of training evaluation. As described by Hardjana (2001: 34), the planning of training program is designed to be used as a guide or reference at the time of conducting the training. Planning is the process of implementation of managerial functions, which starts with goal setting and framework to achieve the training purposes effectively and efficiently

The training implementation is tailored to the needs of teachers based on the needs analysis, training objectives, training program design, and training implementation design. As described by Kamil (2010: 19), training implementation is the core part of the training activity and is the process of educational interaction between sources of learning to the learners in meeting the goals set. This process occurs in various dynamics. Therefore, everything should be directed effectively. And in order to make the training process producing optimum output, the whole capability and

existing components must be united and well-coordinated.

Evaluation of training is tailored to the training needs of the training program evaluation, evaluation models of training, and evaluation of attitudes of participants. It is as described by Chaudhery, U. A (2014: 6) that evaluation is conducted to help managers, employees and human resources professionals to make decisions about programs and certain methods". Evaluation begins with a clear identification, objectives or expected results of the training program by focusing on the goals and results

The Evaluation of Training Model

The training model from development process is generally beneficial both in psychological benefit for the training and participants, with the mean score at 3.69, which is very beneficial. In line with what has been stated by Simamora (2005: 290), training gives some benefits, namely: (1) increasing the quantity and quality of productivity; (2) reducing the learning time required by employees to achieve an acceptable standard; (3) creating better attitude, loyalty, and teamwork; (4) meeting the needs of human resource planning; and (6) helping employees to develop a personality.

The model which is applied in the training program is very practical, easy to be used in the training in terms of training time and cost with a mean score at 3.56, which is very good. In accordance with the opinion of Velada (2007: 283), a good model is a model that is practical or not complicated, simple and easy to be understood by considering the factors that affect the transfer of the training namely, design, the characteristics of the participants (self-efficiency and training resistance), and work environment.

The training model also demonstrates the feasibility for the use in training activities. This is indicated by the results of the cumulative mean score of three feasibility indicators at 3.58 which is very good.

Based on the results of the above description, it can be concluded that the training

model and its instruments are suitable to be used in improving the professionalism of high school math teachers in Brebes Regency because of the fulfillment of the criteria of benefits, practicality, and feasibility of training models. It can also produce another outcome in the form of a CARreport for the participants.

CONCLUSIONS

By using research and development, the study generates a model and its training instruments which consist of CAR training model based on mentoring, training manuals, instructor guidebooks, participant guidebooks, and training materials module. Because the model and training instrument have gone through a process of validation and complied with the construct validitydetermined by the experts, then the model of learning instruments used in this study are valid or feasible.

The final model is able to be used to improve the professionalism of senior high school math teachers inBrebes Regency because the fulfillment of the criteria of benefits, model practicality, and feasibility are high. And this training program can produce scientific papers in the form of reports on the results of CAR.

On the basis of the results, the recommendations are as follows: (1) For math teachers: they should always develop the ability of professionalism through continuous competency development in order to address learning problems in the classroom; (2) For schools: they should provide more facilities for the teachers who try to do innovative research for the development of learning in the classroom.

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