

Strengthening the Pedagogical Competence of Social Studies Teachers via Training in the Preparation and Test Items Analysis Utilizing The ANBUSO Application

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Abstract: Training on the preparation and analysis of test items using the ANBUSO application was conducted to the social studies teachers of MGMP SMP/MTs Jember Regency at UIN Kiai Haji Achmad Siddiq Jember. Based on the results of the initial Focus Group Discussion (FGD) conducted by the service team with the Social Studies Teacher Consultation Group SMP / MTs in Jember Regency, the partners are confronted with a problem that the MTs/SMP social studies teachers' capacity to plan and produce reports on the outcomes of learning evaluation is insufficient. The aims of this service activity are as follows: a) describe the execution of training procedures of learning evaluation preparation, formulation of test items, and item analysis utilizing the ANBUSO application for social studies teachers of SMP/MTs in Jember Regency; b) describe the execution of item analysis assistance utilizing the ANBUSO application for social studies teachers of SMP/MTs in Jember Regency; c) determine the level of success of activities to strengthen the pedagogical competence of social studies teachers of SMP/MTs through training of preparation and item analysis using the ANBUSO Application. d) describe the results of the evaluation of service activities. The method employed in this service activity is the PAR (Participatory Action Research) through several stages including: Mapping and problem identification, FGD and problem analysis, Program preparation stage, program socialization, program implementation, monitoring, and program evaluation. The implementation of this community service activity consists of the following stages: (1) providing training materials consisting of the concept of learning evaluation, procedures for preparing learning evaluations, especially in the Merdeka curriculum, preparing test questions and test items analysis; (2) analyzing test items using the ANBUSO application. The results of the theoretical test in the form of a pre-test and post-test indicate that the post test data shows a significant increase, namely 91% passed with a score above 70 and the remaining 9% failed with a score below 70. Evaluation is also carried out by assessing the results of practices that have been successfully carried out by the participants.

Keywords: ANBUSO application; learning evaluation; test item analysis

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INTRODUCTION

Pedagogical competence is the teacher's ability to manage student learning as defined in Law No. 14 of 2005 of the Republic of Indonesia. Thus, pedagogical competence is a teacher's ability to understand students, design and implement learning activities, evaluate learning outcomes, and encourage students to express all their potential.

The teacher's capacity to assess student learning can also be seen from his/her ability to evaluate learning. Learning evaluation is considered effective and successful if it is of high quality and functions as a tool that can accurately measure student learning outcomes.

The findings from the preliminary FGD carried out by the service team on May 6, 2023, involving the Social Studies Teacher Group of SMP/MTs in Jember Regency, indicated that the capacity of MTs/SMP-level social studies teachers to strategize and compile learning evaluation reports remains insufficient. Teachers have encountered challenges in the process of compiling the report, particularly with regard to test item analysis. Therefore, there is a need for support to assist teachers in enhancing their capacity in evaluating the learning and analyzing the test items they have created.

This condition is further corroborated by the research outcomes of Umamah *et al* (2021), which revealed that among social field teachers in Jember Regency, only 47% had adequately incorporated students' knowledge, experience, and skills into the evaluation component of lesson

plans, while the remaining 53% had not. Therefore, it is imperative to enhance the pedagogical competence of social field teachers in Jember Regency, with a particular focus on learning evaluation.

It is the duty of subject-matter teachers to prepare and evaluate test items that will be administered to students. At present, there is a lack of complete implementation of the learning evaluation development procedure among teachers. This procedure comprises several phases, namely planning, implementing, monitoring, data processing, reporting, and optimal utilization of evaluation results (Abdullah, 2017; Arifin, 2019; Haka *et al.*, 2020).

Effective and procedure-compliant learning evaluations that incorporate item analysis have the potential to generate precise and reliable data. Within this particular framework, the principal objective is to collect suitable evidence of student learning achievement, and the outcomes of the evaluation ought to yield substantial advantages for student growth (Stiggins & Chappuis, 2012).

Teachers can undoubtedly enhance the objectivity of each assessment they conduct by incorporating multiple measurement indicators into the evaluation procedure (Sary, 2018). Miller *et al.* (2009) posit that the accurate execution of assessment procedures will directly enhance student learning outcomes.

There are 10 principles in assessment activities, including: a) assessment must have a strong impact on improving the learning process, b) assessment methods must accommodate and explain each progress of each learning objective, c) assessment steps must include a clear process flow to ensure that valid and reliable information is obtained, d)

assessment must provide an understanding to the community about learning objectives that are in accordance with students' lives both now and for the future, e) assessment of learning outcomes is considered a tool to predict and obey the possibility of errors that may arise, f) assessment must be part of the teaching and learning stage which is the basis for students to know the purpose of learning and the quality of the learning outcomes they have done, g) assessment methods must actively include students in learning activities and assessment activities, h) assessment must be a stimulus for students to show their activity and increase motivation in learning, i) assessment must combine information from various sources, j) assessment methods must meet the provisions that describe the general agreement, starting from the lowest level to the national policy level (Harlen, 2010).

Kubiszyn & Borich (2013) state that valuable and pertinent input and information can be obtained by teachers through evaluation activities in learning, provided that the evaluation instruments satisfy the criteria of validity, reliability, and objectivity. In order to obtain a high-quality instrument, an analysis procedure must be carried out.

The purpose of test item analysis is to evaluate the quality of the items. In test item analysis, the item difficulty level serves as a valuable benchmark by furnishing information pertaining to the level of difficulty or simplicity associated with a given item. A question is classified as challenging when its level of difficulty approaches zero, whereas it is classified as easy when it approaches one. In order to differentiate between students' abilities, questions that are

excessively challenging or simple to answer must be eliminated or revised. A question with a difficulty index between 0.30 and 0.70 is considered to be of an average level of difficulty (Kaplan & Saccuzzo, 2005).

Arikunto (2005) explains that the subsequent procedure may be implemented during test item analysis: First, perform sincere investigation on the prepared questions. Second, incorporate test item analysis that has been premeditated. Third, check the validity of the questions that have been formulated. Fourth, verify the reliability of the prepared questions.

In the same way that the swift advancement of technology can benefit the field of education, it can also be utilized to streamline learning assessment processes. A multitude of software applications have been employed to extract data regarding student performance outcomes from educational exercises. For example, the application of log data obtained from the Electronic Assessment Platform for the purpose of examining test items was initially proposed by Neel in 1999 and unveiled at the AERA Annual Meeting (Lahza et al., 2022).

Moreover, technology has been advantageous in the execution of test item analysis. Considerable software development effort has been devoted to the analysis of developed products. Muhson et al.'s research development outcomes culminated in the creation of the ANBUSO (Test Item Analysis) software. His research resulted in the creation of a flowchart diagram and a manual for utilizing ANBUSO. The flowchart illustrates the phases of software development, beginning with data entry and progressing through analysis and the means by which the results of the analysis can be viewed and read (Muhson et al., 2015).

In order to conduct independent analysis of test items, teachers may

utilize software assistance, including ANBUSO software. Created with Microsoft Excel, ANBUSO is software intended for analyzing test items. The prevalence of the Microsoft Excel software among teachers can be attributed to its extensive adoption across diverse domains, which consequently facilitates its usability (Muhson *et al.*, 2015). As a result, the ANBUSO software is utilized in this service program to assist teachers with test item analysis.

In order to ensure that the learning process runs as smoothly as possible, it is deemed essential that social studies teachers MTs/SMP in Jember Regency be educated via this service activity regarding the preparation and analysis of test items.

The service activity has the following specific objectives: a) Describe the implementation of training for social studies teachers in SMP/MTs in the Jember district regarding procedures for preparing learning evaluations, preparing test items, and analyzing test items using the ANBUSO Application; b) describe the execution of item analysis assistance utilizing the ANBUSO application for social studies teachers of SMP/MTs in Jember Regency; c) determine the extent to which the effectiveness of activities to strengthen Pedagogical Competence for Social Studies Teachers in SMP/MTs through training on the preparation and analysis of items by utilizing the ANBUSO Application; d) describe the results of the evaluation of service activities.

METHOD

This service activity was conducted using PAR (Participatory Action Research) method. This method was

employed to observe, listen, and comprehend the pedagogical competence of social studies teachers in the MGMP social studies group SMP/MTs in Jember Regency.

The service was implemented through the following method. (Muhtarom, 2019):

- a) Problem identification and mapping in relation to the obstacles encountered by the MGMP social studies group in the Jember district.
- b) Conducting a problem analysis and focus group discussion with UIN Khas Jember representatives from the service team as an initial stage. A collaborative dialogue commenced in order to ascertain the challenges encountered by the MGMP social studies SMP/MTs group in Jember Regency.
- c) Preparation for program implementation is predicated on the outcomes of the previously conducted problem analysis.
- d) The socialization program. During this phase, the service activity team informed the MGMP Social Studies SMP/MTs group in Jember Regency about the service program.
- e) Program implementation. In order to strengthen the pedagogical competence of social studies teachers and facilitate program implementation, it is essential that they possess a foundational understanding of learning evaluation procedures and test question development. Therefore, the implementation strategy commences with service partners acquiring knowledge of the theory via educational exercises.
- f) Monitoring, in order to support the strengthening of the pedagogical competence of social studies teachers in the capacity to assess learning, practical activities, and mentoring are conducted so that

service participants may gain direct experience.

- g) The evaluation was carried out subsequent to the completion of all activity coordination:
- 1) Evaluation of theory, specifically through the administration of a theory test comprising a set of question pertaining to theory.
 - 2) Evaluation of practice to assess the outcomes of the participants' taught practice
 - 3) Evaluation of the service activity conducted

RESULTS AND DISCUSSION

The training of preparing learning evaluations, preparing test questions, and analyzing test items using the ANBUSO application to the Social Studies Teachers in SMP/MTs in Jember Regency were conducted for two days, from September 12th to 13th, 2023. Two speakers were asked to participate in this service. They were secondary stakeholders, specifically researchers affiliated with PGRI Argopuro University Jember and the University of Jember, who possess expertise in the domain of learning evaluation.

Speaker 1 was Mr. Moh. Usman Kurniawan, S.Pd., M.Pd. who is a secretary of LP3M PGRI Argopuro University Jember, in addition to being a research lecturer in the field of education. Speaker 2 was Mrs. Tiara, S.Pd., M.Pd., who is an active research lecturer at the Department of Social Studies, FKIP, University of Jember, specializing in learning evaluation.

Participants in this activity were eleven social studies teachers of SMP/MTs from the Jember district who represented the social studies teacher consultation group (MGMP). The Jember district of MGMP Social Studies SMP/MTs is

geographically segmented into the following regions: East Jember, West Jember, North Jember, and South Jember.

Training Process

The activity "Strengthening the Pedagogical Competence of Social Studies Teachers through Training on the Preparation and Analysis of Test Items Using ANBUSO Application in the Social Studies Teacher Consultation Group (MGMP) SMP/MTs in Jember Regency" incorporates both theoretical and practical components in its implementation.

a. Theory

The strategy for implementing the service commences with service partners gaining an understanding of the underlying theory via training activities. A training session was conducted on September 12, 2023, which covered various topics including theories pertaining to the notion of learning evaluation, methodologies for developing learning evaluations with a specific focus on the autonomous curriculum, test question preparation, and test item analysis. The primary objective of this preliminary activity involving the dissemination of theoretical knowledge is to serve as a means of revitalizing the pedagogical expertise of social studies teachers and to enhance their understanding of learning evaluation protocols and test question preparation. The speaker's material delivery activity is depicted in Figure 1.



Figure 1 Training process

b. Practice

In order to bolster the pedagogical competence of social studies teachers with regard to learning evaluation, service participants require direct experience through a practical activity. Consequently, following comprehension and refresher exercises pertaining to the notion of learning evaluation, the protocols for generating learning evaluations, particularly in the context of Merdeka curriculum, comprise the formulation of test questions and the analysis of test items.

The following day, September 13, 2023, the activity proceeded with the application of the ANBUSO application to analyze test items. The theory that had been acquired was put into practice by the participants via simulation and the implementation of item preparation and analysis.

Figure 2 illustrates the outcomes obtained from the MGMP Social Studies SMP/MTs Jember practice group of ANBUSO.

Figure 2 Practice results using ANBUSO

Mentoring

Two days there after following training and practice activities

offline, the activity then continued for two weeks, from September 14-27, 2023, with the implementation of additional assistance in the exercise of item analysis via the ANBUSO Application for Social Studies Teachers of SMP/MTs in Jember Regency online.

During the mentoring activity, the participants engaged in autonomous practice under the guidance of a WhatsApp group class comprised of two speakers, the committee, and other participants. The participants asked or had discussion regarding any challenges they encounter while carrying out their practical tasks. The participants compiled and analyzed test items for the mentoring activity over the course of two weeks. The analysis was conducted online in a WhatsApp group class under the guidance of the speakers.

An Assessment of the Degree of Success: Strengthening the Pedagogical Competence of Social Studies Teachers of SMP/MTs via Training in the Preparation and Analysis of Test Items Utilizing the ANBUSO Application

In order to assess the effectiveness of activities designed to strengthen the pedagogical competence of social studies teachers of SMP/MTs via training of the preparation and test item analysis utilizing the ANBUSO application, the participants' knowledge and skills were evaluated both prior to and subsequent to the activity. The evaluation procedures are executed utilizing:

- a. Theory test pertaining to the field of theory.

Theoretical tests were carried out on learning evaluation materials, techniques for preparing question grids, test item review instruments, preparing and analyzing test items using ANBUSO. Theoretical evaluation in the form of pre-test and post-test with 20 multiple

choice questions. Indicators of success are measured based on the success of the level of mastery of the theory of learning evaluation procedures and the preparation of test questions MGMP Social Studies Jember District participants. Figure 3 illustrates the outcomes of the theoretical evaluation through pre-test and post-test of the training activities.

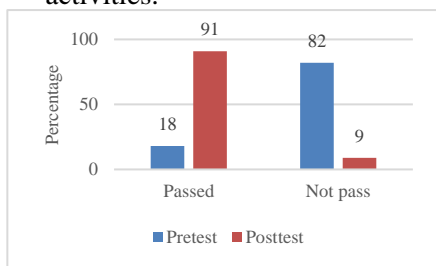


Figure 3 Training activity pre-test and post-test results

The pre-test results indicate that only 18% (2 participants) out of a total of 11 did not pass with a score above 70, and 82% (9 participants) failed with a score below 70. The post-test results indicate a notable improvement in performance, with 91% (10 participants) achieving a passing score of 70 or higher, and the remaining 9% (1 participant) failing with a score below 70.

- b. Practice is by assessing the results of the participants' practice according to what was taught

Evaluation was conducted by assessing the results of the practice carried out by the participants. This practical assessment is measured by success indicators based on the ability of participants to carry out practical activities for compiling and analyzing items using the ANBUSO application. The following assessment results

from practice can be seen in Figure 4.



Figure 4 The evaluation outcomes of item analysis utilizing the ANBUSO application

The results of the evaluation of item analysis practice utilizing the ANBUSO Application fall within the category of high success, as illustrated in the Figure 4. The findings indicated that a total of 91% (10 participants) had effectively executed item analysis exercises utilizing the ANBUSO Application, while 9% (1 participant) had not achieved success.

It is evident, from the outcomes of the conducted theoretical and practical tests, that the pedagogical competence of teachers can be enhanced through the utilization of the ANBUSO application to generate item analyses and training activities. This aligns with the findings of the service conducted by Farhan (2021), which led to the implementation of training programs utilizing ANBUSO to analyze test instruments. Specifically, the programs enabled teachers to recognize items according to criteria such as validity, reliability, differentiation, distractor functions, and difficulty level.

An enhancement in teacher comprehension may facilitate the administration of assessments for the purpose of evaluating student learning. This is consistent with the findings of Firmansah (2022), who discovered that participants' comprehension of learning assessment is enhanced and they are

capable of resolving learning assessment issues when the ANBUSO application software is utilized.

The results of the service activity by Istiyono *et al.* (2020) also resulted that the service activity of preparing HOTS questions and analyzing question items can provide teachers with skills and knowledge in assessing student learning outcomes.

Evaluation Results of the Service Activities

Table 1 Evaluation results of facility sub-indicator of the training

Sub Indicator	Activity variables	VA	A	DA	VDA
Facilities	1.The training room is very cozy (quiet and has air conditioner)	27%	73%	0%	0%
	2.Room capacity is in accordance with the number of participants	82%	18%	0%	0%
	3.Appropriate training aides (audio system, in-focus, etc.) are utilized	45%	55%	0%	0%
	4.The refreshment offered is sufficient	73%	27%	0%	0%
	5.Sufficient supporting facilities (garbage, place of worship, restroom) are provided	55%	45%	0%	0%
	6.Navigating to the training room is a straightforward task	45%	55%	0%	0%
	7.The equipment and the room are organized in an orderly fashion	45%	55%	0%	0%

The evaluation outcomes of the implementation of the aforementioned sub-indicators for training facilities are presented in Table 1. The results for the variables "room capacity is in accordance with the number of participants" and "adequate refreshments provided"

Evaluation of service activity implementation constitutes the last phase of this service activity. Five sub-measuring indicators comprise the evaluation of this activity: facilities, materials, resource individuals, training methods, and organizing institutions/parties. Explanation of the outcomes of the comprehensive implementation evaluation follows.

The results of the evaluation of training facility sub-indicators are shown in Table 1.

fall within the "very good" category. The variable "supporting room" is classified as good, whereas the remaining variables fall within the category of good enough.

The results of the evaluation of training implementation material sub-indicators are shown in Table 2.

Table 2 Evaluation results of training implementation material sub indicators

Sub Indicator	Activity variables	VA	A	DA	VDA
Material	1. Materials are in accordance with the training topic	82%	18%	0%	0%
	2. Materials are organized systematically	82%	18%	0%	0%
	3. An intriguing case example exists	55%	45%	0%	0%
	4. The training modules and materials are engaging and simple to comprehend for the participants	45%	55%	0%	0%
	5. The content can be implemented	45%	55%	0%	0%
	6. Materials can enhance the knowledge and skills of participants	64%	36%	0%	0%

The evaluation results of the implementation of training material sub-indicators are presented in Table 2. The evaluation of the variable "materials are in accordance with the training topic and organized systematically" falls within the very

good category. The variable "materials can enhance participants' knowledge and skills" is rated as good, while the remaining variables are categorized as good enough. The results of the evaluation of the implementation of speaker sub-indicator training are shown in Table 3.

Table 3 Evaluation results of training implementation of speakers sub indicators

Sub Indicator	Activity variables	VA	A	DA	VDA
Speaker	1. The speakers' readiness to deliver the training material is very good	64%	36%	0%	0%
	2. The speakers possess very good competence	55%	45%	0%	0%
	3. The speakers have capability to deliver materials within the allotted time frame	45%	55%	0%	0%
	4. The speakers are capable and receptive to participant questions	55%	45%	0%	0%
	5. The delivery of material by the speakers is very systematic and clear	55%	45%	0%	0%
	6. The interaction between speakers and participant is highly interactive	64%	36%	0%	0%
	7. The speakers have capability to conduct highly objective participant evaluations	55%	45%	0%	0%
	8. The speakers have capability to create an active and communicative atmosphere during the training	64%	36%	0%	0%
	9. The speakers' voice and intonation when presenting the training material are very clear	73%	27%	0%	0%

The evaluation results of the sub-indicators for training implementation of the resource persons are presented in Table 3. The evaluation of the variable "the speakers' voice and intonation when presenting the training material are very clear" falls within the category of "very good." The measurement indicates "The speakers' readiness to deliver the training material is

very good, the interaction between speakers and participant is highly interactive, and the speakers have capability to create an active and communicative atmosphere during the training" is considered to be good. In contrast, the remaining variables fall within the "good enough" range. Evaluation results of training implementation of training method sub indicators are shown in Table 4.

Table 4 Evaluation results of training implementation of training method sub indicators

Sub Indicator	Activity variables	VA	A	DA	VDA
Training methods	1. The training method are appropriate to the materials	45%	55%	0%	0%
	2. The methods facilitate material comprehension of the participants	64%	36%	0%	0%
	3. The methods encourage participants to be more proactive	55%	45%	0%	0%
	4. A highly intriguing problem-solving simulation is available	45%	55%	0%	0%
	5. The training method are appropriate to the materials	36%	64%	0%	0%

Sub Indicator	Activity variables	VA	A	DA	VDA
	6. Evaluation of the knowledge and abilities of the participants before and after the training	100%	0%	0%	0%
The assessment of the variables "Evaluation of the knowledge and abilities of the participants before and after training" falls within the very good category and "the methods facilitate material comprehension of the participants" falls within good category, as shown in Table 4. These results pertain to	the evaluation of the training implementation of the sub-indicators mentioned earlier. The remaining variables fall within good enough category. The results of the evaluation of the implementation of sub-indicator training for the organizing party/institution are shown in Table 5.				
Sub Indicator	Activity variables	VA	A	DA	VDA
Organizing Party /Institution	1.The reputation of the organizer /institution is very positive	73%	27%	0%	0%
	2.Training programs are in line with the institution's vision and mission	45%	55%	0%	0%
	3.Directed curriculum	45%	55%	0%	0%

Table 5 presents the evaluation results of the training implementation on the sub-indicator of the organizing party/institution. The findings indicate that the variable "The reputation of the organizer/institution is very positive" received a very good category. The variables "directed curriculum" and "Training programs are in line with the institution's vision and mission" fall within the good enough category.

The evaluation of the service activities yielded results that fell within the very good, good, and good enough categories. No activity variables exhibit diminished outcomes. The accomplishment of activity objectives is crucially dependent on the success of an activity.

This is consistent with the viewpoint expressed by Indra P. and Fanny (2022), who assert that activity evaluation is a critical undertaking necessary to ensure the effective and deliberate attainment

of an institution's objectives or targets.

CONCLUSION

It is critical to provide social studies teachers MTs/SMP in Jember with knowledge regarding the preparation and analysis of test items in order for the learning process to operate optimally. Furthermore, it can assist social studies teachers of SMP/MTs in refining their preparations for presenting a report on the outcomes of learning evaluations.

The service activity titled "Strengthening the Pedagogical Competence of Social Studies Teachers through Training in Preparation and Analysis of Problem Items Using the ANBUSO Application" has been deemed successful based on the outcomes of theoretical tests administered both before and after the activity, as well as the evaluation of participant practice results.

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