Development of Design and Teaching Materials Training: Orientation Needs in Improving Pedagogical Competencies

Joko Sutarto, Tri Suminar, Imam Shofwan, Yudi Siswanto
Nonformal Education Department, Faculty of Education
Universitas Negeri Semarang
jokotarto@mail.unnes.ac.id, ishofwan@mail.unnes.ac.id, yudie.sw@gmail.com

Alim Harun Pamungkas
Nonformal Education Departemen, Faculty of Education
Universitas Negeri Padang, Indonesia
alimharun@fip.unp.ac.id

Abstract
Training with a "top-down" approach that has been carried out has not been able to improve the pedagogical competencies of the trainees, so it is necessary to design training based on the needs of the trainees. The purpose of this research is: (a) identification of problems and training needs; (b) formulate the design and teaching materials of the training, and (c) test the effectiveness of teaching materials in improving pedagogical competence of learning. The source of the research data is 16 people studying. Data collection is conducted through interviews, documentation, and tests. The research procedure follows the flow of literature studies, field survey, and the preparation of training design and teaching materials, and tests the effectiveness of teaching materials. The results showed: (a) the most perceived problem of learning towards pedagogical competency mastery is in the learning planning sub-competency, especially in identifying the initial ability of the trainees; (b) the design and teaching materials of the training formulated invalidity are very adequate to improve pedagogical competencies; and (c) the teaching materials of pedagogical competency improvement training, reviewed from the response of the trainees showed a very responsive category (84%); and judging by the comparison of pre-test and post-test scores showed the score of 0.4789 was in a high category; thus the training teaching materials developed effectively to improve pedagogical competencies. The benefits of research can be used as a guideline in designing the training by analyzing according to the needs of the trainees, so that the training will be effective.

Keywords: Training Design, Training Teaching Materials, Pedagogical Competencies, Learning Pamong, Nonformal Education

1. Introduction
The successful implementation and management of non-formal education units are a mirror of the implementation of continuous performance coaching. The development is a necessity in improving quality in the global era which is characterized by increasingly tight competition in all aspects of life. Related to research that is the professional competence of teachers in facing MEA (Sulfemi). Related to professional competence is the ability related to mastery learning material for the broad and deep field of study which includes mastery content of curriculum materials (Rahman). Realized that the success of learning services can not be separated from the development of quality performance pamong learning. Good learning performance will be able to develop the potential of learners as optimally as possible, in line with the success of non-formal education units in contributing greatly to the improvement of knowledge, attitudes, and skills of learners in the future.

Empirical facts show that the learning training activities carried out so far have not been systematically planned which is characterized by the lack of training design that accommodates the characteristics and needs of the trainees, and the absence of complete training learning tools (teaching materials). Such conditions indicate a gap between the purpose of the training and the readiness of the design, and the training device used. Besides that, also pay attention to development of andragogical learning model to improve life skills for teenagers (Djibu et al.). Training teaching materials used to influence behaviour or actions especially on the achievement of trainee achievements (Glisson and James 2020). More emphatically, that the academic achievements of the trainees were influenced very strongly by
the mental atmosphere or work climate supported by the training materials that were expected by the trainees (Klassen et al.).

1.1. Objectives
The scope of the problems in this research is related to the design and the need for training teaching materials that are expected to improve the pedagogical competencies of the learning community. The purposes of this research are: (a) identification of the problems and training needs required by the pamong learning community in improving pedagogical competencies, (b) formulate design and training teaching materials that are predicted to improve the pedagogical competencies of the learning community, and (c) test the effectiveness of teaching materials in improving pedagogical competencies pamong learning.

2. Literature Review
In general, the training looks like a part of education that describes a learning ice pro to improve a person in a job essay. Training is a process that creates conditions and stimulus to elicit responses to others, develop knowledge and skills and attitudes, create behaviour changes, and to achieve specific goals (Schunk). The above understanding gives us an understanding that the main idea in training is that there is a process used to meet its needs or objectives (Sutarto et al.). The important thing in the implementation of training is how to arrange and organize training programs that can overcome problems or obstacles that interfere with the main tasks and functions of each learning program.

Training is a deliberate, purposeful, and controlled effort for others to learn (Ericsson) and there is a relatively sedentary change in behaviour as a result of experience (Bryan et al.). Efforts to make others learn can be done by someone who can design, develop, utilize, manage, and assess the learning process. It is confirmed that if the trainees feel a conformity between characteristics and needs with the training material then it can be expected that they will achieve satisfactory achievements.

Other opinions are put forward stated that the empowerment of management and human resources through proper training can improve organizational performance, low organizational performance caused by poor quality planning and a less supportive organizational climate (Demgrec and Erbas). Furthermore, that every educational unit such as a training institution has a working atmosphere character (Torar and Wahono; Kanto et al.; Nuraini et al.), which will influence the success of the learning process. Identification of needs is a systematic process and procedure for determining priority needs and decision making about the program (Gilb and Maier) and the allocation of resources necessary for the continuity of one-course service program. Based on these restrictions it can be stated that Identification is an integral part of the process of organizing and planning to be used as a reference in the preparation of program in the program (Sutarto).

The activity of designing learning and teaching materials training is a cooperative activity between learning resources, where the learning program becomes its product. Given the important role of design and training teaching materials for the smooth running of activities and achievement of goals, it is necessary to optimal efforts in identifying actual learning needs and potential factual environments as well as analytical acumen. In designing learning for adults whose learning motto is low, (Lyra Srinivasan) suggests three approaches to learning, namely problem-centered approaches, projective approaches, and self-actualization approaches. Valid and effective training teaching materials will have an impact on the sustainability of the conducive learning process, and ultimately have a further impact on the mastery of the trainees on the training materials trained. This is in line with research findings that show that effectively designed teaching materials can help participants connect what they already know with what they expect in learning, and to build new knowledge from analysis and synthesis in the learning process (Harris and Hofer). Competence is a qualitative description of one's behaviour.

During the learning process, the stimulus will join the contents of the memory and cause a change in the capacity to do something. Competence as knowledge, skills, and basic values reflected in thinking and acting habits (Wiek et al.). In detail, each sub-competency is described as an essential indicator of pedagogical competencies as follows: (a) memahami the trainees in-depth, has essential indicators, among others: understanding the trainees by utilizing the principles of cognitive development; utilizing personality principles; and identifying the initial teaching provisions of learners; (b) designing learning, with essential indicators, among others: understanding the foundation of education; applying learning and learning theories; determine learning strategies based on the characteristics of
the trainees, the competencies to be achieved, and the teaching materials; (c) conduct training learning, with essential indicators, among others: organizing learning settings; and implementing conducive learning; and (d) designing and implementing learning evaluations, with essential indicators, among others: designing and carrying out evaluations (assessment) of learning processes and achievements continuously with various methods; analyzing the results of evaluation of learning processes and achievements to determine the level of learning completeness; and utilizing the results of learning assessments to improve the quality of learning programs in general.

3. Methods

This research uses research and development design referencing the model developed by (Borg, 1989). In this study, the model used was developed by modification of steps starting from the preliminary stage with regular study activities and field service; tahap development of design and preparation of training teaching materials; and the test stage of the effectiveness of teaching materials in improving pedagogical competencies among learning.

Data and data collection techniques of this research are: (a) data on the problems and the need for improved competence among learning through interviews; (b) data on the validity of training teaching materials for improving pedagogical competencies, obtained from expert academics, and practitioners (training instructors) using validation sheet questionnaires; and (c) data on the effectiveness of training teaching materials for improving pedagogical competencies in learning, obtained by comparing the learning outcomes of trainees before and after the training using tests.

Subjek research to test the effectiveness of teaching materials is 16 participants of the training. The effectiveness of the use of training teaching materials to improve pedagogical competency among learning seen from the improvement of learning outcomes of the trainees was analyzed using the N-Gain Test. This test is used to analyze pre-test and post-test score data.

4. Research and Discussion Results

4.1. Problems and training needs needed by the learning community.

Identification of problems and analysis of training needs required by the learning community in improving pedagogical competencies are revealed through the filling of interview guidelines containing statements of mastery and mastery tests related to pedagogical competencies containing four sub-competencies, namely identification of the initial needs of learners, learning planning, implementation of learning, and evaluation of learning. The study findings showed that the context components involving learning understanding of the learning community were largely (63.3%) lack of mastery of cognitive development of learning citizens, utilizing the principles of the personality of citizens learning, and lack of mastery in identifying/analyzing the initial abilities of learners, while the ability in designing learning, carrying out learning, and evaluating learning has been felt adequately enough. Based on empirical data and analysis can be stated that among the pedagogical competencies containing four sub-competencies as described above, the ability/mastery of identifying/analyzing the initial ability of learners is the most felt and most needed problem by the learners with a percentage of more than 75%; and the ability to analyze the results of process evaluation and presatasi learning occupies the second ranking. By improving the village and training teaching materials developed to improve pedagogical competencies among learning in this research focused on improving the ability/mastery of identifying/analyzing the initial abilities of learners.
4.2. Design and teaching materials for pedagogical competency improvement training for the learning community.

Data on the implementation of training for learning pamong held so far, both organized by the Department of Educators n District / City and the Center for Community Education Development, revealed throughout interviews with pamong learning. The findings of the study showed that the implementation of training has not referred to the concept of systematic training and training teaching materials have not touched the real problems and needs of the trainees, and more terrorientation to the absorption of annual routine targets, so the impact of training activities does not contribute much to the improvement of learning competencies.

The training design used as a reference is not complete, only contains the outline of the program, namely training planning, training implementation, and evaluation of training. Based on the shortcomings and limitations of the implementation of the learning training, more complete and systematic conceptual design development efforts are needed that are oriented towards problem-solving and meeting the needs of the trainees. The training design is designed to have a direction towards improving pedagogical competencies through procedural mechanisms of activities based on the principles of training implementation.

Based on the results of empirical and theoretical studies above, the training design was drawn up to improve pedagogical competence pamong learning. The design of this pedagogical competency improvement training is designed as a guide material for the implementation of the training as a whole, from problem analysis and training needs to follow-up training activities according to adult learning rustristics, systematically outlined, equipped with training learning materials, which contains details of activities: (a) analysis of training problems and needs, (b) recruitment of trainees, (c) training planning, (d) preparation of teaching materials, (e) determination of methods, and training media, (f) implementation of training pe, training supervision, (g) training assessment, and (h) follow-up of trainer activities. Conceptual model of training design for improvement of pedagogical competence pamong belajar, pictured in figure 1 below:

![Conceptual model design training improvement pedagogical competency pamong learning.](image)

**Figure 2.** Conceptual model design training improvement pedagogical competency pamong learning.

The implementation of the training is required due to several conditions, including the following two conditions: (a) the training is required at the time of the work that requires the trainee to have different skills, knowledge or attitudes from or in addition to the one he currently has so that it is expected to adjust to the main tasks and functions for which it is responsible; and (b) training is needed when progress within the organization requires the individual to have different or new skills, attitude knowledge, following the demands of work and the development of science and technology. Thus, the training must be based on the real problems and needs felt by the pamong learning in improving its competence.

Guide the need for training as Training is a process used by the organization to meet its goals. It is called into operation when a discrepancy is perceived between the current situation and a preferred state of affair. The trainer's role is facilitation trainee's movement from the status quo toward the ideal. The above understanding gives us an understanding that the main idea in training is that there is a process used to meet its needs or objectives. To
determine the learning needs of participants in a training can be done by using several methods and techniques. (Lyra Srinivasan) suggests three approaches to learning, namely problem-centred approaches, projective approaches, and self-actualization approaches. The training learning process is a system. Thus, the achievement of un process standards to improve the quality of the training learning process can be started from analyzing each component that can shape and influence the learning process.

Training learning is a deliberate, purposeful, and controlled effort for others to learn and there is a relatively sedentary change in behaviour as a result of experience (Lewis et al.). Efforts to make others learn can be done by someone who can design, develop, utilize, manage, and assess the learning process. Learning contains more meaning than teaching as understood as the presentation of teaching materials. Learning is a personal mental process, taking place in active interactions with the environment to produce changes in knowledge, skills, and attitudes (Vallera and Bodzin). A training learning is declared successful or effective apabila able to make participants actively learn to build certain knowledge, skills, and attitudes.

In principle, the activities of assessment of training carried out before, while and after the training lessons held the assessment of the training program as an activity to respond to a program, which is carried out after will be carried out, which is oriented directly to the activities of the training program. Identification of the need for teaching materials needed in improving pedagogical competencies pamong learning is a teaching material identification characteristics of the needs of learners (Koenig et al.). In general, the teaching materials compiled contain several parts, as follows: background, the purpose of writing teaching materials, expected results, and the contents of teaching materials that explain about basic competencies, description of teaching materials, assignments, and exercises.

4.3. Effectiveness of training teaching materials
The results of validation calculations of four validators and practitioners related to the components of teaching materials consisting of content feasibility, presentation, and language are presented in the following summary table:

<table>
<thead>
<tr>
<th>Components</th>
<th>Average Score</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content Eligibility</td>
<td>3,31</td>
<td>Excellent</td>
</tr>
<tr>
<td>Serving</td>
<td>3,24</td>
<td>Good</td>
</tr>
<tr>
<td>Language</td>
<td>3,27</td>
<td>Good</td>
</tr>
</tbody>
</table>

Based on the table above according to the assessment of four validators on the components: (a) the feasibility of the contents of teaching materials containing the scope of the material consists of: the suitability of the material with the basic competency standards and competencies of the training, the breadth of the training material, and the depth of the material in accordance with the ability of the trainees; and stimulate the activities of the trainees consisting of: centered on the trainees and the involvement of the trainees, the activities contained in the teaching materials are able to foster the activeness of the trainees in training learning, and the ability to motivate the trainees in learning in general shows a very good level of category; (b) presentation of teaching materials containing: systematic consistency of the dish, the logic of the presentation of the material, and the quality of the concept; interactive communicative intertwining and conformity to material characteristics, and the ability to stimulate the depth of thinking of trainees and presentation advocates containing presentation supporting completeness (containing introductions, table of contents, instructions for use, bibliography) generally indicates a good category level; and (c) the language of teaching materials containing the communication of teaching materials about the understanding of the trainees, and the suitability of illustration with the substance of the reading in general, the smoothness of teaching materials containing the accuracy of sentence structure and the specificity of the term, theherness and deterioration of the flow of thought of teaching materials containing the relation of sentence structure, inter-paragraph interrelationships, and the interrelationship between concepts, and conformity with the Indonesian language containing the accuracy of language and accuracy of spelling generally indicates the level of good categories. The research findings provide a strengthening of the importance of teaching materials that are arranged according to the needs of the trainees.
The effectiveness of training materials for improving pedagogical competencies and learning materials for identification and analysis of the initial ability of learners/citizens in this study was measured through: (a) the response of the trainees to the prepared teaching materials, and (b) and the N-Gain Test were used to analyze the improvement of the learning outcomes of the trainees. This test is used to analyze pre-test and post-test score data. In general, participants' response to teaching materials used in pedagogical competency enhancement training showed an average of 84 categories (84%), meaning that teaching materials showed a high degree of effectiveness. In detail the participant response category concerning: (a) the size of the teaching material is up to standard with the percentage (89%), (b) the shape and size of the letters used are clear and easy to read with the percentage (87%), (c) the illustrations in the teaching material are very interesting with the percentage (88%), (d) the language used in the teaching material is easy to understand with the percentage (86%), (e) of this teaching material helping me understand the material taught by instructors with a percentage (81%), (f) interest in studying teaching materials with percentage (82%), (g) teaching materials made me more active in learning activities with a percentage (85%), (h) practice questions in teaching materials is easy to understand and interesting to do with a percentage (84%), (i) the content of teaching materials is useful for the addition of knowledge about the identification and analysis skills of early learners with a percentage (83%), (j) the growing pleasure of using this teaching material in learning with a percentage (84%), (k) of this teaching material is more interesting to learn compared to existing teaching materials with a percentage (86%), and (l) This teaching material is easier to use than existing teaching materials with a percentage (87%).

In addition to the participants' response, the way of measuring the effectiveness of training teaching materials was also carried out through a written test containing 10 (ten) multiple-choice questions and 2 (two) description questions. The results of the pre-test and post-test written examinations of the trainees are presented in the table below.

| Table 2. Comparison of Average pre-test and post-test results of trainees |
|--------------------------|--------------------------|
| Pre-test | Post-test |
| 62.44 | 80.43 |

The score of 0.4789 is then confirmed with the criteria gain factor is in the category quite high. Thus, it can be concluded that the training materials for improving pedagogical competencies of identification material and analysis of the initial ability of learners at a high level of effectiveness. In other words, the teaching materials of the training of the identification material and analysis of the initial ability of the learners are quite effective in improving the learning outcomes of the trainees. Effective plate teaching materials will have an impact on the sustainability of the conducive learning process, and ultimately have a further impact on the mastery of the trainees on the training materials trained. As with other research findings that show that teaching materials are effectively designed to help participants connect what they already know with what they expect in learning, and to build new knowledge from analysis and synthesis in the learning process training teaching materials will have an impact on the sustainability of the conducive learning process, and ultimately have a further impact on the mastery of the trainees on the training materials trained.

This is in line with research findings that show that effectively designed teaching materials can help participants connect what they already know with what they expect in learning, and to build new knowledge from analysis and synthesis in the learning process. From the test results, the effectiveness of teaching materials in this high category indicates that there are still other factors that are suspected to affect the success of the trainees in participating in the training (Safety). Other factors that are suspected to affect the learning outcomes of the trainees include the climate factor of training learning, the availability of learning resources, the motivation and discipline factors of the trainees, the supporting infrastructure of the training, and factors derived from the training instructors.

5. Conclusion
5.1. Based on empirical data and analysis
Pedagogical competencies containing four sub-competencies as described above, the ability mastery to identify is the initial ability of learners is the most felt and most needed problem by the learner among dengan percentage more than 75%. By improving the village and training teaching materials developed to improve pedagogical competencies among learning in this research focused on improving the ability/mastery of identifying/analyzing the initial abilities of learners.
5.2. Training design and teaching materials
Pedagogical competence among learners is designed as a guide material for the implementation of training as a whole, from analysis of training problems and needs to follow-up training activities according to characteristic belajar adults, which contains details of activities: (a) analysis of training problems and needs, (b) recruitment of trainees, (c) training planning, (d) preparation and teaching materials, (e) determination of methods, and training media, (f) implementation of training, training supervision, (g) training assessment, and (h) follow-up of training activities.

5.3. Effectiveness of teaching materials
Effectiveness of teaching materials is (a) the response of the trainees showed a very responsive category (84%), meaning the teaching materials showed a high effectiveness in improving pedagogical competence among learners; and (b) the comparison of pre-test and post-test scores showed skor 0.4789 then, confirmed by criteria again factor was in a high category. Thus, it can be concluded that the training materials for improving pedagogical competencies of identification material and analysis of the initial ability of learners at a high level of effectiveness. In other words, the teaching materials of the training of the identification material and analysis of the learners' initial ability are quite effective in improving the learning outcomes of the trainees.

References
Biography

Joko Sutarto is a Professor in the Departemen of Nonformal Education, Faculty of Education, Universitas Negeri Semarang. Google scholar ID: lxef4_UAAAAJ, Sinta ID: 5982906, Scopus ID: 57211534056. Concerning research focus on Non-formal Education Management and Non-formal Education Training Management. As well as related to the membership that was followed, among others Ikatan Akademisi Pendidikan Nonformal Indonesia (IKAPENFI), Teaching & Education Research Association (TERA) Internasional.

Tri Suminar is a Doctor in the Department of Nonformal Education, Faculty of Education, Universitas Negeri Semarang. ID google scholar: IqBquw4AAAAJ, ID Sinta: 5982604, ID Scopus: 57211534405. Concerning research focus on Non-formal Education Training Management. As well as related to the membership that was followed, among others Ikatan Akademisi Pendidikan Nonformal Indonesia (IKAPENFI), Teaching & Education Research Association (TERA) Internasional.


Alim Harun Pamungkas was born in Yogyakarta (Indonesia) in 1983. He is Lecturer in the Department of Nonformal Education at Universitas Negeri Padang, West Sumatra Province, Indonesia. He did his undergraduate studies in non-formal education and completed graduate studies in non-formal education form Universitas Negeri Malang, East Java Province, Indonesia. He is also professional lecturer certified by Ministry of Technology, Research and Higher Education, Republic of Indonesia. He has been teaching developing models of non-formal education, planning of non-formal education, and philosophy of education for 5 years at undergraduate programs.

Yudi Siswanto is an Lecturer in the Department of Nonformal Education, Faculty of Education, Universitas Negeri Semarang. He obtained a bachelor's degree in non-formal education and a master's degree in non-formal education at the Universitas Negeri Semarang. He has published journals and conference papers. His research papers have been published in several journals and conference proceedings, both nationally and internationally. He was interested in research and evaluation of education and then educational statistics.