

Literature Review: The Role of Education and Installation Training Solar Power Plant towards Increasing Teacher Professional Competence

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ABSTRACT

Writing scientific papers is closely related to education and research. For this reason, in this research, training plays a role in understanding the increase in teacher professionalism after attending education and training. In this research, researchers studied a systematic literature review (SLR) regarding the role of education and training in installing Solar Power Plants (PLTS) in improving teachers' professional competence. The data source in this research is the Google Scholar database of 110 documents published from 2018 to 2022, filtered by applying inclusion and exclusion criteria, and 8 articles analyzed in full-text form. Based on research results with a systematic literature review, education and training can increase teacher professionalism, such as increasing interest in teaching talents, increasing teaching creativity, having a professional organization that has the authority to regulate matters related to teachers' professional duties, and teachers can make the best use of their time. -good. it is possible to improve knowledge and skills through other training.

Keywords: Education and training, teacher professionalism

INTRODUCTION

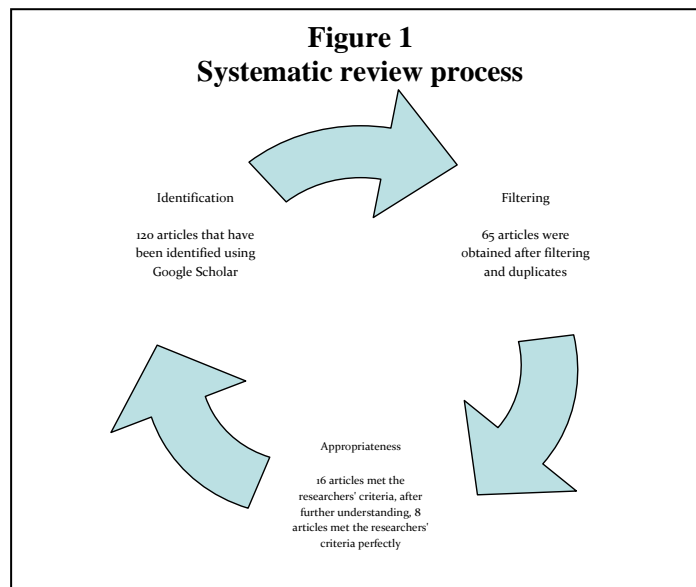
Efforts to improve the quality of education continue to be made, both innovatively and innovatively. Education is critical in organizing life in school, family, community, and national and state life. One way education can be done is by organizing (Esilvita, 2023; Harahap, 2023). Education and training (diktat) are two of the efforts to improve and increase teacher competence. Training is the process of teaching skills and providing the necessary knowledge and attitudes to carry out their responsibilities according to standards (Mahdona, 2023; Rivendri, 2023; Safitri, 2023). This differs from education, which provides a general understanding of a particular subject because training focuses on the job's needs. Usually, the goal is to improve the performance of the last task, asking the official to carry out tasks that the official needs to be used to or preparing the individual for changes that may occur (Harafah, 2023; Nurhabibah, 2023).

Educational training in electrical energy needs in Indonesia continues to increase from year to year (Mayasari, 2022), along with increasingly large electricity usage activities (Sukandarrumidi, 2018). This raises the need for alternative energy sources that replace conventional electrical energy sources (Firman et al., 2017). One of the main choices currently is Solar Power Plants (PLTS). According to the Global Solar Atlas, Indonesia has abundant solar energy potential, around 4.6-4.8 KWh/m² or 112,000 GWp. However, solar energy use needs to be improved to around 10 MWp or 0.000009% of the existing potential of 112,000 GWp (ESDM, 2012). To optimize the use of these resources, it is necessary to increase the application of solar cells or photovoltaic technology. This technology can convert sunlight into electrical energy, later benefiting local communities (ESDM, 2012). This training was carried out to increase teachers' professionalism in implementing solar technology to students with energy source material as a practical tool that supports learning activities. This aims to encourage teachers to increase creativity in teaching. Therefore, this research is essential to understand the various roles of education and training in improving teacher professionalism.

METODE

In this writing, we use the library study or literature review method, examine articles related to the writing topic, and provide relevant explanations for the article's writing to support the explanation of the written topic by including the article review results. The review used the Google Scholar platform with keywords: education and training and teacher professionalism. Article search results using these keywords yielded eight articles that matched the topic of discussion. This type of research is a Systematic Literature Review (SLR). The stages carried out in SLR are as follows: (1) Develop a Research Question (RQ); (2) Search for relevant literature; (3) Conduct a review; (4) Analysis of findings. The research questions in this article are: "What is the role of education and training in increasing teacher professionalism?"

The author collects articles to be reviewed from several sources, namely Google Scholar. The articles collected are articles published between 2018 and 2023. A *systematic literature review* is a research approach that uses literature reviews to explore a predetermined research topic or question in more detail and is designed to collect and evaluate existing evidence related to the research topic. The research sources include scientific journals and other trusted publications relevant to this topic. Based on the discussion above, some keywords contain data worth studying in more detail because the search results and selection of these two keywords contained seven documents published in 2018–2023. Thus, the systematic review process is as follows:



DISCUSSIONS

A literature review that has been carried out involving eight researched articles shows that education and training in installing solar power plants have a significant role in teacher professionalism.



Figure 2
Source: BBPPMPV Jawa Barat



This training can also increase the knowledge of participants who already understand how to assemble and use the PLTS trainer set and increase teacher enthusiasm to develop the PLTS trainer set as a Pancasila profile project in the Merdeka curriculum. The training can also increase talent interest in teaching, advance creativity in education, and create a professional organization with the authority to regulate matters relating to teachers' professional duties. Based on the approach described previously, the eight articles that have been selected and identified will be analyzed in detail at the data analysis stage. This process begins by summarizing each section and outlining its overall content.

The information recorded and extraction results will be presented in the following table:

Author	Title	Location	Result
(Gultom et al., 2023)	Training on Designing PLTS Trainer Sets at SMA Muhammadiyah 1 Boarding School, Bengkulu City	Bengkulu	The activity began with preparing all materials and tools and continued with implementation, which contained socialization, simulation, direct design, and the final stage of monitoring and evaluation. Knowledge increased for around 65% of participants who understood how to assemble and use this PLTS trainer set. The enthusiasm of teachers and students can be seen in the initiative to develop a PLTS trainer set as a Pancasila profile project in the independent curriculum.
(Sahari, 2018)	The Influence of Education, Training, and Teaching Experience on Teacher Professionalism at SMAN I Likupang	Likupang	The research results show that the independent variables together have a significant influence on the dependent variable. Therefore, the first hypothesis states: "There is a significant influence simultaneously on the level of education, training, and teaching experience on the professionalism of Likupang High School I teachers proven true."
(Haryana et al., 2018)	The Role of Training Programs in Strengthening the Professional Competence of SMK Tkr Teachers.		There is a significant influence on teachers' professional competence.

(Khulaemi, 2023)	Increasing Learning Engagement Ability to Practice PLTS Installation for Participants in Technical Training for PLTS Construction and Installation using the Video Based Practice Jakarta approach	Jakarta	The conclusion of this research shows that the video-based practice approach effectively increases learning engagement and the practical ability to install PLTS in technical training participants. This research provides an essential contribution to expanding insight into the use of technology in the context of specialized training. It illustrates the video-based practice and provider-based practice in increasing the effectiveness of field practice learning.
(Samsul Arifin & Miscbahul Munir, 2021)	The role of training on Gempol teacher performance.	Gempol	This research aims to determine the influence of education and training variables on teacher performance. The subjects in this research were UPT teachers in Gempol District at the elementary school level who had received competency improvement training.
(Latiana, 2019)	The role of teacher certification in increasing the professionalism of Semarang educators.	Semarang	Analysis of the Professional Competency of Padang Teachers Based on the results of the research and discussion above, it can be concluded that the professional competence of teachers at SMK Negeri 2 Padang can be seen from the analysis of the management and use of digital-based learning media and learning resources, mastery of teaching materials, implementation of evaluation of student learning outcomes, management of teaching programs.
(Herlina & Bachri, 2019)	The Influence of Motivation, Education, Training and Work Experience on the Performance of Teachers at SMKN 5 Banjarmasin,	Banjarmasin	Banjarmasin. The results of the research show that training factors have a significant effect on Teacher Performance at SMK Negeri 5 Banjarmasin. This indicates that the improvement in teachers' abilities in the teaching and learning process obtained from the training they have attended will directly impact the proper and correct implementation of teachers' duties and responsibilities.
(Mia & Sulastri, 2023)	Analysis of the Professional Competency of Padang	Padang	Teachers Based on the results of the research and discussion above, it can be concluded that the professional competence of teachers at SMK Negeri 2 Padang can be seen from the analysis of the management and use of digital-based learning media and learning resources, mastery of teaching materials, implementation of evaluation of student learning outcomes, management of teaching programs.

CONCLUSION

SLR research on the role of education and training in installing Solar Power Plants (PLTS) in increasing teachers' professional competence shows that training has a very significant role. Teachers who have taken part in the training can improve their abilities and skills and can support professionalism in teaching. This training is essential for investigating innovative approaches that can increase teacher involvement in training activities, such as the application of educational technology or project-based learning. Additionally, research could examine the long-term impact of training on improving teachers' skills, motivation, and commitment to the profession.

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