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WELCOME MESSAGE FROM CONFERENCE CHAIR

We welcome all respected presenters to the 4th International Conference on Learning Innovation and Quality Education (ICLIQE 2020) in Surakarta, Indonesia. A major goal and feature of it is to bring academic scientists, education researchers, teachers, students together to exchange and share their experiences and research results about most aspects of science and social research, and discuss the practical challenges encountered and the solutions adopted.

ICLIQE 2020 this time is carried out online because during the COVID 19 pandemic that is currently sweeping the world, it requires all of us to keep up with the applicable health protocols. However we still believe that you can still get stimulation and quality information related to educational innovations from keynote speakers and invited guests from several countries.

The program consists of invited sessions and discussions with eminent speakers covering a wide range of topics in science and social research. This rich program provides all attendees with the opportunities to meet and interact with one another. We hope that your experience with ICLIQE 2020 has been useful and long lasting. With your support and participation, this conference will continue its success for a long time.

Finally, we have raised the bar by focusing on better quality articles for acceptance to be published in reputable journals. We do hope that participants would understand that publication is a long and tedious process that involves many rounds of reviews and corrections. For these reasons, we hope that participants could assist by putting in more effort to ensure that articles submitted are original, error-free and fulfill the quality standard imposed. So, help us to help you and the others as well, as a delay in submission by some individuals will affect the others as well.

We would like to thank the leaders of Universitas Sebelas Maret, all committees and reviewers. They have worked very hard on reviewing papers and providing valuable suggestions for authors to improve their work. We would also like to thank the external reviewers, who provided extra assistance in the review process, and the authors who contributed their research to the conference.

We hope that all ICLIQE 2020 participants will have a fun scientific gathering in Surakarta. We look forward to seeing you all next year at this conference.

Happy Conferencing

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Development of Attitude Assessment Instrument for Pre-service Primary School Teachers Based on Science Literacy

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ABSTRACT

Assessment is an important factor that determines the success of the process and learning outcomes. The aspects measured in the assessment are still skewed in the cognitive realm. Whereas the assessment of attitudes to pre-service elementary school teachers is also very important in determining the success of the learning process. This study aims to develop and find out the validity and practicality of attitude assessment instruments for elementary school teacher candidates based on scientific literacy. This type of research is research and development using the Rowntree model. The stages of this research include planning, developing, and evaluating. Based on the results of the study the validity of the attitude assessment instrument obtained an average value of 84% with a valid category. The average value was 83% for the practicality value in the practical category. From these data, it can be concluded that the instrument for evaluating the attitude of pre-service elementary school teachers is based on valid and practical science literacy.

CCS CONCEPTS

• General and reference~Document types~General conference proceedings

KEYWORDS

Attitude Assessment Instrument, Research and Development, Science Literacy, Primary School Teacher Candidates

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1. Introduction

The teaching profession is now demanding more and more responsibilities along with the need for higher quality education. Pre-service teachers are expected to be able to answer all these demands. Teacher performance appraisal is considered as a benchmark to make improvements in the quality and performance of teachers. The assessment usually consists of self-development, scientific publications and or innovative work.[1]

Kahramanoğlu, Recep [2], mentioned that Some universities even apply attitude assessment before accepting and placing pre-service students in educational programs. So placing pre-service teachers by the attitude characteristics possessed following the educational program to be pursued. This will realize qualified human resources are qualified teachers. The process of teacher training under the attitudes and characteristics possessed by pre-service teachers is needed to produce qualified teachers.

Based on Estrada Research [3] attitude assessment is considered relevant in preparing pre-service teachers. Because of the positive attitude possessed by the teacher can teach the material to students better, the teacher is more optimistic in teaching anything even natural science and mathematics material that is considered difficult.

Simone et al.,[4] in his research explain that the attitude of the teacher is considered capable of attracting students' interest in learning science. How does a teacher stimulate students to be actively involved in activities and learning science? Some literacy shows that students' interests are lowest at the elementary school level. Based on this the question arises as to how the attitude of a good teacher should be so that the interest of students at the elementary school level can increase

Teacher assessment generally consists of self-development and innovative work as well as publications. These aspects enter the cognitive realm and require habituation in the process. Everyone needs a habit of taking action in every demanding activity. Self-development can be done if someone adopts good attitudes or habits. So that attitude becomes commonplace and fosters a desire to develop themselves in a better real[5]

The focus of the assessment is more focused on the final results so that the process of assessment activities has not been recorded optimally. One of these is attitude assessment. Attitude is a tendency of behavior to do something in a certain way, method,

technique and, pattern towards the world around it, both in the form of people and in the form of certain objects. Attitudes refer to actions and behaviors, however, not all actions can be categorized as attitudes.[6]

Someone's deed can conflict with attitude. As the academic community, we need to know the norms that exist in pre-service teachers. Especially the attitude of pre-service teachers to the surrounding environment that has the potential in self-development efforts, a publication of scientific works, and innovative work. If there are negative teacher candidates, then certain techniques need to be found to put the negative attitude into a positive one. In the realm of attitude there are five levels of thought processes consists of (1) Receiving or paying attention, (2) Responding or responding, (3) Assessing or appreciating, (4) Organizing or managing, and finally having character[7]

Each level has the potential to determine one's learning success. But there are not many attitude assessment instruments because this requires a long time and the lack of data linking attitudes with learning outcomes. Measuring attitudes usually pay attention to the following 3 things, namely(1)Cognition that is regarding the pre-service teacher's knowledge of objects, (2)The Affection that is related to the knowledge of the pre-service teacher of the object and (3)Conative which is related to the tendency of the pre-service teacher's behavior towards the object. [8]

Development of attitude assessment instruments designed with scientific literacy based.Science literacy is the ability to use scientific knowledge and identify questions and draw conclusions based on evidence to explain natural phenomena related to life and human life and natural surroundings. [9] Based on this understanding, scientific literacy is considered as a model that can develop the mindset and behavior of pre-service teachers, instill caring characters responsible for themselves, the community, the natural environment, and face global problems in the 21st-century era. Pre-service teachers who are literature will be able to evaluate the quality of scientific information possessed by students.[10]

Science literacy in pre-service teachers can be explained with questions about the attitudes and views of pre-service teachers towards science. Based on the analysis that teacher candidates can show the attitude of scientific literacy based on factors that are owned. The following is a factor analysis that can be used to determine the attitude of pre-service teacher's scientific literacy, consists of (1) Enjoy scientific activities, (2) Involvement in scientific activities, (3) Beliefs about science (4)The general perception of the value of science (5) Perceptions of activities that give rise to ideas[11]

Pre-service teachers are expected to have a good attitude toward scientific literacy. Because the teacher is an agent of change who has an important role in providing science lessons to students to achieve the goals of science learning [12]. The reality in the field of students does not yet have a low understanding of content, context, context, scientific literacy processes. So we need to ensure the attitude of pre-service teachers to be used as a reference if it is felt the attitude of pre-service teachers still does not meet the assessment criteria based on scientific literacy[13].

Research on pre-service teacher attitudes has been carried out in several countries [11] [12] [13]. Because as pre-service teachers are required to have a good academic attitude in order to evaluate students' abilities and improve their abilities to become good prospective educators.

Based on the description above as well as several previous studies [14] [15] [16], the measurement of the attitudes of prospective teachers based on scientific literacy is necessary so that an attitude assessment instrument is necessary. This development aims to determine a valid and practical instrument for assessing teacher candidate attitudes based on scientific literacy. So that it can be used to analyze the attitudes of prospective teachers.

2. Literature Review

2.1. Attitude of Prospective Teachers

Boubonari et al [14] mentioned that the attitude of prospective teachers to the environment is needed as a form of their knowledge of marine pollution problems. Tuncer et al [15] found that the background and gender of prospective teachers were positively related to the environmental literacy attitudes of prospective teachers.

Rennie et al [16] also revealed the role of primary school teachers as an important aspect in educating children about student's knowledge and attitudes towards science. According to other sources, it is also explained that the attitudes of prospective teachers towards science and science teaching are identified as factors that greatly influence science achievement, attitudes, the tendency to continue science education, and the overall scientific literacy of teacher candidates [17] [18]

The belief or self-confidence that prospective teachers can teach science in an egotential manner and the belief that students can learn science well also affects the ability of prospective teachers. The lower the self-confidence of the prospective teacher, the lower the ability of the prospective teacher because they think that they are not capable so they tend to be lazy to improve themselves [19] [20]

2.2. Science Literacy

Maienschein, Jane[21] mentioned that scientific literacy is a scientific means of knowing the conditions of nature as well as the process of critical and creative thinking about what happens in nature. Another opinion states that scientific literacy is intrinsic goodness based on morals and other basic principles. Scientific literacy helps people live the "good" life

According to PISA 2006 [22] scientific literacy refers to four interrelated features that involve an individual: Scientific

knowledge and the use of that knowledge to identify questions, acquire new knowledge, to explain scientific phenomena, to draw evidence-based conclusions about science-related issues. An understanding of the characteristics of science as a form of human knowledge and inquiry. Awareness of how science and technology shape our material, intellectual, and cultural environment. Willingness to engage in problems related to science, and with science ideas, as constructive, caring, and reflective citizens

3. Method

This study adapts the Rowntree mode [23], with the type of research and development. This model [24] focuses on the design to produce attitude assessment instruments. The resulting attitude assessment is based on scientific literacy. The stages of developing a scientific literacy-based attitude assessment instrument based on the downtree model include planning, development and evaluation. The research flowchart is shown in the Figure 1.

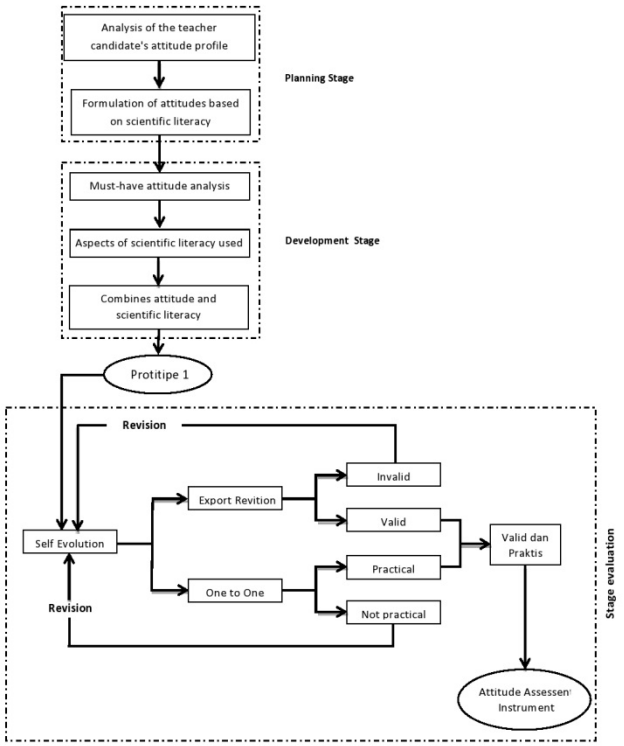

Figure 1. Research Flowchart

The planning stage begins with finding information about the profession, the duties and authority of pre-service teachers, the outline of scientific literacy that must be held the duties and responsibilities of teachers. Review existing attitude assessments for pre-service teachers. Identifying what attitudes pre-service teachers should have based on scientific literacy.[25]

The development stage begins by analyzing what attitude statements will be made in the rubric of assessment based on scientific literacy. Based on the analysis, 8 statements were obtained with each outlining 4 different statement rubrics. The range of values used is 1-4. With the identification of 1 very negative, 2 negative, 3 positive, and 4 very positive.

The product that has been produced is then evaluated. This is the final stage of research and development. The purpose of this stage is to find out the validity and practicality of the attitude assessment instrument for pre-service teachers based on scientific literacy.

The data collection technique used in this study was a validation sheet to determine the validity of the attitude assessment instrument products conducted by experts. Also, the observation sheet is used to determine the practicality of the assessment product that is filled by the observer. The data analysis technique used is descriptive statistics in the form of calculating the percentage of the results of the validator and observer assessment of attitude assessment instruments. [25]

4. Results And Discussion

The development of attitude assessment instruments begins with the product planning. How is the product design instrument assessment a good attitude? Literature observations and studies are conducted to produce good assessment products. Furthermore, material analysis and the relationship between aspects of attitude and scientific literacy were conducted. Next, take into account attitudes that are consistent with scientific literacy. The attitude assessment instruments to be developed consist of observation instruments, self-assessment instruments for pre-service teachers, assessment instruments among pre-service teachers.

At the development stage, observers will develop an attitude assessment in the realm of social attitudes related to scientific literacy. This assessment was conducted by an observer at a science education course in primary school 1. The suitability of the material and scientific literacy in the course was considered capable of developing an attitude assessment instrument.

The development of observation instruments is adjusted to the principles of observation, planning the competency assessment of attitudes with observation and aspects of scientific literacy that will be integrated into the observation instrument. Based on that aspect, 8 aspects must be observed in the observation instrument which is categorized as very positive, positive, negative, and very negative. Furthermore, a self-assessment of elementary school teacher candidates is compiled, the benefits of this assessment are the pre-service teachers can find out their weaknesses and strengths, because when they do an assessment they do self-introspection which of their attitudes are still lacking and which are their superior qualities. The preparation of self-assessment instruments must be following the principles and plans for attitude assessment through self-assessment and scientific literacy integrated into the self-assessment instruments.

This research produces a self-assessment instrument in the form of a questionnaire that must be filled out by pre-service teachers. There are approximately 15 statements that must be filled out by pre-service teachers. The last attitude assessment instrument is the assessment between students, the benefit of this assessment is to train pre-service teachers to act objectively, skillfully, and carefully in assessing an object. Because pre-service teachers will have to provide an assessment of students with an objective, skilled in reading the character of students, and careful in identifying the attitudes that are owned by students. The instrument of assessment among teacher candidates is an integrated questionnaire with scientific literacy. There are 10 statements contained in the questionnaire.

Based on George DeBoer [9] drafted 8 The aspects of scientific literacy that are integrated into 3 good attitude assessment instruments in the form of observation, self-assessment, and peer assessment among pre-service teachers consists of (1) Identifying scientific questions. (2) Explaining phenomena scientifically. (3) Using scientific evidence, (4) Having high scientific confidence. (5) Developing Curiosity (6) Concern for the Environment. (7) Able to Distinguish Facts and Opinions. (8) Courageous and Courteous in Asking Questions and Arguments. The instrument is then measured using expert validation, questionnaires, and self-assessment. The data obtained are qualitative and quantitative data from the validation sheet and questionnaire. Quantitative data will be processed using Microsoft Excel 2010

The above stages continued with the production of prototypes in the form of attitude assessment instruments based on scientific literacy. Resulting in 3 types of attitude assessment that is equipped with a rating scale on each instrument. At this stage produces prototype 1 in the form of attitude assessment. Prototype 1 in the form of an instrument of attitude assessment is then assessed, this is the final stage of research and development. The assessment is in the form of an independent assessment, expert validation, and one to one test.

Self-assessment of prototype 1 products in the form of checking content, constructs, and languages. The basis for determining this aspect of assessment is following the research Puspitasari, et al., [26] which revealed that measuring the quality of the assessment rubric can be done on the aspects of content, language, and presentation. The results of the self-checking are continued by the expert validation. The aspects assessed by validation are the same as independent assessments of language, construct, and content. The determination of this aspect of assessment is in line with the research of Nufus et al [27] which reveals a measure of the quality of the scoring rubric consists of aspects of content, language, and presentation. The results of expert validation are then carried out improvements. Validation was carried out by 3 lecturers from FKIP Nahdlatul Ulama Al Ghazali University. After that, the product was then tested one by one involving 8 students of elementary school teacher education and 3 observers. The data obtained in the series of tests above are qualitative and quantitative. Qualitative data in the form of suggestions and input. Quantitative data are in the form of a combination of scores from expert validation and scores from observers. Quantitative data processing using Microsoft Excel 2010. The following is the quantitative data obtained.

Practical Based on Table 1. Expert assessment and one to one according to three validators scored 84 valid categories and attitude assessment instruments can be used and applied at a later stage. The results of this study are following the research of Wicaksono, et al.,[28], which confirms that the percentage of expert validation values for an attitude assessment instrument with a value of 80% can be categorized as high enough valid and worthy of being tested. The results of this assessment are also supported by the planning process in developing attitude instruments which not only involve the observation component but self-assessment and assessment among prospective teachers. This instrument is expected to be able to assess students as a whole without the subjectivity of the lecturers. This is in line with the research findings of Bua, et al.[29], which explained that teachers need an assessment instrument that can help describe aspects of attitudes in detail so that there is no need to guess what the students' attitudes are during learning.

While the results from one to one involving 8 students and 3 observers resulted in a score of 83 in the practical category. The results of this study are following Widoyoko [30] in the practicality table suggesting that the percentage of expert validation values 75 can be categorized as valid. Based on this it can be stated that the attitude assessment instrument based on practical science literacy. Further qualitative data obtained in this study are suggestions and input from expert validators. Feedback and Suggestions so Improvement Change the font size from 10 to 12. Feedback and Suggestions to Improve the instructions for using the self-assessment questionnaire so this improvement Conduct instructions for use according to the instructions.

Overall the attitude instrument assessment is considered valid and practical. So it can be used in assessing the attitude of pre-service students in lectures. Suggestions and input from experts were no.

5. Conclusion

Based on the results and discussion, it can be stated that the attitude assessment instrument for pre-service school teachers based on science literacy is declared valid and practical. This instrument application can be used in any lecture. After it is applied in lectures, it is expected that it can improve the attitude of pre-service teachers who are still considered lacking. This attitude assessment can also be developed with adjustments to achieve competencies that are not following other subjects. The more attitude assessment instruments developed by the achievements of the courses, the more we can map the attitudes of pre-service teachers in each subject so that we can make appropriate

improvements to improve the attitude of pre-service elementary school teachers for the better.

The implications of the research conducted by researchers are as follows, (1)The instrument for assessing the attitudes of prospective elementary school teachers can make it easier for lecturers to see the abilities and shortcomings of prospective teachers in science lectures (2) The attitude assessment instrument developed will reduce the lecturers' subjectivity in assessing scientific attitudes.(3) The attitude assessment instrument developed will reveal the negative and positive attitudes of students so that it can be a benchmark for teachers in developing attitudes. (4) The attitude assessment instrument developed will be a reference for lecturers in developing attitude assessment instruments in other lectures.

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