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Abstract. This research aims to identify the conception of the pre-service elementary school teachers on air pollution. Analysis of air pollution conception on the pre-service elementary school teacher's straight-away desirable for developing proficiency and mastery of the concept. Data were collected on as undergraduate students of elementary school teachers in *Sumedang* (84 participants). The sample is measured by a diagnostic test (four-tier test) that have been tested for validity by the validator experts and in-depth interviews. Based on the results, (1) the samples are clustered into 4 groups based on understanding the concept, do not know the concept, misconceptions, and less understanding the concept. (2) The misconception occurred of pre-service elementary school teacher unperceptive the process of air convection and the environment. (3) The generating of the misconception on pre-service elementary school teacher is the source of the information acknowledged such as books and the internet. The development of learning models and information sources on pre-service elementary school teachers can improve knowledge of conception on air pollution.

1. Introduction

The perseverance of this study was to investigate and identify the environment and the interrelatedness of pre-service teachers' misconceptions and scientific concepts for explaining air pollution, the discontinue matter on the air of the interrelated concepts including misconceptions and scientific concepts remaining amidst pre-service teachers' larger knowledge system used for clarifying air pollution. The study is substantial to the teacher because elementary teacher on science content knowledge has both direct and indirect influence on classroom practice [1]. Pre-service teachers who have more content knowledge are more likely to help students construct scientifically accepted knowledge. Additionally, teachers with solid content understanding are better prepared to develop instruction that follows a conceptual learning course [2]. The Environmental Studies processes identified, for the first time, areas of understanding in science

which learners should acquire in elementary school. This attention to the importance of conceptual development as well as to the development of skills, which had previously been principal, cast into inquiry teachers' own understanding of the concepts to be developed in children [3]. Environmental pollution is one of the world's biggest problems that need worldwide assistance, this phenomenon is catastrophic to human lives [4]. The condition of a substance is called a pollutant if its continuation can basis impairment to living things because the amount exceeds the standard, not right, and in the wrong situate. Based on the consign of occurrence, environmental pollution is separated into three, namely water, air, and land pollution. mostly in the reason of the most ubiquitous air pollution it is commonly acknowledged today that the understanding of CO2 contributing to the formation of the greenhouse atmospheric effect presume the measurement of the supposed forceful biogeochemical carbon dynamic cycle in the present literature of many ways representation paths of the carbon cycle are considered in the form global CO2 change [5]. The complexity of provided that an understanding of environmental pollution, mainly air pollution is beside given explanation. Education, especially lessons about social environmental issue touching nonhuman natural world, is a working behavior form that lumbers the mentor surroundings with significant exciting overheads [6].

$$\left(P+\frac{n^2a}{V^2}\right)(V-nb)=nRT \tag{1}$$

The Equation (1) shows that the concept of physical gas molecules is closely related to the concept of air pollution. It is known as the van der Waals Gas Equation, in using it must be remembered by the units which are used in accordance with the constants a and b whose magnitude depends on the type of gas.

2. Method

This research is descriptive qualitative research using survey method for the reason that desire to acquire wide-ranging representation about misconception happen in pre-service teacher of elementary school. Examination research methods are used to accumulate data or in classify on large populations with the sample. There is three main uniqueness of the survey: (1) the information collected describe some aspects such as the capacity, situation, conviction, acquaintance of the population, (2) information composed through the submission of questions, (3) information obtained from the sample and not from the population.

3. Result and discussion

Based on the consequences of research tests on air pollution misconception in pre-service elementary school teachers obtained data in table 1.

Table 1. Recapitulation of conception on the pre-service school teacher.

Indicator	The Result (%)
Understand the concept	6 %
Less understanding of concepts	42 %
Misconceptions	39 %
Error	13 %

Collecting data on misconceptions of the concept of pre-service school teacher candidates on air pollution, it was create that 42% of pre-service teachers are at a level of being deficient in understanding of concepts, this is indicated by the level of provided that answers and reasons have not been dependable between answers and reasons and principal levels are still in uncertainty - the personnel respond. The misconception data that occurs in the pre-service teacher candidate is 39% this is outstanding to the high inaccuracy in

answering the problem or selecting the reason and supported the level of poise that the chosen answer is the accurate answer. The third data obtained by the researchers do not recognize the concept as much as 13% in the elaboration of pre-service elementary school teachers do not know both the answer and the precise reasons. While the smallest data revealed pre-service primary school teachers in pre-service elementary school teachers who comprehend the concept.

This study the diagnostic test format used is 4-Tier Multiple Choice Test. This diagnostic test is able to analyses number of misconceptions and classifies the level of understanding pre-service elementary school teachers that is scientific knowledge, misconception, lack knowledge, and error [7]. Because the state of conception is closely related to the student's conception belief, the instrument to diagnose the state of conception held by the student is usually a compilation of the conception test and the level of conception belief. Some researchers have developed multiple-choice conception tests in various formats, such four tier test format [8]. The first tier contains an unfinished question or inquiry about a thoughtful. The second tier leaves the explanation for the pre-service elementary school teacher to explain the answer to the first tier. The second tier is made in the form of multiple choice. So pre-service elementary school only necessitate determining the right reasons based on the answers that have been available in accordance with their answers. The third tier represents the level of confidence of pre-service elementary school teachers in answering questions. The third tier is used to conclude the constancy of answers of pre-service elementary school teachers can be uttered as misconceptions.

Table 2. Analysis conception four tier.

Analysis	Category	Type	Result
Four tier	Understand the concept	Right answer + right reason + certain	6 %
	Less understanding of concepts	Right answer + right reason + uncertain	5 %
		Wrong answer + right reason + uncertain	9 %
		Right answer + incorrect reason + uncertain	25 %
		Wrong answer + incorrect reason + uncertain	3 %
	Error	Wrong answer + right reason + certain	13%
	Misconceptions	Right answer + incorrect reason + certain	25 %
		Wrong answer + incorrect reason + certain	14 %

How to classify misconceptions with four-tier tests requires exactitude and sustained in the construct and correction (data processing). It caused to combine three answers from each level to evaluate misconceptions. Based on preliminary interviews the teacher said that the use of diagnostic instruments takes a lot of time in analyzing the answers of pre-service elementary school teachers. Analysis of the combination of answers on multitier [9].

3.1 Introduction concept and misconceptions on air pollution

The significance of perceptive the difficulties of the learner, in this case, the pre-service elementary school teacher because it will be completed a traction by the teacher in determining the correct treatment to conquer them. Understanding of the pre-service school teacher's entrant toward a concept is often referred to as the expression conception. In this study pre-service elementary school teachers to recognize the concept of air pollution based on the preliminary knowledge gained when learning data derived education Some of the reasons necessary the meaning of identifying the concept of pre-service elementary school teachers such early conception is often not in peace with the scientific conception of scientists.

Presentation of concept in science found from natural phenomenon and slams to pre-service elementary school teacher then studied science learning. Taking the occurrence under revise should be close occurrences with pre-service elementary school teachers in regulate to more easily understand it. A more contextual phenomenon is predictable to increase the motivation of pre-service elementary school teachers in learning science. This experience is a basic acquaintance for pre-service elementary school teachers in studying science. In the misconception table, it is explained that pre-service primary school teachers realize the concept of air effluence by 6%. This is spelled out with the correct response given, the reason given right and pre-service elementary school teachers are confident of the answers and reasons.

This happens because in building knowledge of pre-service primary school teachers always attach new information obtained with previous knowledge, so there is an active thinking progression. Based on these statements it can be completed that the concept is a thought that exists in the human brainpower about an object, event, or event. Inter concept is not separate, because the concept will have denotation if connected with other concepts so as to form a known association.

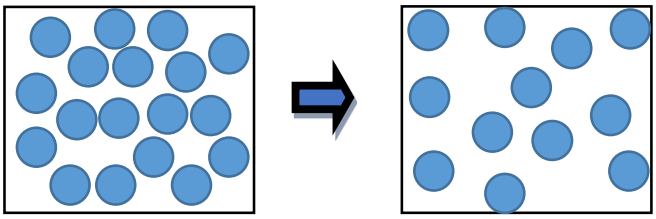

Figure 1. How particle move

This picture shows how particle moves and making the particles move from one place to another. Temperature reverse is a meteorological phenomenon stirring when a warm air layer is surrounded between two colder air layers and subsequently increasing air pollution in a local scale [10]. In this study, a reliable science context was created regarding the complication of air pollution phenomenon for pre-service elementary teachers, in specific the involvement of wind and topography on the concentration of air pollutants in a local scale, the wind donates in the dispersion of air pollutants or attentiveness over big cities [10, 11].

The subject of the air is one of the themes close to pre-service elementary school teachers. Humans live in the lowest layers of the atmosphere called the troposphere. Symptoms of the impression and weather transpire in this layer. The immediacy of the air subject with daily life is anticipated to progress the inducement of primary school teacher candidates in learning science and more straightforwardly understand it. The research with 84 sample of elementary school teacher education students at *Universitas Pendidikan Indonesia* aims to recognize the conception of air pollution material. It can also enlighten the concept of perception change in primary school teacher candidates in understanding air pollution. Conceptual change has become one of the most crucial research domains in the study of science education. The conceptual change model has happened to the most dominant theory since the commencement of research on the conceptual change until now [12]. This conceptual changing model describes learning as the relationship between existing knowledge and new acquaintance leading to four surroundings: dissatisfaction, intelligibility, plausibility, and fruitfulness. Various studies on conceptual change concerning cognitive argument approach in it as a model base prolong to be deliberate [13].

In the data of the research results showed the misconception altitude in the pre-service elementary school teacher reaches 39%, this indicates an inaccuracy in understanding the concept. The misconception is the conception of pre-service elementary school teachers who are built from their daily experiences that are incompatible with systematic concepts. Misconceptions also designate inability of elementary school

teachers not to have an understanding of the content to be qualified in the classroom in science learning [14].

3.2 Information resources

Based on the consequences of research tests on media sources frequently used pre-service school teacher candidates on air pollution substance obtained numbers in table 3.

Table 3. Information resources.

Media	Sum
Self Assumption	12
Book	3
Internet	20
Newspaper	4
Logic	7
All media	1
Unreason	6
Television	20

The most frequently use media data of primary school teacher candidates in receiving information, especially air contamination material 27% with the number of candidate teachers as fundamental as basic information during the book and internet. Additionally, as much as 17% get information from the assumptions or initial acquaintance about pollution such as experience or daily events related to air pollution. The soaring rate of internet use in pre-service primary school teachers reaches 20%. It is explained that pre-service primary school teachers only focus on the relationship between air pollution with wind and topography in local conditions. The authentic context given to pre-service elementary school teachers is based on daily meteorological management effectiveness data over the Internet to approximate air pollution [15]. The assortment of media is based that a teacher has beliefs about the nature of science not directly interacting with the satisfied unless their attitude communicates directly to the function of teaching science [16].

In the stand also indicated 20% of pre-service teachers accept in turn via television, in this case, indicates that the content presented in the form of video. a function for video use is explained that information is conveyed directly through intermediaries of local relations that can explain concepts and can sustain acquaintance [17].

4. Conclusion

Most of the pre-service school teacher candidate is in misconception and mistake in concept understanding, while the as a rule media that makes primary school teachers are in this phase are television and internet**.**

Acknowledgment

This work was financially supported by "*Hibah Penelitian Dosen Universitas Pendidikan Indonesia*" Research Grants in the fiscal year 2017.

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