



**STUDENTS ATTITUDES RESPONSES ON COLLABORATIVE GOOGLE CLASSROOM
IN ENVIRONMENTAL SCIENCE**

Reni Marlina^{1*}, Erwina Oktavianty², Husna Amalya Melati³, Eka Ariyati⁴

^{1,4}Pendidikan Biologi, FKIP, Universitas Tanjungpura, Jalan Prof. Dr. H. Hadari Nawawi Pontianak
Kalimantan Barat, Indonesia

²Pendidikan Fisika, FKIP, Universitas Tanjungpura, Jalan Prof. Dr. H. Hadari Nawawi Pontianak
Kalimantan Barat, Indonesia

³Pendidikan Kimia, FKIP, Universitas Tanjungpura, Jalan Prof. Dr. H. Hadari Nawawi Pontianak
Kalimantan Barat, Indonesia

*email: reni.marlina@fkip.untan.ac.id

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Abstrak

Penelitian ini mendeskripsikan sikap mahasiswa terhadap perkuliahan berbasis penelitian perubahan iklim melalui google classroom. Setting perkuliahan adalah *Lesson Study* dalam 2 siklus (plan, do, see). Penelitian ini merupakan penelitian kualitatif dengan metode survey yang dilakukan kepada 90 mahasiswa dari tiga program studi di Fakultas Keguruan dan Ilmu Pendidikan (FKIP) Universitas Tanjungpura Pontianak yaitu Pendidikan Fisika, Pendidikan Biologi dan Pendidikan Kimia yang mengikuti mata kuliah Pengetahuan Lingkungan. Instrumen yang digunakan dalam penelitian ini adalah angket sikap. Analisis data menggunakan teknik analisis statistik deskriptif yaitu dengan menggunakan rumus persentase sikap mahasiswa. Berdasarkan analisis data, ditemukan bahwa mahasiswa memberikan respon positif terhadap mata kuliah Pengetahuan Lingkungan berdasarkan penelitian perubahan iklim melalui *google classroom*. Sehingga pemanfaatan *google classroom* pada perkuliahan Pengetahuan Lingkungan berdasarkan hasil penelitian perubahan iklim memberikan pengaruh positif bagi kegiatan pembelajaran.

Kata kunci: Sikap Mahasiswa, *Google Classroom*, Penelitian Perubahan Iklim, *Lesson Study*.

Abstract

This study examines students' reactions to a climate change research-based lecture delivered via Google Classroom. Lesson study in two cycles is the lecture's context (plan, do, see). This study involved 90 students from three study programs in education faculty at University Tanjungpura Pontianak, including physics education, biology education, and chemical education, who took an environment-based course. The attitude questionnaire was employed in this research. Data is analyzed using a descriptive statistical analysis technique that employs the percentage formula. According to the data analysis, pupils respond positively to the environment study based on climate change research conducted through Google Classroom. As a result, the use of Google Classroom in a lecture setting based on climate change research findings.

Keywords: Student attitude, *google classroom*, climate change research, lesson study.

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INTRODUCTION

Climate change has an impact on streams as well as forest zones. Millions of species, including coral reefs, rely on the territorial sea's 158,000 km of coastline and 8.8 million oceans (Scavia et al., 2002). Coral reefs, which are vital sources of marine life, have also been decimated. Excessive heat caused coral bleaching or the loss of zooxanthellae algae, according to Ali Arman et al., (2013), resulting in the loss of the role of producers. According to Zikra et al., (2015), climate change can affect coastal and marine environments in a variety of ways, including sea level rise, changes in wind speed intensity, rising ocean waves, higher CO₂ concentrations, oceans absorbing more gas, and becoming more acidic. Climate change, or what is known as Climate Change, has been a major focus of international attention in some industrialized countries, such as the United States of America (Jenkyns & Weedon, 2003). This begins with the advent of deforestation and degradation events, particularly in terms of natural resource availability around the world, including in Indonesia. According to (Scavia et al., 2002), illicit logging, fallen trees, and fires have resulted in the permanent loss of 10.4 million hectares of world forest and 10.16 million hectares of deforestation, with yearly canopy cover losses of more than 10% (Zeraatpisheh et al., 2020).

To prevent and minimize the repercussions of this global crisis and its consequences in all sectors, including education, positive contributions from all stakeholders are required. Concerns about environmental conditions must be addressed at the university level. This is in line with the adaptation agenda outlined in the National Action Plan for Climate Change, which includes raising climate change awareness and information, as well as adaptation as an early preparedness action in the face of increasing climate disasters (Andini & Purnaweni, 2019) both of which can be translated into teaching concepts. The macro lectures are part of the Natural Sciences (IPA), which incorporates the subjects of Physics, Biology, and Chemistry as a platform for thinking, where environmental awareness is the scope of science. Environmental lectures were held in three study programs at the MIPA Education Department, FKIP, Tanjungpura University: Chemical Education, Physics Education, and Biology Education. Environmental learning is divided into various courses offered by each study program, such as Environmental Chemistry (chemistry), Environmental Knowledge, and Environmental Physics (p. Physics), while environmental knowledge is divided into multiple courses offered by each study program (biology education). The same range of material was taught in all three, according to the Semester Learning Plan (RPS) compiled by the course lecturers. The lecture topic includes climate change and its consequences, resulting in numerous learning outcomes that are identical in the RPS. The process of realizing learning devices such as teaching materials/ learning media can be coordinated together as a sort of collaborative learning to attain this learning success. The learning process becomes dynamic and produces positive results through collaborative learning, such as the availability of Google Classroom as a common reference and teaching and learning experience shared by lecturers and students from the three study programs.

The purpose of the environmental knowledge lecture in science education programs is for students to gain a wide understanding of the environment and be able to apply science to explain cosmos phenomena through physical, chemical, and biological research (Irmawati et al., 2016). The scientific inquiry process can aid in the development of life skills such as thinking, working, and being scientific (Avci, 2018). This is in accordance with PERMENRISTEKDIKTI no. 44 of 2015, paragraph 1 of article 5 on college graduate competency standards, which comprises attitudes, knowledge, and abilities that fit the IQF CPL definition. Attitudes are behavioral results of internalization and actualization of values and standards through the learning process, student job experience, and research, according to Article 6. The learning process is interactive, holistic, integrative, scientific, contextual, thematic, effective, collaborative, and student-centered, according to PERMENRISTEKDIKTI no.55 of article 9, however the implementation of environmental lectures has not entirely related to the standard learning process. Interviews with teachers in environmental courses, however, found that the lecture method and the usage of power point slide media continue

to dominate learning. This demonstrates that learning is still centered on the lecturer/instructor and is not participatory. It can be seen in the learning that takes place as a result of the delivery of theory and question and answer sessions. Students become inactive as a result of this process and lack the courage to ask follow-up questions. Due to the large amount of material submitted and the restricted number of meeting hours, lecturers typically provide assignments shortly before the final test as an organized type of assignment.

Environmental lectures allow students to go on field trips to see how the environment is doing, but the activities are confined to identifying environmental vegetation. On the other hand, the implementation of lecture-supporting practicums is done by evaluating water quality criteria, but it has not yet progressed to the search for solutions to environmental deterioration, particularly through research on the utilization of local potential. Because local greatness and knowledge were not fully digested, the learning process was not holistic. In fact, this learning environment should include theme qualities by connecting real-world environmental challenges through a transdisciplinary approach, such as chemistry, physics, and biology. The learning process is influenced by two factors: learning resources and learning media. As facilitators, lecturers or instructors play a role in addressing students' learning needs as learning resources. Lecturers' ability is limited, necessitating the use of alternate learning tools and media to supplement instruction. Learning media is a rigorous and creative endeavor to construct a student learning experience with the purpose of creating qualified graduates from educational institutions. Given the inherent limitations of lecturers' media in the form of power points, the time has come to improve or possibly replace the media by constructing a more innovative and interactive computer-based media.

Globalization and information technology (information and communication technology) have resulted in a shift in learning orientation from externally guided to self-guided, and from knowledge-as-possession to knowledge-as-construction in the twenty-first century. One that can be used is Google Classroom (GC). Tanjungpura University has partnered with Google to provide this service, allowing more people to use the capacity. The environmental instructor has not leveraged the existence of this application in the learning process. According to Ramadhani et al. (2019), GC is a free web-based platform that merges numerous applications into a unified platform under the Google Education umbrella. Teachers can collaborate and teach in online classes by sharing information in a variety of formats, including documents, videos, links, and more. Students in environmental classes can readily obtain assignments and assessments from each meeting or topic, which are conveniently accessible by teachers. Easy to use, saves time and paper, is well organized, and can be used with other Google software apps are just a few of the benefits (Deadman, 2017).

Based on the foregoing, it is clear that climate change research-based teaching resources using Google Classroom are essential to enhance students' scientific attitudes. It is expected to be used in the Hybrid Learning/ Blended Learning system, which combines online and face-to-face based learning in accordance with the 2018 Bachelor of Education curriculum through teaching materials that are transformed into learning media, in accordance with the 2018 Bachelor of Education curriculum's direction. The researchers wanted to know how pre-service science instructors in the West Kalimantan region felt about climate change.

METHOD

This study is a descriptive study. Descriptive research, according to Atmowardoyo (2018), is research used to assess the value of independent variables without conducting comparisons or relating them to other variables. The participants in this study were 74 PMIPA students enrolled in environmental education courses in physics, chemistry, and biology. Students' scientific attitudes in climate change research-based environmental lectures via Google Classroom are the research variable. Scientific attitude questionnaires with indications of curiosity, attitude of discovery, critical thinking, objectivity and openness, diligence and thoroughness, cooperation, and sensitivity to the surrounding environment were utilized in this study. The scientific attitude questionnaire has a total

of 41 statements, which include both negative and positive comments. The questionnaire results were evaluated using descriptive statistical analysis techniques, namely the percentage formula, which was used to process data collected from questionnaires in the form of descriptive statistics (Raco, 2018).

$$P = \frac{\sum X}{\sum Xi} \times 100\% \tag{1}$$

The information in the above equation is percentage score for P, total score for each item for $\sum X$, and ideal number of scores (highest score) for $\sum Xi$.

RESULTS AND DISCUSSION

The results of this study are learning outcomes carried out by each indicator. On each indicator of scientific attitude there are 5-7 statements both positive and negative expressions. Recapitulation of the results of student attitudes, can be seen in figure 1.

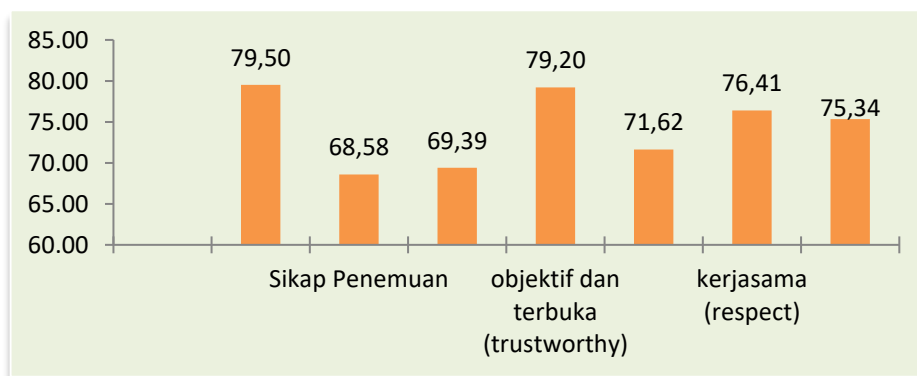


Figure 1. Recapitulation of students' scientific attitudes that appear in the google classroom

From Figure 1, it can be seen that the highest scientific attitude appears in the indicator of curiosity (79.50%) and the objective and open attitude (79.20%). While the attitude of students to findings or different reports is the lowest attitude of 68.58%. Other scientific attitudes are shown by indicators of critical thinking 69.39%, diligent and conscientious attitude is 71.62%, the attitude of cooperation in lectures reaches 76.41% and sensitivity to the environment is 75.34%. These results indicate that students' scientific attitudes are classified as high in the lectures in each of the study programs. Curiosity, as the attitude that emerged highest among the students of the three study programs after environmental studies based on climate change through google classroom, was related to the enthusiasm of students in observing objects in lectures, participating in lectures both on-line or offline lectures to working on assignments given by lecturers (Abdullah et al., 2012; Ratamun & Osman, 2018; Shahid Kazi & Aziz, 2019). Bandaranaike (2018) state that research skills can encourage a novice researcher to be better. The biggest contribution to curiosity is the student's interest in the object of observation in the surrounding environment (Al Emran & Shaalan, 2014; DiCicco, 2016; Iftakhar, 2016). This is also followed by an objective and open attitude, collaborative learning with the help of google classroom provides an opportunity for students to appreciate the opinions of their friends and accept differences of opinion as a positive thing.

The attitude of cooperation, being sensitive to the surrounding environment and perseverance / thoroughness has a presentation that is not too far from the two previous attitudes emerging (Baş & Beyhan, 2010; Hair et al., 2014; Mataniari et al., 2020). The attitude of cooperation refers to the ability of students to cooperate and act honestly in carrying out the tasks given in lectures. While sensitivity to the surrounding environment also shows how students in each activity pay attention to the surrounding environment, such as participating in social activities. One of the things that was done in the lecture was to plant mangrove seedlings as an environmentally friendly action and conduct

experiments related to climate change such as measuring air particulates around the student environment.

In the lowest group, there was an attitude of discovery (68.58%), followed by critical thinking (69.39%). The attitude of discovery relates to how students are able to show the novelty of ideas / opinions and describe the results of observations or conclusions that are new and different from others. Research learning activities provide opportunities for students to provide different views so that the discussion held has a broader perspective. When lecturers provide high-level questions and provide opportunities for students to develop deeper explanations, learning will increase (Kratzwald et al., 2020; Zeraatpisheh et al., 2020; Zhu et al., 2020). This perspective makes students think more optimally about environmental problems, especially climate change. At the beginning of the lecture students are asked to identify climate change in their respective regions. Then the results of the identification were discussed with a large class or removed three study programs. Thus, the discussion that occurs can describe the environmental problems with various possible causes and solutions that can be done.

CONCLUSION

The scientific attitude of students reaches 79.32% with a high category. This shows that through lectures on climate change based on google classroom can bring out the scientific attitude of students. Pre-service science teachers have the good attitude in environmental science particularly in climate changes. That attitudes were evidenced by doing mangrove seed planting activities and documented in the documenter movies and uploaded in goggle classroom. For further research, it is recommended to conduct experiments by comparing the appearance of scientific attitudes of students in the experimental class compared to the control class. After that, it can be seen that there is an increase in the attitude of students in lectures.

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