

New Curriculum of Education in Indonesia: How Do Natural Science Teachers Think about?

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Abstract: The 21st century learning leads to create new skill of students, so the Indonesian government offers the new curriculum. In vocational school, project-based learning for the subject of the *Ilmu Pengetahuan Alam dan Sosial* (IPAS) Project is required to increase the creativity of student. Informations about the perspective of vocational teachers to conduct these learnings require to be elaborated more deeply. This research aims to describe the perspective of teachers to Kurikulum 2022. This study is phenomonology research. Participants of this study were 8 teachers of IPAS Project for vocational high school, in Indonesia. The data was collected by interviews. Data analysis was performed using ATLAS.ti 22 software. The results showed that the majority of teachers's response to the Kurikulum 2022 is positive which they explained that Kurikulum 2022 has more advantageous than the lack. The final goal is to improve quality of education in Indonesia. Pancasila profile has good response by teacher because it is more explicit and complex for building the character of student. The vocational teachers have totally prepared by their own creativity. The recommendation from teachers are expressed as a hope for improving quality of education, such as training for teacher, facilities and massive socialization.

Keywords: New Curriculum, Project-Based Learning, Pancasila Profile, Preparation, and Recommendation

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Introduction

The development of science and technology is fast. This disruption requires fast change also in the learning area, and it means that education requires an adaptable approach. Indonesia is one of the G-20 members, which is

expected to have the ability for competing in Industrial Revolution 4.0. as it refers to the industrial system that is based on digitalization, smart machine, and the Internet of things (IoT). In other words, technology of factories in industry mobilized by robots uses cyber-physical system. This is a huge revolution, and Indonesia should change its industrial system, from the manual system to the digital system.

The competition in the 21st century is inversely proportional to the facts about Indonesia's position in Program for International Student Assessment (PISA) and Trends in International Mathematical and Science Studies (TIMSS). The results in 2015 PISA show Indonesia was ranked 64 out of 74 countries that are members of the Organization for Economic Cooperation and Development (OECD) with a score of 406 for scientific literacy. This score is still very low when compared to the average score for all OECD member countries, which is 493. Meanwhile, Indonesia's position in the TIMSS shows that students' science score was ranked 45 out of 48 countries with a score of 397. This means that there are still many things that need to be evaluated from the education system in Indonesia as a future projection.

As a solution to these problems, Indonesia government offers new curriculum, such Kurikulum 2022. This curriculum is expected to increase literacy and competence of 21st century skill. Another policy of government is Asesmen Kompetensi Minimum (AKM). AKM is minimum competence assessment to measure literacy level of student. This program aims to identify how the level of student in literacy level. Therefore, government could determine appropriately the best program for increasing level of literacy and competence of 21st century skill. New curriculum addresses that students should be taught to develop their thinking skills, so they could think complexly and have high order thinking skills (HOTS). Complex thinking described by skill that includes critical thinking skills, creative thinking, problem solving, and conclusion taking. Meanwhile, HOTS based on the revision of Bloom's Taxonomy by Anderson and Krathwohl includes the ability to analyze, evaluate, and create. Combination of complex thinking and HOTS become the 21st century skills (Anderson, 2011). The *Create* (C6) level is the highest taxonomy level in cognitive which government offers project-based learning as the main model in learning in the school.

The concept of curriculum develops in line with the development of educational theory and practice, also varies according to the flow or theory of education that it embraces. What needs to get an explanation in curriculum theory is the concept of curriculum. According to (Sukmadinata, 2000) that there are three concepts about the curriculum, curriculum as substance, as a system, and as a field of study. The first concept is curriculum as a substance. The curriculum is seen as a plan of learning activities for students in school, or as a set of goals to be achieved. A curriculum can also refer to a document containing formulations of objectives, teaching materials, teaching and learning activities, schedules, and evaluations. A curriculum can also be described as a written document as a result of mutual agreement between curriculum compilers and holders of educational wisdom with the community. A curriculum can also include a specific scope, a school, a district, a province, or an entire country. The second concept is curriculum as a system, namely the curriculum system. The curriculum system is part of the school system, the education system, and even the community system. A curriculum system includes the structure of personnel, and working procedures for how to structure a curriculum, implement, evaluate, and

perfect it. The result of a curriculum system is the arrangement of a curriculum, and the function of the curriculum system is how to maintain the curriculum to stay and be natural. The third concept is curriculum as a field of study is the field of curriculum study. This is a field of study of curriculum experts and education and teaching experts. The purpose of the curriculum as a field of study is to develop knowledge about the curriculum and curriculum system. Those who are steeped in the field of curriculum, learn basic concepts about the curriculum. Through literature studies and various research and experimental activities, they discover new things that can enrich and strengthen the curriculum field of study.

New curriculum focuses on project-based learning which is expected to increase literacy and competence of student. According to (Albar & Southcott, 2021) says that project-based learning stimulates the student creativity process. Furthermore, the results of the study (Shin, 2018) showed that project-based learning has a positive effect on learning motivation and leadership in cooperation or collaboration. In the context of physics learning, (Baran et al., 2018) explained that compared to conventional learning, project-based learning accompanied by games has more success and it is recommended for using in other materials in physics. It is appropriate with (Hanif et al., 2019) who found that STEM project-based learning has an effect on the creativity of learners which the dimensions of creativity studied are dimensions of resolution, elaboration and novelty. Lastly, (Almulla, 2020) found in his research that project-based learning techniques increase students' involvement in sharing and discussing knowledge, because PBL is highly recommended. Therefore, it is important to know deeply how readiness of teacher for facing new curriculum, especially for doing project-based learning and building character of Pancasila.

The project based learning is constructivist approach which student is led to think freely in doing instruction matter and purpose of learning. This model is totally compatible with Kurikulum 2022 which is expected to increase 21st century skill. Therefore, it is prominent to know deeply how the response of teacher for facing this new curriculum, especially for IPAS project subject in vocational high school in Indonesia. The research question on the research is “How do natural science teachers think about new curriculum in Indonesia?”.

Method

A research design that the researcher used was a phenomenological philosophical perspective since the main object of the research was to investigate the response of teacher about new curriculum, Kurikulum 2022. The results of this research are more general instead of using of all phenomenological methodologies following their characteristic result. Hence, the overall procedures of the research used qualitative research procedures. The researcher uses phenomenology method because it enables the researcher to reveal various realities that occur in subjects' standpoints. The objective of this study is to describe the subjects' experience and perspective which stand distinctively for the sake of data provision.

Subject of Research

The researcher performed the information ethically, so the researcher maintained the school and the participants name, the participants' confidentiality, privacy, and safety. The samples were homogenous, the researcher used purposive sampling in selecting the participants. It was done in order to get the appropriate sample or subjects in which they were qualified as the research criteria being aimed in this study. Those samples were gotten according to some consideration choices that were suitable with this research need.

In phenomenology, (Creswell, 2013) explained that data are collected from the individuals who have experienced the phenomenon and often data collection in phenomenological studies consists of in-depth and multiple interviews with participants. The number of participants in this research is eight vocational teachers which consist of two vocational teacher from west Indonesia, five vocational teacher from Central Indonesia and one vocational teacher from east Indonesia. This is compatible to (Creswell, 2013) who stated that the exploration of this phenomenon with a group of individuals who have all experienced the phenomenon. Thus, a heterogeneous group is identified that may vary in size from 3 to 4 individuals to 10 to 15. The participants have much experience about natural science learning in vocational school because at least they have three years of experience as vocational teacher for natural science subject.

Data Collection

The data collection was conducted by depth interview. The questions were created by researcher based on main topic in this research. The collection is done by Zoom App, because the condition was pandemic era on April-May 2022.

Data Analysis

Creswell (2007) argues that phenomenology talks about the important thing to recognize how people interpret the world and what the people experience. Furthermore, to analyze the data, the observation field notes and the interview transcriptions were categorized and analyzed into relevant themes by the researcher. In addition, the triangulation strategy was used in this research to contrast and compare the data between the interview result and the observations' findings. To support this strategy, the researcher implemented the field notes and data transcription. To make an effective interview and observation, the use of memo in two-column forms was made and deliberated the notation process (Creswell, 2007). The researcher deliberated the responses and information to clearly interpret, explain, and analyze the teachers' perceptions. Data is analyzed by Atlas.ti 22 software to generate clear interpretation.

In analysis data, (Bogdan & Biklen, 2007) explains that analysis is a process of data reduction. Decisions to limit codes are imperative. Codes categorize information at different levels. Major codes are more general and sweeping, incorporating a wide range of activities, attitudes, and behaviors. Subcodes break these major codes

into smaller categories. (Creswell, 2013) argues that phenomenology talks about the important thing to recognize how people interpret the world and what the people experience. Therefore, to analyze the data, the observation field notes, and the interview transcriptions were categorized and analyzed into relevant themes by the researcher. The initial step to analyze data is to transcribe data of interview for each participant. The transcript was arranged for coding process. The coding process was conducted by ATLAS.ti 22. The process of data analysis generates data reduction and the interview transcriptions were categorized and analyzed into relevant themes. Data reductions are arranged based on the same subtheme to form code group in ATLAS.ti. Relationships or code groups generate conclusion or theme.

Data analysis in this research used thematic analysis as (Braun et al., 2017) explains that thematic analysis has advantages follows: (1) Flexibility. (2) Relatively easy and quick method to learn, and do. (3) Accessible to researchers with little or no experience of qualitative research. (4) Results are generally accessible to educated general public. (5) Useful method for working within participatory research paradigm, with participants as collaborators. (6) Can usefully summarize key features of a large body of data, and/or offer a ‘thick description’ of the data set. (7) Can highlight similarities and differences across the data set. (8) Can generate unanticipated insights. (9) Allows for social as well as psychological interpretations of data. (10) Can be useful for producing qualitative analyses suited to informing policy development.

Results

The figure 1, figure 2 and figure 3 are the result of data analysis by using ATLAS.ti 22. These figures are reviewed by vocational teacher on three regions in Indonesia, such as West Indonesia, Central Indonesia, and East Indonesia. Figure 1 describes the response of vocational teacher for new curriculum, and figure 2 describes advantages and lack of new curriculum based on vocational teacher’s perspective. Whereas Figure 3 describes how the response of vocational teacher in detail, such as PjBL on natural science project subject, Pancasila profile, preparation, and recommendation.

Theme 1: General response

The first theme data is showed by Sankey diagram. Sankey is generated by ATLAS.ti 22 by Code-Document Table analysis. The document group of participants is arranged by region, such as West Indonesia, Central Indonesia, and East Indonesia.

In the figure 1, the Sankey Diagram shows that majority of vocational teachers have positive response. Muhammad Yunus expressed “I like this curriculum”, whereas Muhammad Ikbal said ‘The new curriculum is good because student can focus on detail things’. The same response with Hasrianti, Alifiah, Harsina, Suriadi and Nurul Huria. The negative response was expressed by Ayu Sulistiwati, vocational teacher from West Indonesia. who said ‘I haven’t understood about Pancasila profile’ and she continued that ‘Teachers do not

know how to implement the curriculum'. Their perspective about new curriculum gives insight that teachers have positively responded but government should give understanding how the new curriculum is.

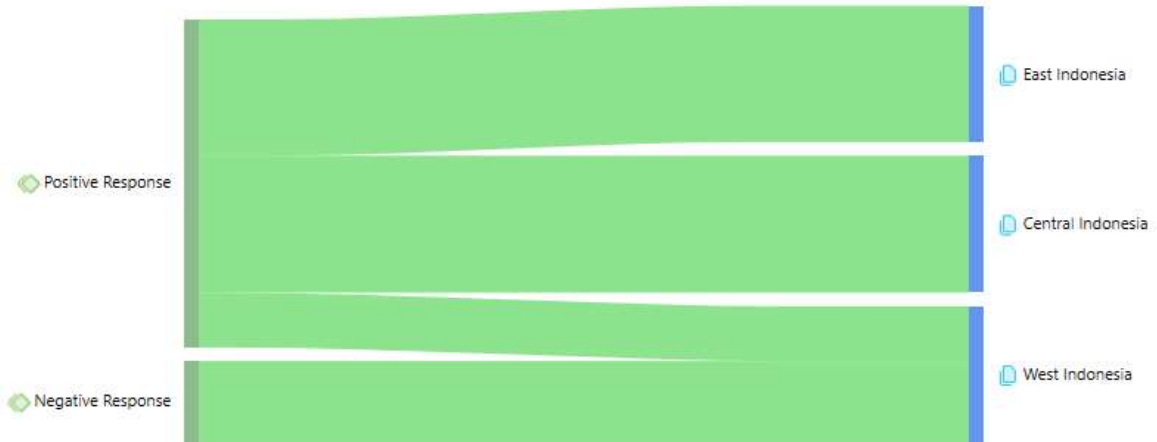


Figure 1. The response of vocational teacher for new curriculum based on region

Theme 2: The advantages and the lacks of new curriculum based on response of vocational teachers

The second theme data is showed by table Sankey diagram. Sankey is generated by ATLAS.ti 22 by Code-Document Table analysis. The document group of participants is arranged by region, such as West Indonesia, Central Indonesia and East Indonesia.



Figure 2. The advantages and lack of new curriculum which is reviewed by vocational teacher

In the second theme, vocational teachers were asked to mention what the advantages and lacks of this

curriculum. The Sankey diagram in the figure 2 shows that teachers have much opinion about this theme. Ayu Sulistiwati expressed ‘It’s match to vocational school because this curriculum directs on students’ talent and passion’. The same point of view with Alifiah, vocational teacher from central Indonesia. Harsina, vocational teacher from East Indonesia, added the advantages that Kurikulum 2022 is more flexible and focused on essential thing. ‘The burden of teacher decreased by implementation the curriculum’, Nurul Huria said. Therefore, it creates freedom for teacher.

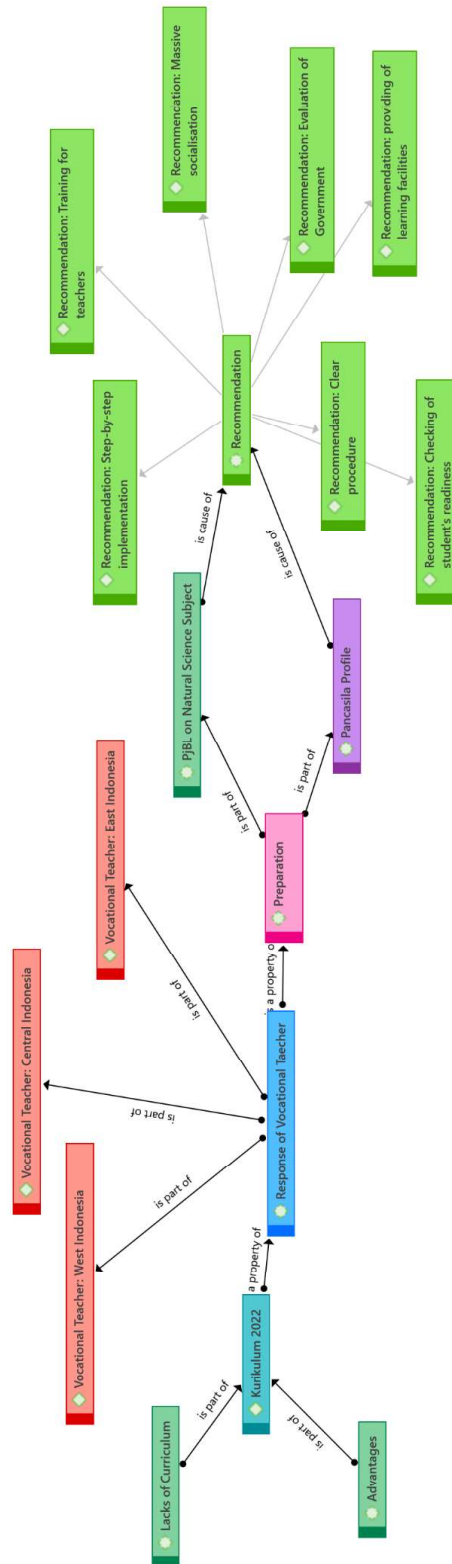
Besides, the lacks of curriculum also were expressed by vocational teacher. Alifiah said “sometimes old teacher is difficult in adaptation for new change”. Some teachers criticize the facilities that it is not complete in the school which it was expressed by Suriadi and Alifiah from Central Indonesia. The main point is less socialization, so the setting of this curriculum is unclearly understood. Harsina emphasized on intensive activities in the industry which take time too long, so student could not be controlled daily and awareness of student is required for conducting the program seriously. Briefly, actually the new curriculum has more advantageous than the lack. government could handle the problems by solving the problem which is expressed by teacher for better implementation in the future. The final goal is to improve quality of education in Indonesia.

Theme 3: Project-based learning (PjBL), Pancasila profile, preparation and recommendation based on response of vocational teachers

The third theme data is showed by table Sankey diagram. Sankey is generated by ATLAS.ti 22 by Code-Document Table analysis. The document group of participants is arranged by region, such as West Indonesia, Central Indonesia, and East Indonesia.



Figure 3. Response of vocational teacher for PjBL, IPAS, Pancasila profile, preparation and recommendation



Figures 4. The mind mapping of vocational teacher's

The last theme is specific things, such as project-based learning (PjBL) model, Pancasila profile, preparation and recommendation in the future. This curriculum emphasizes on project-based learning (PjBL) model for natural science subject. The teacher's point of view about this model is positive which majority of teacher mentioned the benefit of learning model. 'It's necessary', Suriadi said. Nurul Huria explained 'Project-based learning is good, because it stimulates student to create something new'. The same positive opinion from Ayu Sulistiwati who said 'PjBL accommodates the vocational student's competence'. For the challenge, PjBL requires innovative teacher, because sometimes teachers are confused for determining what kind of the project.

The new thing is Pancasila profile. It's about character of student to follow Pancasila values in their life. Pancasila values were explicitly explained by (Kemendikbud Ristek, 2021) which consisted of six values, such as good attitude, respect difference, independence, collaboration, critical thinking and creative. Vocational teachers have the important role for building character, and their perspective should be heard. Hasrianti appreciated this program because character building for student is more explicit and complex. She said 'maybe Pancasila profile is more specific than before'. The way to connect the learning can be conducted by the experiment, which good attitude, respect difference in one group of experiment, independence, collaboration, critical thinking, and creative can be created by the experiment activities.

Preparation for facing new curriculum was explicitly explained by participants with different ways. Hasrianti said 'preparation was done by updating information of new curriculum. collaborating to student and observing environment of school'. Harsina emphasized on giving motivation to student. Nurul Huria explained that preparation of facilities. Generally, vocational teachers have totally prepared by their own creativity. The recommendation from teachers were expressed as hope to better implementation this curriculum. Ayu Sulistiwati recommended to train vocational teachers because many teachers have not known the clear procedure. Alifiah stated that facilities is the key, and readiness of student should be checked. In the end, Alifiah emphasized that evaluation of government is really required.

Discussion

This research is qualitative research to explore how vocational teacher to respond new curriculum. This is important to explore how teacher's response, because their perspective is a reflective for this new curriculum. The teacher's point of view should be heard because they are the key subject who deliver materials in the class. The approach to look the experience in the qualitative research is phenomenology. (Creswell, 2013) explained that the approach of research used phenomenology type that the exploration of this phenomenon with a group of individuals who have all experienced the phenomenon. Therefore, to explore vocational teacher's response about the new curriculum utilized phenomenology approach, because the have experience about how to teach natural science in the school.

The new curriculum is offered by Indonesia government to create specialization based on student's passion and

competence. Furthermore, Indonesia government offer Pancasila profile to build the character of student based on Pancasila's value which it became foundation of nation. (Indarta et al., 2022) explained that the new Curriculum will replace learning methods that were originally implemented in the classroom to learning outside the classroom. The 21st century learning model also emphasizes students to create their skills independently. Teachers could use the 21st century learning model in the application of the independent learning curriculum in schools. Education in this era also emphasizes knowledge and technology in the development of students who will become human resources in the future.

Generally, response of vocational teacher is positive. They argued that this curriculum could improve the quality of education in Indonesia. It is relevant with (Faiz et al., 2022) found that the prototype curriculum is an effort to transform education in Indonesia. The direction of prototype curriculum development has a distinctive feature that supports learning recovery efforts. The prototype curriculum that will be implemented by the Ministry of Education and Culture and Research and Technology in the 2022/2023 academic year has a very good goal, namely wanting more active and adaptive learning by providing flexibility for educators to carry out learning process-oriented to learning projects. To achieve this, the support and hard work of various parties are needed to realize a better and more advanced Indonesian education.

Pancasila profile and project-based learning are new aspects in this curriculum. In the vocational school, natural and social science subject are combined into natural and social science project subject (Projek IPAS). It means that there are two consequences for this change. The first, the teacher of natural and social science have to collaborate to determine direction this subject in the class. The second, the model of learning have to utilize project-based learning (PjBL). In the research, the participant is the natural science teacher in West Indonesia, Central Indonesia and East Indonesia to explore how their response for this change.

Vocational teachers generally have prepared the way to teach for these aspects. They have their own creativity to develop the learning in the class. Rachmawati et al. (2022) found that Pancasila Student Strengthening Project makes a new sense in Education in Indonesia today, which with the allocation of separate time makes teachers more able to innovate planning projects according to the selection of dimensions and characteristics of students. In addition, it provides flexibility for educators to carry out a project-oriented learning process.

New curriculum has more advantageous than the lack. government could handle the problems by solving the problem which is expressed by teacher for better implementation in the future. The final goal is to improve quality of education in Indonesia. Therefore, the thing should be realized by the whole of teacher and principal is how to make a change in school atmosphere. (Rahayu et al., 2022) found that the keys to the success of the implementation of the curriculum are the teachers must think how to make changes. The principal as a leader should change the mindset of human resources in the school to make changes, so the new curriculum could be applied.

Conclusion and Limitations

Many vocational teachers on natural science subject have positive response for the new curriculum. They have explained that Kurikulum 2022 has more advantageous than the lack. Government could handle the problems by solving the problem which is expressed by teacher for better implementation in the future. The final goal is to improve quality of education in Indonesia. Pancasila profile is well response by teacher because it is more explicit and complex for building the character of student. The vocational teachers have totally prepared by their own creativity. The recommendation from teacher was expressed as the hope for better implementation this curriculum, such as training for teacher, facilities and massive socialization. The limitation of phenomenology relies heavily on the researcher's interpretation of participants' lived experiences. The researcher's preconceived notions, biases, and personal background can influence the analysis and interpretation of data, potentially leading to subjective interpretations. Furthermore, phenomenological research aims to provide a detailed understanding of the subjective experiences of a small group of participants. As a result, the findings may have limited generalizability to larger populations or different contexts. The emphasis was on the uniqueness of individual experiences rather than making broad generalizations. The last, participants were purposefully selected based on their experience of a particular phenomenon. This selection process may inadvertently exclude certain perspectives or experiences, leading to a biased representation of the phenomenon under study.

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