Sustainability of Project-Based Learning: Challenge and Obstacles from Students Perception Point of View

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Abstract: The Covid-19 pandemic has caused students to experience learning loss or a slowdown in student learning development in literacy, numeracy, and science. Another pandemic's impact is changing students' behavior and emotions, such as difficulty concentrating during online learning, sensitivity, anxiety, and other excessive worries. In order to overcome learning problems, one strategy from the government is releasing *Kurikulum Merdeka*, which focuses on Project-based learning. Several studies discussed the difficulties of project learning from the teacher's view, but no data explicitly discusses students' difficulty in implementing project learning. This research aims to identify the challenges and obstacles experienced by students when carrying out project learning. Furthermore, this research is grounded research used as reflection material for teachers in planning and improving the quality of project-based learning. The Project Learning Experience questionnaire was distributed to seven high schools in Kota Bandung, and 592 responses were recorded. From the data findings, students faced challenges in collaborative activities; contributions, time management, problem-solving, teamwork, and investigation techniques due to a lack of self-regulation. Theoretical contributions and implications for educational practices are discussed.

Keywords: Covid-19; inquiry; Kurikulum merdeka; Project-based learning; Science; self-regulation

Introduction

The Covid-19 pandemic has caused students to experience learning loss or a slowdown in student learning development in literacy, numeracy and science (Chen et al., 2021). Another pandemic's impact is changing students' behaviour and emotions, such as difficulty concentrating during online learning, sensitivity, anxiety, and other excessive worries (Kadiasti et al., 2021). After the Indonesian government gave a permit to schools to open publicly, problems during online learning did not necessarily disappear, there were some findings such as students having a short focus range, low levels of motivation and enthusiasm for learning and tending to be passive during learning (Chen et al., 2021; Lawa, 2022). Based on the situation, there is a need for strategies that can help restore learning motivation and improve the learning quality pasca pandemic.

In order to overcome learning problems, the government in *Surat Keputusan Bersama* (SKB) along with 4 Ministers issued curriculum policies for use during the pandemic and post-pandemic. In the SKB, schools have the flexibility to choose and use the curriculum that best suits the characteristics of students and school readiness. Types of the curriculum offered in the range of 2019 – 2023 are the Covithe d-19 curriculum, a simplified 2013 curriculum, and a prototype curriculum which later became *Kurikulum Merdeka* (KM) (Kemdikbud, 2022).

The similarity of the three curricula focuses on essential materials and competency development by applying a student-centered learning approach to encourage independence, creativity, and student learning motivation. Unlike other curricula, KM is a competency-based curriculum to support post-

pandemic learning recovery by applying project-based learning (PjBL). The *Kurikulum Merdeka* structure allocates 20 - 30% of its total annual hours as the allocation of project activity time (Kemdikbud, 2022). In the independent curriculum, schools have the flexibility and independence to provide relevant learning projects to the student's characteristics and school culture (Kemdikbud, 2022).

Project-based learning (PjBL) refers to an inquiry-based instructional method that involves learners in developing knowledge construction through a real-world problem approach over a specific period that is quite long (Chen, & Yang, 2019; Guo, Saab, Post, & Admiraal, 2020). Project learning (PjBL) is a student-centered form of learning based on three principles of constructivism: learning is context-specific, learners are actively involved in the learning process, and they achieve their goals through social interaction and sharing knowledge and understanding (Kokotsaki, Menzies, & Wiggins, 2016; Guo et al., 2020). A distinctive feature of PjBL is a simulation of the model or product produced as part of the solution to the problem raised (Chen & Yang, 2019).

Project-based learning is an essential activity for developing student character because it provides opportunities for students to learn through experience (experiential learning). In the learning process, students get the opportunity to experience how to tolerate, cooperate, take care of each other, and integrate the essential competencies of various disciplines (Seow, Pan, & Koh, 2019; Guo et al., 2020; Chen & Yang, 2019). The implementation of PjBL activities in learning shows a positive impact, including on student learning outcomes (Seow et al.,2019; Kokotsaki et al., 2016; Chen & Yang., 2019), the ability to work together (Guo et al, 2020), and the development of 21st-century skills (Chu, Reynolds, Tavares, Notari, & Lee, 2017). In addition, students accustomed to project learning have a better chance of adapting to the volatility, uncertainty, complexity, and ambiguity (VUCA) environment (Seow et al., 2019). Project-based learning also provides opportunities for students to develop skills in providing evaluations and assessments (Mehrabi & Hosseini, 2021). From a pedagogic view, PjBL provides opportunities for students to moderate collaborative learning activities and provide feedback and monitor progress (Chu et al., 2017).

Project learning has significant advantages and benefits for developing student competencies, but PjBL also has its challenges that can hinder the achievement of the expected benefits. Several studies on project learning explain that a project is a long-time activity that sometimes makes students lose interest and focus (Sumarni, Wijayati, & Supanti, 2019; Hira &Anderson, 2021). Another challenge that students experience in independent project activities is difficulties in planning,

supervising, and managing collaboration strategies Guo et al., 2020; Aldabbus, 2018). Another study reported that students in collaborative groups struggled to build shared understanding and had difficulty organizing the division of labor and monitoring its progress (Ayish & Deveci, 2019; Rees, Gerber, Carlson, & Easterday, 2019). Hataja et al., (2022) report that low student involvement in the collaboration process can affect project quality and group effectiveness, resulting in decreased student motivation to complete collaborative project activities.

Since the government announced the Kurikulum Merdeka (KM) prototype in 2021, 2500 schools in Indonesia will implement KM with the Centre's assistance through the *Program Sekolah Penggerak* (PSP). There are 36 schools from the kindergarten, elementary, junior high, high school, and gifted schools recorded as the first batch of PSP in Bandung. At the high school level, seven schools are committed to implementing the KM in tenth grade for the 2021-2022 academic year. Over time, this number will continue to grow with the following selection of PSP batches 2 and 3 and the opening of opportunities for schools to implement the independent curriculum independently.

Meaningful project learning is one crucial success factor of independent curriculum implementation. Based on the massive implementation of project learning carried out in schools, especially at the Bandung City High School level, researchers felt the need to know the real experiences faced by students when carrying out project learning. Several studies discussed the difficulties of project learning from the teacher's side (Aldabbus, 2018; Res et al., 2019), but no data explicitly discusses students' difficulty in implementing project learning. The benefits of this research include identifying obstacles and challenges faced by students so that they can then be used as reflection material for teachers in planning and improving the quality of learning for the next project.

Method

This research includes descriptive observational research that aims to determine the challenges and obstacles students experience in carrying out project learning. The population is grade ten students from 7 Senior High Schools in Bandung who have implemented *Kurikulum Merdeka* and conduct project-based learning. The research sample was students who were randomly selected to fill out the Project Learning Experience questionnaire.

The project learning experience questionnaire consists of 22 closed-response questions to explore information about student obstacles and challenges when implementing project learning. The questionnaire's statements represent six categories of collaborative activities; benefits, contributions, time

management, problem-solving, teamwork, and investigation techniques (Haris, Arsyad, & Sarlin, 2021). To get specific responses, use a Closed-ended statement, which can be standardized and classified into fixed alternative responses. Each closed statement arrange in the form of a 4-choice Likert scale, i.e. never, rarely, often, or always occurs.

The questionnaire was distributed to students in the form of a bit.ly link, assisted by school teachers through WhatsApp groups. Questionnaires can be accessed for 72 hours and succeeded in capturing 596 responses from high school students in class X. Several teachers and students were interviewed to support the research data obtained. The collected data is then processed in the form of percentages and analyzed qualitatively supported by other research findings.

Result and Discussion

This study examines the challenges and obstacles experienced by students in carrying out project learning. The demographics of respondents can be seen in table 1. Initially, there were 596 respondents recorded, but 4 of them stated that they had never participated in project learning so they were excluded from the data. In the end, the data in this study used answers from 592 class X (ten) students. From the demographic data table, it is known that the number of female respondents is more than that of men. This happens because, in terms of population data, each school has an average of more female students. In the data, it shows that 430 respondents stated that they had participated in project learning between 1-3 times, this can be explained because, in the independent curriculum structure for the high school level, there is a minimum number of project learning that must be met every year, namely 2-3 projects/year. In addition, in the independent curriculum, there is a special allocation of time to carry out flexible project activities, which can be adjusted to the conditions and availability of project-accompanying teachers in schools. From the results of interviews with teachers and principals, with this special time, project learning activities have been planned since the beginning of the school year, so they are more planned. Careful and thorough planning has a positive impact on the success of project learning (Bestari, 2018).

Table 1. Respondent's Demographics

Respondent's Characteristics	Numbers
Total	592
Gender	
Male	225
Female	367
Involvement in PBL	
1-3 times	430
4-6 times	62
More than 6	100

Student responses are presented in table 2. Data in the frequency column shows the number of respondents who voted. Furthermore, the frequency data is grouped into 2, namely NS (never-seldom) and OA (often-Always), to obtain a better meaning. Furthermore, in interpreting the data, the researcher will look at NS data for positive statements, while for negative statements, the data will be seen by OA. Based on student responses regarding the project learning experience, the sub-category of benefits represented by two positive statements indicated that students felt the benefits of project learning activities. More than 80% of students stated that PjBL helped them better recognize their abilities and gain a more meaningful understanding of the material. From the results of the interviews, students stated that project learning provided an opportunity for them to carry out investigations according to topics of interest and were more contextual that could be observed and felt directly according to their experiences.

The results of student response analysis, in general, showed quite good results, in the sense that most students had understood their role in PjBL seen from the sub-categories of contribution, problem-solving, teamwork, time management, and investigation technique. The sub-category of contribution is represented by five statements, aiming to find out one's role in the group and to find out one's response to the role of other members in group contributions. From the results obtained, it was very interesting that students' responses to the statement "Not all group members contributed to project activities" showed almost balanced positive and negative responses, namely 49.83% and 50.17%. Student responses showed that more students thought that when carrying out group activities, not all members participated in the division of labor. The results of further analysis on sub-contributions showed that 91.55% of students knew the tasks, but only 79.56% of students stated that they had clear targets and goals when doing group work.

Sub-problem solving is represented by two statements that explore students' responses to the problem formulation set by the group as a guide in carrying out project learning, as well as students' responses to the opinions expressed in groups. Regarding the difficulty in determining the problem of project activities to be studied, 42.74% of the respondents agreed. In contrast, 57.26% disagreed with this statement. Many students still need clarification in determining the main problem from these results. Students must be able to identify the research problem first before setting clear research objectives. The student responses to the "Group members have different opinions regarding the purpose of collaboration" statement show 67.06% agree with the statement. Group members have different opinions regarding the purpose

of collaboration. Each group can set a goal that is mutually agreed upon, but when the group fails to

define a problem, group members will likely form a perception of the goals of their respective projects.

Table 2. Student's response to the challenges and obstacles in project-based learning.

Statement	NS	% OA
Benefit		
Working in a team helps me recognize my abilities better.	16.22	83.78
I gained a more meaningful understanding of the material after doing project activities.	15.71	84.29
Contribution		
Teammates give suggestions and input on my performance in the group	20.44	79.56
I can't express my opinion freely within the team (-)	83.28	16.72
Not all members of the group contribute to project activities. (-)	49.83	50.17
I know the tasks I have to work on in a group.	8.45	91.55
I always have clear goals and objectives when doing teamwork.	20.44	79.56
Problem-solving		
Group members have different opinions on the purpose of cooperation (-)	32.94	67.06
Our group has difficulty in determining the problems of the project activities to be studied (-)	57.26	42.74
Team Work		
While doing project activities I get help and social support from group friends.	18.07	54.05
My teammates are willing to listen to the problems/obstacles I encounter when completing tasks.	23.00	77.03
Group friends don't listen to my suggestions or opinions (-)	82.77	17.23
Decision-making in groups is dominated by one of the team members (-)	61.99	38.01
Group friends always share on project findings or progress.	14.53	85.47
Time Management		
I don't have enough time to do the group assignments that are my responsibility.	43.07	56.93
The group has a schedule of activity plans that are adhered to by each group member.	36.66	63.64
My group completed project activities in a rush at the end of the designated time.	35.64	64.36
Learning Strategy		
Each member of the group gets different tasks according to their potential based on mutual agreement.	18.07	81.93
I reflect and evaluate every time I finish working on group assignments	59.63	40.37
When carrying out project activities, I arrange a daily schedule of activities that is always adhered to.	18.58	81.42
Before carrying out project activities, I always read and understand the learning resources on the research topic first	11.32	88.68
I divide research objectives into small goals that I must achieve in this project activity.	22.47	77.53

Sub-teamwork consists of 5 statements that explore students' opinions regarding the atmosphere of cooperation that is felt when carrying out project learning, such as support from group mates, opportunities to share information, and the possibility of a dominant attitude from one of the group members. From the results of the questionnaire, it was known that student responses regarding assistance and social support from group friends (81.92%), sharing of findings or project progress (85.47%), and dominance of one group member in decision making (38.01%). Responses to teammates' statements are willing to listen to the problems/obstacles I face when completing assignments (77.07%). While negative statements, namely group mates, do not listen to suggestions or opinions expressed (17.23%).

Sub-time management consists of three statements determining students' responses to time management when carrying out project activities. The response measured was time management as an individual, namely when completing tasks resulting from the division of work in groups, and also to determine group performance related to time in completing projects. The

results of the questionnaire show that 63.34% of students' responses regarding the work plans adhered to by the group. Then 56.93 respondents stated they needed more time to complete the group assignments they were responsible for, and 64.36% stated they were doing project assignments in a hurry.

The last sub-category in the questionnaire concerns the strategies carried out during project activities. Statements in this sub-category try to determine students' responses to several aspects, such as dividing tasks into groups during project activities (81.93%). The habit of doing reflection and evaluation (40.37%), compiling daily schedules and keeping them (56.08%), preparing themselves before implementing project activities by reading and understanding learning resources related to research topics (88.68%) and dividing work to be completed into small goals (77.53%).

Based on data from student responses to project activities, the researcher saw several aspects to note, namely problem-solving, time management, and group contributions. The data shows that many students still need clarification in determining their main problem. Based on the literature, students' confusion in

determining problems can be influenced by several things, including problems presented by the teacher as triggers for project activities that are too general. Another issue is the problems used as topics that are not contextual because students rarely or never experience them in everyday life, and the delivery of instructions needs to be clarified (Ping, Halim, & Osman, 2020). Other literature also explains that the ability to identify must be used and can be improved by getting students used to doing research (Hughes, 2019). From the results of interviews with a sample of students, it is known that when students have to identify a problem, it is known that it begins with the teacher giving an overview of the problem and examples first.

In essence, one problem will act as a catalyst for others. According to the findings of student interviews, students' biggest challenge in completing project activities is managing resources. They also have trouble setting priorities for their work and have poor self-control. The ability of students to organize, use learning strategies, and evaluate activities that have an impact on progress in subsequent activities is directly tied to their ability to self-regulate. Self-regulation abilities will be very beneficial for students, particularly in project tasks that call for their independence, according to certain studies. Self-regulatory processes serve as a link between the person, their environment, and their success (Russell, Baik, Ryan & Molloy, 2022). Students with high self-control create objectives and then pick the strategies they believe would assist them in achieving those objectives. After monitoring their progress toward the targets, they evaluate the efficacy of their strategies. Since learning settings change regularly, a self-regulated learner adjusts to new situations, modifies objectives, and makes deliberate choices to move closer to achieving those objectives (Russell et al., 2022). Self-regulating learner actively participates in their learning by setting goals, planning, using task methods, and managing their time. They also reflect on the success of previous learning tactics and adjust their future learning as necessary (Nugent et al., 2019). These skills are frequently emphasized and even advised, but they are rarely demonstrated to students, leaving them with no understanding of how to apply them. Additionally, it is advised that teachers engage students in discussions on inquiry and thinking processes, allowing them to assess the success of their learning strategies and demonstrate alternative ones (Nugent et al., 2019).

Conclusion

In terms of meaningful collaboration and comprehension, project learning offers students a pleasurable experience, according to the data analysis findings. Students face challenges and difficulties during project activities, such as the uneven contribution of group members, domination from some members, and Information searching strategy that needs to be directed and results in the development of knowledge. Another challenge was the extended project management period without a defined schedule of tasks, which led to delays in project completion. Resource management is the biggest issue they run into when carrying out project activities; they need help to set priorities for their tasks and have poor self-control. The ability of students to organize, use learning strategies, and evaluate activities that impact progress in subsequent activities is directly tied to their ability to self-regulate.

Self-regulating learner actively participates in their learning by setting goals, planning, using task methods, and managing their time. They also reflect on the success of their previous learning strategies and adjust their future learning as necessary. These skills are frequently emphasized and even advised, but they are rarely demonstrated to students, leaving them with no understanding of how to apply them. To implement learning management that can foresee these challenges, the teacher plays a crucial role as a project learning facilitator in creating project learning that incorporates student learning management tactics. Teachers are recommended to involve students in talks about inquiry and thought processes so they can evaluate the effectiveness of their learning strategies and present alternative ones.

Acknowledgments

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