Project Based Learning for Children with Special Needs during the Covid-19 Pandemic

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ABSTRACT

The purpose of this study was to describe the application of Project-Based Learning (PjBL) to Special School Teachers (SLB) in distance learning (PJJ) for Children with Special Needs. There were 4 aspects that would be measured: (1) the level of teacher's understanding of PjBL, (2) the level of teacher needs for PjBL in PJJ during the covid-19 pandemic; (3) the quality of PjBL learning applied by teachers after attending PjBL training, and (4) the impact of PjBL on the learning outcomes of Children with Special Needs (ABK). This type of research was survey research involving 22 special school teachers in Central Java Province. Data were collected using a semi-closed questionnaire, which was then analyzed using descriptive statistics. The results showed that teachers' understanding of PjBL was sufficient and the teacher's need for PjBL learning during the COVID-19 pandemic was high. The quality of PjBL learning was considered to be better than conventional learning and the implementation of PjBL had a positive impact on the activity and critical thinking-based learning of students with special needs (ABK).

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1. INTRODUCTION

Online learning for children with special needs (ABK) is more complicated than that for other normal students. The diversity of ABK makes it difficult for teachers to choose learning media suitable for them. The unpreparedness of teachers, parents, and students in dealing with COVID-19 can be the cause of the low quality of learning during the COVID-19 pandemic. Limited planning time, resources and funding are also other obstacles in the implementation of online learning for children with special needs (Tremmel, 2020).

Many studies have found various kinds of problems in learning with special needs children during the COVID-19 pandemic. Problems come from schools, teachers, students, parents, or other

technical problems. Schools and teachers implementing online learning are less innovative. Parents are not ready to use technology and guide their children to study at home. Students are also not ready to learn and have a difficulty in understanding the material online (Minsih, 2021; Supena, 2020; Terayanti, 2021). Technical barriers are students and parents' lack of technology skills, especially weak/unstable internet signals and/or power outages in some areas (Supratiwi, 2021). So the various research results showed that online learning for ABK during the pandemic was not effective for students with special needs. Therefore, it is necessary to find a solution on how to keep quality learning even though it is carried out in an online format or distance learning.

The teaching and learning process for ABK during the COVID-19 pandemic, cannot take place optimally. This is because (1) not all children with special needs can use online learning media well, (2) not all parents of children with special needs have the readiness to accompany learning at home, (3) not all parents have supporting facilities in conducting online learning (Wardany, 2020). With these limitations, distance learning for ABK tends to be less effective and less meaningful.

Distance learning for children with special needs that is applied by teachers during the COVID-19 pandemic should prioritize learning activities that are more meaningful for children's lives. Meaningful learning is learning that prioritizes the occurrence of fun learning activities, learning activities that are able to develop creativity and innovation, and learning activities that are able to produce certain products. Meaningful learning initiated by David Ausubel is a process of linking new information with relevant concepts in one's cognitive structure (Tarmidzi, 2018). This kind of learning model is project-based learning (PjBL). Project-based learning provides opportunities for students to learn concepts in depth and can improve learning outcomes (Kurniawan, 2020).

PjBL is the right model to use for learning from home because it can develop students' creativity. The research results of Mihardi et al. (2013) found that online assessments of students' creativity using the PjBL model revealed better results than using conventional learning models. The results of the research by Sumarni (2003) stated that the project-based learning model was an effective learning because it could improve the quality of learning as seen from the improvement of learning outcomes in the form of achievement and improvement of the quality of the learning process. Distance learning constraints currently are, one of which is giving quite a lot of assignments, children's activities are used to do these tasks, so that the meaning of learning tends to be low. PjBl in distance learning has the advantage of reducing the burden of student learning, because student activities are more focused on completing theme-based productive projects and the theme is a collaboration of subjects. In addition, by utilizing blended learning, asynchronous activities running projects have a larger portion than synchronous activities in the form of face-to-face either through online or offline media.

PjBL is a learning construction that emphasizes dynamic and fun learning activities. Children are given the motivation to identify the resources that are around them, and then use these resources to make something meaningful so that it becomes a certain product through predetermined stages. The stages in PjBL using authentic assessment according to Wiggins & McTighe (2005) are known as the GRASPS method, (1) Goal, which contains an explanation of "problems that exist in the real world" and actions that students will take in scenarios to solve problems in the real world (2) Role, namely the role of students in scenarios, where these roles are professions that exist in the real world, this role selection function will provide opportunities for students to better understand problems from the perspective played especially in solving problems (3) Audience, namely resource persons/communities/other participants who will later relate to the role of students in the scenario, or other supporting professions to solve problems (4) Situation, namely challenges and details of the atmosphere or series of activities carried out in the scenario.

At this stage of the situation, more detailed and comprehensive learning scenarios are prepared starting from (a) Questioning (guiding questions/project explanations), how to guide face-to-face (delivering topics and how to solve them), and home learning activities (Teachers send project completeness using brochures, journal; explaining the projects that will be carried out by students to parents through brochures, the teacher accompanying parents to explain the projects that will be

carried out by their children) (b) Planning (Making a project schedule using a kanban board/journal), face-to-face (Teachers make plans for joint project implementation students use kanban boards), home learning (teachers make project implementation plans with students through student journals) (c) Researching (conduct observations, study literature, interviews, internet searching), home learning (Parents accompany children to observe where the problem occurs, making reports of observations through student journals, compiling lists questions, make appointments with resource persons, conduct interviews with resource persons, make reports on interview results, seek additional information, teachers monitor the progress of activities carried out by children who are accompanied by parents and parents assess student activities through the rubric that has been given by the teacher) (d) Creating (processing research results, making presentation materials, presenting solutions or products that will be communicated to the general public), home learning (Students accompanied by parents make presentations on observations and interviews, and information from the internet, teachers monitor students make presentations on observations, interviews , and information from the internet, students are accompanied by their parents to make products, and the teacher tests the results of products made by students) (e) Presenting (Group/individual presentations in class, and group/Individual presentations to the general public), home learning (People parents accompany Children to make presentations online, publish and processed products to the general public online (share WA, FB or Youtube), and the teacher assesses student performance) (5) Product, which is the result of student learning activities or while carrying out scenarios (6) Standards, stating how this task will be graded , with what criteria the product will be assessed and what indicators of success based on the national curriculum standards are (Curriculum 2013), both in terms of knowledge, character, and skills.

The importance of PjBL is therefore deemed necessary to be trained for teachers in special schools. PjBL has been widely carried out by teachers in many regular schools in general, but it is still rarely done by teachers in Special Schools (SLB). Taking this into account, a study is conducted to determine the effect of PjBL training for SLB teachers with an In-On-In approach to improving learning performance for students with special needs. There are many training models to improve teacher's competence. There is a conventional model, in which the teacher is given training materials and ends with an assessment. It is not known whether the training was followed up or practiced in the field or not. The In-On-In training model is a training approach that emphasizes the combination of theory and practice and ensures that the training results are implemented in the field. The training at the In-1 stage is intended as a form of in class-1 meetings. Some core material in the form of theory is delivered in the class within a certain period of time. The training at the on stage is meant to be on the job learning, where the trainees follow field practice for some time to apply the results of the training in In Class-1. The training at the In-2 stage is intended for trainees to present the results of on the job learning in class to get feedback and input from the instructor or other training participants. With this training pattern, it is hoped that teachers can benefit directly and are therefore encouraged to follow up with implementing it in the field.

Many training institutions apply the In-On-In training model, including the LP2KS Directorate of Teachers and Education Personnel in conducting training for prospective school principals. This is because there are many benefits of training using the In-On-In approach, among others, to enrich the learning experience, train participant responsibilities and strengthen group collaboration, and it is very important for trainees to achieve the truth they have, especially learning service programs must convey that consciousness and the world are side by side, thus reality is shaped by human consciousness itself (Manurung & Napitupulu, 2014). This is in line with research conducted by Fadli in 2017 on improving teacher's competence through In-On-In which showed the results that training with the In-On-In approach can improve teacher competence in writing Classroom Action Research (CAR) scientific papers (Fadli, 2017).

Many previous studies have discussed PjBL for non-disabled people (Guo et al., 2020; Kurniawan, 2020), advocacy during a pandemic is less effective and less meaningful (Terayanti, 2021)

and parental involvement is less than optimal, during a pandemic, during a pandemic, a lot of children's time is wasted (Wardany, 2020). This research is expected to provide an alternative solution to the problem above. Based on these considerations, the objectives of this study were formulated as follows, namely to describe (1) the level of understanding of SLB teachers about PjBL; (2) the level of need for SLB teachers for PjBL in PJJ during the covid-19 pandemic; (3) the quality of PjBL learning applied by teachers after attending training with an In-On-In approach, (4) the impact of PjBL on ABK learning outcomes as measured by teachers' perceptions of the impact on learning activities, learning meaningfulness, and critical thinking skills.

2. METHODS

This research is a survey research to describe the phenomena that occur in schools related to the Covid-19 pandemic. There are 4 aspects that need to be explained in this research, namely (1) aspects of the understanding of SLB teachers about PjBL, (2) aspects of the needs of *SLB* teachers for the implementation of PjBL during the Covid-19 Pandemic, (3) aspects of the quality of PjBL learning that is applied *SLB* teachers after attending PjBL training, and (4) aspects of the impact of PjBL on learning outcomes which will be measured based on teachers' perceptions of the meaning of learning.

The population of this study were SLB teachers in Central Java Province, while the research sample was selected using a purposive technique, namely those who have worked as teachers for more than one year and have skills in the use of information technology for distance learning purposes and were willing to take part in PjBL training patterns for 33 hours of lessons. The selected sample was 22 teachers from 11 special schools in Central Java. Here are the characteristics of the respondents:

Table 1. The characteristics of the respondents

Respondent	Characteristics	Percent
Gender	Male	18%
	Female	82%
Employment Status	Civil Servant	51%
	Non-Permanent Foundation Teacher	23%
	Permanent Foundation Teacher	26%
Length of work	1-5 years	40%
	6-10 years	11%
	Over 0 years	49%
Educational background	Bachelor of Special Education	60%
	Bachelor of Non-Special Education	40%

The selected samples were then included in PjBL training activities with an In-On-In approach. For 3 days they participated in online training (In Class-1), and then field assignments (On the Job Learning) for one month to practice the results of the In Class-1 training in the form of PjBL practices in their respective schools. After that, participants were asked to attend In Class-2 training for one day to explain the results of the experience of practicing PjBL activities at school. This research was conducted in the period February – March 2021

Data was collected using a semi-closed multiple choice questionnaire. Prior to the training, a questionnaire was given about the understanding of PjBL and the training needs. After the training, participants were asked to practice PjBL, submitted a report on the results of the practice, and were given a Questionnaire about the quality of PjBL learning implemented and the impact of PjBL applied on children's learning outcomes. Data analysis was done using descriptive statistical analysis of

percentages combined with qualitative data collected based on teacher's performance reports when carrying out On the Job Learning activities. The results of the research were narrated with the help of a descriptive percentage table

3. FINDINGS AND DISCUSSION

The results of this study were grouped into two parts, namely before the implementation of the training and after attending the training. The results of the research prior to attending the training focused on aspects of teachers' understanding of PjBL, mastery of information technology, problems in online learning, and the needs and motivation of teachers to participate in PjBL training.

3.1. *The First Part Before Attending The Training*

Teacher's Understanding About PjBL

To determine the level of understanding of teachers in PjBL learning, several questions were asked. The results can be seen in tables 1 - 5 accompanied by a brief explanation on the table below.

Table 2. SLB teachers' level of understanding of PjBL

No	*SLB* **teachers' understanding of syntax in PjBL**	Frequency	%
a	Understood	4	18%
b	Moderately understood	17	77%
c	Less understood	1	5%
	Total	22	100%

Table 2 shows that there were 18% of teachers who understood PjBL, 77% understood enough and the remaining 5% of *SLB* teachers still did not understand PjBL learning. This finding shows that in fact teachers' understanding of PjBL is only 18%, the others are in the sufficient and less categories.

Table 3. SLB Teachers' Understanding of Syntax in PjBL

No	*SLB* **teachers' understanding of syntax in PjBL**	Frequency	%
a	Understood	4	18%
b	Moderately understood	16	73%
c	Less understood	2	9%
	Total	22	100%

Table 3 shows that there were 18% of teachers who really understood PjBL syntax, 73% of teachers who had understood PjBL syntax, and 9% of teachers who did not understand PjBL syntax.

Table 3. Teacher skills in using information technology (IT)

No	**Teachers' IT Skill Level**	Frequency	%
a	Fluent/skilled	20	91%
b	Not Fluent/unskilled	2	9%
	Total	22	100%

Table 3 shows that 91% of *SLB* teachers were fluent/ skilled in using information technology for online learning and the remaining 9% *SLB* teachers admitted that they were not fluent/ skilled in using information technology for online learning.

Table 4. Difficulty level of SLB teachers in online learning

No	Difficulty in online learning	Frequency	%
a	Have a lot of troubles	6	27%
b	Have little troubles	16	73%
	Total	22	100%

Table 4 shows that 27% of teachers experienced many difficulties in online learning and the remaining 73% had little difficulty in online learning. Of those who experienced these difficulties, when asked to them, it was found that there were several types or scopes of difficulties experienced by teachers as shown in Table 5 below.

Table 5. Scope of online learning difficulties experienced by SLB Teachers

No	Teacher's scope of online learning difficulties	Frecuency	%
a	Developing lesson plan	5	7%
b	Carrying out the learning process	7	9%
c	Evaluating learning outcomes	8	11%
d	Using information technology media	4	5%
e	Choosing learning materials that suit children's needs	5	7%
f	Internet network limitations, frequent breaks, no network, slow	17	23%
g	Do not have a laptop or smart phone that is accessible for online learning	1	1%
h	Difficulty in cooperating/empowering parents	13	18%
i	Difficulty in directing *ABK* students	11	15%
j	Others if any	3	4%
	Total	74	100%

Note: the choice is more than one answer

From table 5 it appears that there were 4 major problems faced by teachers in online learning, namely (1) limited internet network, frequent disconnections, no network, and slowness, (2) difficulties in empowering parents in order to accompany their children to study at home, (3) difficulties in directing funds to control children when studying remotely, and (4) evaluating the learning outcomes of children with special needs. The rest there were some difficulties with a relatively small percentage. The findings of this study are in line with the results of research conducted (Minsih, 2021; Supena, 2020; Terayanti, 2021). In his research, among others, it was stated that parents were not ready to use technology and guided children to study at home. Students were also not ready to learn and had a difficulty in understanding online material. Technical barriers where students and parents lack technology skills, especially weak/unstable internet signals and/or power outages in some areas (Supratiwi, 2021).

Teacher Needs for PjBL Practice

The level of teacher needs for PjBL learning in order to overcome difficulties and increase the meaning of learning during the Covid 19 Pandemic can be summarized as follows.

The Objectives of Participating in PjBL Training

The purposes of participating in PjBL learning based on qualitative data were obtained in the following description:
1. Gaining new knowledge and insight so that they can do maximum and effective learning for ABK

2. Adding experience about the correct Project-Based Learning for ABK
3. Mastering project-based learning methods
4. Optimizing children's abilities with existing methods and facilities
5. Providing more meaningful learning to students.
6. Making distance learning more effective and meaningful
7. Knowing interesting and meaningful learning methods
8. Getting a new learning method
9. As a reference in learning
10. Increase knowledge in the era of the covid-19 pandemic regarding PJJ
11. Desire to improve in learning especially online
12. In order to be able to apply project-based learning to ABK
13. Looking for fun, meaningful learning because of being directly involved and collaborating with others

Participants' Expectations in Participating in PjBL Training

The expectations of SLB teachers in participating in PjBL training from qualitative data are obtained as follows:
1. Can find new alternatives and strategies for learning
2. Able to produce useful projects or learning outcomes
3. Can practice it at school
4. To know the method in more detail
5. To get materials for project-based learning
6. To know more about what the effective steps so that children's learning is in accordance with its goals.
7. To gain more knowledge to be able to provide more meaningful and effective learning.
8. To add knowledge and insight so that they can do maximum and effective learning for ABK
9. To get information about interesting and meaningful learning
10. To make children easily understand the lessons given by the teacher
11. To be able to take the best side especially to be applied to the crew
12. There is a complete program from starting to make a teaching program to evaluation
13. Can improve students' knowledge

Level of Motivation to Participate in Pjbl Training

Table 6. Level of motivation to participate in PjBL training

No	Level of motivation to participate in PjBL training	Frequency	%
a	Follow earnestly	9	41%
b	Follow according to ability	11	50%
c	Follow what can be done	2	9%
	Total	22	100%

From the data presented in letters a, b, and c, it is known that the purpose of participating in the training was to make online learning more meaningful for children with special needs. While the hope to be obtained in participating in the training, among others, he can find new alternatives and new strategies for more effective learning during the COVID-19 pandemic. Furthermore, from Table 6 it can be concluded that most of the teachers have their abilities and seriousness.

3.2. Research Results and Discussion Part Two after attending the Training

The Quality of Teacher Learning in The Implementation of PjBL

After attending PjBL training, they were monitored and filled out a questionnaire to determine the frequency and quality of PjBL implemented by teachers. Of the 4 indicators measured, namely (1) the frequency of PjBL implementation, (2) compliance with PjBL rules and syntax, and (3) the PjBL strategy used, the results of the research can then be presented in the following table:

Table 7. Frequency of SLB teachers in implementing PjBL

No	Frequency of *SLB* Teachers in implementing PjBL	Frequency	%
a	Often	1	4%
b	Seldom	12	55%
c	Ever	9	41%
	Total	22	100%

Table 8. Conformity of PjBL practice with proper syntax

No	Conformity of PjBL practice with proper syntax	Frequency	%
a	Fully compatible	2	9%
b	Mostly suitable	13	59%
c	Only a small part is suitable	5	23%
d	Not suitable, it is just to make it work	2	9%
	Total	22	100%

Table 9. Strategies Used by SLB Teachers in PjBL Practice

No	Strategies Used by SLB Teachers in PjBL Practice	Frequency	%
a	Activity Based	12	55%
b	Critical thinking Based	2	9%
c	Both strategies simultaneously	7	32%
d	Other strategies	1	4%
	Total	22	100%

Based on the data presented in table 7,8,9, it can be explained as follows. Table 7 shows that all teachers who were research subjects were sometimes applied to PjBL. However, most (59%) of them paid less attention to the PjBL syntax and only about 23% were consistent with the PjBL syntax. In terms of strategy, in table 9 it can be seen that the PjBL focus applied by SLB teachers was more on the Activity Based learning strategy (59%) and only (9%) used the Critical Thinking Based Learning strategy. The rest (32%) used both strategies simultaneously and the remaining (4%) used other strategies.

The research results of Mihardi et al. (2013) found that online assessments of students' creativity using the PjBL model showed better results than using conventional learning models. The results of research by Gerhana et al. (2017) stated that a project-based learning model was an effective learning method because it could improve the quality of learning as seen from the improvement of learning outcomes in the form of achievement and improvement of the quality of the learning process.

Impact of PjBL on ABK's Learning Outcomes

The impact of PjBL on ABK learning outcomes was measured based on several indicators, namely the level of significance and the level of usefulness. The results of the study can be presented as follows.

Table 10. Significance level of PjBL according to the teachers after practicing PjBL-based learning

No	Significance Level of PjBL According to The Teachers After Practicing PjBL-Based Learning for special need children	Frequency	%
a	Very meaningful	5	23%
b	Meaningful	17	77%
	Total	22	100%

Table 11. The benefit of PjBL in improving the quality of distance learning

No	The Benefit of PjBL in Improving the Quality of Distance Learning	Frequency	%
a	Increasing children's learning activities	5	23%
b	Product-focused learning	5	23%
c	Improving critical thinking skills	6	26%
d	Increasing the intensity of collaboration between teachers, parents, and students	3	14%
e	Improving the quality of learning during the COVID-19 pandemic	3	14%
	Total	22	100%

Table 10 shows that the level of meaningfulness of PjBL according to teachers after practicing PjBL learning was (23%) teachers said it was very meaningful and (77%) teachers said it was meaningful. Table 11 shows the level of benefits of PjBL in improving the quality of distance learning, namely 23% of teachers stated that PjBL increased children's learning activities, 23% of teachers stated that they increased product-focused learning, 14% of teachers stated that they increased the intensity of teacher, parent, and student collaboration, 14 % stated that it improved the quality of learning during the COVID-19 pandemic.

This finding is in line with the results of the study (Suranti et al., 2016). It was said that PjBL was practical to motivate students. Active students could contribute to expressing opinions and ideas about topics or discussions that were their interests and preferences by asking questions. It can be concluded that learning with the PjBL method is child-centered, constructive, and the goals to be achieved are clearly stated. Through this approach, students could collaborate with other parties to communicate and carry out critical reflection in learning practices. This approach has been widely used from primary education to higher education (Guo et al., 2020).

This finding is also in line with the results of Garbe's et al research which stated that distance learning for children with special needs that was applied by teachers during the COVID-19 pandemic prioritized learning activities that were more meaningful for children's lives (Garbe et al., 2020). Meaningful learning is learning that prioritizes the occurrence of fun learning activities, learning activities that are able to develop creativity and innovation, and learning activities that are able to produce certain products. Project-based learning provides opportunities for students to learn concepts in depth and can improve learning outcomes (Lhan, 2014).

4. CONCLUSION

Based on the results of research that has been carried out, the impact of PjBL on special need children (ABK) shows that learning for ABK became more meaningful, increasing ABK Activity Based, prioritizing the learning product, helping children in critical thinking skills, increasing the intensity of collaboration between teachers, parents, and students, and improving the quality of learning during the covid 19 pandemic. Unfortunately, not all teachers applied PjBL according to the established rules and syntax. Most of the teachers tended to use Activity Based strategies. Therefore, they need for PjBL training to apply PjBL for ABK during the pandemic.

Conflicts of Interest: The authors declare no conflict of interest

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