Implementation of Problem Based Learning Based on 4C in Independent Curriculum Science and Social Learning in Elementary Schools

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Abstract
The aim of this research is to analyze the implementation of the PBL Based on 4C in Independent Curriculum science and social learning for 5th Grade students at SD Negeri Wirun 01 in Sukoharjo Regency for the 2023/2024 academic year. The teachers who participated were class 5 teachers with more than 10 years of teaching experience. This research was carried out by observing and seeing directly the teacher who was teaching in class. The research method used in this research is a qualitative approach using descriptive methods. Data collection techniques for qualitative research include observation, interviews, and documentation studies. The research results showed that the PBL Based on 4c model can have a positive impact on teachers and students in implementing 21st century learning. Later, the results of this research can support the implementation of 4C which includes Critical Thinking, Creativity, Collaboration and Communication for 5th Grade students, especially in when learning science and science using the independent curriculum.
Keywords: *PBL based on 4c, independent curriculum, science and social learning, elementary school.*

Abstrak
Tujuan penelitian ini adalah untuk menganalisis implementasi PBL Berbasis 4C dalam pembelajaran Kurikulum Mandiri IPA dan IPS pada siswa kelas V SD Negeri Wirun 01 Kabupaten Sukoharjo tahun ajaran 2023/2024. Guru-guru yang ikut serta merupakan guru kelas 5 dengan pengalaman mengajar lebih dari 10 tahun. Penelitian ini dilakukan dengan cara mengamati dan melihat secara langsung guru yang sedang mengajar di kelas. Metode penelitian yang digunakan dalam penelitian ini adalah pendekatan kualitatif dengan menggunakan metode deskriptif. Teknik pengumpulan data pada penelitian kualitatif meliputi observasi, wawancara, dan studi dokumentasi. Hasil penelitian menunjukkan bahwa model PBL Berbasis 4c dapat memberikan dampak positif bagi guru dan siswa dalam melaksanakan pembelajaran abad 21. Nantinya hasil penelitian ini dapat mendukung penerapan 4C yang meliputi Berpikir Kritis, Kreativitas, Kolaborasi dan Komunikasi pada siswa kelas 5 SD khususnya pada saat pembelajaran IPA dan IPA dengan menggunakan kurikulum mandiri.
Kata kunci: *PBL berbasis 4c,kKurikulum mandiri, pembelajaran IPA dan IPS, sekolah dasar*

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INTRODUCTION

Education in Indonesia cannot be separated from the development of the curriculum which is increasingly adapting to the times (Mustamilah, 2015). Change is described as a natural thing and always happens, meaning that everything in life will definitely change, including in the world of education. Changes in the world of education can be seen from the emergence of various innovations in the education system, implementation of learning, learning media and issues related to the field of education. One thing that can be seen is the curriculum changes implemented as a form of anticipation and development for the learning needs of the 21st century, to complement the character and competency-based curriculum (Darise, 2019). All of these changes are caused by changes in competency requirements which affect the continuity of education in the future.

The COVID-19 pandemic has caused changes to the school curriculum to guide the school learning process. This is in accordance with the needs of students and teachers in carrying out teaching and learning activities. Every time a change in the curriculum occurs, teachers must be able to adapt the learning principles to the evaluation process and good collaboration between students, teachers and parents for optimal curriculum implementation (Megandarisari, 2021). This is confirmed by the statement that teachers basically have a curriculum, if teachers cannot understand the existing curriculum then the desired educational goals will not be achieved, so the teacher's adaptability is important, even though it takes time. (Yanti & Fernandes, 2021).

One of the impacts of the pandemic is learning loss and learning gaps. Engzell et al (2021) showed in their research that students experience learning difficulties when studying at home. This is also influenced by many other factors, geographical conditions, demographics, strategies, policies, and the state of the school itself before the pandemic (Donnelly & Patrinos, 2021). Apart from that, the pandemic has also created a learning gap where the condition of students, family conditions and also financial conditions are other factors causing the learning gap during the COVID-19 pandemic (Bonal & González, 2020). To anticipate this, in 2020 the Ministry of Education and Culture published a curriculum for extraordinary conditions in educational units.

As the main actors in the world of education, teachers must always be ready to face any political changes in education. Currently, a real role is needed by the parties in the socialization of the national curriculum, so that teachers are truly ready to implement it. Socialization of this curriculum must be carried out by teaching staff and must not be differentiated. This means that if socialization is carried out efficiently and effectively, the new curriculum can run. Apart from that, there are three aspects that need to be considered in dissemination, including teacher willingness, geographical conditions, and information dissemination. In its implementation, the curriculum of each educational unit must consider the achievement of student competencies in different situations, including during the COVID-19 pandemic (Yanti & Fernandes, 2021) when COVID-19 is contained in one of the special situations involving . students' learning loss due to being forced to study at home due to the pandemic (Engzell et al., 2021).

Based on the explanation above, various educational problems can be described that have arisen as a result of the COVID-19 pandemic. To eliminate the gap in student learning achievement due to this learning crisis, a learning recovery policy is needed within a certain period of time, with an independent curriculum being one effort to overcome this problem. Apart from that, it is also necessary to apply innovative learning models that are in accordance with the independent curriculum, one of which is the 4C-based Problem Based Learning (PBL) learning model which is a characteristic of 21st century learning.

The PBL learning model is a learning model where students actively solve problems and examine the relationship between knowledge and the problem (Syamsidah & Hamidah, 2018). The PBL learning model is compatible with constructivism theory. In Piaget's constructivism theory, learning is the process of searching for knowledge or theories that are constructed according to field realities. The PBL learning model also encourages students to actively learn in accordance with the concept of an independent curriculum which develops a person's lifelong learning abilities.

At the beginning of science learning, the teacher presents real problems that need to be solved by students through various investigations, so that the learning process becomes better and students can build their own knowledge by generating ideas and opinions. and based on the problems they face. Therefore, the PBL learning model forces students to play an active role in achieving solutions to problems that are expected to be in accordance with scientific learning objectives. The PBL model itself has three unique characteristics, including: 1) involving students in problematic situations as stakeholders; 2) organize the curriculum around holistic themes and enable students to learn in relevant and connected ways; and 3) creating a learning environment in which teachers train students' thinking, guide students' questions, and encourage deeper understanding. (Ramlawati, et al, 2016).

The independent curriculum provides freedom and is centered on students, teachers and schools are free to ensure appropriate learning, the independent curriculum focuses on freedom and creative thinking. One of the programs launched by the Ministry of Education and Culture in the launch of independent learning is the start of a driving school program to support each school to produce future generations. a life with a personality as a Pancasila student (Warsidah, et al. 2022). In this independent curriculum, teachers and students are freer to explore, the independent curriculum places more emphasis on teachers to guide students. As stated by the Ministry of Education and Culture (Rahmadayanti, Hartoyo 2022) Focusing on essential material and developing competencies for students in each phase so that students can learn more deeply, meaningfully and have fun and not be rushed.

4C skills consist of critical thinking, creative, communication, and collaboration. 4C learning is structured systematically with the aim of increasing the competency standards of graduates implemented in formal or non-formal education (Jonaeidy 2019:140). 4C learning is learning that is designed, structured and implements 4C learning process skills with the aim of training students' critical thinking skills, increasing students' self-confidence and students' creativity (Daryanto & Karim 2017:12).

The aim of implementing 4C is the formation of quality, independent and high-willed human resources so that they are able to realize the nation's ideals (Darmadi 2019:105). The characteristics of learning that implements 4C are students as the center of learning, emphasizing the creation, discovery and exploration of contextual-based learning, developing creativity, developing abilities, learning that requires students to be active, creating an interesting and comfortable atmosphere in learning (Hosnan 2014: 85).

In independent curriculum learning, it is more about a differentiation approach, namely what students learn is related to the learning material, students can process ideas and information by choosing their own learning style (Angga, et al. 2022). Implementation of the Independent Curriculum in other forms of elementary schools will optimally improve the quality of learning implementation in elementary schools. The Merdeka Curriculum which emphasizes a learning process on meeting the needs and characteristics of students will certainly give students the freedom to continue to develop according to their potential interests, talents, especially in implementing the independent curriculum in elementary schools referring to the curriculum structure

(Fadli, R. 2022). The independent curriculum itself has new updates from the previous curriculum, namely science and social studies learning to become IPAS (Science and Social).

IPAS is a combination of Science and Social Learning. In terms of content, IPAS is very close to nature and human interaction. Science and science learning needs to present a context that is relevant to the natural conditions and environment around students (Rusilowati, 2021). IPAS also plays an important role in forming literacy and numeracy competencies. Currently literacy and numeracy are generally understood to only be related to Indonesian and Mathematics. Therefore, it is necessary to develop IPAS which can be linked to literacy and numeracy. In this way, students can be helped in understanding the content and context of science subjects, strengthen their mastery of literacy and numeracy and become life skills in everyday life.

According to Rusilowati (2021) IPA or Science is a collection of knowledge and ways to obtain and use that knowledge. Science has three components that cannot be separated, namely product, scientific process, and scientific attitude. Therefore, learning science is learning products, processes and attitudes. Science as a product means that science is an organization of facts, concepts, procedures, principles and natural laws. Science as a process explains that scientific findings are obtained from scientific processes or scientific work. Science as an attitude means that a scientific attitude underlies scientific processes that are useful in producing scientific products.

Several studies that are relevant to this research include: (1) research conducted by (Herzon et al., 2018) obtained research results that PBL was proven to be significant in improving students' critical thinking skills. (2) research conducted by (Maryatun & Metro, 2017) obtained results that the use of the PBL learning model had an effect on learning at SMA PGRI 1 Metro, especially class X1 as the experimental class of this research. (3) research conducted by (Muslim et al., 2015) obtained results that the application of the PBL learning model could improve students' mastery of concepts and critical thinking skills on the concept of elasticity and Hooke's law.

Based on research by Widia (2023) with the title "Problem Based Learning using 4C Competencies: Implementation in Economic Learning". From this research, it was concluded that the gain value was 58.51 > 38.30, indicating that the experimental class was superior to the control class. This shows the effectiveness of the Problem Based Learning learning method. Furthermore, research from Widiawati (2018) shows that learners who learn use science approach in Problem Based Learning model integrated with the inculcation of 4C skills have higher higher-order thinking skills than those learning using scientific approach in Think-Pair-Share learning model with the inculcation of 4C skills.

Next, Reseacrh by Setiawan (2021) with the title “Problem Based Learning (PBL) Model For The 21st Century Generation” concluded that the application of the Problem Based Learning model is considered suitable to be applied in an effort to prepare students with their 21st century skills.

Based on this relevant research, the novelty of this research is that no researchers have researched the implementation of the Problem Based Learning Based on 4C. This research aims to describe the implementation PBL Based on 4c in Independent Curriculum Science and Social Learning in Elementary Schools.

METHOD

The main focus of this research is to analyze the implementation and impact of the application of the Problem Based Learning (PBL) model in science and science learning in collaboration with 21st century learning. The location of the research is in public elementary schools in Mojolaban sub-district with school accreditation score A and the same number of class V students. Lots. This research uses a qualitative method with a case study approach. The subjects in the research were class 5 phase

C at SD Negeri Wirun 01 for the 2023/2024 academic year and also teachers who had more than 10 years of teaching experience.

Data collection techniques for qualitative research include observation, interviews, and documentation studies. Observations in this research were carried out during science learning using the PBL model. Interviews using an interview guide were conducted involving teachers and students regarding the implementation and impact of implementing PBL on science and science learning. Apart from that, a questionnaire using a Likert scale was also given to teachers and students to gather information about the implementation of learning and also the impact of the PBL model. The documentation used includes: 1) Teaching module (RPP); 2) implementation of learning; 3) student learning outcomes.

The validity of the data in this research uses triangulation of methods and sources. Method triangulation is carried out by comparing information or data in different ways, such as using interview methods, observation, and using different informants. This method will produce different evidence or results, which will then provide a different view that will obtain reliable truth. Meanwhile, source triangulation is carried out by checking data that has been obtained from various data sources such as interview results, documents, questionnaires and observations. The analysis technique used is interactive analysis (Milles Huberman). The data analysis process consists of data collection, data reduction, data presentation, and drawing conclusions (Sutama, 2019).

RESULTS AND DISCUSSION

Implementation of Problem Based Learning Based on 4C begins with creating a class activity plan prepared by the class V teacher. This plan includes the steps that the teacher will take to students in the learning process related to the topic to be studied. Planning has a very important role in implementing effective learning, as well as creating a classroom atmosphere that is conducive to teaching and learning activities so that students can easily master curriculum material. Problem Based Learning planning to increase interest in learning begins on November, 2nd 2023. Before starting the learning process, researchers coordinate with schools and obtain information regarding learning tools such as teaching modules, student worksheets, as well as what preparations are needed by teachers before implementing the learning model Problem Based Learning. Next, researchers conducted interviews with teachers and students regarding the process.

After making observations on November, 2nd 2023, it was seen that Mrs. Herni, as a class teacher, made preparations before carrying out the lesson. create a Learning Implementation Plan (RPP) or in the independent curriculum it is called a Teaching Module which is packaged with PBL Plus 21st Century Learning syntax.

Based on the results of an interview with the teacher, Mrs. Herni (as a class 5 teacher) on November, 2nd 2023, "*This PBL model is almost the same as other learning models, only for this PBL students are taught more so that students' interest in learning increases further for making teaching modules for There is actually no big difference between the problem-based learning model and other learning models, only in PBL it increases students' interest in learning compared to teaching methods that use the normal lecture method*." Mrs. Hanna also explained that the teaching module uses a PBL has several advantages.

According to Sanjaya (2007:218), there are several advantages in implementing Problem Based Learning (PBL), namely as follows: a. PBL can increase students' interest in learning, develop students' initiative in working, and motivate students to learn. b. PBL encourages meaningful learning. In PBL, students learn by solving problems, so they will apply the knowledge they already have or try to find the knowledge they need. c. PBL helps students become independent and diligent

learners. d. Through problem solving, students can develop new knowledge and take responsibility for their learning.

As per the interview conducted with the teacher, Mrs. Herni (as a class 5 teacher) on November, 2nd 2023: "*In my opinion, as a class teacher at SDN Wirun 01, there are several materials or topics that I use the PBL method for and they are accepted and responded well by the students, they are actively involved in the teaching and learning process well, they are also active in asking questions and when discussing together they can answer the questions well and precisely*" "*In my opinion it turns out that this method can increase students' interest in learning, make students more diligent in doing their assignments What I provide, this method also motivates students to be more enthusiastic about learning. Students easily solve a problem so students are able to apply the knowledge they have. students become diligent learners. Problem solving can help students to develop knowledge and potential within students*"

A similar thing was also explained by one of the 5th grade students who took part in the learning process using the PBL BASED ON 4C model, namely Novaldy Raffy on November, 4th 2023: "*I feel that PBL BASED ON 4C learning is very good, it increases the enthusiasm for learning in the class, which I previously lacked enthusiasm for but after using it This model makes me happy when I follow the lessons given by the teacher."*

A similar opinion was also expressed by one of the 5th grade students, namely Bilqis Rastantri, on November, 4th 2023: "*My opinion is that when the science and science subject is given using the lecture method, I don't follow it well, and when the teacher gives material using the Problem Based Learning model, I am more understand, apart from that the interesting learning makes me study even more diligently*"

As per the interview conducted with the teacher, Mrs. Herni (as a grade 5 teacher) on November, 3rd 2023: "*In my opinion, as a class teacher at SDN Wirun 01, in providing material for science and science lessons, I still use the lecture method as usual, whereas for the PBL BASED ON 4C model I also use it but not on all lesson topics, because at school we also experience problems and there are still many shortcomings such as a lack of supporting books in the process of learning activities, and also when using the PBL method it has to take a very long time, this will make students get bored while taking science lessons.*"

A similar thing was also explained by another 5th grade student who took part in the learning process using the PBL learning model, namely Arka Rafiandra on November 4 2023: "*In my opinion, the supporting books in PBL learning are still lacking, we only use 1 textbook for us. discuss it together.*" A similar opinion was also expressed by one of the 5th grade students, Aisyah Qoiri, on November, 4th 2023: "*learning using PBL takes a very long time so we often get bored in class, and there is also a lack of supporting books for us to use when studying science lessons. given by the teacher*"

Based on research data Based on research data involving interviews and documentation, it was found that at the learning planning stage, teachers faced obstacles in determining appropriate problems for students to discuss in groups. Even though group division is done fairly, students with low abilities tend to be passive in their groups. The problems presented by the teacher are considered challenging by groups of students who have high abilities, but students in low groups feel they do not have a meaningful contribution. On the other hand, cooperation in groups should be well established, but in reality this does not happen.

As in an interview conducted with the teacher, Mrs. Herni, on November, 3rd 2023: "*Identifying problems in PBL is indeed a challenge, because if the problem is too difficult, students with low abilities can become confused and tend to be passive. Conversely, if problems are too easy, high-ability students may feel less challenged.*"

The facts presented are in line with the views expressed by Hotimah (2020), that Problem based learning (PBL) is a method learning that is triggered by problems, which encourage students to learn and work cooperatively in groups to get solutions, think critically and analytical, able to determine and use sources appropriate learning power.

In other matters expressed, it was stated that PBL can run well if the teacher makes thorough preparation. Good preparation does take a long time, but it is important for the success of PBL. However, there is an assessment that because preparation takes a long time, the implementation of PBL is not considered effective by some teachers. The implementation of PBL will achieve maximum results if all learning tools are prepared with careful planning. However, unfortunately, preparing good learning tools takes quite a long time.

CONCLUSION

Based on the results of the research and discussion, it can be concluded that the implementation of the Problem Based Learning Based on 4C at SD Negeri Wirun 01 can increase students' interest in learning, especially in the Independent Curriculum with subject science and social learning, which can be accepted and responded well by students, who are active in participating in the learning process teach well, actively ask questions and when discussing together they can answer the questions well and accurately, making students more diligent in doing their assignments, this PBL Based on 4C learning model also motivates students to be more enthusiastic about learning, students easily solve problems and are able to apply the knowledge they have learned. This research can support the implementation of 4C which includes Critical Thinking, Creativity, Collaboration and Communication for 5th Grade students, especially in when learning science and science using the independent curriculum.

REFERENCE

Angga, A., Suryana, C., Nurwahidah, I., Hernawan, A. H., & Prihantini, P. (2022). Komparasi Implementasi Kurikulum 2013 dan Kurikulum Merdeka di Sekolah Dasar. *Jurnal Basicedu, 6(4), 5877–5889*

Bonal, X., & González, S. (2020). The impact of lockdown on the learning gap: family and school divisions in times of crisis. *International Review of Education, 66(5–6), 635–655.*

Darise, G. N. (2019). Implementasi Kurikulum 2013 Revisi sebagai solusi alternatif pendidikan di Indonesia dalam menghadapi Revolusi Industri 4.0. *Jurnal Ilmiah Iqra', 13(2), 41*.

Darmadi, Hamid. (2019). *Pengantar Pendidikan Era Globalisasi*. Tangerang : An1mage.

Daryanto & Karim, S., (2017). *Pembelajaran Abad 21*. Yogyakarta: Gava Media.

Donnelly, R., & Patrinos, H. A. (2021). Learning loss during Covid-19: An early systematic review. *PROSPECTS*.

Engzell, P., Frey, A., & Verhagen, M. D. (2021). Learning loss due to school closures during the COVID-19 pandemic. *Proceedings of the National Academy of Sciences, 118(17).*

Fadli, R. (2022). Implementasi Kebijakan Kurikulum Merdeka di Sekolah Dasar. *Jurnal Elementaria Edukasia, 5(2), 147-156*

Herzon, H. H., Budijanto dan Utomo, D. H. (2018) Pengaruh Problem Based Learning (PBL) Terhadap Keterampilan Berpikir Kritis. *Jurnal Pendidikan, 3(1): halaman 45*.

Hotimah, Husnul. (2020). Penerapan Metode Pembelajaran Problem Based Learning Dalam Meningkatkan Kemampuan Bercerita Pada Siswa Sekolah Dasar. *Jurnal Edukasi 2020, VII (3): 5-11*.

Maryatun, & Metro, P. E. F. U. M. (2017). Pengaruh Penggunaan Model Problem Based Learning (PBL) Terhadap Hasil Belajar Ekonomi Siswa Kelas X Semester Genap SMA PGRI 1 Metro Tahun Pelajaran 2016/2017. *Jurnal Pendidikan Ekonomi, 5(1), 152–159.*

Megandarisari, M. (2021). Adaptasi kurikulum Pendidikan Anak Usia Dini di masa pandemi COVID-19. *Inovasi Kurikulum, 18 (1), 1–9*.

Muslim. et al. (2015). Penerapan Model Pembelajaran PBL Untuk Meningkatkan Penguasaan Konsep dan Keterampilan Berpikir Kritis Siswa pada Konsep Elastisitas dan Hukum Hooke Di SMA Negeri Unggul Harapan Persada. *Jurnal Pendidikan Sains Indonesia, 03(02), 35–50*.

Mustamilah. (2015). Peningkatan Keterampilan Proses dan Hasil Belajar Menggunakan Model Problem Based Learning Pada Sub Tema Merawat Tubuhku Siswa Kelas 1 SD Negeri Gosono-Wonosegoro. Boyolali: *Scholaria, 5 (2), 70-79*.

Rahmadayanti, D., dan Hartoyo, A. (2022). Potret Kurikulum Merdeka, Wujud Merdeka Belajar di Sekolah Dasar. *Jurnal Basicedu, 6 (4), 7174–7187*.

Ramlawati, dkk. (2017). *Materi Pelajaran IPA Bab V Energi dan Kalor Dalam Sistem Kehidupan*. Jakarta: Kementerian Pendidikan dan Kebudayaan.

Rusilowati, dkk. (2023). Konsep Desain Pembelajaran IPAS Untuk Mendukung Penerapan Asesmen Kompetensi Minimal. Diunduh 25 Oktober 2023. https://unnes.ac.id/mipa/id/2022/04/07/konsep-desainpembelajaran-ipas-untuk-mendukung-penerapan-asesmen-kompetensi-minimal/

Sanjaya. (2007). *Strategi Pembelajaran Berorientasi Standar Proses Pendidikan*. Jakarta: Kencana Prenada Media Group

Setiawan, Agung. (2021). Problem Based Learning (PBL) Model For The 21st Century Generation. *Social, Humanities, and Education Studies (SHEs) Conference Series 4 (6) (2021) 290– 296*

Syamsidah dan Suryani, Hamidah. (2018). *Model Problem Based Learning (PBL)*. Yogyakarta: Deepublish

Warsidah, dkk. (2022). Implementasi Pembelajaran Berbasis Kurikulum Merdeka pada Peserta Didik Kelas 4 Sekolah Dasar Negeri N0. 16 Pontianak Utara. *Jurnal Pendidikan Dasar, 6 (2), 233-246*.

Widia, Reni. (2023). Problem Based Learning menggunakan Kompetensi 4C: Implementasi pada Pembelajaran Ekonomi. *JurnalEcogen Universitas Negeri Padang Vol.6 No.3 2023*

Widiawati, Leni. (2018). Higher Order Thinking Skills as Effect of Problem Based Learning in the 21st Century Learning. *International Journal of Multicultural and Multireligious Understanding (IJMMU) Vol. 5, No. 3, June 2018*

Yanti, A. A., & Fernandes, R. (2021). Adaptasi guru terhadap pembelajaran pada masa pandemi COVID-19 (studi kasus Guru MAN 2 Kota Padang Panjang). *Jurnal Perspektif, 4(3), 459*.

Sutama. (2019). *Metode Penelitian Pendidikan (Kuantitatif, Kualitatif, PTK, Mix Method, R&D)*. Sukoharjo: CV. Jasmine