



IMPLEMENTATION OF THE INDEPENDENT CURRICULUM IN ZERO WASTE APPLICATION THROUGH THE BASED LEARNING METHOD

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ABSTRACT

The implementation of the Independent Curriculum is one of the important initiatives in improving the quality of education in Indonesia, especially in equipping students with 21st century skills. One of the main challenges faced is how to apply sustainability principles, such as the concept of zero waste into relevant and contextual learning. This article aims to analyze how the Independent Curriculum can be applied in the application of the concept of zero waste through based learning methods, such as Project-Based Learning (PjBL) and Problem-Based Learning (PBL). The method used in this study is a case study in a school that has implemented the Independent Curriculum with a focus on the zero waste program. Data was collected through direct observation, in-depth interviews with teachers and students, and analysis of curriculum documents and student project results. The analysis was carried out to assess the effectiveness of the application of the based learning method in facilitating students' understanding of the principle of zero waste and the relationship between learning materials and real life. The results of the study show that the implementation of the Independent Curriculum through the based learning method is effective in increasing students' awareness of the importance of zero waste and encouraging them to be actively involved in real projects that have an impact on the environment. In addition, students show significant improvements in critical thinking, collaboration, and problem-solving skills. The conclusion of this study is that the Independent Curriculum, when combined with the based learning method, has great potential to encourage education that is not only academically relevant but also has a positive impact on the environment and society.

Keywords: Independent Curriculum, Zero Waste, Based Learning

INTRODUCTION

Ki Hajar Dewantara, known as the father of Indonesian national education, defines education as “a demand in the life of growing children, as for what it means, education guides all the natural forces that exist in children, so that they as human beings and as members of society can achieve the highest safety and happiness”. Education can be interpreted as a process of humanism which is then known as an effort to develop human nature (Pristiwanti et al., 2022). Education is the most important means in the development of a nation, the existence of education states the implementation or support of security in the world. Based on the Law of the Republic of Indonesia No.20 of 2003 concerning the National Education system states that “Education functions to develop the ability and form a dignified nation in educating the nation's life which aims to develop the potential of students to become human beings who are faithful and devoted to God Almighty, noble, healthy, knowledgeable, creative, independent, and become democratic and responsible citizens”. Education in Indonesia has a curriculum that continues to change, the purpose of curriculum changes is an effort to improve education for the better.

The independent curriculum is the development of the 2013 curriculum, which previously used the 2004 curriculum and then continued using the 2006 KTSP curriculum, and then the 2013 curriculum which facilitates learning in the classroom because students are not teacher-centered. In contrast, the independent curriculum is a learner-centered and learning-focused curriculum, where content is optimized for students and students have the opportunity to understand concepts more deeply and deeply. The independent curriculum gives teachers the freedom to choose learning methods that suit students' learning needs and interests. Differentiated learning system is a way of delivering learning in the curriculum. It is an attempt to customize the learning process in various ways through differences in content, process, product, learning environment and initial evaluation to meet the individual learning needs of each student. Differentiated learning will change the way teachers teach and make the differentiated learning system even better (Septiana, 2023)

Learning in accordance with the teaching method of the material to be taught can increase learning motivation for students. But in reality, there are still many students who face difficulties in learning. In addition, another problem is that the learning model used is too monotonous, which makes students bored and uninterested in learning. This becomes an obstacle to achieving learning objectives in the teaching and learning process. Therefore, the project-based learning method is the most suitable method for the independent curriculum, which focuses on students. Project-based learning model learning model is a student-centered learning model, so students have the freedom to express ideas that can be used in their projects, so that students can be more creative in completing their assignments (Dewi Anggelia et al., 2022) The project-based learning method, also known as project-based learning, provides opportunities for students to be directly involved in real problems through research, collaboration, and application of the concepts they have learned. In this context, the application of zero waste as a project theme

allows students to not only be able to learn the theory but also be able to apply it to real situations, such as waste management in schools or communities. Integrating zero waste into this curriculum not only supports project-based learning but also fosters students' awareness of social and environmental responsibility.

The zero waste project not only focuses on waste reduction, but also engages students in a contextualized and practical learning process. Students are directed to increase environmental awareness and practical skills that can be applied in everyday life by applying the 4Rs principle (Reuse, Reduce, Recycle, Repair). By conducting various activities, such as waste separation, composting, and making goods from recycled materials, it aims to build a circular economy and reduce negative impacts on the environment. In implementing this project, it is also expected to raise the profile of Pancasila students, because students will not only learn about theory but will also be involved in real action to improve their environment. Thus, education not only serves as a medium for knowledge transfer, but also serves as a tool to build students' personality and social responsibility towards their environment (Sugrawati, 2023)

LITERATUR REVIEW

1. Research article from Azka Qonita et al. The book entitled "Project Based Learning with Media Poster in Improving Zero Waste Lifestyle at SMAN 6 Jakarta" published in 2024, uses descriptive qualitative. The results of this study concluded that Zero Waste Lifestyle can increase students' awareness at SMAN 6 Jakarta to reduce the use of plastic. This conclusion is evidenced by them starting to use tumblers and showing responsibility for the health of the school environment, this can be seen from their active contribution in every activity of the adiwiyata school program at SMAN 6 Jakarta.
2. Research journal from Mirda Apriliana et al. in 2024 entitled "Improving Students' Environmental Awareness Through the Implementation of Zero Waste at SD Alam Karawang." 5(1):38–45. This study uses a naturalistic qualitative method to show the phenomena that occur in the object of research. The results of the study stated that Zero Waste was actualized in various policies and activities involving school residents, both students, educators and education staff, and canteen attendants, so that a positive habit was formed and an attitude of caring for the environment increased in students.
3. Research Journal from Septiana, K. in 2023 entitled "Environmentally Friendly Project Based Learning (PJBL) Learning Model in Reducing Plastic Waste and Implementing a Sustainable Lifestyle (Case Study of Grade 7A Students of SMP Negeri 239 Jakarta Academic Year 2022/2023)". This study uses cutivative research methods and case studies. The conclusions from this study are that the Project Based Learning Approach has learning steps (syntax) that must be carried

- out, namely: Starting with the essential question, designing a plan for the project, create a schedule, create a schedule
4. Research journal from Az-zarkasyi, Muhamad Irgi Abdillah, and Hindun Hindun in 2024 entitled "Application of Problem Based Learning (PBL) Methods in the Independent Curriculum." 2(1). This research uses a descriptive qualitative method, this method can describe how educators will apply to students during teaching and learning activities. The results of the research related to the application of the PBL problem-based learning method in the independent curriculum include several aspects of the independent curriculum, namely basic learning, teaching skills, group targeting, and the use of technology.
 5. Research Journal from Rima Rizkiannida in 2023 entitled "Application of the Project Based Learning Model in the Independent Curriculum in Improving Understanding of the Concept of Ipas in Grade IV Students of SD Negeri Pandeanlamper 1". The research method used is qualitative. The results of the study show that students experience increased understanding by using the project-based learning model, judging from the cognitive tests carried out. It is also supported by the results of interviews and student learning outcomes.
 6. Research journal from Haryo Kunto Wibisono in 2024 entitled "Student Leadership in Community Empowerment: A Study of the Waste Independent Village Program in Lamongan, East Java." This research uses a qualitative method. The results of the study show that ability is seen in the application of project organizing skills and students' knowledge about waste problems. This knowledge can also be seen as the power used by leaders to make changes, as well as related to the relationship between leaders and the people they lead.
 7. Research journal from Jeni Wardi et al in 2024 entitled "Introduction to the Zero Waste Concept with the 3R Concept (REDUCE, REUSE and RECYCLE) Early at Madrasah Tsyanawiyah Diniyyah Puteri Pekanbaru). The results of this study show that Zero waste activities have provided an understanding of the meaning, benefits and importance of implementing a waste-free lifestyle from an early age which is expected to continue to be applied by the residents of Madrasah Tsanawiyah Diniyah Puteri both in the school environment and in daily life.
 8. Research Journal from Sugrawati entitled "Succeed the Zero Waste Program with the Pancasila Student Profile Strengthening Project". This study uses a qualitative descriptive method. The result of this study is that as a solution in plastic waste management, the zero method is effective in overcoming environmental pollution due to the impact caused by plastic waste such as flooding due to waste that clogs water drains, odors caused by garbage accumulation, the environment becomes slum because the amount of waste can damage the aesthetics/beauty of the environment. The program of utilizing plastic waste into ecobrick products that provides alternative solutions that are environmentally friendly and have aesthetic and economic value, creating innovative students in waste management is very useful which is reflected in their increasing knowledge of sustainable waste

management so as to help reduce plastic waste in the environment of SMA Negeri 2 Taliwan.

9. Research journal from Muhammad Riza Bahrudin in 2024 entitled "Waste Selection Training at an Early Age in West Java". This study uses a method by dividing it into three stages. The first stage is to conduct a survey about needs and discussions with the school, waste selection training, and measurement of the results of the training carried out. The results of the study found that from all respondents stated 100% that this training had enough impact on student learning on waste sorting and the respondents 100% strongly agreed that the training carried out by the community service team could be a learning medium to be implemented in daily life and the material provided could be understood by the students and the students could do the 3R movement after being given waste sorting training.
10. Research journal from Rifa'i Abdul Karim in 2020 entitled "MAPS (Waste Management Learning Method) for Elementary School Students for Indonesia Zero Waste." This research uses a qualitative method. The results of this study show that zero waste can create lessons that are not boring, can increase creativity for student, foster environmental awareness and foster a spirit of entrepreneurship. With this idea, it is expected to realize Indonesia ZeroWaste.

METHOD

This research uses a qualitative approach by relying on literature analysis as the main methodology. This approach was chosen to investigate and understand the relationship between the independent curriculum, the zero waste principle, and the resource-based learning approach. This method involves collecting and analyzing secondary data from various literature sources, such as journal articles, books, official documents, and relevant research reports. Literature analysis will be presented thoroughly, with a focus on synthesizing findings to provide a comprehensive picture of the impacts, challenges, and opportunities associated with implementing merdeka curriculum in the context of zero waste through method-based learning.

The analysis process began by identifying and categorizing the main themes in the current literature, then coding the information to find important patterns and relationships. Next, thematic analysis was conducted to identify the relationship between the findings and the implementation of the independent curriculum in the context of zero waste and the contribution of method-based learning. The validity and credibility of the research was maintained through source verification, data triangulation, and researcher reflection to reduce bias. By adopting a literature-based qualitative research method, this research is expected to provide in-depth insights into the implementation of Merdeka Curriculum in supporting the principle of zero waste and the effectiveness of method-based learning in this context.

RESULT

Project-based learning is a learning method that uses projects or activities as a medium for learning. The method is divided into two, namely Project-Based Learning (PjBL) and Problem-Based Learning (PBL). Problem-based learning is a learning method that uses real-world problems as a context for students to learn about relevant concepts and skills. (Az-zarkasyi and Hindun 2024). The main objective of PBL is to improve critical thinking skills, initiative, internal motivation, and the ability to collaborate. PBL also aims to make students become independent of the teacher, but can find and use information independently. Project Based Learning (PjBL) is a learning model that incorporates projects into the learning process, where they are involved in real projects that are relevant to everyday life. (Qonita 2024). PjBL aims to develop students' critical, collaborative, and creative skills through hands-on experience in solving problems.

Researchers have implemented PjBL in schools that have implemented the independent curriculum. Researchers applied zero waste to the PjBL method. In the research conducted, researchers found that students were very enthusiastic when learning directly by practicing waste processing, rather than monotonous learning in the classroom. Zero waste is an effort by researchers to empower students to reduce waste, especially plastic waste.

The schools used as research sites are SD Negeri 1 Kalirejo and SD 2 Kalirejo. In learning, these two schools have implemented the independent curriculum into their learning process. In the implementation of independent curriculum learning, of course, this school applies PBL and PjBL which have the aim of providing opportunities for students to study surrounding issues, then provide problem solving and produce projects as a solution. Currently, the issue that is happening in Indonesia is Indonesia's Plastic Waste Emergency. Therefore, students need to know and apply solutions to existing events. In this case, researchers apply zero waste in schools consisting of stages, namely introduction, contextualization, action or implementation, and reaction (Nurazizah, Surana, and Al-ghazal n.d.).

In the initial stage, the researcher introduced zero waste to the students. The researcher first explained the importance of maintaining a clean and healthy environment in supporting the waste reduction program set by the government. Students must first know the distinction between degradable and non-degradable waste. The understanding of reduce, reuse, recycle also needs to be understood in an effort to reduce waste in the surrounding environment. The next stage is contextualization in this stage students are invited to contextualize zero waste in an effort to maintain environmental cleanliness. Students need to understand the importance of managing waste and identify the benefits of zero waste in reducing waste, as well as the positive impact on the cleanliness of the school environment. Students need to realize that waste management and reduction that is processed properly and correctly will have a positive impact on life and the environment around them.

The next stage is the action stage, in this action stage researchers take real action by using Project Based Learning as a problem-solving method from the initial stage. Zero waste is applied by Recycle from unused papers in the school environment into canvases that students can use for drawing or other works by recycling unused items into new useful items trains students to think creatively in processing waste Another action taken in addition to direct manufacturing practices is the pasting of quotes on the walls of the school regarding cleanliness, such as cleanliness is part of faith, or by providing differentiated bins between organic and inorganic waste.

This project is inseparable from the reflection stage as the final stage, namely reflection on the initial to final stages of zero waste by asking questions about zero waste to students. Here students' understanding will be seen about the zero waste project that has been implemented Students will give an impression of the message regarding waste management activities carried out through zero waste.

In the integrity sub-element, there is a development of elements between phases (Qonita 2024). In the observation of undeveloped aspects, it is known that students are still minimal in environmental awareness. This can be seen by students who still use plastic bottles, undifferentiated garbage disposal, and the like at school. Furthermore, in the developing aspect, that students already have awareness in the importance of protecting the surrounding environment, throwing garbage in its place by paying attention to the type of garbage.



Figure 1. pulp making

Then in the sub-element of cooperation, in this undeveloped aspect, students are still unable to determine the first steps that will be taken to start implementing zero waste

and determine what decomposition will be done to reduce waste. Then, in the aspect of starting to develop, learners begin to design together about the steps of recycling used paper to be made into a new canvas or paper. Then, in the aspect of developing as expected, learners begin to work on recycling used paper and collecting used garbage in the classroom. Then in the highly developed aspect, learners are able to complete the recycled paper well. In addition, learners also clean the classroom together from the garbage in the room and the school environment.



Figure 2. waste paper printing process

In the last element sub chapter is developing self-reflection, in the undeveloped aspect, learners are invited to self-reflect on apathetic behavior towards the environment and personal health related to waste and littering behavior. Then in the developing aspect, learners begin to reflect and realize what behaviors are very detrimental to the health of the environment and themselves and plan to support the zero waste program through the movement to recycle used goods into new ready-to-use goods.

DISCUSSION

Based on direct observations made by researchers, it was found that the application of the independent curriculum through Project Based Learning and Project Based Learning methods can develop students' creativity and critical thinking skills. Students can be aware and sensitive to the surrounding environment and existing problems. This makes students able to solve solutions and produce new projects in solving the resulting solutions. In the context of the Merdeka Curriculum, where learning approaches are more

open and students have more freedom to explore, PBL can be a very effective method (Az-zarkasyi and Hindun 2024). In addition, the PjBL method is a collaborative, innovative and unique project implementation, with a focus on solving problems related to students' lives (Qonita 2024).

Based on the results of direct fieldwork conducted by researchers, the results show that the application of zero waste in Program Based Learning by recycling used paper into canvas or new paper makes school residents, especially students, become more concerned about unused goods. Students are more picky in the use of biodegradable and non-degradable items. As done in research (Apriliana, Maryati, and Munafiah 2024), which states that the application of zero waste in the school environment can form awareness of school residents about environmental awareness. Furthermore, in research (Ariski et al. 2023) also mentioned that waste processing programs can make students more creative and more concerned about school cleanliness.

CONCLUSION

The implementation of the Based Learning Program through zero waste by recycling used paper into canvas or ready-to-use paper at SD Negeri Kalirejo is a program that can create critical, innovative and intellectual students. Schools that have always been stuck in a monotonous classroom that only listens to the teacher's explanation, this time it is different with the based learning method. Students become more critical and innovative in solving problems that exist in the surrounding environment. With the application of zero waste used paper makes an effort to solve the waste problem in order to form creative students in utilizing used items that can be recycled into new items. In addition, students become more concerned about the surrounding environment. The results obtained show a positive increase in the behavior of school residents, especially students in managing and reducing waste in the school environment.

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