IMPLEMENTATION OF PROJECT BASED LEARNING MODEL BASED ON CODING SCRATCH PRODUCTS TO INCREASE STUDENTS' UNDERSTANDING OF PRESERVING NATIONAL CULTURE

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Abstract

Study This was carried out in order to find out what kind of impact and influence it had on increasing students' understanding of cultural preservation and advancing national culture through learning with a Science, Technology, Engineering, and Mathematics (STEM) Project Based Learning (PjBL) model based on Scratch coding products. This research method is a qualitative approach with the type of classroom action research. The subjects or data sources for this research were Pancasila education teachers, and class VIII A students at SMPN 1 Labuapi, and to strengthen the research results, informants were determined or acted as learning reviewers who had an understanding related to the learning being carried out. The informants or reviewers for this research were determined with special considerations, were not haphazard, and could be accounted for. Data collection was carried out using observation techniques (diagnostic assessment), questionnaires (to measure student achievement), interviews, and documentation. Data analysis was carried out using the Kemmis & McTaggart model which took place in four cycles, namely Planning, Implementation, Observation and reflection. This research shows that learning using the PjBL model STEM approach based on coding scratch products has a significant impact significant In increasing students' understanding regarding the preservation and advancement of national culture which is able to provide a better learning experience, systematic understanding and 21st century abilities, it can also be seen from the high level of enthusiasm and motivation for students to learn.

Keywords: Science Technology Engineering Mathematics (STEM) approach, 21st Century Education, Project Based Learning (PjBL), Product Coding Scratch.

INTRODUCTION | مقدمة

Preserving national culture is a shared responsibility in maintaining unique national wealth and identity. Indonesian culture is a combination of various authentic and diverse local cultures and traditions ranging from dance, traditional ceremonies, traditional clothing, special foods to customs (Grace & Setiawan, 2019). Traditional art is the cultural identity of local communities. This is important, to protect people's identity so that they do not lose their cultural community identity. Moreover, due to globalization, traditional culture is less appreciated than foreign culture by Limano et al (Dwihantoro, Susanti, Sukmasetya, & Faizah, 2023).

In the era of globalization and technological advances, the challenges in preserving culture are becoming increasingly diverse. To overcome this challenge, innovative approaches in education are needed to increase students' understanding and involvement in cultural preservation. One approach that is attracting attention is project-based learning (PJBL) which

utilizes coding products using the Scratch platform. Cultural preservation is the foundation of a nation's identity. However, the rapid development of technology often affects the way we understand, inherit and maintain cultural heritage. Students need to understand the value and importance of cultural preservation as part of their responsibility as educated citizens. Therefore, innovative and interesting learning approaches are needed to stimulate student interest and involvement in cultural preservation.

Scratch is visual programming designed to introduce programming concepts, especially to children, with the aim of training computational thinking in beginners. Utilizing the use of Scratch can create animations, interactive games, and multimedia projects by visually arranging command blocks (Luthfyyah, et al., 2023).In addition, Scratch also offers a wide variety of graphic, sound and animation assets that can be used directly in project creation, facilitating the creative process.One of the superior features of Scratch is its active online community, Where users can share their projects, get feedback, and learn from the work of others. This promotes collaboration, experiential learning, and creativity.

Sumarno in (Lestari, 2019) states that "Scratch" has advantages including 1) Scratch has a small size compared to other programming languages, 2) The interface is very simple and easy to use for children, 3) It is easier for children to learn programming logic without having to be complicated by writing syntax in programming languages in general, 4) Scratch Helps children in creating interactive stories, animations and games, 5) Scratch allows everyone to easily combine images, sounds and video without having to have special skills in the field of programming, 6) Animation can be created, executed and controlled, 7) Scratch can be run on Windows, Linux or Macintosh operations.

The research results of Sifana et al in (Ahmad, et al., 2024) show that rapid advances in computer technology, both in terms of hardware and a number of software, have enabled integrated use in various contexts, for example in the world of music. According to research results (Lestari, 2019), the advantages of Scratch software are that it does not impose usage costs for its users and is a graphical programming language that allows the creation of these things to be easily achieved. A number of previous studies have highlighted the importance of education in cultural preservation. However, there are still limitations in the approach used, especially in terms of student involvement and use of technology. The lack of use of innovative approaches, such as product coding-based PjBL, reduces the attractiveness and effectiveness of learning in the context of cultural preservation.

Therefore, this research aims to explore the potential of PjBL learning based on coding products using Scratch in increasing the understanding of class VIII A students at SMPN 1 Labuapi about preserving national culture. By involving students in coding projects that focus on cultural preservation, this research aims to measure the impact on students' understanding and their involvement in cultural preservation efforts. Through this research, it is hoped that evidence will be found that supports the effectiveness of PjBL learning based on coding products in increasing awareness and understanding students about the importance of cultural preservation. Apart from that, this research can also provide new insights into the use of technology in the context of cultural preservation education. Through combining PjBL with Scratch, it is hoped that students can be more actively involved in understanding and preserving national culture. They will be faced with tasks that require searching for information, analysis and creative execution of ideas in the form of digital products that combine elements of traditional culture. Thus, learning is not only a process of acquiring knowledge, but also a creative experience that builds skills and cultural values.

METHOD | منهج

The approach used in this research is Classroom Action Research (PTK), using qualitative data obtained from observation (diagnostic assessment), questionnaires (to measure student achievement), interviews, and documentation carried out in one cycle consisting of two meetings. Arikunto (2015) said that the data source is the subject from which the data is obtained. The data sources in this research were PPKn teachers and class VIII A students at SMPN 1 Labuapi, totaling 31 people. This research uses the Kemmis and McTaggart (1997) data analysis model, which consists of a research procedure in the form of a spiral-like cycle consisting of planning, action, observation and reflection (Mahmud, & Priatna, T. (2008). The data analysis process can see as follows:
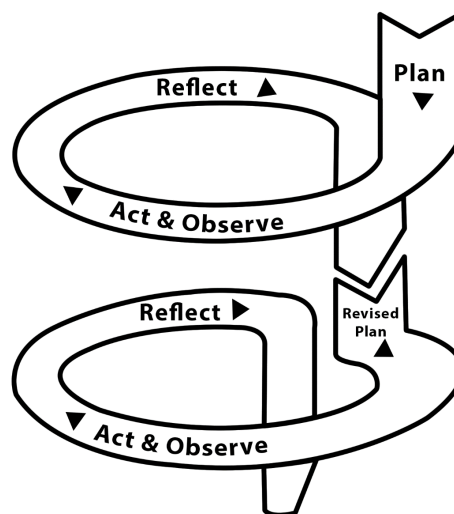

Figure 1. Kemmis & McTaggart analysis process (Ningari, W. F. 2022)

The first stage carried out was planning, at this stage the researcher identified the problem to be solved in the learning. Next, a teaching module is designed that formulates clear and measurable learning objectives, selects and compiles assessments used in the learning process, then researchers develop learning steps by selecting learning resources and learning media used, as well as preparing study guides and sheets. student work (LKPD) to assist students in completing projects. The second stage is implementation (acting), at this stage the researcher carries out the action plan according to what has been prepared, then the researcher guides students in working on the project, provides direction and support, and facilitates discussion and collaboration between students. Teachers also observe students' learning processes and record their progress. The third stage is observation, at this stage the researcher observes how students compose Coding Scratch, complete project assignments, and collaborate with classmates. The researcher also documents the students' learning process through photos, videos and written notes. The final stage or fourth stage is reflection, at this stage the process of analyzing data obtained from observation and data resulting from reflection on learning experiences during the implementation of the action takes place. The researcher together with the students reflected on their learning experiences while working on the project, the researcher also evaluated whether the learning objectives had been achieved and identified aspects of the project that needed to be modified. This process ran continuously during two meetings in order to obtain reliable data validity.

RESULT | نتائج

After conducting research carried out at SMPN 1 Labuapi, especially on class VIII A students with a total of 31 students, this research was carried out using data collection techniques of Observation, Questionnaires, Interviews and Documentation with the aim of collecting data or information regarding Product Based Project Learning. Coding Scratch to improve students' understanding of National Cultural Preservation material. This research begins with the analysis stage of learning conditions/culture and students' learning needs. The analysis stage consists of observing learning conditions/culture and identifying students' learning needs through cognitive diagnostic assessments and non-cognitive diagnostic assessments. The indicators and findings from the situation/culture analysis stage and students' learning needs are as follows.

First; The learning conditions and culture of class VIII A students at SMPN 1 Labuapi are very diverse, including cultural diversity in the form of ethnicity and customs, the diversity of students' characters which makes for a pleasant learning atmosphere, the diversity of learning styles of students, most of whom tend to like studying alone and some others like learning in groups, and the diversity of students' ability levels in understanding a particular concept. However, despite this diversity, all students always maintain the value of unity, and as 21st century students are often named the Alpha Generation, on average students really enjoy learning accompanied by illustrations and learning that is related to everyday life they.
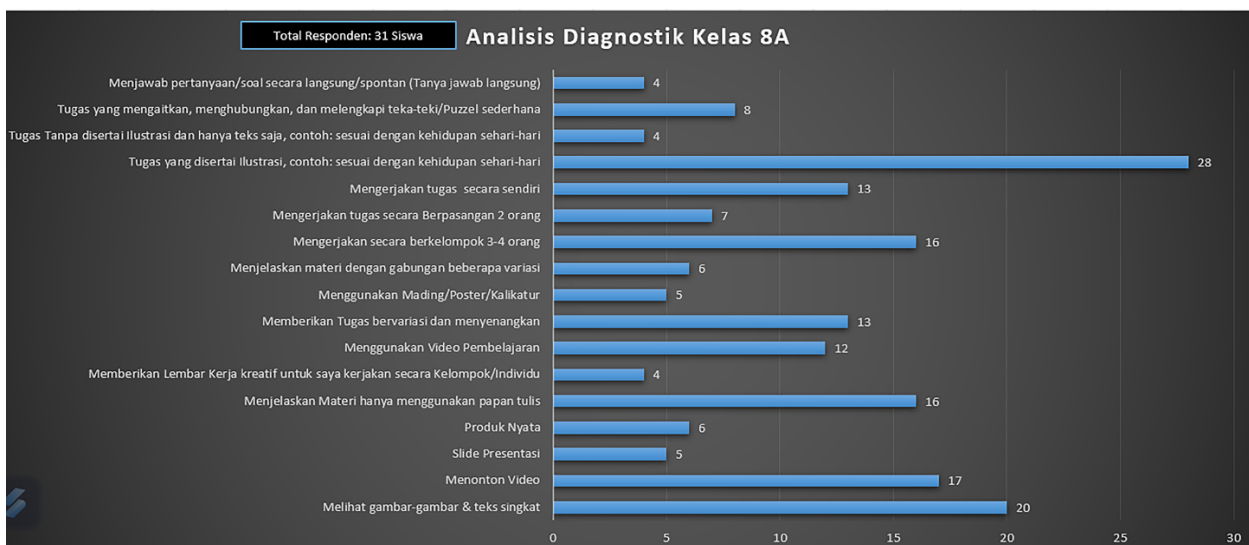

Figure 2. Results of Diagnostic Assessment Analysis

Second; Class VIII A students at SMPN 1 Labuapi have varying levels of knowledge/cognition, but on average they are able to understand several basic concepts in the Pancasila Education Subject, especially on the topic of National Identity and National Culture, this was proven when carrying out a diagnostic assessment cognitively, most, even almost all, of the students were able to answer various questions correctly, and this was also proven during the learning process, the teacher gave several trigger questions and Student Worksheets (LKPD) to be worked on individually and in groups, during the work process it was indeed found Some students experience confusion and difficulty, but when directed and given additional explanation by the teacher, they can complete the tasks given correctly. However, the understanding and knowledge that they only process is still limited to visualizations and abstract concepts, so it is very necessary to implement the knowledge and understanding they have in the form of more concrete projects.

Figure 3. Analysis of Knowledge and Learning Styles

Third; Efforts to provide a deeper understanding to students regarding the topic of National Identity and National Culture, especially in the section on Preserving and Advancing National Culture. So, the teacher packages learning using a STEM approach, Project Based Learning model with product output produced using Scratch coding, learning is designed based on the principles of the Science, Technology, Engineering, and Mathematics (STEM) learning approach and with learner stages according to the elements in the learning model Project Based Learning. During the learning process regarding the material for Preserving and Promoting National Culture, the teacher begins with an introduction to several basic concepts and then introduces students to forms of Preserving and Promoting National Culture with the hope of providing strong encouragement to students regarding the preservation and advancement of national culture, through In this case, the teacher and students hold discussions until they agree on the form of the project that will be created using scratch coding.

Figure 4. Learning Documentation

Fourth; Implementation of learning in class VIII A of SMPN 1 Labuapi uses a STEM approach with the PjBL model using scratch coding to create a project for preserving and advancing national culture as a form of contribution and concern for the 21st century digital generation towards the sustainability of national culture, a project created by class VIII A students SMPN 1 Labuapi is making Angklung musical instruments using scratch coding as a form of effort to archive and immortalize the art of Angklung music in Digital media. However, apart from archiving the Angklung musical instrument, basically this is just an output so that during the

process of creating and compiling coding scratches up to the creation of the digital Angklung musical instrument, of course there are many abilities and soft skills that are indirectly formed and embedded in the students.
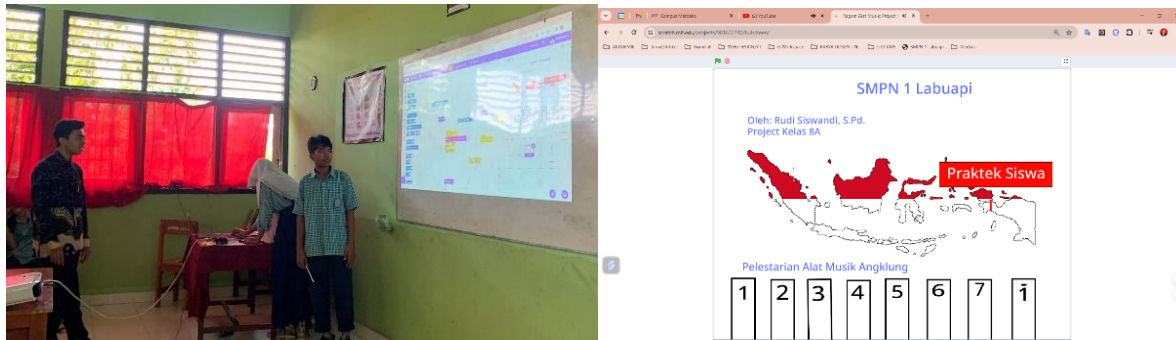

Figure 5. Student Project Results

Fifth; The formation of 21st Century abilities including Critical Thinking, Creative Thinking, Collaboration, and Communication abilities, in class VIII A students at SMPN 1 Labuapi through the process of completing scratch coding projects, these abilities are formed based on students' activities from the beginning of the learning stage starting from criticizing cultural phenomena, creating cultural preservation, discussing and collaborating on the understanding they have through coding scratches to create products for preserving and advancing the nation's culture, through activities like this can form various abilities, skills and soft skills of students which are not only limited to understanding basic, however, more contextual and real in efforts to preserve and advance national culture.

DISCUSSION | مناقشة

Results of observations, questionnaires, interviews and documentation involving 31 students and 1 Pancasila education subject teacher shows that learning with the PjBL model STEM approach using coding scratch-based products is able to provide a better learning experience. good for students, able to simplify students' thinking processes in understanding a concept, and able to provide significant opportunities for students to form and improve 21st Century abilities.

Better learning experience

A safe and comfortable learning atmosphere is the main component in making the learning process successful, learning that fosters a positive and enjoyable atmosphere can provide enthusiasm and enthusiasm for learning for students (Sevrika & Putri, 2022, p. 84). If a smooth, safe and comfortable learning environment has been created, it is a realm for students to interact and be part of uniting their diversity (Rahmadani & Syuraini, 2021, p. 366). The diversity of students is a crucial element to consider in implementing the learning process so that it can create a better learning experience for students. In order to realize a change in a learning atmosphere full of diversity, significant innovation or breakthroughs are needed (Pawestri & Zulfiati, 2020, p. 906). So in this case, the PjBL model of learning is implemented with a STEM approach based on coding scratch products on the material Preservation and Advancement of National Culture, to ensure that every student gets a better learning experience, through the PjBL model it can be ensured that every student has a role and involvement and with integration approach STEM which is based on scratch coding products as a forum for students to develop

problem solving abilities and creativity. Such a learning atmosphere can provide experience learning that is full of challenges and rich in deep meaning for students.

The learning that has been implemented can actually have a meaningful impact on students as an unforgettable learning experience. This kind of learning must continue to be developed and implemented with enthusiasm in order to provide a very wide space for expression to students so that it can provide a sense of independence, freedom, and independence in learning. So, through p the it can be ensured that students can become organizers, controllers and leaders and take full responsibility to explore various new knowledge that is beneficial for themselves and others (Hariyadi, Misnawati, & Yusrizal, 2023, p. 12). Therefore, through PjBL learning with an approach STEM product-based coding Scratch has shown good success in supporting the fulfillment of students' learning needs so as to provide a better and more meaningful learning experience for them.

Systematic Understanding of Concepts

Very component main and crucially, which is the basic aim of implementing learning through education, namely to provide thinking skills and the ability to understand deep, meaningful concepts in a more systematic way for each student, the ability to think and understand concepts systematically can train students to solve problems. through systematic improvement of cognitive abilities (Sutriningsih, 2015, p. 29), as stated by Dick and Carey in (Fujiawati, 2016, p. 21) that learning is a systematic process which has components including teachers, students, materials, and learning environment as an aspect in fulfilling learning success. Therefore, the ability to understand a concept systematically is an ability that every student should have in order to guide their life and livelihood, that through the habit of presenting, understanding and implementing a concept systematically can provide opportunities for them to apply the concept. they learn to solve various life challenges and problems correctly and systematically (Yufenty, Roza, & Maimunah, 2019, p. 201).

Therefore, learning is carried out using the PjBL Model based on scratch coding products. Through this kind of learning, students are given full opportunities to plan, process, implement and evaluate the projects they are working on. During this process, students should have the ability to manage projects that they create systematically, through this learning process the students are divided into several groups and then each of them is given a responsibility or role that provides opportunities for them to work together and collaborate systematically to achieve the goal, namely creating a conservation project. and advancing national culture using the scratch coding platform which can increase their understanding of the concept of preserving and advancing national culture in a systematic and real way.

Enhancing 21st Century capabilities

The development of very complex science at this time is no longer an inevitability or a taboo thing, but this has become a very inherent part of every individual, so that the ability to survive and develop amidst the upheaval of science and technology is so complex that, every Individuals must be equipped with comprehensive abilities that aim to provide each individual with internal provisions face challenges and problems that they will face in living their daily lives, the world today seems to have become transparent and is able to ignore the existence of national boundaries, conditions like this are some of the characteristics of the rapid development of science and information technology which has an impact significant regarding various aspects of life, thought patterns, attitudes, actions, and survival abilities (Rahayu, Iskandar, & Abidin, 2022, p. 2100), respond This is done through the provision of education specifically optimizing the

learning process needs to be carried out well and as a responsibility of every educator towards the growth and development and abilities of students, therefore, through learning use The STEM approach with the PjBL model is based on scratch coding products which have been designed very carefully and implemented with full responsibility as an educator, in order to prepare individuals who have 21st Century abilities and make them ready to face various life challenges and problems.

21st Century Capabilities that have been in placeintensify with full of enthusiasm with the hope that every person can master and have one or even all that covers abilities *Critical Thinking, Communication, Creative Thinking,* and *Collaboration* known as 4C, an effort to create individuals who have 4C abilities as an effort to adapt to the 21st Century environment which is rich in science and technology, so one of the basic aspects to start with is through education, teachers as a very strategic profession to guide growth students' development in facing the challenges of the 21st Century, so starting from approaches, models, media, strategies and learning processes must be oriented towards 4C skills or abilities in order to provide provisions for students (Khotimah, 2022, p. 4).

CONCLUSSION | خاتمة

Based on research results and in-depth data analysis taking into account various aspects and considerations discussion Above, a common thread or conclusion can be drawn that the implementation of learning uses an approach *Science, Technology, Engineering, and Mathematic (STEM)* using models *Project Based Learning (PjBL)* by presenting real products based on the scratch coding platform, the fact is that it has a very significant and complex influence increase students' abilities in the material on preserving and advancing national culture which has been implemented in class VIII of SMPN 1 Labuapi. This can be proven through various facts and data that this learning can provide a better learning experience, a more systematic understanding of concepts, and improve 21st century abilities and can also be seen from the very high enthusiasm and enthusiasm for learning from students during the process. learning and even after the learning process wait for the next learning schedule. Therefore, learning with a PjBL model STEM approach with Scratch coding-based products designed carefully and fully implemented is not quite enough responsible, able to have an impact very significant on the knowledge and growth and development of students.

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