



The Independence of Students of SLBN Karangrejo Madiun Regency in Learning Farm Education with the STEAM Approach

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Abstract. Independence is the main goal of learning at extraordinary schools (SLB). SLBN Karangrejo Madiun regency has a large area of land so that it can carry out farm education learning. The STEAM approach was chosen in learning because it is very suitable for improving the competence of graduates. This study discusses the independence of students of SLBN Karangrejo Madiun regency in learning farm education with the STEAM approach. The purpose of this study is to find out the increase in the independence of students of SLBN Karangrejo Madiun regency in learning farm education with the STEAM approach. Qualitative research methods are used by collecting data from observations and interviews in depth. Time triangulation is used to obtain valid student independence data. For data analysis, interactive methods are used so that conclusions can be drawn as a result of research. The results of the study showed the process and independence of farm education learning with the STEAM approach of students of SLBN Karangrejo Madiun regency. Farm education learning with the STEAM approach to this research focuses on kale gardening. Learning is carried out with 5 cycles, namely seeding, land preparation, planting, care, and harvesting.

Keywords: Independence · SLB · Farm Education · STEAM

1 Introduction

One of the main goals of learning is independence. Independence is an activity driven by self-will, self-choice, and self-responsibility without the help of others and is able to account for its actions [1]. Learning independence affects the success of students to understand mathematical concepts in their own way [2]. Learning independence is a learning activity carried out by each student who is independent of others, has his own will, initiative, and is responsible for solving his learning problems [3].

Independence is very important in learning. Learning independence is very important for students, signs of having the initiative to do something, not having fear, enjoying playing alone, rarely getting bored, focusing on one or several activities, not being afraid to express their thoughts, and being easy to get along with others [4]. Students need to be aware to get used to being independent not dependent on others so that they can carry

out the learning process whenever and wherever they are [5]. Student independence is a full concern for students of SLBN Karangrejo, Madiun Regency.

Karangrejo State Extraordinary School (SLBN Karangrejo), Madiun Regency, located on Dungus Street No. 309 Karangrejo, Wungu District, Madiun Regency, has problems related to student independence. Based on the results of interviews with principals and teachers at SLB Negeri Karangrejo, Madiun Regency, it shows that students' independence is still low. During the learning process, students are led to develop thinking skills so that behaviour changes occur. Students must be able to be independent without relying on help from others and continue not to rely on learning from the teacher alone [6]. In supporting the ability to survive, it is necessary to have student comfort, so that students can live independently in the future.

Independence includes being emotionally independent, independent in action, and independent thinking [7]. Emotional independence is an aspect of independence that is related to the change in the closeness or attachment of the individual's emotional relationships, especially with parents or other adults who have a lot of interaction with him. Independent action is the ability to make decisions freely and act on them. Independent thinking is the freedom to interpret a set of principles of right and wrong, good and bad, what is useful and futile for himself. There are several factors that can influence independence, namely: age, gender, self-concept, education, family, social interaction [8].

Each SLB student gets different learning methods and techniques according to student needs. According to the big dictionary of Indonesian (KBBI), children with special needs are children who are classified as disabled or abnormal who bear the provisions, and currently the concept of civility has changed to be different or extraordinary. Children who are include: children with health disorders (blind), children with speech and language barriers (hearing impaired), children with hearing loss, mentally retarded children, children with physical disorders. The characteristics of civility (children with special needs) are unfocused eye contact, prefer to be alone, emotional, difficulty communicating, and others.

SLBN Karangrejo, Madiun Regency, has a large yard and garden after getting a grant from a generous person. So, this SLB has the potential to carry out farm education. Farm Education was chosen because it is one of authentic learning and combines learning with the natural environment. Farm Education is an education that utilizes an authentic learning environment, which combines academic studies with the environment in an agricultural context [9]. Farm Education in high school is the starting point for introducing students to agricultural literacy and career exploration [10]. Farm education can be carried out inside or outside the classroom.

In line with the foregoing, which is related to active learning, innovative and critical thinking in line with the concept of learning with the STEAM (Science, Technology, Engineering, Art, and Mathematics) approach. This approach is considered suitable to be applied because the main concept is that practice is as important as theory [11]. STEAM is a collaborative learning from various disciplines in one unified learning concept [12]. STEAM is a learning approach that combines Science, Technology, Engineering, Art and Mathematics that help students realize how they learn and focus and increase student learning motivation and independence.

The results of the study about farm education and the value of learning in an authentic learning environment show that learning by utilizing the plantation environment is proven to encourage students to carry out learning directly according to their respective abilities [13]. The results of study about analysis of student learning independence based on gender at MTs Al-Khairiyah Pakuncen Serang Banten showed that there are many factors that affect student independence, namely from within the student and from outside so that educators must get to know the student's specifications study [14].

Based on the background above, the following problem formulation was obtained: How is the process of learning farm education with the STEAM approach through kale gardening at SLBN Karangrejo, Madiun regency? How is the independence of students of SLBN Karangrejo, Madiun district after getting farm education learning with the STEAM approach through kale gardening? The purpose of this study is: to find out the learning process of farm education with the STEAM approach through kale gardening at SLBN Karangrejo, Madiun regency and to find out the independence of students of SLBN Karangrejo, Madiun regency after getting farm education learning with the STEAM approach through kale gardening.

2 Method

This research uses descriptive qualitative methods. Qualitative research methods are research methods based on the philosophy of post positivism which is used to examine the condition of natural objects where the researcher is the key instrument and data analysis is inductive. Qualitative research analysis is the process of finding and compiling data obtained from interviews, field notes, and other materials systematically so that they are easy to understand and can be informed to others [15].

This research was carried out at the Karangrejo State School which was addressed at Dungus street's No. 309 Karangrejo Village, Wungu District, Madiun Regency. The data collection time is carried out in the even semester of the 2021/2022 school year, namely in March to July 2022.

The source of data in qualitative research is words, actions, the rest are additional data such as documents and others [16]. Qualitative types of research data can be words and actions, written data sources, photographs and statistics. Qualitative data are required to meet natural, broad, and deep criteria. This research data is more focused on implementing learning and increasing student independence after carrying out farm education with the STEAM approach at SLBN Karangrejo.

The data obtained is the result of observations, interviews, and tests, so that the source of the data and information can be obtained through observational observations of events or activities related to research problems. In addition to lecturers, data collection is also assisted by students.

The subject of independence of SMPLB students at SLBN Karangrejo based on gender taken by researchers is deaf. Deafness is a state of hearing loss covering all levels whether mild, moderate, severe, and very severe which will result in communication and language disorders. This deafness can be classified as hearing or deafness. The selection of subjects of this study was based on gender differences as well as teacher recommendations. After the deaf students are selected as the research subjects, a written

test and interview are then carried out. The test questions were given to deaf students of class VIII at the SMPLB level at SLBN Karangrejo, Madiun Regency.

The interview was conducted to find out the characteristics of deaf students of SMPLB at SLBN Karangrejo, the process of learning activities and learning media used by teachers, as well as the independence ability of SMPLB students at school. From the sources of research data obtained, it is known the number of deaf students at the junior high school level, the learning methods and media used to carry out learning activities.

The main instrument on qualitative research is the researcher himself. In qualitative approach researchers should use themselves as instruments, because nonhuman instruments are difficult to use flexibly to capture the various realities and interactions that occur [17]. In qualitative research, there are also auxiliary instruments that are developed according to characteristics are also used in collecting data. In this study, the auxiliary instruments include: self-reliance observation sheets, interview guidelines, and grids and test question sheets.

In obtaining the data needed in the research process, researchers use data collection methods using observation, interviews, and tests. The observation technique used in this study is the participant observation technique, which is a technique where researchers are involved in the daily activities of the person being observed or who is used as a source of research data. In this study, researchers used a semi-structured type of interview, namely in order to obtain maximum information and be more free or open than structured interviews. Researchers use this test method to collect data on the independence of deaf students at the junior high school level based on gender at SLBN Karangrejo which will be given through written questions.

In this study, the validity test used triangulation techniques. Researchers use this type of triangulation technique, because this triangulation is used to compare or check the data obtained from the results of interviews and written tests. Data analysis using reduction, display, and conclusion drawing/verification. Data reduction is carried out on data that is not related to the research objectives. Data display is delivered to show natural, in-depth, and extensive data. Conclusion drawing /verification is carried out based on the results of data analysis so as to determine the independence of SMPLB students at SLBN Karangrejo in learning mathematics through farm education with the STEAM approach.

3 Results and Discussion

3.1 Implementation of Learning

Farm Education learning with the STEAM approach at SLBN Karangrejo for this research is focused on gardening kale. Learning is carried out by developing classroom action research. There are 5 (five) cycles for the implementation of this learning Learning is carried out with 5 cycles, namely seeding or nursery (cycle 1), land preparation (cycle 2), planting (cycle 3), care (cycle 4), and harvesting (cycle 5).

The first cycle is more focused for seedlings. Science learning is carried out in the classroom by introducing kale and the benefits of kale to students so as to motivate

students to grow kale. The first step to growing kale is the breeding of kale. Technology Learning is carried out by introducing the necessary materials and tools for kale breeding. Engineering learning is carried out by the teacher conducting direct nursery demonstrations such as preparing polybag, entering soil to the polybag, and inserting seeds into the polybag that already contains soil. Art learning is carried out by asking students to do nursery and the teacher guides for the accuracy, neatness, and beauty of polybag arrangement. Mathematics learning is carried out with a brief discussion of questions about adding, subtracting, multiplying, and dividing (Fig. 1).

The second cycle is more focused on tillage. Science learning is carried out in the classroom with kale growth lessons so that students understand the importance of preparing the land. Technology learning is carried out by introducing materials and tools needed for land preparation such as hoes, sickles, and others. Engineering learning is carried out with teachers conducting direct land preparation demonstrations such as cleaning stones and grass to hoeing and arranging the soil. Art learning is carried out by asking students to do land preparation and teachers guide for the accuracy, neatness, and beauty of the land. Mathematics learning is carried out with a brief discussion of questions about adding, subtracting, multiplying, and dividing related land.

The third cycle is more focused on planting. Science learning is carried out in the classroom with kale growth lessons so that students understand the importance of growing kale. Technology learning is carried out by introducing the materials and tools needed to grow kale such as hoes, sickles, and pegs. Engineering learning is carried out with teachers demonstrating kale planting directly. Art learning is carried out by asking students to do kale planting and the teacher guiding for the accuracy, neatness, and beauty

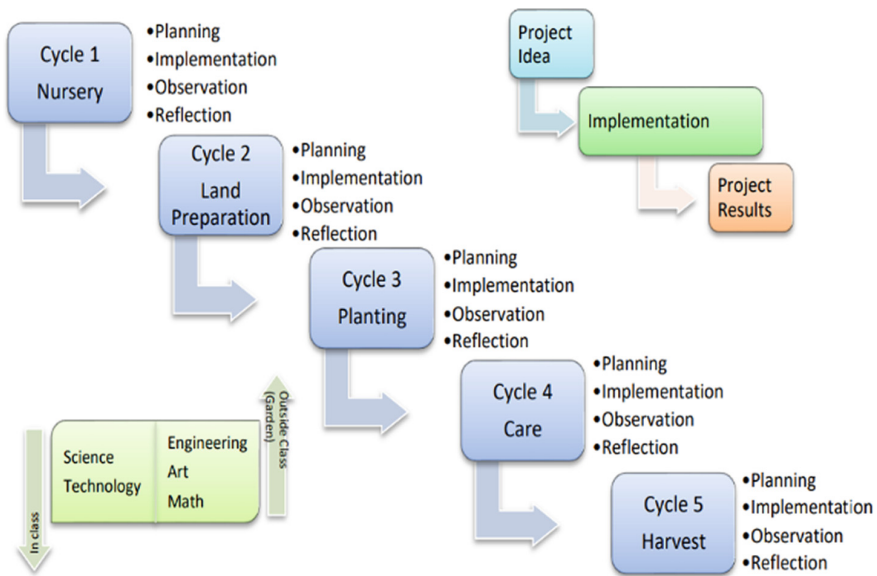


Fig. 1. Implementation of Farm Education Learning with a STEAM Approach through kale gardening

of planting. Mathematics learning is carried out by a brief discussion of questions about adding, subtracting, multiplying, and dividing related to the cultivation of kale.

The fourth cycle is more focused on treatment. Science learning is carried out in the classroom with kale growth lessons so that students understand the importance of caring for the kale plant. Technology learning is carried out by introducing the materials and tools needed to care for kale such as sickles and pegs. Engineering learning is carried out with teachers demonstrating kale care directly. Art learning is carried out by asking students to do kale treatments on their respective fields and teachers guide for accuracy, neatness, and beauty of care. Mathematics learning is carried out with a brief discussion of questions about adding, subtracting, multiplying, and dividing related to kale treatment. In terms of learning, students reminded again the importance of caring for kale plants and gave the task of caring for kale according to their respective fields.

The fifth cycle is more focused on harvesting kale. Science learning is carried out in the classroom with kale lessons and their benefits so that students understand the importance of harvesting kale. Technology learning is carried out by introducing the materials and tools needed to harvest kale such as knives, scissors, and bags. Engineering learning is carried out by teachers conducting live kale harvesting demonstrations. Art learning is carried out by asking students to harvest kale on their respective fields and the teacher guides for the accuracy, neatness, and beauty of kale harvesting. Mathematics learning is carried out with a brief discussion of questions about adding, subtracting, multiplying, and dividing related to kale harvesting.

The implementation of farm education with the STEAM approach requires experience and flying hours. Experience and flying hours can improve a teacher's critical thinking skills. The results of research on the level of criticality and visually intelligence of prospective mathematics teachers in designing STEM-based learning show that it is still low. However, the teachers in this study have shown good abilities [18].

3.2 Independence

In general, students meet all indicators of independence, that is, be responsible, have initiative, and do not depend on others. The increase in student independence is as follows (Fig. 2).

The attitude of responsibility is shown by the behaviour of students in learning and in doing questions. When doing the calculation test questions. Students start counting and there are several answers that come up. Students try to answer by showing how they work out which shows an attitude of responsibility for the chosen answer. Students answer and explain the completion stage solemnly. During the learning process in the garden or farm education, researchers invite students to plant kale in polybags. At this stage of planting, the researcher gave an example of planting kale to the two students put the soil into the polybag, then put the kale seeds to be planted. When students are asked to practice according to the example, student is more responsive such as looking for a shovel or peck themselves. Then after the planting was completed and there was soil falling to the floor, student directly picked it up and cleaned it up. Meanwhile, same student must be directed and not participate in cleaning up dirt on the floor.

The self-initiative is shown by students. Before doing the learning, the students are already neatly prepared to receive the learning. When doing calculation test questions,

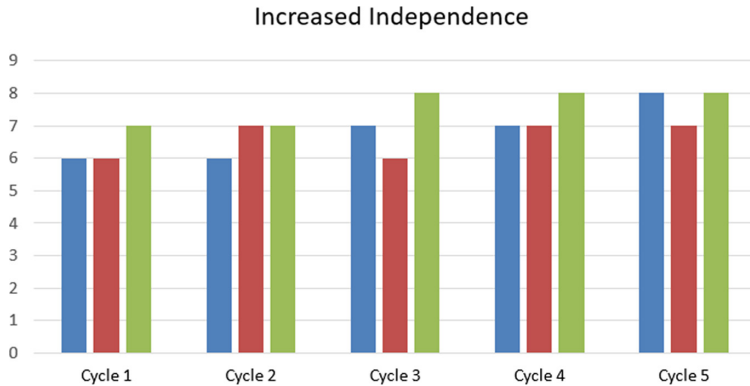


Fig. 2. Increased independence (responsibility, initiative, and independent of others)

such as looking for a rectangular area in description question. Student took the initiative to make scribbles or drawings to make it easier to solve the problem. The subject also uses his finger to help calculate the result of his multiplication or summation. In the same context, same student did the calculation problem without exact calculations (only guessed) so that the results obtained were also not quite right.

The student's non-reliance on others can be demonstrated by the student's behaviour. When working on the test questions, Research Subject 1 did not ask others and was confident in the answers that had been selected, the subjects immediately wrote down the results of the answers after finding the answers to the questions. Meanwhile, subject 2 still had time to ask subject 1 because he was still in doubt or unsure and confident, even though he remained in his own answer. But that's not the case with all questions. In the question at another number, subject 2 is also able to do it himself without asking anyone. In addition, for both subjects in terms of learning and reading still need a little help and need assistance. During the learning process in the garden or farm education, researchers gave a one-time example of how to grow kale in polybags. Students can already do it themselves without the help of others.

Increasing student independence should be seen as a process. Students must learn to be as independent as they are to learn lessons. Children need learning process and visualization to multiplication concept [19]. The existing improvements show success in learning. Although there is no guarantee, student independence is expected to last or even increase in other learnings.

4 Conclusion of Research Results

Based on the discussion of the results of the research that has been carried out, it can be concluded related to farm education learning with the STEAM approach and the independence of students of SLBN Karangrejo, Madiun Regency.

Farm education learning with the STEAM approach to this research focuses on kale gardening. Learning is carried out with 5 cycles, namely seeding (cycle 1), land preparation (cycle 2), planting (cycle 3), care (cycle 4), and harvesting (cycle 5). Learning is felt enjoyable by students and model teachers.

The independence of SLBN Karangrejo students is built by learning farm education with a STEAM approach. The increase in student independence can be seen from learning and in doing questions. This increase can be seen from the indicator of independence, which is an attitude of responsibility, has initiative, and is independent of others. The attitude of responsibility can be seen from the neatness after carrying out learning students return the equipment used. The attitude of having its own initiative can be seen from the enthusiasm of students in the discussion of the problems raised by the teacher. The attitude of not being dependent on others is seen from the moment of doing the given question.

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