Research Paper / Article

Enhancing Competence in Critical Thinking, Creativity, Collaboration, and Communication in SD Negeri Pengadilan 2 in the New Normal Era

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Abstract: The COVID-19 pandemic (coronavirus disease 2019) has caused various problems in terms of health, education, economy, and other aspects. Vitamins are a complex compound that is needed by the body both for immunity and sharpening focus, especially during this pandemic. Therefore, in this social empowerment, the time conducted counseling on the importance of vitamins to teachers, parents, and students of SD Negeri Pengadilan 2. The Covid-19 pandemic has also had an impact on students' 4C (Critical Thinking, Communication, Collaboration and Creativity) skills. To overcome this, the members of the social empowerment also conducted learning by using integer chip props to hone students' 4C skills. Through the collaboration of chemistry study program lecturers who provide socialization of the importance of vitamins and mathematics study program lecturers who provide teaching integer operations with integer chip. By this social empowerment activities, students can focus on observing the learning process and honing students' 4C skills.

Keywords: vitamin, critical thinking, communication, collaboration, creativity

1. INTRODUCTION

Based on the Basic Education and Secondary Education Fundamental Data for the first semester of 2021/2022, the national number of students in Primary Schools (SD) amounted to 8,385,668, with a total of 529,764 teachers. West Java Province stands out as the province with the highest number of elementary school students, totaling 1,501,283 out of 19,610 schools at the SD level. Among these, Bogor City ranks 21st in West Java, comprising 328 schools, consisting of 212 Public Elementary Schools and 116 Private Elementary Schools, with a student population of 27,275.

Bogor Tengah District is one of the six districts in Bogor City and is home to 45 elementary schools, consisting of 31 Public Elementary Schools and 14 Private Elementary Schools, with a total student population of 2,399. One of the selected partner schools is State Elementary School (SD) Pengadilan 2, located in the Pabaton Village, Bogor Tengah District, with 170 students distributed across 7 classes. The school occupies an area of 1,150 m2 and has been established since 1981. The choice of SD Negeri

Pengadilan 2 is motivated by the lack of knowledge of students and parents about the benefits of using vitamins.

Figure 1. SD Negeri Pengadilan 2

With the school's location making it easy for students to access their preferred snacks, concerns arise about the impact of children's eating habits influenced by the school and home environment. There is a worry that children may consume nutritionally unbalanced foods. Therefore, there is a need for socialization and education to strengthen students' immune systems, introducing the benefits of vitamins as supplements to enhance their resilience. Based on the questionnaire data that has been spread in SD Negeri Pengadilan 2 before doing community service, parents, students, teachers, and the surrounding community remain unaware of the functions and benefits of vitamins as essential supplements for maintaining and preventing various diseases. It is known that a lack of vitamins can lead to an imbalanced body condition and suboptimal organ function.

The best sources of vitamins and minerals are fruits and vegetables. However, some elementary school-aged children may dislike consuming these. Children's eating behavior is also influenced by the availability of fruits and vegetables at home, as well as the attitudes and behaviors of teachers and parents in consuming them, which are in turn influenced by knowledge and attitudes. Encouraging children to consume a variety of staple foods and emphasizing fruits and vegetables as sources of vitamins and health supplements can contribute to strengthening their immune systems. By adopting healthy habits daily, it is hoped that the community, especially school-aged children, will develop stronger immune systems to prevent various diseases, including those caused by the novel coronavirus (nCoV).

The Covid-19 pandemic has also impacted school learning, as online learning became the norm. This shift has led to a decline in students' 4C skills (Communication, Critical Thinking, Creativity, and Collaboration). Consequently, the community service team conducted demonstrations for teachers, parents, and students on integer operation learning using the integer chip manipulative tool to enhance the 4C skills of SDN Pengadilan 2 students in Bogor City.

Manipulative tools serve to stimulate critical thinking, encourage group discussions (Collaboration), capture students' attention for active communication (Communication), and unleash students' creative potential (Creativity) (Nasaruddin, 2015). These tools provide opportunities for student-centered learning methods, as students have greater control in using manipulatives to understand the lesson material and motivate group discussions (Masrul, et al., 2022). Manipulative tools that enhance the 4C skills of students can improve learning outcomes (Gesty, et al., 2022).

Building 4C skills (Communication, Critical Thinking, Creativity, and Collaboration) is crucial for students as these skills are needed in the 21st century job market (Partono et.al, 2021). Problem-Based Learning models can be applied to train these 4C skills (Windari and Yanti, 2021). Recognizing the importance of these 21st-century skills, they should be taught at all levels of education, including elementary school (Widodo and Wardani, 2020). With these 4C skills, students can become individuals capable of solving problems in this era of disruption (Simanjuntak, 2019).

2. METHOD

The first activity is doing observation and share the questioner to teachers and parents in SD Negeri Pengadilan 2. The next activity is to visit SD Negeri Pengadilan 2 in Bogor city to (i) give a lecture to teachers and parents (School Komote) about the benefits of vitamins and introduce water-soluble and fat-soluble vitamins (ii) provide training to the School Committee of SD Negeri Pengadilan 2 to detect and conduct qualitative and semi-quantitative analysis easily, quickly, in detail, and independently on the content of vitamin C in supplements and fruits; (iii) Vitamin socialization needed to prevent the Covid-19 virus. Increased knowledge about the benefits of vitamins in preventing diseases and boosting the immune system will enhance the potential for achievement in crucial aspects of optimal child growth and development, including intelligence, creativity, height, strength, flexibility, independence, and confidence. (iv) Conduct a demonstration of integer learning with a tool for demonstrating integer chips, allowing students to hone their 4C skills (Communication, Critical Thinking, Creativity, and Collaboration).

3. RESULT AND DISCUSSION

On September 29, 2022, Thursday, lecturers, students, and laboratory assistants from the Faculty of Mathematics and Natural Sciences (FMIPA) at Pakuan University once again carried out community service to share knowledge. This time, the community service partner was SD Negeri Pengadilan 2 in Bogor City.

Figure 2. Photo of the Chemistry and Mathematics Community Service Team from UNPAK with Teachers and Parents

There are two stages in the Community Service activity conducted by the lecturers of the Faculty of Mathematics and Natural Sciences (FMIPA) at Pakuan University. The first stage of community service, a collaboration between chemistry and mathematics faculty members, involves providing a socialization on the importance of vitamins by Dr. Eka Herlina, M.Pd., a chemistry lecturer at UNPAK, to parents, teachers, and students. The next stage involves teaching the operation of integers using integer chips by Ms. Isti Kamila, S.Pd., M.Si., a mathematics lecturer at UNPAK.

The vitamin socialization presented by Dr. Eka Herlina, M.Pd. includes explanations about the types of vitamins, the benefits of each vitamin, and foods that contain vitamins. In addition, Dr. Eka Herlina, M.Pd. also explains the connection between vitamins and strengthening the 4C abilities. Teachers and parents enthusiastically listen to the explanation from Dr. Eka Herlina, M.Pd. The goal of this socialization is to encourage parents and teachers to pay attention to the food consumed by students so that students can focus on learning and strengthen their 4C abilities.

Figure 3. The Head of the Implementation Giving a Socialization on the Importance of Vitamins

After the socialization, Mrs. Isti Kamila, S.Pd., M.Si., a lecturer in the Mathematics Department at Pakuan University, provided enjoyable and engaging mathematics teaching. The students were taught integer operations using integer chips as teaching aids. The students were divided into four groups, each

consisting of four students, and each group was given a set of integer chips, comprising 10 red chips and 10 white chips. One red chip represented the number (-1), and one white chip represented the number (+1). For example, 3 red chips represented the number (-3), while 4 white chips represented the number (+4).

The learning activity began by giving examples of how to use the teaching aids, and students observed it. Mrs. Isti provided an example of adding 5 + (-3) to the students using integer chips. The way to use the integer chips was by placing 5 white chips on the table and then putting 3 red chips on top. Each pair of 1 red chip and 1 white chip equaled 0. The result of the addition of these two numbers was represented by the number of chips without a pair, which was 2 white chips, resulting in the answer of 2.

Next, students used the teaching aids in groups to solve the addition problem (-2) + (-3), and the fastest team was given the opportunity to demonstrate the use of integer chips to solve the addition problem in front of the class and receive a prize. Each group was enthusiastic, and one team raised their hand as a sign that they knew the answer. The team members were asked to come forward and explain the process of obtaining the result (-5) using the teaching aids. While presenting the process of obtaining the result, students demonstrated their communication skills, allowing their peers to understand their explanations. Regularly encouraging students to present their results helps sharpen their communication skills and self-confidence. During student presentations, the community service team occasionally provided guidance on proper communication to ensure not only the accuracy of the information but also politeness.

The formation of groups gave students the opportunity to collaborate, thereby honing their collaboration skills when solving the given problems efficiently and effectively. Based on the observations of this community service team, the school is already accustomed to implementing group learning for students when given problems involving the addition and subtraction of integers. The students were very cooperative, and all group members actively contributed their ideas.

Furthermore, each group was asked to discuss the conclusions regarding the addition of integers. The first group stated that the result of adding two integers is always negative, based on their experience with the examples and problems given. However, this conclusion was not correct. The community service team then asked other groups to respond. The second group provided a different conclusion, stating that the result of adding two integers could be positive or negative. If the larger number is positive, the result is positive; if the larger number is negative, the result is negative. Again, the response of the second group was not accurate. Nevertheless, their response demonstrated the honing of critical thinking skills by the students. The community service team then asked a question to prompt students to arrive at the correct conclusion about the concept of adding integers, such as asking about the result of adding 5 + (-5). One group was enthusiastic to respond. The third group gave the answer of 0 and proceeded to provide the conclusion that the result of adding two integers could be a negative number, 0, or a positive number.

Figure 4. Active and Enthusiastic Students in Solving Problems

Next is the enactment of subtracting two integers, such as (-5) - (-2). Initially, there are 5 red integer chips on the table, and the subtraction principle involves removing (subtracting) the integers to be subtracted, which are two red integer chips. The result is the number of remaining red integer chips on the table, which is 3 red integer chips representing the number (-3). After that, a question was given: what is the result of the subtraction -5 - 3? Each team was enthusiastic about using integer chips to solve this problem. In addition to critical thinking skills (Critical Thinking), creative skills (Creativity) are also required to solve this problem. One group was able to enhance their creative skills and successfully solve it. They initially placed 5 red integer chips on the table, and since there were no white integer chips available to subtract 3 white integer chips, the group placed 3 pairs of red and white integer chips on the table, equivalent to the number 0. This action did not change the value of (-5) because now there were 8 red integer chips and 3 white integer chips with a value of (-5). After that, the group subtracted (removed) 3 white integer chips, leaving 8 red integer chips representing the value (-8). The group successfully answered correctly.

Based on the learning experience of adding and subtracting integers in groups using integer chips as teaching aids, this method successfully hones student's 4C skills: Communication, Critical Thinking, Creativity, and Collaboration. These skills need to be practiced in every learning process in schools in the 21st century to prepare students to confidently face future challenges, enabling them to provide effective solutions to their own problems, their workplace, and their environment. It showed that there is a relationship between eating food contains vitamin and enhancing student’s 4C skill.

Figure 5. Team Members Teaching Integer Operations

4. CONCLUSION

The Community Service Activity conducted at SDN Pengadilan 2 was carried out well and met expectations. Parents, teachers, and students felt the importance of maintaining a nutritious diet that includes vitamins. Additionally, the demonstration of teaching integer operations using integer chips as teaching aids was able to enhance students' 4C skills (Communication, Critical Thinking, Creativity, and Collaboration).

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