

## Training on TEKAR (*Caramunting flour*) Production as Efforts to Enhance Science Literacy

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**Abstract:** PKBM is one of the educational facilities, especially non-formal education, to enhance the knowledge and skills of people studying there. This is done to support the improvement of life skills to enhance living welfare (social and economic), one of which is in the form of scientific literacy skills. This community service activity aims to enhance the scientific literacy skills of students studying at community learning centres or PKBM Harati through training activities in making caramunting flour. The method used in community service starts from the planning stage, activity implementation stage and evaluation. The evaluation was carried out by assessing the literacy skills of the activity participants, namely 20 residents studying PKBM Harati, located in Sampit City, East Kotawaringin, Central Kalimantan, by giving test questions of 10 multiple choice questions and measured quantitatively. The results of the activity show that there has been an increase in the scientific literacy learning outcomes of the activity participants, namely that at the pretest, they got an average score of 35, and at the posttest, they got an average score of 83. These results indicate that the training activities carried out can have a positive impact. Positive because it provides concrete examples regarding the application of scientific literacy skills.

**Keywords:** caramunting; flour; PKBM; scientific literacy skills

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### INTRODUCTION

Indonesia is a mega-biodiversity country with high biodiversity in each region, one of which is in Central Kalimantan. The biodiversity in Central Kalimantan consists of various natural resources from plants and endemic animals that

characterize the region (Rabiatul et al., 2019). One of the typical plants in Central Kalimantan is the caramunting plant (*Melastoma malabathricum*). caramunting is one of the wild plants commonly found in Central Kalimantan. So far, caramunting has never been

utilized by the community, thus it lacks economic value. Based on research conducted by a previous team, it is known that the fruit of caramunting has very high nutritional content, making it very potential to be developed as a food fortification material in the form of flour for making cakes (Zannah & Hidayati, 2022). The results of this research have significant benefits, including serving as a learning source to increase knowledge related to exploring local plants in Central Kalimantan.

The utilization of local plants to be empowered for economic value is still rarely done, which is one of the indicators of the minimal science literacy skills that need to be honed in learning activities in various educational institutions. Science literacy skills are highly needed nowadays because, through science literacy skills, a person will be able to apply scientific knowledge observed from various natural phenomena around them to make decisions for the improvement of economic and social welfare (Arohman & Priyandoko, 2016).

These skills are in line with the skills needed to face various challenges in the 21st century that require people to have various skills to be applied in solving everyday life problems (Sriyati et al., 2021), including problems in the economic field. By mastering science literacy skills, a person will have the initiative to empower various local potentials to improve their welfare. Given the importance of mastering science literacy skills, all educational aspects need to apply them in their learning activities, not only in formal educational institutions but also in non-formal educational institutions such as community learning centres or PKBM. PKBM is one of the non-formal educational institutions engaged in community education, one is PKBM Harati located in Sampit City, East Kotawaringin Regency, Central Kalimantan, Indonesia. PKBM Harati is

engaged in equality education packages, equivalent to elementary school (package A), junior high school (package B), and high school (package C).

The implementation of learning activities at PKBM Harati has been going well so far; however, it is still focused on mastering materials for equality exams, one of which is in the package C equality program. The urgent needs of learning citizens in the package C program also need attention, one of which is science literacy skills to support improving life skills needed in the 21st century.

Scientific literacy can be called science literacy skills, which is the ability to understand science, communicate science (verbally or in writing), and apply problem-solving skills scientifically, having a high level of self-awareness and sensitivity to oneself and the surrounding environment, making decisions based on scientific considerations (Dewantara et al., 2019; Yuliati, 2017). Science literacy is the ability to apply scientific knowledge by identifying, making decisions, and drawing conclusions related to interactions between science, the environment, technology, and society. Interactions can include communication through the use of scientific knowledge and explanations based on scientific evidence obtained (Lestari et al., 2021; Situmorang, 2016).

Learning citizens in the package C program are usually dominated by adult participants who certainly need skills that can support life skills to improve their welfare. This is because of the limitations of the teachers at PKBM Harati regarding innovations in learning resources that can be applied in learning activities.

One learning tool to improve science literacy skills to support life skills is training on making caramunting flour (TEKAR). This activity not only improves students' science literacy skills but also serves as an example in exploring various natural potentials in the

surrounding environment to be economically empowered. Moreover, in PKBM Harati, there is a business unit available, as seen in figure 2, which can be used as a means of marketing products developed by learning citizens at PKBM Harati to improve their economic welfare.

Based on Director General Regulation number 71 of 2019 article 1 paragraph 1, it states that PKBM is a non-formal educational unit that carries out learning activities according to the learning needs of the community based on the initiative of, by, and for the community, so that it can be part of the solution to community economic problems. Implementing training activities on making caramunting flour is certainly in line with the role and function of establishing PKBM. This is also to improve the quality of graduates from PKBM, which has so far received minimal trust from the community regarding its quality (Ernawati, 2014).

Efforts to improve the quality of graduates of adult learners from a PKBM, one of them PKBM Harati, through the training activities of TEKAR, are very important to be done. With the hope that PKBM can fulfil its function as it should, namely to become an alternative that grows in society to be empowered in addressing various problems in society (Raharjo et al., 2016), and to improve the life skills of alumni from the PKBM (Nurjaman, 2016), so that they are also expected to have the same quality as alumni from formal educational institutions.

Based on the problems at PKBM Harati that have been described earlier, the team will carry out community service activities by implementing project-based learning activities for making caramunting flour.

The minimal innovation in learning activities for learners in the package C program causes the low level of science literacy skills. One form of effort that can

be applied to improve science literacy skills is by implementing project-based learning. This is because project-based learning activities tend to present more contextual learning activities, thus positively contributing to the improvement of science literacy (Dewi et al., 2021). Moreover, project-based activities integrated with various local potentials in an area (Setiawan et al., 2017), one in Central Kalimantan. Central Kalimantan is rich in very high biodiversity, including the diversity of local plants. The research team, especially the lead researcher, has previously studied various local plants used by the Dayak community, one of them like bajei used to treat acne (Zannah et al., 2017; Zannah et al., 2022). Then there is kelakai believed by the community to be beneficial for increasing breast milk production (Zannah & Dewi, 2021), and finally the lead researcher explores the potential of caramunting fruit as a food fortification material. The research results on caramunting became the basis for the implementation of this community service activity as a concrete example for the application of project-based learning.

Based on the project-based learning activity of making caramunting flour, it is expected to serve as a means to improve the life skills of package C learners at PKBM Harati as a solution to overcome the problems at PKBM Harati, especially in the educational aspect. Thus, this activity aims to improve the science literacy skills of Package C learners at PKBM Harati through the training activities conducted.

## **METHOD**

This community service activity was conducted at PKBM Harati, which is located in Sampit City, Central Kalimantan. The activity took place on September 16-17, 2023. Based on the described problems and the offered solutions, the detailed method to be

applied to execute the solution is as follows:

**Planning**

In this stage, it involved planning activities regarding the steps to be taken in the future. The first was the initial coordination with partners and agreement on the schedule of activities such as visits to partner locations in Sampit City, East Kotawaringin Regency, Central Kalimantan, Indonesia. Planning activities were conducted intensively both among the faculty team and with the student team.

**Implementation**

The implementation of this activity consisted of three main activities aimed at addressing educational aspects. In Table 1 Indicator categories in science literacy tests

terms of education, efforts were made to improve the knowledge and science literacy skills of Package C learners at PKBM Harati. The activity is attended by 20 Package C learners at PKBM Harati.

**Evaluation**

In the evaluation stage, it was conducted to evaluate the community service activities that have been carried out. This is aimed at analyzing the success of the activities that have been implemented. During the implementation stage, training activities were conducted by conducting pretests first to measure the science literacy skills of learners at PKBM Harati. The preparation of science literacy instruments is referred to in Table 1 (Arohman & Priyandoko, 2016).

| Indicator |  | Sub-Indicator |   |
|-----------|--|---------------|---|
| 1         | Understanding inquiry methods leading to scientific knowledge                        | 1             | identifying appropriate scientific arguments                                      |
|           |  | 2             | using an effective literature search  |
|           |  | 3             | evaluation in using scientific information  |
|           |  | 4             | understanding research design elements and their impact on scientific discoveries |
| 2         | Organizing, analyzing, and interpreting quantitative data and scientific information | 5             | creating graphs that can represent data   |
|           |  | 6             | reading and interpreting data   |
|           |  | 7             | problem-solving using quantitative skills including probability statistics        |
|           |  | 8             | understanding and being able to interpret basic statistics                        |
|           |  | 9             | presenting conclusions, predictions based on quantitative data                    |

Assessment results are carried out quantitatively descriptively by conducting tests before the activity (pretest) and after the activity (posttest). During the implementation of the activity, training activities are conducted using a project-based learning approach to making caramunting flour. In this issue, project-based learning activities are carried out with the following stages (Kristanti & Subiki, 2017):

- a. Beginning with research questions
- b. Designing project plans
- c. Scheduling
- d. Monitoring students and project progress

- e. Assessing results
- f. Evaluating activities

These stages in project-based learning activities are integrated into community service activities by linking them to the theme of community service activities, which is about training in making caramunting flour.

**RESULTS AND DISCUSSION**

The community service activities conducted at PKBM Harati, Sampit City, East Kotawaringin, Central Kalimantan have been carried out well. The activities consisted of several stages including

observation, activity implementation, and evaluation.

The material presented during the activity was about the utilization of natural resources in the surrounding environment, especially in the Central Kalimantan region. The presentation aimed to increase awareness among the learners at PKBM Harati as representatives of the community about the natural wealth that should be utilized effectively to improve community life.

The socialization activities were held in the PKBM Harati classroom in September 2023. The activities conducted can be seen in Figure 1.



Figure 1 Activity participants

This community service activity was attended by 20 learners at PKBM Harati, namely Package C learners. The participants were provided with information about examples of the utilization of natural resources in Central Kalimantan, one of which is caramunting fruit that can be processed into flour for making sponge cake (Figure 2).



Figure 2 Sponge cake made from caramunting flour

This activity certainly benefits the community because caramunting fruit has various potentials both as food ingredients and as medicines. Based on research results, extracts from

caramunting fruit have the potential as antioxidants (Isnaini et al., 2019), (Sari et al., 2018), as well as anti-acne agents (Zannah & Dewi, 2021).

To ensure the successful implementation of the activity, evaluation was also conducted, especially on the science literacy skills of the participants. The science literacy results of the participants can be seen in Table 2.

Table 2 Science literacy results of activity participants

| Scientific Literacy Skill Score |          |
|---------------------------------|----------|
| Pretest                         | Posttest |
| 35                              | 83       |

The evaluation of the science literacy scores of the participants shows an improvement in the science literacy of the activity participants. This indicates that the community service activity had a positive impact on increasing the knowledge of the participants.

With the science literacy mastered by the participants, namely the learners at PKBM Harati, they will be able to understand scientific concepts and solve problems scientifically. This is because science literacy leads to mastery of life skills, not just knowledge mastery (Kristyowati & Purwanto, 2019).

## CONCLUSION

The community service activity in the form of caramunting flour training has had a positive impact, especially on improving the quality of education for learners at PKBM Harati, namely in terms of science literacy skills through caramunting flour making training. The increase in scores from pretest to posttest indicates that the training activity had a positive impact.

## REFERENCES

- Arohman, M., & Priyandoko, D. (2016). Kemampuan literasi sains siswa pada pembelajaran ekosistem. *Jurnal.Uns.Ac.Id*, 13(1), 90–92.

- Dewantara, D., Mahtari, S., Misbah, M., & Haryandi, S. (2019). Student responses in biology physics courses use worksheets based on scientific literacy. *Prisma Sains: Jurnal Pengkajian Ilmu Dan Pembelajaran Matematika Dan IPA IKIP Mataram*, 7(2), 192-197.
- Dewi, C. A., Erna, M., Martini, Haris, I., & Kundera, I. N. (2021). Effect of contextual collaborative learning based ethnoscience to increase student's scientific literacy ability. *Journal of Turkish Science Education*, 18(3), 525-541.
- Ernawati, I. (2014). Manajemen pelatihan berbasis life skill dalam meningkatkan kompetensi lulusan pendidikan kesetaraan paket c. *Empowerment: Jurnal Ilmiah Program Studi Pendidikan Luar Sekolah*, 3(1), 78-91.
- Isnaini, I., Yasmina, A., & Nur'amin, H. W. (2019). Antioxidant and cytotoxicity activities of caramunting (*Melastoma malabathricum* L.) fruit ethanolic extract and quercetin. *Asian Pacific Journal of Cancer Prevention*, 20(2), 639-643.
- Kristanti, Y. D., & Subiki, S. (2017). Model pembelajaran berbasis proyek (project based learning model) pada pembelajaran fisika di sma. *Jurnal Pembelajaran Fisika*, 5(2), 122-128.
- Kristyowati, R., & Purwanto, A. (2019). Pembelajaran literasi sains melalui pemanfaatan lingkungan. *Scholaria: Jurnal Pendidikan Dan Kebudayaan*, 9(2), 183-191.
- Lestari, P. C., Miriam, S., & Misbah, M. (2021). Science literacy-based sound wave e-worksheet: Validity aspects. *Journal of Physics: Conference Series*, 2104(1), 012010. IOP Publishing.
- Nurjaman, N. A. (2016). *Penerapan hasil pelatihan menyulam payet mute berbasis kecakapan hidup dalam mengembangkan kemandirian berwirausaha (studi pada alumni paket c di pkbm al amin desa sukasenang kecamatan tanjungjaya kabupaten tasikmalaya)*. Universitas Siliwangi.
- Rabiatul, A., Siti, M., & Pienyani, R. (2019). Keanekaragaman tumbuhan potensi obat tradisional di hutan kerang pasir putih khdtk um palangkaraya. *Talenta Conference Series: Agricultural and Natural Resources (ANR)*, 2(1), 71-79.
- Raharjo, T. J., Suminar, T., & Muarifuddin, M. (2016). Peran pusat kegiatan belajar masyarakat dalam menanggulangi kemiskinan melalui pendidikan nonformal di Jawa Tengah. *Journal of Nonformal Education*, 2(1).
- Sari, N. M., Kuspradini, H., Amirta, R., & Kusuma, I. W. (2018). Antioxidant activity of an invasive plant, *Melastoma malabathricum* and its potential as herbal tea product. *IOP Conference Series: Earth and Environmental Science*, 144(1).
- Setiawan, B., Innatesari, D. K., Sabtiawan, W. B., & Sudarmin, S. (2017). The development of local wisdom-based natural science module to improve science literation of students. *Jurnal Pendidikan IPA Indonesia*, 6(1), 49-54.
- Situmorang, R. P. (2016). Integrasi literasi sains peserta didik dalam pembelajaran sains. *Satya Widya*, 32(1), 49-56.
- Sriyati, S., Ivana, A., & Pryandoko, D. (2021). Pengembangan sumber belajar biologi berbasis potensi lokal dadiah untuk meningkatkan keterampilan proses sains siswa. *Jurnal Pendidikan Sains Indonesia*, 9(2), 168-180.
- Yuliati, Y. (2017). Literasi sains dalam pembelajaran IPA. *Jurnal Cakrawala Pendas*, 3(2).
- Zannah, F., Amin, M., Suwono, H., & Lukiati, B. (2017). Phytochemical screening of *Diplazium esculentum* as medicinal plant from Central

- Kalimantan, Indonesia. *AIP Conference Proceedings*, 1844(May).
- Zannah, F., Amin, M., Suwono, H., & Lukiati, B. (2022). Identification of metabolite compounds and biological activity of diplazium esculentum lcms analysis. *International Journal Bioautomation*, 26(2), 131–140.
- Zannah, F., & Dewi, I. S. (2021). The utilization of various medicinal plants based on the Dayak community perspective in the Central Kalimantan as an education for sustainable development. *BIO-INOVED: Jurnal Biologi-Inovasi Pendidikan*, 3(3), 216-220.
- Zannah, F., & Hidayati, N. (2022). Exploration of the potential of local plants of melastoma malabathricum fruit for food fortification. *Journal of Tropical Life Science*, 12(3).