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Pineapple Leaf Fiber Painting (Ananas Comosus): An Ecopreneurship Education Perspective

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ABSTRACT

This research aims to explore the ability of teachers and students of SMA Negeri 1 Sipahutar in processing pineapple leaf fibers into paintings based on ecopreneurship education and equipping them to manage pineapple leaf waste independently as a medium for learning crafts. The problem faced is that the concept of ecopreneurship has not been integrated into the 2013 Curriculum so that students' work has not been oriented towards sustainability and economic value. The research uses a descriptive qualitative approach with the Participatory Action Research (PAR) model through the stages of planning, training, mentoring, and evaluation. Data were obtained through observation, interviews, documentation, and document studies, analyzed with the Spradley model. The results show that this program can make partners gain knowledge in exploring painting using pineapple leaf fibers based on ecopreneurship at SMAN 1 Sipahutar by utilizing animated videos and guidebooks that have been given to partners. Partners have applied independently in the classroom in processing pineapple leaf fibers into paintings in learning crafts through online training so that they have the opportunity to become jobseekers. With the online training on making pineapple leaf fiber paintings through animated videos and guidebooks, in the future partners can develop local potential to achieve the goals of craft learning with the implementation of the 2013 curriculum. The program has received a positive response from teachers and school principals regarding the idea of using pineapple leaf fiber as an exploration material in painting. This program supports the purpose of learning craft while opening up opportunities for environmentally friendly entrepreneurship in schools.

KEYWORDS

Ecopreneurship Education, Pineapple Leaf Fiber, Crafts, Painting

INTRODUCTION

SMA Negeri 1 Sipahutar is a senior high school located in Si Abal-abal Village, Sipahutar District, North Tapanuli Regency, North Sumatra Province. In the learning process, this school implements the 2013 Curriculum. In the world of education, the curriculum is made to achieve learning targets, so that educators have references and achievements in educating (Pranoto et al., 2021). In schools, the 2013 Curriculum is implemented with an emphasis on encouraging students to be better able to observe, question, reason, and communicate (present) what they have acquired or know after receiving learning materials at school. Then, in the 2013 curriculum, the learning objects used are more emphasized on natural phenomena, social phenomena, art phenomena, and cultural phenomena (Kartono et al., 2021).

The craft subject is one of the subjects in the 2013 Curriculum that can develop students' skills to produce a product. The Craft subject aims to develop students' knowledge, skills and confidence

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through self-produced products by utilizing the potential of natural resources in the surrounding environment (Herlina, 2019).

The results of the Community Service (PKM-M) Team's interview with art teacher partners at SMAN 1 Sipahutar said that the curriculum has not been integrated with ecopreneurship, so that when making a product, it has not paid attention to the economic or business potential of the product produced, as well as environmental concern in the product, production process or other aspects related to the business. The results of student crafts are only limited to products and tasks that are assessed in learning but do not have the sustainability of the products produced. The problem faced in handicraft learning at SMA Negeri 1 Sipahutar is in the form of not achieving the expected craft learning goals from the implementation of the 2013 curriculum. In fact, the achievement of learning objectives is a benchmark for the success of the learning carried out (Wardani et al., 2014). In addition, learning objectives are also decisive to see the quality of learning carried out whether it is going well or vice versa (Wisdiarman et al., 2018). The learning objectives in the craft subject at SMAN 1 Sipahutar have not been achieved, because they do not have signs in implementing ecopreneurship in the production process other than the use of waste as raw materials (Anih, 2015). Craft subjects have the potential to be developed as ecopreneurship education content.

Puspitasari explained that ecopreneurship is an environment-based business activity that focuses on reducing the impact on the surrounding environment while still ensuring the fulfillment of the goals of the business run so that business results can be maximized (Puspitasari et al., 2022). Ecoprenuership can also be interpreted as the ability to think creatively and innovatively to create something new and different by taking advantage of the opportunities that exist around the environment and being used as a product that can generate financial benefits (Munandar, 2023). Meanwhile, ecopreneurship education is a planned effort to create a learning atmosphere and learning process so that students have the knowledge, attitudes and skills needed to become entrepreneurs who care about the environment, develop innovations to overcome environmental problems, exploit opportunities in the environment by paying attention to sustainability (Anih, 2015).

Painting is a product of painting, which is a medium that can be used to express a painter based on one's experience which is poured into a two-dimensional field (Chia & Fitryona, 2022). A painting can be made with various techniques and materials into a form of painting that has a high value of creativity. Pineapple is a type of plant whose leaf fibers can be used as a basic material for textiles (Maryam et al., 2024). In addition, pineapple leaf fibers are useful as raw materials for textiles and can be used as a base for paintings. The process to produce pineapple leaf fiber uses a blunt machete by dredging to separate the pineapple leaf fiber and flesh. The PKM-M team provides solutions to partner problems by utilizing the potential that exists in the student environment. One of the potentials available in the Sipahutar area, especially Si Abal-abal village which is the location of SMA Negeri 1 is pineapple leaf waste which is usually thrown away every time harvest (BPS, 2020).

The PKM-M team helps partners solve problems by utilizing pineapple leaf waste into a painting that reflects local wisdom based on Ecopreneurship. The products produced from the Craft subject are processed and developed from an entrepreneurial perspective. The processing of pineapple leaf waste into paintings will provide many benefits for SMAN 1 Sipahutar students in learning Prakarya because it provides the advantage that students can be entrepreneurial by utilizing the availability of raw materials in the form of pineapple leaf fiber. The results of PKM-M activities are expected to contribute and new opportunities to partners regarding the use of pineapple leaf waste into paintings.

Based on the background, the problem can be formulated, namely: 1) How are partners able to explore knowledge in painting using pineapple leaf fibers based on ecopreneurship at SMAN 1 Sipahutar? 2) How to equip SMAN 1 Sipahutar partners in the management of leaf waste into paintings independently? This study aims to explore the ability to paint using pineapple leaf fibers based on ecopreneurship at SMAN 1 Sipahutar and partners can independently manage pineapple leaf fibers into paintings. The output achieved from the PKM-M pineapple leaf fiber painting program is a video of the implementation of pineapple leaf fiber painting activities and a program implementation guidebook. The benefit of PKM-M activities is that students can develop and utilize pineapple leaf waste into ecopreneurship-based paintings and teachers can develop creative ideas

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with pineapple waste raw materials that were initially wasted into products that have use value in learning crafts.

METHOD

This research is a research with a qualitative descriptive approach, and using the Participatory Action Research (PAR) model. Moleong (Pratama et al., 2022) stated that qualitative research is a research procedure that produces qualitative data in the form of written and spoken words from the behavior of the people observed. Qualitative research is also understood as a research method based on the philosophy of postpositivism, used to research on the condition of natural objects and researchers are the key instruments (Siregar et al., 2020). Meanwhile, descriptive qualitative is a research approach that reveals a specific social situation by describing reality correctly, formed by words based on relevant data collection and analysis techniques obtained from natural situations (Anisa et al., 2018). So that the researcher will describe the various findings obtained in the research according to the existing circumstances and situations. In addition, this descriptive qualitative approach also aims to describe, summarize, and document various social conditions and phenomena contained in the society that is the subject of research (Syukri et al., 2023). Then from this approach, the data obtained is described using words in the form of narratives or descriptions that are as clear as possible based on the facts obtained by researchers in the field (Saragih & Zulkifli, 2019).

Meanwhile, the selection of the Participatory Action Research (PAR) model was chosen because it involves the active participation of partners (teachers and students of SMAN 1 Sipahutar) in every stage of the activity, starting from problem identification, planning, implementation, to evaluation. This is in accordance with the concept of the Participatory Action Research (PAR) model, where in the model it is explained that community partners or in this case students and teachers are not only placed as research objects, but also actors, researchers and beneficiaries of research (Siswadi & Syaifuddin, 2024). The ecopreneurship education approach is also applied to integrate aspects of environmental care and entrepreneurial values into craft learning, by utilizing local potential in the form of pineapple leaf waste as the main raw material for making paintings. The research location is located at SMA Negeri 1 Sipahutar which is located in Si Abal-abal Village, Sipahutar District, North Tapanuli Regency, North Sumatra Province.

The data collection techniques of this study include direct observation, open interviews, documentation and document studies. All data that have been successfully collected are analyzed using the Spradley model which includes 4 analysis procedures, namely domain analysis, taxonomic analysis, component analysis, and event structure analysis (Arroisi & Yasrif, 2025). Analysis is carried out as a stage of how to examine, investigate and discuss problems, events or relationships between elements in the right circumstances by finding something that is considered important in a tangible form/fact to solve the final goal of the research (Nainggolan et al., 2018). The validity of the research data was tested through 4 qualitative data test procedures including credibility test, transferability test, detestability test, and confirmability test (Sa'adah et al., 2022). The thematic database obtained from the test results will be drawn conclusions that are the results of the research findings (Azis et al, 2024).

The PKM-M activity of Pineapple Leaf Fiber Painting Based on Ecopreneurship Education on August 6, 2020 was declared passed and funded by the Ministry of Education and Culture. The PKM-M team and accompanying lecturers discussed creating an activity mechanism according to the PKM-M program activity flow as follows.

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Figure 1. Flow Chart of the Implementation of Activity Programs
(Source: Personal Documents, 2019)

RESULT AND DISCUSSION

SMA Negeri 1 Sipahutar is one of the State High Schools in North Tapanuli located on Jalan Pangathousands Sipahutar, Si Abal-Abal village, Sipahutar district. In accordance with the Decree on the establishment of schools with No.0298/0/1982, schools have state status with the status of local government ownership. The curriculum implemented by the school is the 2013 Curriculum. SMA Negeri 1 Sipahutar has 59 teachers consisting of 21 males and 38 females, with a total of 1064 students consisting of 522 males and 542 females.

Figure 2. Public High School 1 Sipahutar
(Source: Personal Documents, 2019)

The condition of the area around SMA Negeri 1 Sipahutar which is the center of pineapple plantations. The large number of pineapple plantations makes the availability of raw materials for pineapple leaf waste abundant. At the time of harvest, the old pineapple plants must be replaced with new pineapple plants while the leaves are only thrown away as waste by pineapple farmers. Pineapple plants will be dismantled after two or three harvests to be replaced with new plants, resulting in pineapple leaf waste continuing to grow. Farmers usually just pile up pineapple leaf waste from uprooting.

Figure 3. Pineapple Garden and Pineapple Leaf Fiber
(Source: Personal Documents, 2019)

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This condition is further exacerbated by pineapple leaf waste which takes a long time in the decay process. The lack of awareness, concern and understanding of the treatment of pineapple leaf waste requires pineapple farmers to accept the consequences of problems that arise such as the emergence of pests that interfere with pineapple plantations. Viewed from another point of view, the condition of waste of pineapple leaves can actually be a considerable potential if students at SMA Negeri 1 Sipahutar are able to utilize pineapple leaf waste, in this case it can be processed into fibers that have economic value such as paintings based on ecopreneurship.

Ecopreneurship concerns three important dimensions, namely social and social, economic and ecological/environmental (Murniningtyas, 2014). Ecopreneurship education is a planned effort to create a learning atmosphere and learning process so that students have the knowledge, attitudes and skills needed to become entrepreneurs who care about the environment, develop innovations to overcome environmental problems, and exploit opportunities in the environment by paying attention to sustainability (Alhail et al, 2025).

The main goal of ecopreneurship education is to provide knowledge, attitudes and entrepreneurial skills that are friendly, caring and do not damage the environment. The subject of crafts and entrepreneurship is a new subject in the 2013 Curriculum and was developed from the entrepreneurship subject. Prakarya is developing knowledge and training life skills based on art and technology. The essence of entrepreneurship is to create added value in the market through the process of combining resources with new and different ways in order to compete (Mukhlisin, 2017). Dixon and Clifford stated that entrepreneurs in the green entrepreneur category carry out their business activities by considering three dimensions, namely economic, social, and environmental (Dixon & Clifford, 2007). The purpose of learning SMA/MA/SMK/MAK crafts is to equip students to have the ability to make handicraft products that have selling value, by understanding and comparing various work designs, identifying, and describing the process of making works, making and modifying works in the context of local wisdom in detail and with selling value (Wahidmurni, 2019).

This goal can be achieved by encouraging students to utilize existing local knowledge, skills and wisdom to develop their business, so that they can work independently in the form of small businesses (Prasetya, 2016). In the design of the program, there is an identification of problems and alternative solutions initiated as follows.

Table 1. Problem Identification and Troubleshooting Alternatives

Problem Identification	Troubleshooting Alternatives
Partners were able to explore the ability to paint using pineapple leaf fibers based on *ecopreneurship* at SMAN 1 Sipahutar in craft learning.	Through the Pineapple Leaf Fiber Painting PKM program based on *ecopreneurship education*, partners at SMAN 1 Sipahutar are able to explore the ability to paint using pineapple leaf fibers in handicraft learning through socialization and training for partners.
Equipping partners in the management of leaf waste into independent paintings at SMAN 1 Sipahutar	Through animated videos and a guidebook for making pineapple leaf fiber paintings, partners at SMAN 1 Sipahutar are able to process pineapple leaves into fiber as raw materials for painting independently and apply them to students.

Through the program in converting pineapple leaf waste into pineapple leaf fiber painting, it provides many benefits for partners at SMAN 1 Sipahutar. The benefits obtained are the achievement of craft learning competencies and being able to care about the surrounding environment and generate income from paintings made from pineapple leaf waste.

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Figure 4. Pineapple Leaf Fiber Painting Design Example
(Source: Personal Documents, 2019)

1. Preparation Stage

The implementation of PKM-M activities after the announcement of the PKM results on August 6, 2020, was followed by an online meeting on August 10, 2020. The PKM-M team together with the accompanying lecturers held a video meeting using the google meet application to discuss the draft work program to be implemented as well as the division of duties of the chairman and team members as well as submission to partners regarding the implementation of activities according to the 2020 Addendum.

Figure 5. Discussion of Work Program Plans
(Source: Personal Documents, 2019)

Discussing the draft work program of the PKM-M Team After discussing with the accompanying lecturers, the PKM-M team then informed the activity plan with partners on August 22, 2020 online using the Whatsapp application which discussed the implementation of PKM in 2020 which implemented online activities during the covid-19 pandemic with a digital basis.

2. Stage of Preparing an Activity Plan

The design of the activity was made after discussion with accompanying lecturers and partners. The PKM-M team prepared an activity plan based on the outputs that had been set. The PKM-M team online designed the concept and flow of program implementation activities which were designed starting from the opening, dubbing, content and closing of the video. The design of the implementation video concept was carried out from August 17, 2020 to September 18, 2020. Videos designed and created using several applications such as, Kinemaster, Adobe Illustrator, Photoshop and Corel Draw. The process of making an opening video contains the background and objectives of the overall PKM-M implementation activities carried out by the PKM-M Team using Kinemaster and Adobe Illustrator.

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Figure 6. The Process of Making Opening Videos with Kinemaster Software and Adobe Illustrator
(Source: Personal Documents, 2019)

The dubbing process uses the voice of one of the members of the PKM-M Team combined with the voice of a partner to voice the animated video using a sound record.

Figure 7. Dubbing Process
(Source: Personal Documents, 2019)

The process of making video content contains activities in the form of video tutorials on processing pineapple leaf fibers and making pineapple leaves using Kinemaster software, Adobe Illustrator, Photoshop and Corel Draw. The process of making a closing video contains feedback from partners in the sustainability of activities using Kinemaster software, Adobe Illustrator, Photoshop, Corel Draw and Google Meet recordings.

Figure 8. Video Content and Closing Process
(Source: Personal Documents, 2019)

The PKM-M team designed and designed the content of the guidebook for implementation activities starting from the design and content of the book using Power Point and Corel Draw software. The design and content of the book began on September 1, 2020. Part of the book contains the cover, preface, the content consists of Part 1 Tools and Materials, Part 2 Taking Fibers, Part 3 Making Sketches, Part 4 Attaching Fibers.

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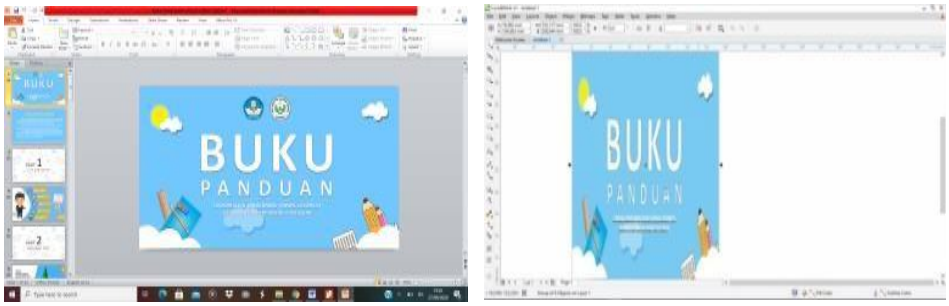

Figure 9. Guidebook Creation Process
(Source: Personal Documents, 2019)

3. Socialization and Training Stage

The PKM-M team carried out socialization activities with partners which was held on September 5, 2020 by displaying a draft guidebook and video illustrations of making pineapple leaf fiber paintings through the google meet application.

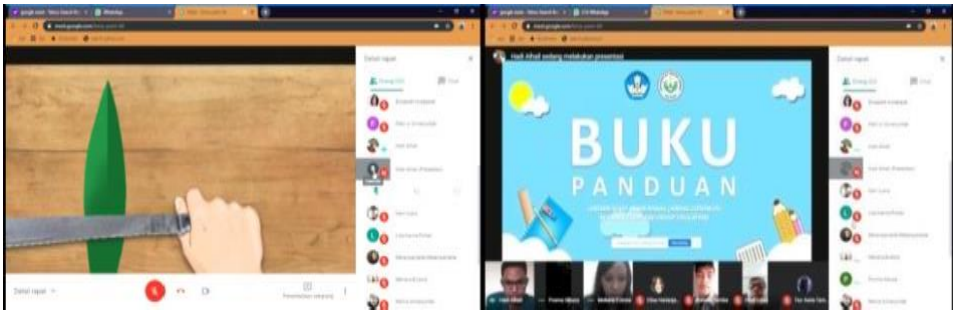

Figure 10. Implementation of Socialization through Google Meet
(Source: Personal Documents, 2019)

Socialization was carried out to partners by displaying videos and manuals for making pineapple leaf fiber paintings starting from the preparation of tools and materials, taking pineapple leaf waste, making sketches and gluing the fibers to become paintings. On this occasion, the PKM-M team and partners actively communicated regarding the step by step making paintings through books and videos given to partners.

The PKM-M team and accompanying lecturers provide training to partners in two stages. The first stage is in the form of taking pineapple leaf fiber, washing and drying on September 12, 2020 through the google meet application.

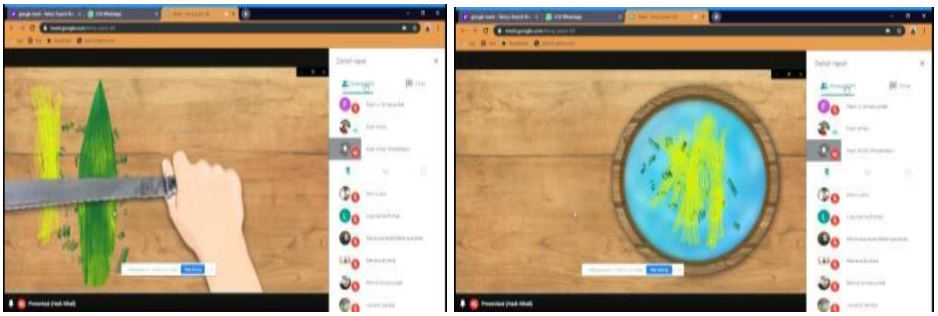

Figure 11. Pineapple Leaf Fiber Processing Process Training Activities
(Source: Personal Documents, 2019)

The second stage of the training was held on September 19, 2020, providing training on making sketches of paintings on canvas followed by the process of making paintings through google meet. The stage of making sketches using pencils drawn on the canvas and the stage of making paintings starts from the preparation of pineapple leaf fibers, glue and canvas that already contains the sketch of the painting.

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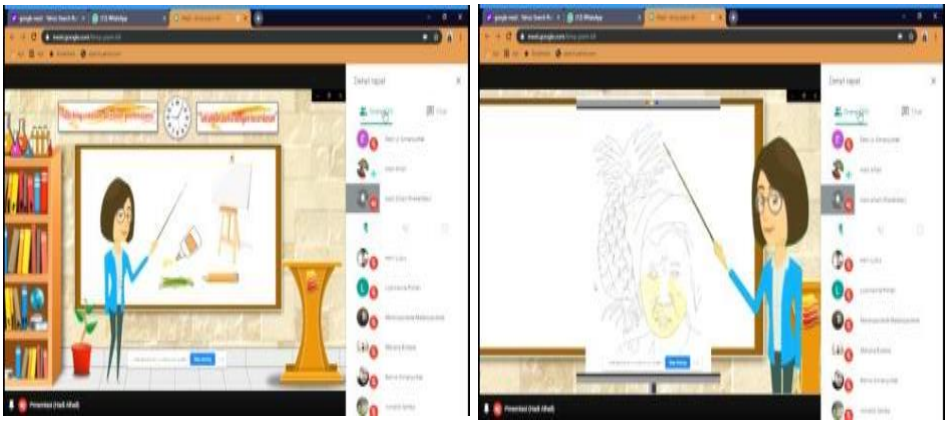

Figure 12. Pineapple Leaf Fiber Sketching and Painting Training
(Source: Personal Documents, 2019)

4. Monitoring and Evaluation Stage

The monitoring stage was carried out on September 23, 2020, Monitoring was carried out to find out the extent to which partners knew the implementation of handicraft learning carried out by partners in making pineapple leaf fiber paintings to SMAN 1 Sipahutar students. The PKM-M team saw the results of learning activities that had been carried out by partners in the form of videos on processing pineapple leaf fibers and making paintings independently by students.

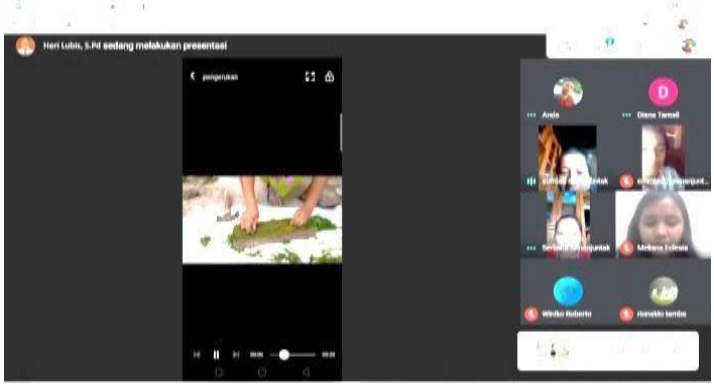

Figure 13. Monitoring Learning with Partners
(Source: Personal Documents, 2019)

The monitoring results found that students still tend to use sketches made by partners, and the process of attaching pineapple leaf fibers that are not neat. Problem solving from the monitoring results is suggested by partners to convey to students to make sketches that are in accordance with students' imagination and creativity. The attachment process can be neater if it is carried out seriously.

5. Program Sustainability Stage

The sustainability of the PKM-M Pineapple Leaf Fiber Painting team program, it is hoped that teachers and students will be able to make paintings with new innovations not only in the school of naturalism but also in the form of romanticism, surrealism and futurism, realism. PKM-M activities continued by raising the topic of learning crafts based on local content. The results of the painting in the future can become a jobseeker.

The video of the implementation of the activity was made to make it easier for partners to make paintings made from pineapple leaf fibers, starting from processing and making paintings. The program implementation video contains the initial problems of the partners, solutions from the PKM team in accordance with the learning in the 2013 curriculum, namely handicraft learning by utilizing pineapple leaf waste into paintings starting from the process of processing pineapple leaf fibers, and making pineapple leaf fiber paintings.

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Figure 14. Video of Making Pineapple Leaf Fiber Painting
(Source: Personal Documents, 2019)

The program implementation manual contains tools and materials, fiber processing and painting making.

Figure 15. Program Implementation Handbook
(Source: Personal Documents, 2019)

The overall results achieved in the activities of the PKM-M team have reached 100%, which has produced 2 mandatory outputs in the form of videos of program implementation and guidebooks. With the existence of animated videos and guidebooks, it is hoped that teachers and students will be able to make paintings with new innovations not only in the school of naturalism but also in the form of paintings in the school of romanticism, surrealism and futurism, realism. The potential for the sustainability of PKM-M activities is not only for partners but can be widely used by teachers in raising the topic of learning crafts based on local content through links to potential PKM-M outputs. In addition, publications of the implementation of the program were made by UNIMED public relations media to expand the benefits of the program.

Figure 16. Program Implementation Publication
(Source: Personal Documents, 2019)

CONCLUSION

The results of the study prove that this program can make partners gain knowledge in exploring painting using pineapple leaf fibers based on ecopreneurship at SMAN 1 Sipahutar by utilizing animated videos and guidebooks that have been given to partners. Partners have applied independently in the classroom in processing pineapple leaf fibers into paintings in learning crafts through online training so that they have the opportunity to become jobseekers. With the online training on making pineapple leaf fiber paintings through animated videos and guidebooks, in the future partners can develop local potential to achieve the goals of craft learning with the implementation of the 2013 curriculum. The program has received a positive response from teachers and school principals regarding the idea of using pineapple leaf fiber as an exploration material in painting.

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