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SOUND OF GREEN INNOVATION IN MERDEKA CURRICULUM LEARNING SCIENCE BASED ON BASIC EDUCATION OF AMBON CITY

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ABSTRACT

Maluku, an archipelagic region with numerous small islands, necessitates a focused approach to island education management with the following objectives: 1) To sustainably protect, conserve, rehabilitate, utilize, and enrich the natural resources and ecological systems of small islands; 2) To enhance the involvement of communities and governmental bodies, and to stimulate community-led initiatives in managing natural resources and small islands to achieve fairness, balance, and sustainability; 3) To generate socio-economic and cultural value through community participation in the utilization of natural resources and small islands. The curriculum for educational institutions is practically developed based on diversification. A novel science education innovation, Sound of Green (SoG), integrates the living environment as a learning tool. This research aims to: 1) determine the improvement in students' conceptual understanding through the Sound of Green approach, empowering endemic Maluku plants in villages with musical tourism appeal in Ambon city; and 2) identify differences in students' creative thinking when employing the Sound of Green approach, empowering endemic Maluku plants in villages with musical tourism appeal in Ambon city. Statistical analysis revealed a difference in critical thinking regarding the carbon absorption of the gandaria plant across different locations among junior high students in Ambon. Furthermore, local Maluku fruits can now be used to produce various popular food and beverage products. Project-Based Learning (PjBL) is highly effective in fostering students' creative thinking and innovation to develop products beneficial to the community in their daily lives. This approach encourages practical application and community engagement.

Keywords: *Sound of green, merdeka curriculum, basic education*

INTRODUCTION

21st-century learning is an educational paradigm that prepares the 21st-century generation. It encompasses three primary subjects: (1) Learning and innovation skills, which include both cognitive and practical methodologies; (2) Information, Media, and Technology, involving the tools utilized in professional endeavors; and (3) Life and career skills, encompassing the competencies required for global citizenship (Gunadi et al., 2022; Sundari, Novita, 2023). Cognitive methodologies refer to the thinking skills students must master for the 21st century, such as creative thinking, critical thinking, problem-solving, and decision-making. Practical methodologies pertain to the ability to function in a global and digital world, requiring students to communicate, cooperate, and collaborate effectively with individuals, communities, and networks. Students must also achieve proficiency in the technological tools relevant to the 21st-century workforce (Aslamiah et al., 2021; Panggabean et al., 2021).

Technology introduces novel challenges to the 21st-century learning process, including the development of technological knowledge and the integration of technology with content, pedagogy, and learning within specific contexts (Merta et al., 2023). A contributing factor to low student creativity is often a lack of conceptual understanding, where learning processes primarily cultivate convergent thinking. Consequently, students may encounter difficulties in creatively solving problems, particularly within science education (Eslit, 2023).

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A crucial aspect in this context is the educational curriculum. In accordance with the National Education System Law No. 20 of 2003, Article 36, Paragraph (1), the curriculum at all levels and types of education is developed based on the principle of diversification, tailored to the educational unit, regional potential, and students. Curriculum diversification serves as a means to enhance students' abilities in literacy, numeracy, and science through contextualized curriculum content (E2030 Position Paper (05.04.2018), n.d.). It is anticipated that a contextualized curriculum will equip students with the necessary life skills relevant to their current and future circumstances for sustainable living, enabling them to navigate future challenges (Branden, 2015).

Differentiated instruction is an approach that aims to adapt the learning process by offering diverse pathways through the differentiation of content, process, product, learning environment, and initial assessment to cater to the individual learning needs of each student (Monica Oloo & Muteheli. Florence, 2023). Differentiated instruction accommodates the diverse learning needs of students. Teachers facilitate learning according to individual student requirements, recognizing that each student possesses unique characteristics that necessitate varied approaches (Mahartika et al., 2023). When implementing differentiated instruction, teachers need to consider reasonable actions to be taken, as it does not imply providing different treatment or actions for every single student, nor does it differentiate between academically high-achieving and low-achieving students (Angilan, 2021).

The necessity of science literacy among students has prompted developed nations to prioritize its early development (Andaresta et al., 2023). The significant contribution of science literacy to scientific advancement is undeniable. Furthermore, it exerts a substantial impact on other domains, such as social, cultural, and economic sectors (Nilyani et al., 2023). Consequently, nations with a high level of science literacy tend to experience rapid development. This necessitates a curriculum with a learning approach that emphasizes full student engagement in discovering learning material and connecting it to real-life situations, thereby encouraging its application in practical contexts (“Implication And Application MBKM’s Curriculum In Education (Madrasah And Universities),” 2023). Students often lack motivation and feel disengaged in the learning process. Therefore, a contextualized independent curriculum emerges as a more relevant alternative to address students' needs (Acedillo & Saro, 2023). It is also crucial to document sources of local wisdom through written manuscripts to prevent its reliance solely on oral tradition (Nurdiana et al., 2023).

The contextualized independent curriculum is designed with the objective of ensuring that learning is more relevant to students' lives. Additionally, it aims to equip students with the skills to address real-world challenges (Pradesa, 2023), embodying the true essence of independent learning. Through this curriculum, students are expected to become more active and involved in their learning, enhancing their understanding and skills within social and cultural contexts (Pradesa, 2023). The development of a contextualized curriculum is anticipated to assist students in acquiring life skills more aligned with their current and future living conditions (Loretha, 2023). One factor contributing to the current neglect of local culture is the lack of interest among the younger generation in learning and inheriting their own culture, as well as the scarcity of documented local wisdom (Zort et al., 2023). The wealth of local wisdom in Maluku is not adequately documented in academic manuscripts or written documents, despite the vast amount of local knowledge that teachers and students can articulate.

Students, particularly those who are practitioners of endemic Maluku local natural resources, are crucial agents in the preservation and development of these resources. This is attributed to their inherent capacity, credibility, and vested interest in the local natural resources they are conserving. In support of Ambon's aspiration to be recognized as a world creative music city, the basic education community of Ambon city, acting as practitioners in the management of local natural resources, has been actively involved in developing local potential at the village level with the aim of realizing music tourism villages in Ambon city. They are preserving various forms of local wisdom, which essentially constitute indigenous knowledge in the fields of environmental conservation, livelihoods, culinary traditions, arts, and diverse social customs within the villages. The role of these local natural resource practitioners, who have a mandate to preserve local knowledge, can determine the progress or decline of music tourism villages in Ambon city. They are motivated to cultivate the unique characteristics of local natural resources at the village level and reproduce them for the benefit of advancing Ambon's music

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tourism villages. Furthermore, they actively compete to conserve various local natural resources and even strive to revitalize local cultural traditions that have been impacted by the forces of modernization and globalization. It is hoped that there will be an enhancement in students' mental well-being, aligned with their individual talents, fostering their creativity and encompassing a range of high-level intellectual learning experiences (Thornhill-Miller et al., 2023).

The Sound of Green innovation supports the archipelago-based independent curriculum. In practice, the curriculum of educational units is developed with the principle of diversification, featuring a novel innovation in science education known as Sound of Green (SoG), which incorporates the living environment as a learning resource. The Sound of Green approach is a form of conservation action, implementing agroforestry patterns and developing local culinary arts. It is an approach directed towards environmental preservation. Furthermore, this approach elevates the economic value of utilizing local Maluku plants, the utilization of plant waste, learning through nature and music schools, the calculation of the carbon footprint of local plant forests, the formation of farmer groups, the creation of culinary creative communities through educational units, and the development of Ambon as a music tourism region (Arts, 2022).

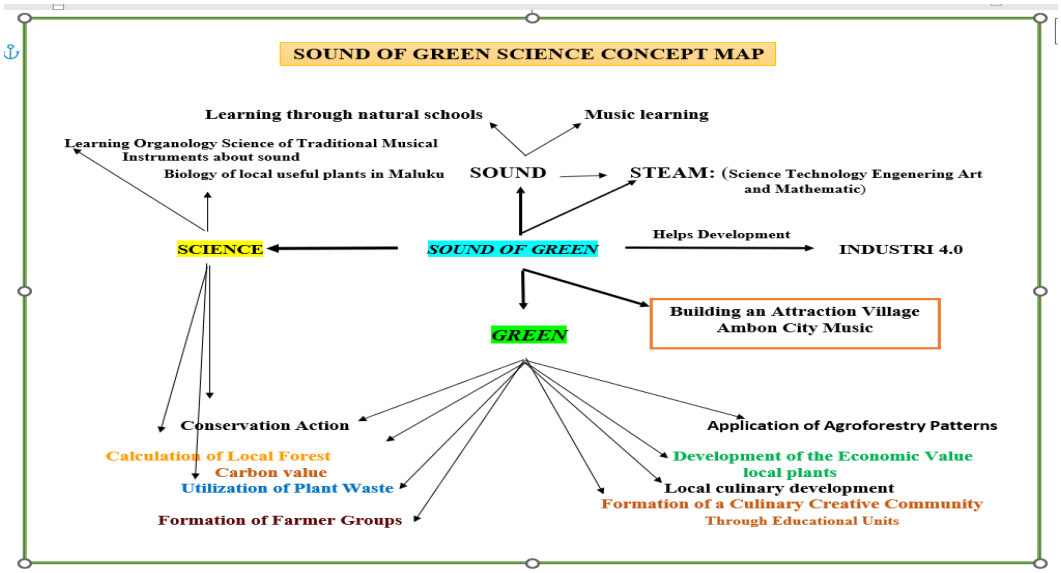

Figure 1. Sound Of Green Science Concept Map

Maluku is an archipelago with small islands in the Islands Education that needs to be progressed with the purpose:

1. Protecting, considering, rehabilitating, utilizing and enriching natural resources on small islands and an ecological system on a sustainability.
2. Strengthening roles and communities and government agencies, and promoting community initiatives in the management of natural resources and small islands to avail justice, balance and clearness.
3. Creating social, economic, and cultural values through roles and communities in utilizing natural resources and small islands.

Sound of Green represents an application of the Science Technology Society approach in student learning, which holds the potential to effectively address this crucial educational objective. This is because the Sound of Green approach demonstrates a significant connection to problem-solving skills, which are fundamentally oriented towards the development of attitudes (Sutaryono & Prasetyaningtyas, 2020). This research aims to: 1) ascertain the enhancement in students' conceptual understanding through the implementation of the Sound of Green approach, which empowers endemic Maluku plants in the music tourism villages of Ambon city; and 2) identify the differences in students' creative thinking when utilizing the Sound of Green approach, which empowers endemic Maluku plants in the music tourism villages of Ambon city.

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RESEARCH METHODS

This research is a survey and expansion of the 4-D development model from Thiagarajan (Billingsley et al., 2017) consisting of 4 stages: define, design, develop, and disseminate and produce learning-based learning devices. This research is also a Mixed Method (qualitative and quantitative) research, to analyze the influence of e-Learning collaborative learning strategies with ethnosive approaches to mental models, student creative thinking skills. This research is also a Mixed Method (qualitative and quantitative) research, to analyze the influence of e-Learning collaborative learning strategies with ethnosive approaches to mental models, student creative thinking skills.

This research uses embedded experimental design model from Cresswell (Billingsley et al., 2017). This development research was conducted within basic education settings at pilot project schools implementing a mandatory local content curriculum focused on music education in the music tourism villages of Ambon city. The study took place during the second semester of the 2022/2023 academic year at SMPN 2, SMPN 6, SMPN 11, and SMPN 15 Ambon. The primary focus of this research was to analyze students' conceptual understanding and the differences in their creative thinking abilities.

Qualitative data were analyzed descriptively in this study, while quantitative data were subjected to analysis of covariance (ANCOVA) using SPSS 25. Prior to conducting the ANCOVA, prerequisite tests for normality and homogeneity were performed, which indicated a normal distribution of the data. The results of these preliminary tests confirmed that the data met the assumptions of normality and homogeneity.

RESULTS AND DISCUSSION

The application of Sound of Green on the Basic Education Units at Pilot School Project Implementation of local mutant curriculum is required to be in the village of the attractiveness of Ambon City Music Tourism successfully implemented in this study there are 3 programs, among others:

1. Calculation of local forest carbon value especially in endemic plants.
2. The formation of culinary creative groups in the unit of educational.
3. Utilization of plant waste.

Basic Education at Pilot School Project Implementation of local headquarters of mandatory music education in the village of attractive city of Ambon City tourist. These programs we describe as follows:

1. Calculation of Local Forest Carbon Value Especially in Endemic Plants

a. Mastery of the Concept of Learners

Data regarding concept understanding, collected before and after instruction, were analyzed by reviewing and qualifying student scores against the Minimum Completeness Criteria (KKM). The average concept mastery scores revealed that student achievement remained relatively low, falling below the KKM threshold of 75 in SMP Negeri 11 and SMP Negeri 15, both registering an average of 72. This suggests that the schools' efforts in fostering concept mastery have not yet reached their optimal level. Several factors may contribute to this observation. Firstly, students' individual readiness to engage with lessons, complete assignments, and articulate their understanding varies, which is a direct consequence of their learning responsibility. Lower learning readiness logically correlates with diminished learning responsibility, consequently impacting overall learning outcomes (Batlolona & Mahapoonyanont, 2019).

Secondly, variations in learning motivation among students play a significant role. According to Filgona et al. (2020), intrinsic motivation is a critical determinant of students' learning success within the educational process. High learning motivation is a key indicator of instructional quality, as students who are highly motivated are more likely to be driven to actively pursue learning activities that lead to specific results or goals (Mantiri, 2020).

Thirdly, the diverse characteristics and learning styles inherent in each student significantly influence their ability to grasp new concepts. Ethnic, cultural, and socio-economic backgrounds,

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as well as individual learning preferences, all contribute to the variability in students' conceptual understanding (Mantiri, 2020).

Instruction employing contextual student worksheets (LKPD) not only emphasizes the acquisition of science concepts but also focuses on the learning process itself, which can significantly impact students' mastery of these concepts (Riong, 2022). The development of learning concepts through contextual LKPD represents a pedagogical model that provides authentic learning experiences, thereby encouraging active student engagement and the structured construction of knowledge. One key outcome of this approach is the development of cognitive abilities (Riong, 2022), specifically, in this research, the mastery of the carbon absorption concept. Concept mastery is a crucial foundation for students in mastering scientific knowledge, enabling them to effectively solve problems and generate solutions (Ridho et al., 2023). With a solid grasp of fundamental concepts, students are better equipped to address a wide range of scientific challenges, both those encountered in everyday life and broader scientific inquiries (Silva, 2022).

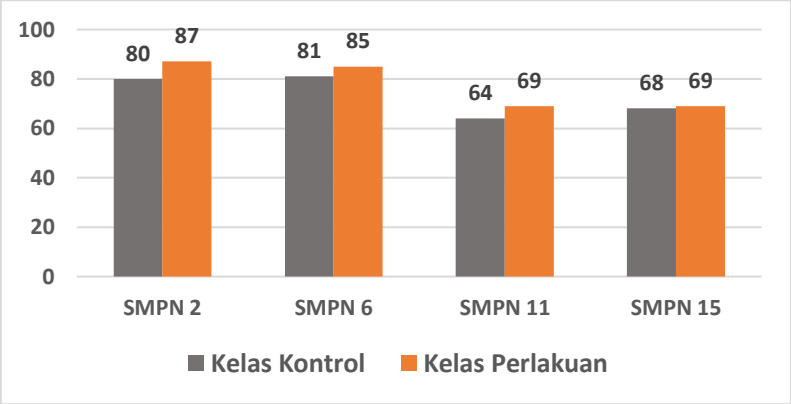

Figure 2. Results of critical thinking analysis

The findings of this research underscore the necessity for educators to critically evaluate and refine their existing teaching methodologies. Recognizing the pivotal role of a robust learning system in fostering students' cognitive abilities, it is imperative to implement pedagogical approaches that actively engage students throughout the learning process (Solovyeva et al., 2023). This can be effectively achieved through the implementation of well-designed learning systems that prioritize active student participation and cultivate a strong awareness of critical thinking (Heard et al., 2020).

Equipping students with critical thinking skills is essential for effective problem-solving. Facione's (2011) research posits that critical thinking is grounded in the continuous updating of knowledge, involving the analysis of differences and comparisons (identifying similarities and distinctions), the observation and identification of causal relationships, the extraction of core ideas, and rigorous evaluation. The ultimate aim of science education is to empower individuals to make sound judgments regarding the validity of scientific and other forms of knowledge. Furthermore, science learning is anticipated to serve as a valuable tool for students in exploring and understanding both their surrounding natural world and their own selves (Leasa et al., 2023).

Statistical analysis revealed varying mean critical thinking scores among students from different schools. Specifically, students at SMP Negeri 2, who utilized contextual student worksheets (LKPD), achieved an average critical thinking score of 80.00. SMP Negeri 6 recorded a mean of 77.06, SMP Negeri 11 had an average of 63.46, and SMP Negeri 15 presented an average of 72.60. As illustrated in Table 32, these average critical thinking skill scores indicate a considerable variation in the comprehension of the carbon absorption concept across the sampled schools.

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Table 1. The Mean Value of Critical Thinking

School	Mean	N	St. Dev
SMPN 2	80.800	15	7.379
SMPN 6	77.067	15	13.724
SMPN 11	63.467	15	11.064
SMPN 15	72.600	15	8.433
Mean	73.483	60	12.088

The results of the ANCOVA test revealed a statistically significant difference in students' critical thinking abilities regarding carbon absorption between the treatment groups, even after controlling for the covariate ($F = 5.349$, $p = 0.003$, where $p < 0.05$). This signifies that the intervention had a substantial impact on critical thinking skills, independent of the influence of conventional teaching methods used as a control variable. These findings indicate that the implementation of contextual student worksheets (LKPD) contributed to the observed differences in students' critical thinking concerning the understanding of carbon absorption concepts.

The conventional teaching method employed as a covariate in this study was the Student Teams–Achievement Divisions (STAD), a well-established cooperative learning approach commonly utilized by teachers. STAD emphasizes student interaction to foster mutual motivation and support in mastering learning materials, aiming for optimal individual achievement within a collaborative group setting. In this framework, students may feel more comfortable seeking clarification from their peers regarding challenging concepts (Setiyaningsih & Sujarwo, 2023). Statistical analysis demonstrated that the use of conventional instruction in the control group did influence the variance in critical thinking abilities related to the carbon absorption concept of the gandaria plant (*B. macrophylla*). This suggests that while employing conventional methods like the STAD cooperative learning model, teachers should consider the outcomes of group work. However, it is crucial for educators to recognize that the ultimate goal is the academic success of each individual student. Furthermore, the successful development of group cohesion and awareness through conventional or cooperative learning models like STAD necessitates a sustained and consistent application over an extended period, rather than isolated instances (Yasin et al., 2020).

Table 2. Anacova Test Table at Critical Thinking Values

Source	Type III sum of squares	df	Mean square	F	Sig.
Corrected model	3761.519[a]	4	940.380	10.643	0.000
Intercept	317.475	1	317.475	3.593	0.063
Controll	1249.202	1	1249.202	14.139	0.000
School	1417.754	3	472.585	5.349	0.003
Error	4859.465	55	88.354		
Total	332609.000	60			
Corrected total	8620.983	59			

Students' critical thinking in responding to the issue of carbon absorption demonstrates a satisfactory level of skill. However, given the novelty of this topic for the students, the necessity of effective teamwork skills is paramount. Social competencies required for successful teamwork, alongside considerations regarding group size management, fundamental social skills, and students' academic standing, are important factors to consider (Mendo-Lázaro et al., 2018). To further enhance students' critical thinking abilities in comprehending the discussed issues, it is crucial to cultivate their capacity to analyze questions, subsequently select and develop appropriate solutions, and design projects that nurture their ability to evaluate outcomes and effectively apply feedback (Febliza et al., 2023). Employing such a pedagogical framework ensures that the students' learning process not only involves assimilation (the absorption of knowledge) but is also effectively integrated with accommodation (the active construction of knowledge) (Faizah et al., 2022).

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Table 3. LSD's Advanced Test on Critical Thinking Values

School (I)	School (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
SMPN 2	SMPN 6	-5.27	4.086	.217	-13.98	3.44
	SMPN 11	10.07*	4.086	.026	1.36	18.78
	SMPN 15	11.60*	4.086	.012	2.89	20.31
SMPN 6	SMPN 2	5.27	4.086	.217	-3.44	13.98
	SMPN 11	15.33*	4.086	.002	6.62	24.04
	SMPN 15	16.87*	4.086	.001	8.16	25.58
SMPN 11	SMPN 2	-10.07*	4.086	.026	-18.78	-1.36
	SMPN 6	-15.33*	4.086	.002	-24.04	-6.62
	SMPN 15	1.53	4.086	.713	-7.18	10.24
SMPN 15	SMPN 2	-11.60*	4.086	.012	-20.31	-2.89
	SMPN 6	-16.87*	4.086	.001	-25.58	-8.16
	SMPN 11	-1.53	4.086	.713	-10.24	7.18

Based on observed means.
The error term is Mean Square(Error) = 125.211.
*. The mean difference is significant at the ,05 level.

Based on the results of the post-hoc LSD test presented in Table 34, it can be observed that significant differences exist in critical thinking abilities among the students from the four schools included in the sample. These variations in critical thinking proficiency are considered by the researchers to be influenced by a multitude of factors. These factors encompass motivation, intelligence, the prevailing learning climate, the pedagogical models employed, the integration of technology with instructional strategies, the specific teaching approaches implemented, students' inherent capacity to comprehend problems, and their ability to engage in idea exchange and collaborative work within learning groups (Nold, 2017). Notably, the primary factor influencing critical thinking ability is motivation. Motivation can stem from intrinsic sources within the students themselves or from extrinsic sources in their environment (Sa' et al., 2022). The implementation of relevant activities fosters greater student interest and active participation in the learning process, thereby facilitating the development of their critical thinking skills. This observation is consistent with the findings of prior research, which has established a clear relationship between motivation and students' critical thinking abilities (Wahyuni et al., 2021).

2. The Formation of Culinary Creative Groups in the Educational Unit

Students, as practitioners of local natural resources, are crucial agents in the preservation and development of these resources. This is because they possess the capacity, credibility, and a vested interest in the local natural resources they are preserving. In support of Ambon as a global creative music city, students in Ambon, who are practitioners in the management of local natural resources, have been actively involved in cultivating local potential at the level of educational units with the aim of realizing music tourism villages within Ambon City. They preserve a variety of local wisdom, which essentially constitutes indigenous knowledge in the fields of environmental conservation, livelihoods, culinary arts, artistic expressions, and diverse social customs within their villages. Tourists come to appreciate and understand this rich tapestry of local wisdom. The role of these student practitioners of local natural resources, who have a mandate to preserve local knowledge, can determine the progress or decline of villages with music tourism appeal in Ambon city. Students are motivated to develop the uniqueness of local natural resources at the village level and reproduce them to advance the music tourism villages in Ambon city. Furthermore, these students actively compete to conserve various local natural resources and even attempt to revitalize local culture that has been eroded by the currents of modernization.

One of the important purposes of learning through the formation of culinary creative groups in the units of education are the birth of individuals who are always responsive to the development of science and technology and sensitive to social issues that arise as a result of

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these developments, emphasizing that critical thinking education enhances problem-solving skills. Students will be more prompted to construct knowledge and skills in researching facts from a phenomenon or incident (Gholam, 2019). The formation of culinary creative groups in educational units in learning can certainly accommodate this important purpose, as it has a very important relationship with the problem-solving skills of the student participants (Redhana, 2019).

Creative economy practitioners at the educational unit level express the hope that governmental support will extend beyond merely facilitating the development of cultural infrastructure, such as providing residents with traditional musical instruments, art centers, and cultural studios. They also seek support for initiatives aimed at strengthening the creative economy. Furthermore, these practitioners recognize the crucial role of government and stakeholder support in developing music tourism villages grounded in local fruit-based food, utilizing community-based science and technology. This approach would empower them to independently manage the Gandaria plant (*B. macrophylla)* as a local food source, ensuring its conservation and utilization for enhanced community well-being. The realization of local fruit food development hinges on the students within Ambon's music tourism villages comprehending and wholeheartedly implementing the principles of community empowerment. Consequently, driven by the principles of community-based science and technology, lecturers from the Biology Education Study Program at FKIP Unpatti are motivated to actively promote the empowerment of the Gandaria plant as a local food resource. This endeavor serves as a form of extending the Sound of Green initiative to music tourism villages possessing this inherent potential. This research subsequently directs its focus on establishing collaborative partnerships with the community and actively guiding the participatory process of formulating music tourism village programs within Ambon City. Ultimately, this research aims to develop the capacity of students in Ambon's music tourism villages to formulate their own village tourism programs as a Community Action Plan (CAP).

3. Utilization of Plant Waste

The utilization of plant waste in education involves employing all available resources in the students' immediate surroundings, including discarded materials. The management of plant waste is taught to students through the implementation of suitable pedagogical models, notably Project-Based Learning (PjBL). PjBL is a student-centered approach that fosters learner autonomy as they construct meaningful artifacts through their learning journey. This autonomy, in turn, enhances student engagement and motivates them to take ownership of their educational progress. Within PjBL, the teacher's role is to inspire students and cultivate a supportive classroom environment conducive to learning. Specifically, teachers act as facilitators, guiding students in developing problem-solving projects, actively pursuing discovery, formulating potential solutions, and implementing these solutions to meet defined specifications and criteria, thereby constructing new knowledge autonomously. PjBL is recognized for its potential in promoting high-order thinking skills, such as problem-solving, critical thinking, and creative thinking. This model empowers students to direct their learning and devise unique, personalized solutions for specific project challenges (Rati et al., 2017). Learners need to be trained in advanced thinking processes to address local issues, including waste management, thereby fostering early awareness and a sense of responsibility as engaged citizens (Mendo-Lázaro et al., 2018).

One practical activity in waste management is recycling, an action geared towards promoting environmental sustainability through efficient resource use and the reduction and reuse of waste. In the context of reuse, reduce, and recycle, waste management can involve students creating new items from discarded materials, waste, or used clothing. This process, often termed creative remake or upcycling, is a concept widely regarded as a means to encourage sustainable practices, leading to the creation of economically valuable creative craft and art products (Junaidi & Utama, 2023).

An initiative is required to facilitate teachers' pedagogical skill development (Mardhatillah & Surjanti, 2023). This involves developing learning resources based on high-order thinking skills through the implementation of Project-Based Learning (PjBL) for teachers, particularly within Teacher Working Groups (KKG) in villages with music tourism attractions. Addressing the substantial waste issue in Ambon, the learning approach can be structured using PjBL to

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transform plant waste into creative economic products. Teachers in KKG encounter challenges regarding knowledge, skills, and best practices in the design, implementation, and evaluation of PjBL for fostering students' high-order thinking. Consequently, this research activity is deemed effective and holds potential to address and anticipate local environmental issues. It is anticipated that this initiative will enhance junior high school teachers' knowledge and skills in designing learning materials, media, and instruments, alongside improving their instructional practices to effectively empower students' superior high-order thinking abilities.

Based on observations, several key issues were identified in most junior high schools within Ambon's music tourism villages regarding the learning process. These include: 1) Teachers' limited capacity to design learning that effectively empowers students' high-order thinking skills; 2) Teachers' constraints in designing and implementing learning using the Project-Based Learning (PjBL) model; 3) Teachers' limitations in developing evaluation instruments that accurately measure high-order thinking skills; 4) The presence of neglected waste within the community and environment, despite its economic potential; 5) Teachers' difficulty in identifying appropriate best practices to optimize high-order thinking skills instruction for both students and the school level; and 6) Insufficient training for students in developing their high-order thinking skills. Furthermore, challenges related to learning outcomes include students' cognitive achievements remaining predominantly at lower levels, and their skill-based learning aspects being underdeveloped.

Based on the identified problems, the following solutions were conceived and implemented: 1) Training teachers in high-level thinking and in developing daily learning techniques that foster high-level thinking skills; 2) Training teachers in best practices regarding the design, implementation, and evaluation of learning using Project-Based Learning (PjBL); 3) Training teachers to develop creative economic products by utilizing various waste materials within the school environment; 4) Training teachers and students to process waste into diverse creative economic products for practical application; 5) Training teachers to develop learning evaluations, including test specifications, test instruments, rubrics, and answer guidelines oriented towards the development of high-level thinking skills; and 6) Training teachers to conduct actual teaching using the PjBL learning model with students; and 7) Training students to enhance high-level thinking skills in learning through PjBL.

Observation of the research results regarding the application of learning practices with PjBL in each school focused on a single class, although all participating teachers also engaged in learning practice. During the observation, a master teacher modeled a lesson in one class, which was observed by the research team and peers. The PjBL approach was implemented following a scenario prepared by the teacher in prior learning materials. The average achievement rate of learning implementation using PjBL, based on the observation results, was 94.07%, as detailed in Table 4 below.

Table 4. The Results of the Observation of Learning Implementation with PjBL

No	Teacher's activities	Persentation (%)
1	Performs apperception by reminding some of the actual problems related to the learning topic	90
2	Stimulate students to recognize the problem	90
3	Stimulate students in identifying alternative solutions and choose an alternative as the best solution (HOTS)	92.5
4	Forming an effective working group, containing 4-5 heterogeneous students	95
5	Conformity of learning flow according to PJBL syntax	95
6	Applying learning educating by using garbage in producing economical products	100
7	Skills in creativity on managing waste	92.5
8	Skills in carrying out differentiated learning	95
9	Skills in organizing learning resources and / or teaching materials	90
10	Encourage students' high-level thinking skills in learning activities through PJBL	97.5
11	Skills encourages students to implement garbage utilization projects	100

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12	Motivate students thinking and work to produce products that value economically in learning	97.5
13	Skills Implementing the PJBL model	90
14	The ability to create a fun learning atmosphere	92.5
15	The ability to encourage students to produce products from original and innovative waste	90
16	Implementing the assessment of learning, assessment of learning, assessment of learning) and utilization of the results	87.5
17	The ability to provide reinforcement and punishment strengthening	100
18	Skills in time management	97.5
19	Skills in closing the learning session	95
	Mean	94.07

Table 3 show informs that there are 3 items of teachers activities that can be done perfectly: 1) Learning educating by using waste in producing economical products, 2) Skills encouraging learners to implement the waste utilization project, and 3) the ability to provide reinforcement and punishment strengthening. In addition, it is found that learning with PjBL is able to encourage students to think high levels in changing garbage in its environment into a useful product for the wider community. That is, learning with PjBL is very helpful in developing student creativity thinking and innovating creating products that can be utilized by the community in everyday life (Zainuddin et al., 2023).

CONCLUSION

1. The application of the sound of innovation of the green and its implementation in the Merdeka curriculum learning IPA increased the understanding of the concept of the students of the Ambon City's Basic Education.
2. Based on the results of statistical analysis found there was a difference in critical thinking crisket material of garandar plant carrier in different places on the students of junior high school (SMP) in Ambon city.
3. The local type of food fruit is only used as a proposal, can now be taken into the type of food and drinks liked by many people.
4. Learning with PjBL is very helpful in developing student creativity thinking and innovating creating products that can be utilized by the community in everyday life.

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