

The effectiveness of the ecopreneurship model in increasing environmental awareness among college students

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Abstract

This research aims to determine the effectiveness of the ecopreneurship model in increasing environmental awareness among midwifery students. The research method was quasi-experimental, with a control group design using midwifery students as research subjects. The research stages include applying the ecopreneurship model in the learning process in the lecture hall, as well as measuring the level of knowledge before and after. A valid and reliable survey instrument was used to collect data regarding student perceptions and attitudes towards the environment. The data analysis results show that applying the ecopreneurship model significantly increases environmental knowledge and awareness among midwifery students. Previously, students tended to have a limited understanding of environmental issues and their relevance in the context of entrepreneurship education. However, after learning about the ecopreneurship model, there was a real increase in students' understanding, attitudes, and involvement towards environmental issues.

Keywords

Ecopreneurship model, entrepreneurship, environment, environmental awareness

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Introduction

The COVID-19 pandemic has become a time that makes us reflect because this disaster shows that the Indonesian people do not always care about the environment. Even though Indonesia has much potential in terms of population and is projected to enter a golden age in 2045 (Wisnumurti et al., 2018), in reality, the COVID-19 pandemic shows that there are still many things that need to be improved in the behavior of some Indonesians, who often do not comply with the standard health protocols set by the world. This fact confirms that it is not enough to have a large population, but it is also important to pay attention to its quality (Schultz & Schultz, 1982).

Ironically, Indonesia still must face three urgent tasks regarding the results of the Global Competitiveness Index. First, there are problems in basic education with the "Technology Readiness" indicator, which has implications for the low literacy level of the Indonesian population (Hertina et al., 2021). Second, an inability to absorb labor impacts the imbalance between the number of entrepreneurs and the population ratio in Indonesia (Habibi & Juliawan, 2018). Third, the poor health system indicates the Indonesian people's lack of awareness of protecting the environment (van de Haterd et al., 2021). These three problems are priorities that must be addressed amidst the COVID-19 pandemic, which continues to this day.

According to Christina et al.(2024), ecopreneurship is considered a solution that can overcome the three main problems faced by the Indonesian nation in an era of disruption, especially in the context of growing millennial demographics. Conceptually, ecopreneurship is closely related to the concept of entrepreneurship, as well as the concept of eco-literacy (AFidah et al., 2021). Entrepreneurship refers to an ability to optimize ideas, thoughts, and efforts to create innovations based on perseverance, independence, creativity, etc (Okpara, 2007).

Ecopreneurship highlights the importance of environmental aspects in entrepreneurship. This involves the use of business strategies and practices that aim to create a positive impact on the natural environment, whether through sustainable use of resources, reduction of waste, or development of environmentally friendly products (Buzohera & Mwakipesile, 2024). Ecoliteracy, on the other hand, refers to an individual's understanding and awareness of environmental issues and the ability to take sustainable action in business and everyday life.

Environmental factors can be an important catalyst for the success of sustainable entrepreneurial initiatives because environmental awareness influences society to seek solutions to meet the demands of individuals and companies, prevent environmental degradation, and improve the environment (Diale et al., 2021).

Therefore, environmental awareness can set a precedent for entrepreneurial intentions in sustainable business. Environmental problems are not easy to handle because they involve several fields of science. By this argument, people who are environmentally conscious and whose actions aim to improve the environment recognize the need to achieve a high level of self-improvement and training (Luong et al., 2021). As analyzed in the literature, many individuals show great concern for the environment. However, they recognize that this

awareness does not always translate into changes in behavior if they do not have the proper training to encourage action (Thiermann & Sheate, 2022).

Suppose people feel they can influence their actions towards the environment because their knowledge can solve environmental problems that are getting bigger with the depletion of natural resources (Awan, 2013). In that case, the impact of the observed behavior change will be greater. In the Indonesian context, ecopreneurship has excellent potential to answer the challenges faced by this country. First, ecopreneurship practices can produce innovative solutions that focus on developing environmentally sustainable products and services (Masjud, 2020). Second, ecopreneurship can provide opportunities for the millennial generation to play an active role in advancing an environmentally based economy (ismail et al., 2024) so that it can absorb an increasing workforce. Third, ecopreneurship can also increase Indonesian people's awareness of preserving the environment through a sustainable business approach (Mananda & Sudiarta, 2024).

In the current era of disruption, ecopreneurship has become a relevant and effective strategy in facing the challenges the Indonesian nation faces. In building a sustainable economy, ecopreneurship provides an opportunity to integrate economic, social, and environmental aspects to achieve inclusive and sustainable development (Awa et al., 2024). In this case, the ecopreneurship approach can be a basis for encouraging quality economic growth, protecting the environment, and improving the welfare of Indonesian society (Gunawan et al., 2021). Ecoliteracy plays an important role in encouraging the achievement of the above goals.

Entrepreneurial ability is an important indicator in facing unexpected conditions, such as disasters, which cause many residents to lose their jobs as employees due to the impact of the COVID-19 pandemic. In this context, it is important to train and teach entrepreneurial skills from an early age, primarily through mothers, so that the entrepreneurial mentality can grow and develop into adulthood (Dagher & Linares, 2022; Schoon & Duckworth, 2012). Moreover, disasters are also closely related to human awareness of treating nature naturally because the impact of disasters is primarily caused by human behavior that is not proportional to the ecological system. Therefore, every individual must have an eco-literacy attitude that can be developed by instilling eco-literacy values early on.

Terminologically, ecopreneurship is a form of combining the concepts of eco-literacy and entrepreneurship. Ecopreneurship refers to business practices that integrate environmental aspects with entrepreneurial principles. By adopting an ecopreneurship approach, individuals can develop environmentally sustainable businesses, considering the positive impact on nature and society (Gunawan et al., 2021). The importance of the ecopreneurship approach in dealing with disasters and other challenges also shows the need for eco-literacy education to be instilled from an early age. Through eco-literacy education, individuals will better understand environmental issues, appreciate biodiversity, practice wise use of resources, and adopt environmentally responsible actions. Thus, eco-literacy education plays an important role in forming environmentally friendly human attitudes and behavior early, influencing the development of entrepreneurial skills and understanding of ecopreneurship in adulthood (Amalia, 2024). To support learning outcomes, it is important to use innovative media (van Alten et al., 2020). Ecopreneurship is considered a solution that can

accommodate the three main problems the Indonesian nation faces in an era of disruption amidst the growing demographic conditions of millennialism.

Audio-visual media has proven to be efficient in helping improve learning outcomes (Nisa, 2023). Social audio media can increase student learning interest because this media is more interesting and interactive and can attract attention. This media also supports using videos, images, and animations, which help students understand the material more easily (Rosdiana & Ulya, 2021). Besides using this media, it stimulates students to be more creative in making presentations or learning videos (Widahyu, 2021). Teachers are helped to explain material more effectively and efficiently. The impact is that student learning outcomes improve (Kyriakides et al., 2013).

Nunggalina et al. (2018) combined the quantum teaching model with audio-visual media and found a significant influence on interest and learning outcomes. The same results were also obtained (Solung & Paat, 2021), which show a significant influence between using the Think Pair Share (TPS) model assisted by audio-visual media and student learning outcomes regarding environmental pollution. Likewise, studies (Hamsyah & Sulaiman, 2022) found a significant influence between using the explicit instruction learning model assisted by audio-visual media and learning outcomes. However, unfortunately, the studies mentioned above have not integrated eco-literacy learning to support students in understanding environmental issues as early as possible. Therefore, this research aims to determine the ecopreneurship model's effectiveness in increasing students' environmental awareness.

Literature Review

Concept of entrepreneurship

Entrepreneurship is one sector that the government is very concerned about encouraging throughout Indonesian society, including in higher education (Amalia & Von Korflesch, 2021). This cannot be separated from the number of unemployed or young job seekers, which is constantly increasing (Achdut & Refaeli, 2020; Solaz et al., 2020). Entrepreneurship education is seen as necessary to shape and support their job skills. Entrepreneurship course curricula have been developed in various state and private universities in Indonesia. The Minister of Research, Technology, and Higher Education stated that Universities nowadays should have a big responsibility to produce young entrepreneurs, because the nation's economic development will not immediately increase and progress without the significant role of entrepreneurship.

The application of entrepreneurial learning can be carried out in several ways, including integration with local courses or relevant courses using various learning methods that can build an entrepreneurial spirit (Higgins et al., 2013). University curricula focused on entrepreneurship should be adapted to introduce cross-disciplinary training, such as the importance of environmental management and sustainability in business (Kazakeviciute et al., 2016). Therefore, the aim is to provide evidence about the influence of environmental awareness variables on students' entrepreneurial intentions to take the right approach to entrepreneurship training in higher education institutions (Barba-Sánchez et al., 2022).

Environmental awareness

The rapid increase in world population and technology has created a serious problem in the environmental conditions of the earth as the only place of life (Singh & Singh, 2016). Environmental sustainability is considered one of the most significant challenges that requires immediate attention and reaction today. An environmentally friendly system must maintain a secure resource base and invest in alternative assets while preventing the overexploitation of renewable and non-renewable resources and maintaining the stability of ecosystems and the air environment. This is in line with the UN Conference on Environment and Development, UNESCO (1992), which highlighted the need for development and its integration into environmental education. Education is critical to promote sustainable development and can increase the number of people in the world who care about environmental and development issues (Chankseliani & McCowan, 2021; Žalėnienė & Pereira, 2021).

Concerns about current environmental conditions belong to the world community, including students at school and college levels. A balance must be achieved between the population and the total resources required to maintain habitat integrity and species diversity. Environmental awareness influences the search for opportunities in environmentally friendly business. The idea of "green-oriented" businesses emerged from people with a proactive attitude towards environmental entrepreneurship who connected with pressure groups concerned with ecology and sustainability (Vegirawati, 2024).

Model ecopreneurship

The ecopreneurship model is the integration of environmental education into the entrepreneurship education curriculum (Masjud, 2020). The environmental and social impact ensures the success and sustainability of this initiative, forming a generation of innovative and environmentally conscious ecopreneurs. Therefore, environmental education is very relevant to current needs. Consequently, environmental concerns add relevance to the curriculum (Cotton, 2006). This is also supported by the triple bottom line concept, which was popularized by John Elkington, who stated that when running a business, you must pay attention to the 3 Ps, namely profit (economic), people (social), and planet (environmental) (Birkel & Müller, 2021). Developing an ecopreneurship attitude is part of training life skills (Gunawan et al., 2021).

Audio-visual media

Audio-visual media technology can be applied in learning at all levels and disciplines to convey knowledge to the teaching environment effectively and creatively (Tawil & Dahlan, 2021). Audio-visual media technology supports the delivery of information between the sender of the information message and the recipient, thereby depicting the objective reality that contributes to the learning process through representation (Labinska et al., 2020). In recent years, audio-visual media technology has grown rapidly in the educational process, which can be the basis for forming (new) theories in education and the field (Bagila et al., 2019).

Methodology

This research aims to determine the effectiveness of the ecopreneurship model in increasing environmental awareness among midwifery students. The research method was quantitative with quasi-experimental, with a control group design using midwifery students as research subjects. Quasi-experiments are prospective or retrospective studies in which patients or groups of patients self-select into (or health care providers select on their behalf) one of several different treatment groups to compare the real-world effectiveness and safety of those non-randomized treatments (Maciejewski, 2020). This research was conducted at the Midwifery Study Program, Kurnia Jaya Persada Institute of Health and Business. As the most popular in quasi-experiments approach, the experimental and control groups are not randomly selected. The experimental group had 102 students, and the control group had 102 students. The research stages include applying the ecopreneurship model in the learning process in the lecture hall, as well as measuring the level of knowledge before and after.

Table 1. *Quasi-experimental*

Groups	Pre-tests	Treatment	Post-tests
Experiment	O1	X	O2
Control	O3	-	O4

Based on Table 1, it can be seen that O1 is the pre-test result of the experimental class, O2 is the post-test result of the experimental class, O3 is the pre-test result of the control class, O4 is the result of the control class post-test, and X is the treatment, where the experimental class was treated with the Think Pair Share (TPS) learning model assisted by audio-visual media (Wuryandani, 2021), while the control class was treated using the lecture method. The instrument in this research is multiple-choice questions consisting of pre-test and post-test questions (Doyle & Buckley, 2022).

The pre-test is a test to measure students' initial understanding before treatment. At the same time, the post-test is a final test that aims to determine students' final understanding after being given treatment. Testing of question items is carried out using validity and reliability tests (Lechien et al., 2022). Validity testing in this research uses the Pearson product-moment correlation coefficient calculation, and reliability testing uses the KR-20 formula (Uyanah & Nsikhe, 2023). The data analysis technique used begins with a normality test using the Lilliefors test to determine whether the data is normally distributed (Terán-García & Pérez-Fernández, 2024).

Furthermore, test homogeneity to determine the similarity of the two variances using the F-test equation (Parra-Frutos, 2013). After the prerequisite tests are fulfilled, if the experimental class and control class data are normally distributed and homogeneous, hypothesis testing can be continued, namely by using hypothesis testing using the t-test formula with a significance level of $\alpha = 0.05$ (Di Leo & Sardanelli, 2020). The data analysis was carried out with the help of the SPSS application, which includes normality and homogeneity tests. Hypothesis testing was carried out using the t-test, and then the results of

statistical calculations for primary data and supporting data calculations were interpreted qualitatively to obtain research data.

Findings and Discussion

The implementation of the pre-test- post-test can be seen in the following table:

Table 2. *Summary of frequency distribution of student knowledge test results*

Score	Category	KLK1		KLK2		KLK3		KLK4	
		F1	%	F2	%	F3	%	F4	%
85 – 100	Very high	9	29	7	22.6	12	38.7	5	21.7
65 – 84	High	11	35	12	38.7	5	16.1	17	73.9
45 – 64	Currently	7	11	5	16.1	8	25.8	1	4.3
25 – 44	Low	0	0	1	3.4	3	9.7	0	0
0 - 24	Very low	0	0	0	0	0	0	0	0

Data sources are processed from test results

The summary table above shows that the knowledge test results for each group are in the high and very high categories. This shows that the learning process using the ecopreneurship model can improve student learning outcomes and is effectively used repeatedly in different classes. This research is also specifically relevant to improving educational outcomes and competencies in ecopreneurship training (Varbanova & Ivanov, 2016). Other research concludes that the ecopreneurship model teaching process can be applied in any higher education institution. Even though the concept of this model is good to apply, very few universities still provide learning tools for students regarding the integration of environmental education and entrepreneurship education (Andruk & Altinay, 2022).

Table 3. *Homogeneity test of student test results*

Levene Statistic	df1	df2	Sig
1.189	4	23	0.342

The homogeneity test results show that the significance value (Sig) is $0.342 > 0.05$, so it can be concluded that the variance of the experimental class and control class score test results is homogeneous or the same (Rahim & Nadira, 2022). Based on the results of the normality and homogeneity test data analysis, it was declared feasible and met the requirements or was credible (Blanca Mena et al., 2017) to carry out an independent sample t-test, which is a necessary part of the parametric test in assessing differences in learning outcomes from score gain between the experimental class and the control class (Fathi & Rahimi, 2022).

Table 4. *Independent sample test*

	F	Sig.	t	Sig (2- tailed)	Mean difference	Sts. Error Difference	Lower	Upper
Equal variances assumed	.024	.876	4.415	.000	.3312 5	.07503	.18127	.48123
Equal variances not assumed			4.415	.000	.3312 5	.07503	.18125	.48123

Data sources are processed from test results

Based on the results of the independent t-test, the Sig. (2-tailed) is 0.000, smaller than the probability value of 0.05, in the sense that there is a significant difference in test results between the experimental and control classes. Because of this significant difference, it can be concluded that the ecopreneurship learning model developed effectively in increasing students' knowledge of environmentally-oriented entrepreneurship compared to the current entrepreneurship learning model of entrepreneurship. This research is relevant to increasing student interest after using the ecopreneurship module with excellent grades (Sutiyaniti & Budijastuti, 2018). Other research shows that the ecopreneurship learning that has been developed is in the very good category and is effective in supporting learning and increasing students' characteristics, which can be seen in the results of student ecopreneurship products. (Martini et al., 2018).

This data analysis shows that applying the ecopreneurship model significantly increases students' environmental knowledge and awareness (Suryaningsih & Aripin, 2022). Previously, students tended to have a limited understanding of environmental issues and their relevance in entrepreneurship learning (Yilmaz & Ari, 2024). However, after learning with the ecopreneurship model, there was a real increase in students' understanding, attitudes, and involvement towards environmental issues. This also aligns with Manning et al. 2020 that implementing the learning process raises students' awareness, intentions, and actions to learn about environmentally based businesses. Furthermore, other research also recommends collaboration between the ecopreneur business world and universities (Masjud, 2020) so that students can learn and practice directly without ignoring environmental sustainability for economic improvement and growth. Apart from that, there was a significant improvement after the ecopreneurship-based learning model was treated, which can be seen from the results of the questionnaire, namely creative and innovative attitudes (Afidah et al., 2021).

Conclusion and Recommendations

This research concludes that the ecopreneurship model, which combines the concept of entrepreneurship with environmental conservation, effectively increases environmental awareness among midwifery students. Through this innovative approach, students better understand environmental issues and show significant improvements in attitudes and engagement towards environmental conservation. The ecopreneurship model is proven to

overcome the limitations of students' initial understanding of the relevance of environmental issues in the context of entrepreneurship education, making it a powerful educational tool to form prospective midwives who are more environmentally aware and ready to become change agents in society. These findings imply the need to integrate the ecopreneurship approach into the midwife education curriculum to strengthen environmental awareness and prepare prospective midwives to become agents of change in environmental conservation efforts.

Thus, this research expands insight into environmentally oriented entrepreneurship education and innovation in student learning. Recommendations for further research are to examine the role and contribution of industry, non-governmental organizations, and local communities in supporting the implementation of ecopreneurship, as well as researching the influence of environmental policies and regulations on the implementation of ecopreneurship in midwife education and how these policies can be optimized to support sustainability initiatives.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest.

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