

Research Article

The Linkage Between Entrepreneurship Education and Green Entrepreneurship: Understanding Student Readiness for Green Enterprises

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Abstract

Green Entrepreneurship has emerged as a form of awareness in building ecological, economic, and social sustainability amidst the issue of environmental degradation and an increase in the earth's temperature continuous rise in the earth's temperature. This study explores students' readiness for green entrepreneurship. Green entrepreneurship includes entrepreneurship education, perceived technological capability, commitment to the environment, university support for green entrepreneurship and green entrepreneurial behavior. This method used qualitative method with six participants interviewed. Data analyze with this research is listening recording Zoom, writing and coding data, data interpretation and validation through FGD. The findings revealed that the concept of entrepreneurship integrated with the green entrepreneurship curriculum stimulates students towards environmentally friendly business practices. Collaboration between academics, students, and green industry players will strengthen the practice of environmentally sound entrepreneurship and form a young generation that is ready to face global challenges with sustainable and responsible solutions. The green entrepreneurship education curriculum is dynamically updated to include ecological, social and economic aspects.

Keywords: entrepreneurship education, green entrepreneurship, student readiness

INTRODUCTION

Global trends show that the challenges and opportunities in providing youth employment have different dynamics in both developed and developing countries (Grunwald et al., 2024). This has become a concentration of universities in facilitating entrepreneurship education which has become a growing research topic, both in terms of practice and theory (Luthfiyah et al., 2024). This entrepreneurship education needs to foster entrepreneurial intention in individuals taken from three perspectives: educational curriculum, public policy, and practitioners (Martínez-Cañas et al., 2023). Student entrepreneurship education includes job creation reflected by students' awareness of the strategic role of entrepreneurs in overcoming unemployment but also on adaptability and sustainable strategies in the face of market dynamics (Mulyono & Riorini, 2024). Sustainable entrepreneurial strategies are considered a key solution to achieve sustainable social and economic development goals (Volkman et al., 2021).

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Entrepreneurship education plays an important role in fostering students' interest in green entrepreneurship (Angelia, 2024). Students' green entrepreneurship interest is influenced by the entrepreneurship education they receive in college (António Porfírio et al., 2023), entrepreneurial orientation that strengthens entrepreneurial knowledge (Ataei et al., 2024), and student self-efficacy to form an entrepreneurial mindset (Bagis, 2022). Thus, the concept of integrating sustainable entrepreneurship education can encourage a new generation of entrepreneurs who are not only profit-oriented, but also care about environmental sustainability (Sahid et al., 2024).

Green entrepreneurship is a growing practice of business innovation to develop new business opportunities and as an alternative to addressing social and environmental problems (Mawardi et al., 2025). Research conducted by Akinsemolu and Onyeaka (2025) shows that the future of the earth depends on achieving the SDGs by making wise decisions about the impact on the environment. Currently, we are faced with a big challenge in maintaining a balance between human needs and environmental sustainability regarding waste management, although it has decreased during the 2019-2021 period, the percentage of food waste has increased in the following two years, namely in 2023, food waste reached 41.90 percent of the total of all types of waste (BPS, 2024).

The issue of environmental sustainability is increasingly being discussed, there are still many students who are less sensitive to the importance of green entrepreneurship (Meliani & Panduwinata, 2022). Additionally, students can be prepared to face global challenges related to emerging technologies and climate change through the integration of business concepts into their high school education (Spada et al., 2025). Thus, the implementation of green entrepreneurship among college students not only contributes to environmental conservation, but also creates sustainable economic opportunities.

This is evidenced by their lack of involvement in sustainable business initiatives, limited interest in green innovation, and lack of awareness of the environmental consequences of economic activities (Chiang & Chen, 2022). In fact, as agents of change, students have a strategic role in encouraging the development of businesses that are not only financially profitable, but also contribute to environmental conservation. This lack of awareness is due to low understanding, lack of access to green entrepreneurship education, and the perception that sustainable businesses are less profitable than conventional business models (Badjeena et al., 2024). If this condition continues, the potential of students as the driving force of the green economy will not be optimally developed.

The role of higher education in preparing green entrepreneurship curriculum should include aspects to prepare and enable students to address environmental issues by assisting them in developing innovative solutions that promote environmental-based

business opportunities (Makuya & Changalima, 2024). According to data from The World Bank Group (2020) only 27% of university students have realistic jobs out of approximately 9 million university students enrolled each year. Supported by education, policy, and access to venture capital, students can offer innovative entrepreneurial solutions to address pressing environmental challenges.

Social psychological theory developed the concept of entrepreneurship in the 1970s. Social cognitive career theory explains that outcome expectations and efficacy play an important role in determining an individual's belief in his or her ability to carry out the necessary behaviors to achieve the desired results, and these two factors have a direct relationship with the career goals that a person wants to achieve (Bandura, 1977). According to Bandura (1977), self-efficacy is formed through four main processes, namely beliefs gained from the experiences of others (vicarious beliefs), support through verbal communication (verbal persuasion motivation), emotion regulation that affects self-confidence (emotional beliefs), and successful experiences in completing tasks (performance achievement). Another well-known theory that supports EE is the Theory of Planned Behavior (Ajzen, 1991). Ajzen's (1991) theoretical model consists of five elements: intention, norm, attitude, control and behavior.

The entrepreneurship model studied by Romero-Colmenares and Reyes-Rodríguez (2022) among university students based on the main determinants of Ajzen's Theory of Planned Behavior model found that the model still does not analyze environmental awareness. On the other hand, if entrepreneurship education is only theoretical without an applicative approach, students may have difficulty in connecting business concepts with real sustainability issues (del Brío González et al., 2022). In addition, the lack of support in the form of access to capital, mentors, and campus policies that encourage green entrepreneurship may hinder their readiness to start sustainable businesses (Flagstad & Johnsen, 2022). Therefore, for entrepreneurship education to be truly effective in preparing students for green businesses, universities should adopt an approach that is more interactive, experiential and relevant to the needs of green industries (Li et al., 2023). Thus, students not only understand the concept of green entrepreneurship, but also have the skills and confidence to realize it in the real business world.

To address this gap in the literature, this article analyzes the environmental variables that influence the entrepreneurial intentions of university students as intellectual individuals. In this study, we refer to the literature on sustainable entrepreneurs, who have a high awareness of issues such as environmental preservation (Sadiq et al., 2025), community welfare, and seek opportunities to develop innovative products, processes and services to provide future economic and environmental benefits (Zhang et al., 2023).

Our research contributes to several aspects of the SDGs, through existing theory and practice. First, our research focuses on promoting green entrepreneurial intentions among youth from HEIs, thus supporting the SDGs to ensure that future student entrepreneurs are aware of green business practices for sustainable management of natural resources in the long term, rather than only fulfilling sustainability aspects in the short term. Second, this research not only sheds light on the direct relationship between entrepreneurship education and green entrepreneurship, but also explores student readiness for green ventures. This is further extended by investigating the role of university students, which is crucial to advance the existing literature (Peter et al., 2024). This study also provides significant empirical evidence by utilizing data collected from university students, which is critical to extending the evidence from previous research.

Our research can also serve as important literature to assist higher education institutions (HEIs) in their efforts to prepare and motivate future entrepreneurs who are more environmentally conscious, thus ensuring sustainable business practices. Such success is certainly inseparable from the synergy to produce a more resilient and environmentally conscious entrepreneurial ecosystem.

METHOD

Research Context

This qualitative research was conducted in one of the private universities in Jember. The college contains entrepreneurship education courses. Jember University (UNEJ) is one of the universities in Indonesia that actively encourages the development of entrepreneurship among students. Through various programs such as the student business incubator, the student entrepreneurship program, and independent entrepreneurship. In addition, UNEJ also has an entrepreneurship development center that plays a role in developing a business ecosystem based on innovation and sustainability. With the support of a curriculum that includes entrepreneurship as part of learning, UNEJ is committed to producing graduates who are not only ready to work, but also able to create jobs through innovative and highly competitive entrepreneurship.

Research Design and Participants

Using naturally occurring phenomena in the classroom, we used a social constructivist and interpretive approach that emphasizes making meaning from data. Therefore, a narrative inquiry design was adopted. Clandinin et al. (2009) state that through narrative inquiry, researchers and participants engage in exploring social phenomena experienced by participants. In this case, the focus of this investigative effort is to explore students' readiness for environmentally friendly businesses. In recounting their personal experiences, participants were given the freedom to organize their feelings and thoughts, as well as the events they experienced so that the resulting narratives could be used to find narrative patterns of green entrepreneurial readiness. Thus, the narratives are seen as a socio-psychological phenomenon and explore the real experiences of students.

Participants

We contacted two alumni who are currently running businesses. They were asked to become participants and recommend other participants who were willing to participate in the study. Since we knew the two alumni well, we were able to recruit more participants (= 2 entrepreneurs) to be involved in the study. Then, they willingly signed the consent form, and they were given the autonomy to withdraw from the study at any time. Thus, there were six school entrepreneurs who agreed to be participants. The following is the demographic data of the participants (see Table 1) The participants recruited were entrepreneurs who run their own businesses. They had a minimum of 1 year of experience selling and opening a business. In addition, the participants were tech-savvy; they were familiar with video conferencing and streaming technologies, such as Zoom, Google Meet, YouTube, WhatsApp.

Table 1*Participant demographic data*

No	Name (Initials)	Gender	Age (Years)	Education	Business	Experience	Marketing
1	Kristanto	Male	35	S1	E-Commerce, Carwash, Culinary	8 Years	Online & Offline
2	Ufi	Female	30	S1	Retail	2 Years	Online & Offline
3	Cahya	Male	32	S1	Culinary	6 Years	Online & Offline
4	Ega	Male	26	S1	Retail	2 Years	Online & Offline
5	Rahma	Female	31	S1	Retail	1.5 Years	Online & Offline
6	Bagus	Male	31	S1	Travel	4 Years	Online & Offline

Table 2*Constructs and research questions*

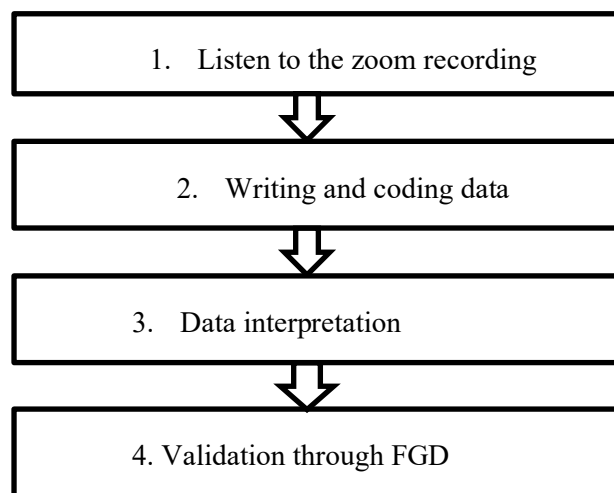
Dimensions	Question
Entrepreneurship Education Denanyoh et al. (2015); Opoku-Antwi et al. (2012)	<ol style="list-style-type: none"> 1. What do you know about entrepreneurship education? 2. What do you think is necessary to be a successful entrepreneur from what you have learned? 3. In your opinion, is entrepreneurship education necessary to foster entrepreneurial motivation? 4. How does entrepreneurship education help you in entrepreneurship? 5. Is entrepreneurship education only needed for those who want to have their own business?
Perceived Ability to Use Technology Fekete (2021)	<ol style="list-style-type: none"> 1. How do you perceive the use of technology in enhancing University support for Green Entrepreneurship? 2. Is the ability to use Technology helpful in enhancing Entrepreneurial Motivation? 3. How do you perceive the use of technology to support green entrepreneurship? 4. Has your business implemented technology that supports green entrepreneurship?
Commitment to the Environment Alcock (2012)	<ol style="list-style-type: none"> 1. How committed are you to the environment? 2. Have you implemented your commitment to the environment through your business? 3. What does your campus commitment to the environment look like? 4. How much impact does your environmental commitment have on green entrepreneurship motivation? 5. How does commitment to the environment affect you in business? 6. Is commitment to the environment important for business people to have?

University Support for Green Entrepreneurship Saeed et al. (2018)	<ol style="list-style-type: none"> 1. Does your campus support the implementation of green entrepreneurship 2. Has your campus incorporated green entrepreneurship into the learning curriculum? 3. What are the campus programs to support green entrepreneurship?
Green Entrepreneurial Behavior Kautonen et al. (2015)	<ol style="list-style-type: none"> 1. What green entrepreneurial behaviors have you implemented in your business? 2. How long have you been implementing green entrepreneurial behavior in your business? 3. Does this green entrepreneurial behavior arise from the entrepreneurship education you have received? 4. How are you interested in applying the concept of green entrepreneurship in your business? 5. How important is the role of your business in protecting the environment? 6. How do your values and life principles influence your decision to pursue green entrepreneurship?

Data Collection

This research helped us explore the participants' lived experiences (Clandinin et al., 2009), especially in entrepreneurship education and green entrepreneurship in business. Data for this study was collected through zoom interviews as agreed by the participants. To facilitate these interviews, we formulated a list of semi-structured questions (see Table 2).

Figure 1
Data analysis steps



Then, all translated interview data were carefully checked and proofread to minimize risks. This language triangulation was intended to double-check that the data had been translated correctly without any change in meaning.

Data Analysis

Data analysis began with listening to the recordings. The researcher acts as a transcriber related to the interview. The steps of interview data analysis are listed in (Figure 1). The data obtained was sorted and further examined for the data that had been collected to find similarities/themes/patterns, or obvious differences. The next step was to identify similarities and differences in participants' answers; and make generalizations. The fourth step is to verify and justify generalizations to build a basic theory, generalizations are based on or inferred from the data collected by the researcher. The constant comparative technique was used to understand the data, categorize the data and explain the meaning of the data in depth. By constantly comparing and contrasting the information collected, the patterns that emerged were then used to build a research model.

The coding process was done with the help of Microsoft Excel which involved two stages, the first was to organize the descriptive information from the data, and from this information further coding was done to find patterns and themes. Open coding aimed to identify words, phrases and sentences that reflected the three research questions. Furthermore, the coding was analyzed and refined by grouping them into the topics of rural community empowerment and smart tourism villages. Based on these topics, further analysis was conducted by looking for emerging themes and patterns. These two themes were then discussed based on stakeholder theory and the analytical framework. The theoretical framework that has been provided is generalized to arrive at conclusions that can answer the three initial research questions.

RESULT

The findings revealed that the concept of entrepreneurship integrated with the green entrepreneurship curriculum stimulates students towards environmentally friendly business practices. In particular, the questionnaire results for the six aspects. The findings of this study are presented and organized systematically based on data collected from questionnaires and structured interviews.

Entrepreneurship Education

The first theme of the findings is entrepreneurship education. The participants took entrepreneurship education while studying at the University of Jember. This influenced their perspective and attitude in running their business. The following data illustrates their perspectives and attitudes through entrepreneurship education.

The first semester we were taught the theory such as market analysis aspects, financial analysis aspects, marketing were all taught. I really understood when I practiced directly through my rainbow stall business, Digital school platform until I opened a carwash integrated with culinary.

(Kristanto, 10 March 2025)

Alhamdulillah, I have taken more or less entrepreneurship education. Due to the limitations of my memory, sometimes my memories grow when I take part in training on campus, namely through bazaars as a project of entrepreneurship education. Entrepreneurship education certainly equipped me with the skills, knowledge and mindset needed to start my electronic retail business. It not only

teaches business theory, but also builds an innovative spirit, creativity, and courage in facing risks.

(Ega, 9 March 2025)

Entrepreneurship education is very important because with increasing competition in the world of work, having entrepreneurial skills allows us young people to create our own job opportunities and not just depend on available job vacancies. Because through the household needs retail business that I run I can manage my own work rhythm.

(Ufi, 11 March 2025)

Based on the interview data above, the three participants reported that entrepreneurship education is highly correlated with the business they are running. Basically, they really understand when practicing directly so that solving problems from business often requires knowledge as a basis. A successful business starts with the right mindset, which is formed through entrepreneurship education. The participants also revealed related entrepreneurship education as follows:

When I was in college, I just followed what was taught from my campus. At first, I didn't intend to become a businessman. I had a business idea, but was hesitant to start. Through entrepreneurship education, I was guided to understand the business process from scratch, from market research, risk management, to marketing strategies. There were many things I didn't know so I was more confident in taking the first step

(Bagus, 9 March 2025)

I feel more comfortable when there is motivation at work. I run a business because I used to have an entrepreneurial education. And there's no denying that economic demands also made me think about how I could survive. For a long time I was convinced of what I am doing now. Starting from the theory that was taught then practiced in my life. Business does not only provide money but forms a strong soul.

(Cahya, 10 March 2025)

The quote above shows that the motivation started with the entrepreneurship education that the participants attended. Starting from theory then affects their lives.

The Perception of the Technological Usage

Survival and even survival of on's business will be very difficult if he does not have proficiency in technology (Rauf et al., 2021). The participants have different perceptions of their abilities related to business development. The following are interview excerpts from participants:

Almost all aspects of my business use technology because I am engaged in travel. Online booking by cooperating with airline because I use package purchases. Digital payment via bank transfer *mandiri/bsi*. Navigation applications such as Waze and others.

(Bagus, 9 March 2025)

Technology is very helpful in budget efficiency in my business. In fact, one of my businesses is creating digital-based school management. The capital cost is minimal but the profit can be high. In my carwash business, I also use robotic tools. In my culinary business, digital payments such as *qris* and bank transfers are already marketing strategies using more online if visitors are suitable, they will return.

(Kristanto, 10 March 2025)

The quote above shows that participants are more confident in using technology. They are always updated in the use of technology, starting from technical matters such as car washing robots, online promotions carried out by garbage to digital payments to provide non-cash payments for customers. With the perception of high ability to use technology, it will also affect the sustainability of their business. Technology helps their business efficiency. The following is interviewing data from other participants:

Because I am not very good at IT, I lack innovation in my business. I also use Qris and only promote through WA, Facebook. I focus more on maintaining the quality of the taste image of my culinary business. Because I think that no matter how great the technology is if the quality of the taste image of my culinary business is ordinary, it will not be too influential. Sometimes I still use plastic in the packaging of my product purchases.

(Cahya, 10 March 2025)

The household goods retail business that I run has not used too much technology, because many residents in my place pay using cash, for promotion, I don't really use online because here I focus on the product menu and store opening hours. I am worried that operational costs could increase if I use technology.

(Ufi, 11 March 2025)

I use technology through promotion through WA, Instagram. The rest I use conventional methods. Technology has not fully supported my business to be environmentally friendly.

(Ega, 9 March 2025)

Based on the interviews above, some participants still consider that the ability to use technology depends on the needs of their business. If the technology is felt to directly benefit business efficiency, it has not yet reached the aspect of green entrepreneurship.

Commitment to the Environment

Global agenda in sustainable development goals for human welfare. Business actors play a strategic role in protecting the environment to maintain the balance of nature while still meeting human needs. This can be seen from interviews with several participants as follows:

My commitment to the environment is carried out through my marketing strategy, which is mostly online so as to reduce brochures or paper waste. However, I still

use plastic in my packaging because I am constrained by time and cost to use environmentally friendly products.

(Cahya, 10 March 2025)

Initially, I felt it was important to use environmentally friendly products. I suggested using shopping bags to my customers, once I produced 100 shopping bags and gave them to my loyal customers in the hope that they would shop using the bags I gave them. After a while, customers returned to their original habits because the environment also affects them.

(Rachma, 11 March 2025)

Honestly, I don't have more knowledge to create green entrepreneurship even though I was taught in college, but I still can't do it so I use what materials are in my business, for example for shopping bags I use plastic.

(Ufi, 11 March 2025)

The interview excerpt above shows that business actors have an awareness of running an environmentally friendly business. The implementation still experiences various obstacles. The first challenge is limited time and energy, especially for small-scale businesses that must manage all aspects of the business independently. In terms of higher production costs, especially in the use of environmentally friendly materials, they often assume that there must be additional costs to recycle the goods. In addition, many consumers are still accustomed to conventional methods and are not open to the concept of refills and waste reduction. It was also revealed that limited knowledge slows down green entrepreneurial business practices. Based on the data above, commitment to the environment is not just a matter of intention, but also requires support for access to information, support systems, education.

University Support for Green Entrepreneurship

Educational support through universities cannot be ignored. In addition, universities need to prepare students not only to think profit-oriented but also to prepare students to think ecologically. Here are the data from the participants:

I was once invited as a resource person for a green entrepreneurship seminar held by one of the campuses in Jember. In the past, my campus had a funding program for students who had sustainable business ideas. I think this is a good step to motivate students to start their own business.

(Kristanto, 10 March 2025)

The campus does have an entrepreneurship program, but in practice it is still limited to the green economy because at that time there was no separate discussion related to the green economy.

(Cahya, 10 March 2025)

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(Rachma, 11 March 2025)

The growth of green entrepreneurship among students is inseparable from the support of universities. Universities are not only a place to gain knowledge, but a platform to instill values of sustainability and social responsibility. Through relevant curricula, business incubation facilities, entrepreneurship training, and collaboration with external partners, universities can create an ecosystem conducive to the birth of green innovations. With such support, students not only learn to become entrepreneurs, but also agents of change who are able to create sustainable business solutions that have a positive impact on the environment.

Green Entrepreneurial Behavior

Green entrepreneurial behavior refers to the attitudes and actions of an entrepreneur who is oriented towards environmental sustainability in running his business. This behavior is represented through a commitment to produce environmentally friendly products or services. Green entrepreneurial behavior can be formed through habits. Based on the participant data obtained are as follows:

At first, I didn't really care about the environment, but over time, if left unchecked, it will affect my mood. Sometimes I imagine if waste continues to accumulate without any handling then what will happen. So, in my business I still try not to use plastic in the packaging in my shop.

(Ufi, 11 March 2025)

My business is all about technology for efficiency in business. I have a school management application business. Then I have a car wash that is integrated with my Pelangi culinary stall. In the future, I plan to use environmentally friendly plastic for my shop.

(Kristanto, 10 March 2025)

I still haven't fully implemented green entrepreneurship because of my limited abilities in green entrepreneurship. I always maintain cleanliness in my stall because if it is not clean, visitors will not be comfortable.

(Cahya, 10 March 2025)

Research on green entrepreneurship shows that the integration of sustainability principles in business practices has a positive impact on business performance, environmental awareness, and social value generated. The findings show that green entrepreneurs tend to be more conscious in creating environmentally friendly products or services, and more adaptive to regulations and market demands that are increasingly concerned with sustainability issues. In addition, the study also revealed that the support of educational institutions, such as environmentally-based entrepreneurship training and green programs, plays an important role in shaping the behavior of socially and ecologically responsible entrepreneurs. Green entrepreneurship is proven to not only

improve business competitiveness, but also be an effective tool in educating the public to shift to more sustainable consumption and production patterns

CONCLUSION

The application of green entrepreneurship in environmentally friendly business activities makes a significant contribution to entrepreneurship education, particularly in building awareness of the importance of sustainability in business. Through this approach, students and entrepreneurs not only learn about how to run a business effectively, but also understand the social and environmental responsibilities attached to every business decision. Universities have a strategic role to play in encouraging the growth of green entrepreneurial behavior through the provision of relevant curricula, practical training, and environmental-based business incubation support. By creating an educational ecosystem that supports green innovation, campuses can become a place to build entrepreneurial characters who care about sustainability. Collaboration between academics, students, and green industry players will strengthen the practice of environmentally sound entrepreneurship and form a young generation that is ready to face global challenges with sustainable and responsible solutions.

Implication

Sustainable business is inseparable from the entrepreneurship education that students receive in college. This knowledge not only impacts students' mindset, but also develops a strong perception of their ability to utilize environmentally friendly technology. This perception is a key factor in increasing students' confidence to create sustainable business innovations. In addition, the commitment to the environment instilled through the entrepreneurship curriculum strengthens students' awareness of the importance of maintaining ecosystem balance in business practices. Thus, the integration of entrepreneurship education, green technology mastery, and environmental values encourages the creation of a generation of young entrepreneurs who are not only economically competent, but also ecologically responsible.

Limitation and Future Directions

Research related to entrepreneurship education and green entrepreneurship is limited to the university of Jember and focuses on five aspects namely entrepreneurship education, perceived ability to use technology, commitment to the environment, university support for green, green entrepreneurial behavior, so the suggestion for further research is to research with a wider range and increase the aspects to be discussed.

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