

RESEARCH ARTICLE

The impact of green entrepreneurship education on green entrepreneurial intention of students majoring in agriculture in Chinese universities

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ABSTRACT

The purpose of this research is to probe into the relation of green enterprise education and green enterprise intent of Chinese agriculture students. In this paper, Planned Behavior Theory is used to examine the relation of Green Entrepreneur Education and Green Entrepreneur Intent, which is used to test the intermediary role of Entrepreneur Self-efficacy. The study employs a questionnaire method, collecting data from 500 agricultural students in higher education institutions, with 478 valid questionnaires. It is found that the Green Entrepreneur Education of China's Agriculture College Graduates can improve the Entrepreneur's Self-efficacy and influence the Green Entrepreneur's Intent. Both the Green Entrepreneur Education and the Entrepreneur Self-efficacy Influence the Green Entrepreneurship Intent significantly. Self-efficiency of entrepreneurs has an obvious intermediate effect on the relation of green enterprise education and green enterprise intent. The findings are of great significance to policymakers in higher education departments, university administrators, and educators.

Keywords: Green entrepreneurial intention; Green entrepreneurship education; Entrepreneurial self-efficacy

1. Introduction

Global warming and environmental degradation are the greatest threats facing humanity. The contradiction between economic development and ecological protection has a negative impact on sustainable development^[1,2]. Green economics is a key element in tackling the problem of environment deterioration efficiently^[3]. Green entrepreneurship will be helpful in decreasing the damage caused by natural resources, resolving environment issues and creating new employment opportunities, which will make a significant contribution to social and economic sustainability^[4]. Green entrepreneurship is a tendency for an individual to pursue environmental sustainability and contribute positively to the ecosystem^[5]. As a result, all over the globe have begun to implement green business initiatives in order to bring about a balance of economic development, social development, and environmental sustainability^[6]. Students in higher education are an important group for creating green entrepreneurial projects, as they possess the skills and knowledge to establish enterprises^[7]. In summary, understanding the green entrepreneurial intention among higher

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education students is crucial for nurturing a more sustainable future^[8].

Current studies show that individual factors are important determining factors for GPP, such as personality traits^[9], green opportunity recognition^[10], and attitudes and subjective norms^[11]. However, as environmental issues become increasingly severe, higher education institutions play a crucial role in ensuring that future graduates can integrate sustainable practices into their business activities^[12,13]. Entrepreneurship education guidance is vital in cultivating students' entrepreneurial skills and intentions^[14]. Green entrepreneurship education helps students generate and promote new ideas and provides facilities that can foster greater interest in green entrepreneurship among college students^[5,15]. According to Gunawan and Lubis^[16], entrepreneurial intentions and behaviors are largely driven by school education, which aims to better meet demands and maximize profits at the lowest cost. Therefore, we can conclude that the Green Entrepreneur Education has an active influence on the business intent of the students.

Entrepreneurship education encompasses an array of educational approaches designed to inspire, develop, and promote students' entrepreneurial skills and attitudes^[17]. The environmental entrepreneurship education that an individual receives has a significant effect on their entrepreneurial self-efficacy^[18]. Through the practice of green entrepreneurship education, students can accumulate practical experience, which further enhances their belief in their own capabilities and action in green entrepreneurship. This is crucial for the improvement of entrepreneurial self-efficacy^[19]. Education that students receive in schools not only helps to enhance their personal qualities but also has a positive impact on the overall environmental awareness and behavior of society^[20]. Through systematic education, schools enable students to recognize the value of the ecological environment, understand the impact of human activities on the natural environment, and realize the urgency and importance of environmental protection^[21].

Previous research has revealed how individuals' attitudes, subjective norms, and self-efficacy serve as predictive factors that profoundly influence their intentions for green entrepreneurship^[22]. Entrepreneurial self-efficacy, which is an individual's belief in their ability to successfully carry out entrepreneurial actions, is another crucial factor^[23,24]. This determines students' confidence in green entrepreneurial ventures and may enable them to overcome the challenges and risks associated with such efforts. Past research has indicated that the higher a person's level of entrepreneurial self-efficacy, the stronger their entrepreneurial intentions^[25]. Compared with conventional business, green business is confronted with bigger challenges in investing and innovating green technology. Individuals who have confidence in their own EHS will be more likely to have a strong desire for green enterprise^[26,18]. A survey of 285 undergraduates was conducted, and the findings indicated that green entrepreneur self-efficiency was a significant predictor of their willingness to start a green business.

The Theory of Planned Behavior (TPB) assumes that intent is the immediate precondition for related behaviour, and that the greater the intent, the greater the likelihood of being translated into action^[27]. Within the framework of the TPB, entrepreneurial intention has always been a focus of research. But as time goes by, the emphasis on the study has moved away from the tradition view to the personal purpose of the enterprise^[28]. There are three key factors that affect individual behavior intention: Attitude, Subjective Norm, and Perceived Behavior Control^[29]. Perceived behavioural control refers to an individual's perception of their capability to perform a given behaviour and is closely related to the concept of self-efficacy^[30]. In determining whether an individual intends to start a green business, their attitude and self-efficacy become key predictive factors^[31,32]. Green enterprise education can improve the students' green entrepreneur self efficiency, thus indirectly influencing their desire for green enterprise^[19]. In this paper, we discuss the

influence of Green Entrepreneur Education on Entrepreneurship Intent and the Intermediary Effect of Entrepreneurship Efficiency.

Karimi and Sepahvand^[33] argue that agricultural entrepreneurship is highly beneficial for protecting ecosystems, tackling climate change, preventing deforestation and environmental degradation, improving practices in agriculture and freshwater supply, and conserving biodiversity. Agricultural students have a close relationship with green entrepreneurship or ecological conservation^[34]. Agricultural students typically learn about soil, plant growth, crop management, and animal husbandry^[35], providing a solid foundation for green entrepreneurship. Modern agriculture is increasingly reliant on technological innovation, such as smart agriculture, vertical farms, and precision agricultural technologies^[36]. In the process of learning and mastering these technologies, agricultural students can provide innovative ideas and solutions for green entrepreneurship to promote ecological sustainability^[37].

According to the prior research by Israr and Saleem^[38], the entrepreneurship rate of college graduates in China in 2018 still had a significant gap compared to that of their counterparts in Europe and America. In many European and American countries, a wide range of green entrepreneurship education courses are offered in colleges, which helps to inspire students' enthusiasm for starting a business. In comparison, Chinese universities lag behind in green entrepreneurship education, there are few positive researches about the influence of green enterprise education on enterprise intent. This research is intended to probe into the relation between the Green Entrepreneur Education, Green Entrepreneurship Intent and Entrepreneur Self-Efficacy.

2. Literature review

2.1. Theoretical foundation

The Theory of Planned Behavior (TPB), which extends Reasoned Action Theory, is one of the most significant models for understanding people's behaviour. This theory holds that intent is a major predictor of behaviour and is mainly affected by three factors: individual attitude towards the behaviour, subjective norms, and perceived behavioural control^[39]. Attitude reflects an individual's evaluation of the behavior, subjective norm involves perceived social pressure, and perceived behavioral control is related to the perceived level of difficulty of performing the behavior^[27,40].

The TPB assumes that a person's behaviour is motivated by behaviour intent, which is a function of an individual's attitude towards the behaviour, the subjective norms surrounding the behavior, and the perceived behavioral control over the behavior^[39]. This theory has been widely applied across various fields, including education, and has been used to understand students' entrepreneurial intentions^[41]. The TPB is especially well-suited for studying entrepreneurial intentions because it encompasses the multifaceted nature of entrepreneurship. Entrepreneurship involves personal decisions influenced by three factors: personal attitudes, social norms, and self-efficacy^[42]. The theory can examine how green entrepreneurship education affects these factors, thereby shaping entrepreneurial intentions. The framework of the TPB is crucial for understanding entrepreneurial intentions, as it provides a structured approach to analyzing how different factors interact to influence these intentions. By considering attitudes, norms, and self-efficacy, the TPB offers a comprehensive method for identifying the psychological processes that drive entrepreneurship^[43].

In the educational context—particularly within entrepreneurship education—the Theory of Planned Behavior (TPB) has evolved to encompass factors such as entrepreneurial self-efficacy and entrepreneurial motivation. Prior studies have demonstrated that entrepreneurial self-efficacy mediates the relationship between educational attainment and entrepreneurial intention^[19]. In the context of agricultural students, TPB

plays a pivotal role in understanding how green entrepreneurship education, entrepreneurial self-efficacy, and green entrepreneurial motivation influence students' entrepreneurial intentions. Educational institutions play a critical role in shaping students' attitudes and perceived behavioural control, which are core components of the TPB^[44]. By offering relevant curricula and emphasizing entrepreneurial motivation, universities can actively foster students' willingness to engage in green entrepreneurship—an especially significant endeavour in agricultural education, where sustainability and ecological impact are of paramount importance.

2.2. The relationship between Green Entrepreneurial intention and Green Entrepreneurship education

Suwartha and Sari^[45] noted that the role of HEI has been developed as a key element in a global environment management regime, with the responsibility of motivating and supporting students so that they have the ability and willingness to start green businesses after completing their studies. After reviewing the relevant literature, Rothaermel et al.^[46] concluded that there are two main areas that play a key role in the entrepreneurial functions of higher education institutions: First, universities should take on the organizational responsibility of promoting entrepreneurship, such as supporting green entrepreneurial intentions through green entrepreneurship education, including providing entrepreneurial incubators, developing science parks, and building innovative fields. Second, universities need to provide eco-oriented entrepreneurship education and support to assist green entrepreneurial practices. Ginanjar^[47] believes that education plays a central role in shaping the entrepreneurial intentions of college students, and the study by Wong et al.^[48] further confirmed that entrepreneurship education in higher education institutions has a significantly positive effect on students' entrepreneurship.

Fichter and Tiemann^[49] support the role of entrepreneurship education in green business activities. Ploum et al.^[50] found that sustainable business development depends on individuals' knowledge, abilities, attitudes, and skills in managing sustainable businesses. The need for entrepreneurship has been underlined by the latest educational developments, which are critical to the creation of business attitudes, behaviour, thinking and intentions^[51,52]. Bazkiaei et al.^[53] and Jena^[54] pointed out that entrepreneurship education prepares students for entrepreneurship by integrating experience, skills, and knowledge. The decisive factors of educational activities will guide people to take entrepreneurial actions^[55,56]. The findings of Saptono and others^[57] have proven the correlation between entrepreneurship education and entrepreneurial intention. Therefore, this study proposes the following hypothesis:

H1: China's agriculture graduate's green enterprise education has remarkable influence on the green enterprise intent.

2.3. Green Entrepreneurship education and Entrepreneurial Self-Efficacy

Bandura^[58] identified vicarious experiences, verbal persuasion, physiological states, and role models as the four main sources of self-efficacy. Entrepreneurship education can serve as an effective external input to enhance an individual's self-efficacy. Entrepreneurial stories from alumni or successful entrepreneurs can provide realistic role models, thereby strengthening students' vicarious experiences. Additionally, encouragement and support from teachers and peers can play a role in verbal persuasion, thereby enhancing an individual's self-efficacy^[59]. Entrepreneurial self-efficacy can be cultivated through entrepreneurship education^[60], with the core mechanism being that entrepreneurship education can enhance an individual's knowledge reserve and practical skills in the field of entrepreneurship. This leads to a more positive cognitive evaluation of entrepreneurial activities, thereby enhancing entrepreneurial confidence and increasing self-efficacy^[61].

Entrepreneurship education enables undergraduates to make greater use of the positive elements of their business environment to strengthen their entrepreneurial strengths and thus increase their self-efficacy^[62]. Entrepreneurship education can enhance entrepreneurs' intrinsic motivation to improve their entrepreneurial skills^[63]. Thus, it is possible to develop entrepreneurial techniques and to transform business chances into business superiority. While there are business opportunities in an entrepreneur's environment, it is crucial to make good use of those opportunities, and entrepreneurship education has a positive impact on capturing and exploiting commercial opportunities^[64]. Ediabonya et al.^[18] indicated that an individual's environmental entrepreneurship education has a great influence on his or her entrepreneurial self-efficacy. Studies by Ediabonya^[65] and Abdelwahed et al.^[66] also found a significant positive relationship between green entrepreneurship education and entrepreneurial self-efficacy. Therefore, this study proposes the following hypothesis:

H2: China's agriculture graduate's green enterprise education has significantly positive influence on the enterprise self-efficiency.

2.4. Entrepreneurial Self-Efficacy and Green Entrepreneurial intention

Entrepreneurial self-efficacy refers to an individual's confidence in their ability to undertake the tasks required to start a business and succeed in managing its operations ^[67]. Past research has indicated that the degree of entrepreneurship self-efficiency is positively correlated with entrepreneurship intent, which implies that the greater the self-efficacy, the more determined the entrepreneur will be ^[25]. Those who have confidence in their own GPP will be more likely to develop an interest in green business and take an active part in the green business process^[26].

Based on the research by Ediabonya et al.^[18], which used a convenient sampling method to choose 285 students as the sample, the findings show that green entrepreneurial self-efficacy is a significantly predictive factor of students' intentions toward green entrepreneurship. Under the background of Green Entrepreneurship, people who have a high degree of Green Entrepreneurship have greater confidence in creating new ideas, designing eco-friendly products, and actively assuming social responsibility for environmental sustainability. This capability not only helps enterprises build competitive advantages, enhance economic performance and profitability^[68], but also increases individuals' willingness to accept new challenges and meet customer needs, thereby further creating value for enterprises. On the basis of the above-mentioned findings, we propose the following assumptions:

H3: China's agriculture college graduates' green entrepreneur self-efficiency has significantly positive influence on their commitment to green enterprise.

2.5. The mediating role of Entrepreneurial Self-Efficacy between Green Entrepreneurship education and Green Entrepreneurial intention

In the field of entrepreneurship research, entrepreneurial self-efficacy is considered one of the strongest predictors of entrepreneurial intention^[69]. Entrepreneurship Self-efficacy positively affects entrepreneurship intent, while a high degree of entrepreneurship self-efficiency may result in a high degree of entrepreneurship intention^[70]. Moreover, numerous empirical studies have demonstrated the mediating role of entrepreneurial self-efficacy^[71]. For instance, the empirical results of Souitaris et al. ^[72] show that the entrepreneurial attitudes and intentions of STEM students who have been educated in entrepreneurship have increased significantly in comparison with their pre-enrollment counterparts. Others have also shown that the intermediary effect of entrepreneurship self-efficacy increases the influence of antecedent variables on entrepreneurial intention^[69, 73]. Yeh et al.^[74] found that individuals with high entrepreneurial self-efficacy

demonstrate a commitment to achieving entrepreneurial objectives, while entrepreneurial self-efficacy may act as a mediator in relation to entrepreneurial intent.

According to the findings of Ediagbonya^[65], the Green Entrepreneurship Education can predict the Green Entrepreneur's Intent, and the Green Entrepreneur Self-efficacy can predict the Green Entrepreneur's Intent. Mambali et al. Based on the analysis of 412 Tanzania graduates, it is found that entrepreneurship education can directly and indirectly influence the green entrepreneur's intention. Therefore, this study makes the following hypothesis:

H4: The entrepreneur self-efficiency of China's agriculture graduates has an obvious intermediate role in the relation of green enterprise education and green enterprise intent.

2.6. Research framework

Using Planned Behavior Theory, this paper discusses the influence of Green Venture Education on Green Entrepreneur Intent, Influence of Green Entrepreneur Education on Self-efficacy, and Influence of Entrepreneurship Efficiency on Green Business Intent. Secondly, it studies the intermediary effect of the entrepreneur's self-efficiency on the environment of green enterprise education. The study frame is illustrated in **Figure 1**

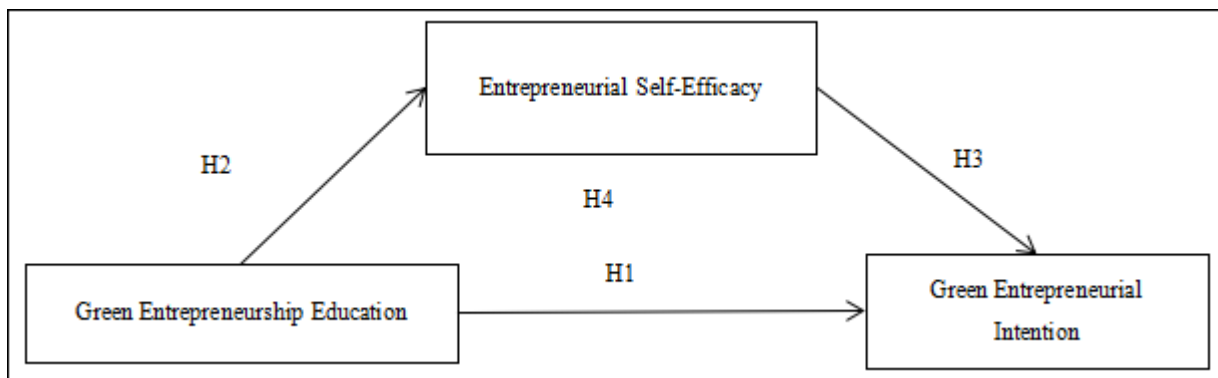


Figure 1. Research frame map

3. Research method

3.1. Research subject

This study was conducted from February to March 2025 and involved agricultural students from three universities in China, including two provincial key universities and one local vocational college. Key University A is a provincially administered key institution characterised by its academic strengths in agriculture and forestry. It hosts multiple key disciplines, with several ranked among the global top 1% in ESI. The university has long placed a strong emphasis on cultivating talent in green agriculture and sustainable development. Green entrepreneurship education has been systematically integrated into its curriculum, with relevant courses offered and practical training bases established, resulting in a relatively comprehensive educational framework for green entrepreneurship. Key University B, jointly established by the provincial government and the National Forestry and Grassland Administration, concentrates on agriculture and forestry disciplines. It has embedded green entrepreneurship education into its academic structure through specialised courses, and further promotes this agenda via lectures, competitions, and the incubation of entrepreneurship projects, thereby developing a model of green entrepreneurship education with distinctive features in forestry and agricultural product processing. Vocational College C is oriented

towards serving the green agriculture and food industries in Hunan Province. It offers a range of courses related to green agriculture and entrepreneurship, supported by practical training platforms. The institution places particular emphasis on developing students' technical competencies in green agricultural production and their capacity for entrepreneurial practice.

To ensure the representativeness and diversity of the sample, a stratified random sampling method was adopted. The stratification criterion used in this study was students' grade level (first-year, second-year, third-year, and fourth-year students). This approach was chosen to account for potential variations in students' exposure to entrepreneurship education and developmental stages in their academic journey. The sampling process was carried out in two main steps. First, the total population was divided into mutually exclusive strata according to grade level. The proportion of students in each stratum relative to the overall population was then calculated to determine the stratification ratio. Subsequently, within each grade-level stratum, a simple random sampling technique was used to select participants, ensuring that every student within each stratum had an equal probability of being included in the final sample. This method ensured that all grade levels were proportionally represented in the sample, thereby enhancing the generalisability and validity of the study findings across different academic cohorts.

In the present study, all of the students who were interviewed had been involved in entrepreneurship programs. The Dhurakij Pundit University Ethics Review Committee had been approved before the data were collected. The rules and requirements laid down in the Thai National Research Council's National Policy and Human Research Guidelines^[75] have been followed closely throughout the data gathering process. The specific procedure was as follows: First, the purpose of the study, implementation procedures, and relevant requirements were clearly explained to the participants to ensure they had a comprehensive understanding of the research. Second, the study provided detailed information regarding the schedule of the survey and the expected outcomes, while also highlighting the potential positive value of the research for the participants themselves and other stakeholders. Third, once participants agreed to take part and were formally included in the sample, their personal information and related data were properly protected to prevent any leakage of information. The scope and method of informed disclosure were clearly stated to safeguard participants' right to be informed. Fourth, participants were informed of their right to withdraw from the study at any point should they no longer wish to continue, and the research team was required to terminate their participation immediately upon such a request. Finally, the study underwent an ethical review in accordance with relevant regulations and was officially launched only after receiving approval.

The study coordinated with relevant teachers to select classes for data collection, ensuring that students in the selected classes had all taken a basic entrepreneurship course and were familiar with the concept of green entrepreneurship. Questionnaires were distributed online via WeChat and email to facilitate subsequent collection. Ultimately, 500 students participated in this study, with 478 valid samples collected, yielding a valid recovery rate of 95.600%. In terms of gender, 55.230% were male and 44.770% were female. In terms of grade, the first year students accounted for 18.828 percent, the second year was 27.406 percent, the second year was 30.126 percent, and the senior year was 23.640 percent.

3.2. Research tool

3.2.1. Green Entrepreneurship education scale

The measurement tool for the variable of green entrepreneurship education was developed by Zhang and Xu^[76]. The scale is unidimensional and comprises six items designed to comprehensively reflect college students' overall perception of green entrepreneurship education. The scoring method employs a 5-point

scale, with 1 representing “very dissatisfied” and 5 representing “very satisfied.” An example item is “Satisfaction with the curriculum design of green entrepreneurship education at school.”

3.2.2. Green Entrepreneurial intention scale

Referring to Yi ^[6], the green entrepreneurial intention scale used in this study consists of five items and fully employs a 5-point Likert scale. All responses in the assessment must select a number between 1 (indicating “strongly disagree”) and 5 (indicating “strongly agree”). Since the students surveyed in this study have all taken courses related to green entrepreneurship education, this scale is suitable for students from freshman to senior year. A representative item is “After graduating from university, I hope to start a green business to help alleviate environmental problems.”

3.2.3. Entrepreneurial Self-Efficacy scale

In this paper, we use the Entrepreneurship Self-efficacy Scale which was developed by Lim and Chen^[43]. The scale consists of six items and is unidimensional. The scoring method uses a 5-point scale, and a representative item is “If I start a business, I will have a high probability of success.”

4. Research result analysis

4.1. Descriptive analysis

The five Likert Scale was adopted for each of the three scales, with a midpoint of 3. The Green Entrepreneurial Educational Scale has an average of 3.271, which shows that Green Entrepreneurial Education is of medium grade. The Green Entrepreneur Intent Index has an average of 3.382, which indicates a moderate degree of green business intent. The Entrepreneurship Self-efficacy Scale has an average of 3.180, which shows that entrepreneurship self-efficiency is moderate. See **Table 1**.

Table 1. Descriptive statistics analysis table

Variables	Number of Items	Mean	Standard Deviation
Green Entrepreneurship Education	6	3.271	0.859
Green Entrepreneurial Intention	5	3.234	0.884
Entrepreneurial Self-Efficacy	6	3.180	0.843

4.2. Reliability analysis

In this research, we have carried out the inner consistent examination of the Green Entrepreneur Education, the Green Entrepreneur Intent, and the Self-efficacy of Entrepreneurs. The overall Cronbach's Alpha for the green entrepreneurship education scale was .899, for the green entrepreneurial intention scale was .887, and for the entrepreneurial self-efficacy scale was .892. Each measurement tool demonstrated good consistency (all Cronbach's Alpha values were greater than .700), indicating that the measurement tools had good reliability. See **Table 2**

Table 2. Reliability analysis table

Variables	Number of Items	Cronbach's Alpha
Green Entrepreneurship Education	6	.899
Green Entrepreneurial Intention	5	.887
Entrepreneurial Self-Efficacy	6	.892

4.3. Discriminant validity and correlation analysis

The results are presented in **Table 3**. The figures in the diagonal are the Average Variance Extracted (Average Variance Extracted) square roots, while the figures under the diagonal represent the relationship among the sizes. Because the AVE's square root is larger than that of the three dimensional ones, it is proved that the measuring model is highly discriminating.

There was a significant positive correlation between the Green Entrepreneur Education and the Green Entrepreneur Intent ($r = .525$, $p < .001$), and the Green Enterprise Education had a significant positive relationship with the Entrepreneur Self-efficacy ($r = .471$, $p < .001$), and there was significant positive correlation between the Green Enterprise Intent and the entrepreneur Self-efficacy ($r = .525$, $p < .001$).

Table 3. Discriminant validity and correlation analysis

Variables	Green Entrepreneurship Education	Green Entrepreneurial Intention	Entrepreneurial Self-Efficacy
Green Entrepreneurship Education	.774		
Green Entrepreneurial Intention	.525***	.782	
Entrepreneurial Self-Efficacy	.471***	.525***	.761

Note: *** $p < .001$

4.4. Regression analysis

In regression analysis, when examining the relationships among the independent variable, mediator variable, and dependent variable, the four-step approach proposed by Baron and Kenny^[78] is commonly employed to test for mediation effects. The four steps are as follows:

Step 1: A regression analysis is conducted with the dependent variable as the outcome to determine whether the independent variable significantly predicts it. If β_1 is significant, it indicates that the independent variable has a significant total effect on the dependent variable. Step 2: A regression analysis is conducted with the mediator as the outcome to examine whether the independent variable significantly predicts the mediator. If β_2 is significant, it suggests that the independent variable significantly influences the mediator. Step 3: A regression analysis is conducted in which both the independent variable and the mediator are included as predictors of the dependent variable. The significance of β_4 is examined. If β_4 is significant, it indicates that the mediator has a significant effect on the dependent variable. Step 4: This step involves comparing the direct effect of the independent variable on the dependent variable, as obtained in Step 3, with the total effect from Step 1. If the direct effect β_3 is no longer significant while β_4 remains significant, this suggests full mediation. If β_3 remains significant but is reduced in magnitude, and β_4 is also significant, this indicates partial mediation.

In this research, we adopt the method of regression analysis, which takes sex and grade as the control parameter, EHS as an independent variable, and entrepreneur self-efficiency as intermediary variable. Model 1 shows that green entrepreneurship education has a significant positive impact on green entrepreneurial intention ($\beta = .523$, $p < .001$). Career identity explains 27.800% of the variance in green entrepreneurial intention, with an adjusted R^2 of 27.300%. The results show that the more advanced the Green Venture Education is, the more likely it is to have a better Green Entrepreneur Intent. Model 2 shows that entrepreneurship self-efficiency is positively related to the green entrepreneurship intention ($\beta = .524$, $p < .001$). Entrepreneurship self-efficiency accounts for 27.300% of the variance in EF, with an adjusted R^2 of 27.300%. The results show that the more successful entrepreneurs are, the more likely they are to have green entrepreneurship. The third study indicated that the influence of EHS was significantly positively ($\beta = .469$, $p < .001$). Green entrepreneurship education explains 22.600% of the variance in entrepreneurial

self-efficacy, with an adjusted R^2 of 22.100%. The results show that the more advanced the Green Venture Education is, the more successful they are. Model 4 shows that the influence of EHS and EEP on EE is significantly positive ($p < .001$). The β value for green entrepreneurship education in Model 4 is .356, which is notably lower than the β value of .523 in Model 1. These results indicate that the entrepreneur's self-efficiency has some intermediate effect on the green enterprise's education, as shown in **Table 4**.

Table 4. Regression analysis table

	Model 1		Model 2		Model 3		Model 4	
	Green Entrepreneurial Intention		Green Entrepreneurial Intention		Entrepreneurial Self-Efficacy		Green Entrepreneurial Intention	
	β	t	β	t	β	t	β	t
Gender	.033	.830	.036	.918	.008	.203	.030	.812
Grade	.027	.689	.007	.186	.057	1.412	.007	.181
Green Entrepreneurship Education	.523	13.394***			.469	11.585***	.356	8.655***
Entrepreneurial Self-Efficacy			.524	13.372***			.356	8.627***
R^2	.278		.277		.226		.376	
R^2 Adjusted R^2	.273		.273		.221		.371	
F	60.846***		60.649***		46.024***		71.308	

Note: *** $p < .001$

5. Discussion and conclusion

5.1. The relationship between Green Entrepreneurial intention and Green Entrepreneurship education

In this paper, we investigated the influence of Green Entrepreneur Education on Green Entrepreneur Intent of China's Agricultural College Students. The findings show that the Green Entrepreneur Education has significant impact on the Green Entrepreneur Intent of the College Graduates, which supports the Hypothesis H1. The findings of this study are consistent with those of Fichter and Tiemann^[49]. The “theoretical teaching + practical training” educational model employed by agricultural universities, through practices such as entrepreneurial case analysis and business plan competitions, significantly enhances students’ abilities to identify opportunities and integrate resources. This enhancement directly strengthens their confidence in transforming entrepreneurial ideas into concrete actions. According to Luo et al.^[62], the unique industry-university-research institute cooperation model of agricultural universities provides students with opportunities to engage in real entrepreneurial situations. This immersive learning experience effectively shortens the behavioral conversion distance from cognition to intention, validating the role of specialized education in shaping entrepreneurial intention and offering theoretical support for optimizing the training model of agricultural talents.

5.2. The relationship between Green Entrepreneurship education and Entrepreneurial Self-Efficacy

In this paper, we investigated the influence of Green Venture Education on Entrepreneurship Self-efficacy of Agricultural College Students in China. The findings indicate that the Green Entrepreneur Education has significant impact on the Entrepreneurship Self-efficacy of the College Graduates, which supports the H2. The findings of this study are consistent with those of Luo et al.^[62]. As important

agricultural production bases in China, universities should fully integrate regional characteristics into the curriculum of green entrepreneurship. In addition to imparting modern agricultural technology and the concept of circular economy, green entrepreneurship education places greater emphasis on cultivating students' system thinking and their perspectives on sustainable development. Through modular course design, it helps students build a complete knowledge framework^[78,79]. Barba-Sánchez et al.^[80] found that practical activities such as the simulation of agricultural product e-commerce operations and the roadshow of green agricultural projects effectively enhance students' market insight and project management capabilities.

5.3. The Relationship between Green Entrepreneurial intention and Entrepreneurial Self-Efficacy

In this paper, we investigated the influence of entrepreneurship self-efficiency on the green entrepreneurship intent of China's agriculture students. The findings show that entrepreneurship self-efficiency has a significant impact on the green entrepreneurship intent of the undergraduates, which supports the hypothesis H3. The findings of this study are consistent with those of Ediagbonya et al.^[18]. First, students with higher entrepreneurial self-efficacy tend to hold more positive beliefs in their ability to solve technical problems and market challenges in the process of agricultural entrepreneurship^[81]. This intrinsic confidence directly translates into a stronger entrepreneurial intention, especially in the context of China's rich resources of characteristic agricultural products, where students' confidence in developing localized green agricultural products further strengthens their entrepreneurial intentions. Second, Hu et al.^[82] found that students with higher self-efficacy are more likely to believe that they possess core entrepreneurial competencies such as the application of modern agricultural technology and ecological planting techniques. This sense of capability makes them more willing to put their green entrepreneurial ideas into practice.

5.4. The mediating role of Entrepreneurial Self-Efficacy

It is found that the entrepreneur self-efficiency of China's agriculture students has an intermediary effect on the relation of the green enterprise education and the green enterprise intent, thus supporting Hypothesis H4. The findings of this study are consistent with those of Mambali et al.^[83]. The reason is that green entrepreneurship education, by integrating systematic knowledge such as modern agricultural technology, ecological management concepts, and sustainable business strategies, effectively enhances students' professional quality and entrepreneurial awareness^[59]. Scholars such as Agu et al.^[84] have found that the practice-oriented thinking and problem-solving tendencies commonly possessed by agricultural students form a positive interaction with the pragmatic traits required for green entrepreneurship. This match between professional characteristics and personal traits further optimizes the psychological path through which education effects are transmitted to entrepreneurial intention via self-efficacy^[85,86].

6. Research contribution

In this paper, Planned Behavior Theory is used to set up an intermediary function of entrepreneur self-efficiency, and to analyze the influence path of green enterprise in agriculture students. Traditionally, TPB studies the impact of behavior attitude, subjectivity, and perception of behavior on behavior intent, but less on the impact of education on behavior intention^[87]. This paper discusses the intermediary function of TPB in relation to enterprise intent by integrating enterprise self-efficiency into TPB's frame.

7. Research suggestions

7.1. Establish a systematic green Entrepreneurship Education system

Therefore, as the principal implementer of Green Entrepreneurial Education, it is necessary to set up an educational system for Green Entrepreneurial Education. First, it is recommended to include green entrepreneurship courses in the compulsory curriculum for agricultural majors and develop teaching cases with regional characteristics, such as designing green agricultural entrepreneurship projects based on the characteristics of agricultural ecological environments. Second, the construction of practical teaching link should be strengthened by setting up green entrepreneurship practice bases and establishing cooperative relationships with local ecological agricultural enterprises to provide students with opportunities for field studies and internships. For example, a “Green Agricultural Entrepreneurship Incubator” could be created, equipped with a team of professional mentors and entrepreneurial funds for support. Additionally, a diversified evaluation mechanism should be established, focusing not only on students’ mastery of green entrepreneurship knowledge but also on the effectiveness of cultivating their green entrepreneurial intentions and capabilities. Schools should also regularly hold green entrepreneurship competitions and achievement exhibitions to foster a positive atmosphere for green entrepreneurship.

7.2. Promote the development of Green Entrepreneurship Education through collaboration

Educational authorities and agricultural departments should work together to advance the development of green entrepreneurship education. First, it is recommended to establish special policies to support agricultural universities in conducting green entrepreneurship education, such as setting up a “Green Agricultural Entrepreneurship Education Development Fund” to provide financial rewards to institutions with significant achievements. Second, a government-school-enterprise cooperation platform should be built to integrate the resources of agricultural research institutes, environmental protection departments, and agricultural-related enterprises, providing technical support for green entrepreneurship education in universities. For example, a “Green Agricultural Entrepreneurship Education Alliance” could be established to facilitate the connection of resources from multiple parties. Additionally, it is suggested to improve the policy support system for green entrepreneurship, offering preferential policies such as entrepreneurial loans and tax exemptions for agricultural students. Relevant departments should also establish a quality assessment mechanism for green entrepreneurship education, conducting regular supervision and inspection of the implementation of green entrepreneurship education in universities to ensure educational quality. Finally, successful cases should be publicized through the media to create a positive social atmosphere that supports green entrepreneurship.

8. Research limitations and suggestions for future research

(1) This study primarily employed a cross-sectional survey method, which, despite its efficiency in collecting large-sample data, has certain limitations. First, the cross-sectional design can not capture the dynamic relationships between variables and is unable to determine the long-term impact of green entrepreneurship education on entrepreneurial intention. Second, the self-report nature of the survey method may be subject to social desirability bias, with students potentially providing answers that conform to social expectations when reporting their green entrepreneurial intentions. Future research could combine multiple data collection methods, adding in-depth interviews with students and focus group discussions with teachers, in addition to surveys, to obtain richer research data. Moreover, incorporating objective behavioral indicators, such as the number of times students participate in green entrepreneurship competitions, the quality scores of business plans, and the registration status of actual entrepreneurial projects, could serve as a validation against the self-reported data.

(2) The study does not sufficiently account for the potential moderating effects of variables such as individual traits, family support, and regional economic conditions, which may influence the effectiveness of

entrepreneurship education. Moreover, the theoretical model does not adequately reflect the unique characteristics of green entrepreneurship, particularly its emphasis on environmental sustainability. Future research should explore the moderating roles of factors such as individual innovativeness, family entrepreneurial background, and regional green industry policies. It is also recommended to develop domain-specific measurement instruments, such as a “Green Agricultural Entrepreneurship Intention Scale”, incorporating dimensions like ecological innovation, resource circularity, and low-carbon operations. In terms of theoretical integration, the Theory of Planned Behavior may be combined with sustainability theories to better capture the environmentally sustainable nature of green entrepreneurship. Furthermore, a multi-level theoretical framework is suggested—one that examines psychological mechanisms at the individual level while also addressing educational and institutional factors at the organisational level.

Conflict of interest

The authors declare no conflict of interest.

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