

International Journal of Learning, Teaching and Educational Research
 Vol. 25, No. 8, pp. 60-94, August 2026
<https://doi.org/10.26803/ijlter.25.8.3>
 Received May 31, 2026; Revised Jul 13, 2026; Accepted Jul 16, 2026

Design-Based Research on Green Entrepreneurship E-Learning: Cultivating Entrepreneurial Intention in Vocational Fashion Design and Marketing Programs in Salatiga

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Abstract. Growing global concern over sustainability has highlighted the need to integrate green entrepreneurship into vocational education. However, the limited use of learning technologies linking entrepreneurship with sustainability has created a gap in vocational high schools. This study aims to design and validate a Green Entrepreneurship e-learning platform for vocational high school students majoring in Fashion Design and Marketing in Salatiga, Indonesia. A Design-Based Research (DBR) approach was employed through iterative cycles of problem identification, platform design, refinement, and validation. Data were collected through questionnaires, semi-structured interviews, observations, and focus group discussions involving 2 teachers, 2 school

Citation :
 Rina, L., Siswandari,
 Hindrayani, A., &
 Sangka, K.B. (2026).
 Design-Based Research
 on Green
 Entrepreneurship
 Intention in Vocational
 Fashion Design and
 Marketing Programs in
 Salatiga. *International
 Journal of Learning,
 Teaching and Educational
 Research*, 25(8), 60–94.
<https://doi.org/10.26803/ijlter.25.8.3>

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principals, 48 students from public and private vocational schools, and 4 expert validators. Students were selected using simple random sampling, while experts were recruited through purposive sampling. Qualitative and quantitative analyses were conducted during the needs analysis, design, and validation stages. The findings reveal two main outcomes. First, the platform was developed using a green entrepreneurship framework comprising learning modules and project-based activities spanning conceptualization, practical implementation, and digital promotion of circular products. As a paperless, cloud-based Learning Management System (LMS), it supports collaborative learning while encouraging students to transform altruistic values into practical solutions for real-world challenges. Second, the platform demonstrates high feasibility, with mean scores of 4.58/5 (92%) from media experts and 4.32/5 (86%) from green entrepreneurship experts. Future studies should integrate Artificial Intelligence (AI) to provide personalized feedback on students' green entrepreneurship literacy according to their vocational specialization.

Keywords: Design-based research; Learning Management System (LMS); SDG 4; sustainability; vocational education

1. Introduction

Integrating the values of the Sustainable Development Goals (SDGs) into education has become a global priority for accelerating the transition toward sustainable development. In support of this agenda, the *Global Education Monitoring Report* recommends further research to identify the factors shaping students' knowledge, attitudes, and environmentally responsible behaviors.

This recommendation reflects the international commitment to monitoring the implementation of green education, beginning with the integration of sustainability principles into school curricula (United Nations Educational Scientific and Cultural Organization & Monitoring and Sustainability Education Research Institute University of Saskatchewan, 2024). In this context, Vocational High Schools require stronger support to implement entrepreneurship education that promotes environmental responsibility and sustainability (Widodo et al., 2025). Empirical evidence indicates that altruistic values and sustainability-oriented entrepreneurship curricula positively influence students' attitudes toward green entrepreneurship (Romero-Colmenares & Reyes-Rodríguez, 2022).

Although Indonesia has established a national green economy agenda targeting 2060 (Organisation for Economic Co-operation and Development, 2024), labor market data suggest that the transition toward green employment remains limited. According to the Ministry of National Development Planning/Head of the National Development Planning Agency (2025), 61 % of Indonesia's workforce remains employed in non-green sectors. Regional statistics from Central Java further show that Vocational High School graduates have consistently represented the largest share of unemployed individuals over the past three years, accounting for 33.25% of total unemployment (Central Statistics Agency of Central Java Province, 2025). More concerning, only 21.8% of vocational graduates

in Central Java are employed in green occupations, while merely 7.3% are classified as potential green workers. These figures highlight the limited contribution of vocational education to developing sustainability literacy and preparing graduates for the emerging green workforce in Indonesia.

Previous studies have promoted environmental awareness and sustainable practices in vocational education (Al Yusuf & Alhamad, 2026; Zakaria et al., 2022); however, they have not explored how these initiatives can be effectively supported through Learning Management Systems (LMSs). Likewise, although several studies have developed LMS-based entrepreneurship learning platforms, their instructional content has largely overlooked sustainability (Fadillah et al., 2023; Mensah et al., 2023).

Conversely, other studies have integrated sustainability literacy into LMSs without incorporating entrepreneurship education (Alturki & Aldraiweesh, 2021; Donath et al., 2020). Consequently, existing LMS platforms tend to address entrepreneurship and sustainability as separate domains rather than as complementary learning objectives. To address this gap, the present study develops and validates a Green Entrepreneurship e-learning platform that integrates entrepreneurship education with sustainability principles to support the implementation of Education for Sustainable Development (ESD) in Vocational High Schools.

1.1 Problem Statement

Despite the growing adoption of digital learning, the accessibility, relevance, and practical value of e-learning platforms in vocational schools remain challenging. In Indonesia, the Ministry of Manpower of the Republic of Indonesia (2025) has identified Vocational High Schools as strategic institutions for preparing an adaptive, inclusive, and industry-responsive green workforce. As providers of technically skilled graduates, Vocational High Schools play a crucial role in supporting the transition toward a green economy. Although several Vocational High Schools have introduced programs related to green occupations, sustainability remains a peripheral rather than a core component of the entrepreneurship curriculum.

Preliminary observations and semi-structured interviews conducted between October and November 2024 in public and private Vocational High Schools in Salatiga, Indonesia, revealed that entrepreneurship instruction had not yet integrated sustainability principles into learning activities. For example, fashion design practices continued to rely on synthetic dyes instead of natural alternatives, entrepreneurship projects generated considerable fabric and plastic waste without recycling initiatives, and most students had not considered environmentally sustainable business models in their future entrepreneurial plans. Under these circumstances, digital learning technologies offer an opportunity to provide more accessible, interactive, and authentic learning experiences that encourage students to develop knowledge and practical competencies in green entrepreneurship.

1.2 Research Objective

The primary objective of this study is to design and validate a Green Entrepreneurship e-learning platform to foster green entrepreneurial intention among Vocational High School students. Specifically, this study aims to:

1. Formulate the design principles underlying the development of a Green Entrepreneurship e-learning platform for Fashion Design and Marketing students in Vocational High Schools in Salatiga; and
2. Examine the iterative refinement process of the LMS through expert validation, focus group discussions (FGDs) with teachers, and pilot testing with students to produce a validated and feasible Green Entrepreneurship e-learning platform.

1.3 Research Questions

This study addresses the following research questions:

1. What design principles underline the development of the Green Entrepreneurship e-learning platform for Vocational High School students majoring in Fashion Design and Marketing in Salatiga?
2. How does the iterative refinement process, including expert validation, teacher FGDs, and pilot testing with students, contribute to the development and feasibility of the Green Entrepreneurship e-learning platform?

2. Literature Review

2.1 Development of Green Entrepreneurial Intention in Vocational Education

Green entrepreneurial intention is closely associated with the Theory of Planned Behavior (TPB) proposed by (Ajzen, 1991), which explains that intention is shaped by the interaction among attitudes, subjective norms, and perceived behavioral control. Within the TPB framework, positive attitudes toward green entrepreneurship encourage individuals to develop intentions to engage in environmentally responsible entrepreneurial activities (Yi, 2021). Subjective norms refer to the influence of family, peers, teachers, and the broader social environment on individuals' entrepreneurial decisions, whereas perceived behavioral control reflects individuals' confidence in their ability to perform green entrepreneurial behaviors and is considered a key determinant of sustainable entrepreneurial intention (Mehraj et al., 2023).

Accordingly, educational support plays a critical role in strengthening these three determinants of intention by providing contextual learning experiences that encourage students to develop green entrepreneurial intentions. In vocational education, green entrepreneurship learning can be enhanced through idea-generation activities, project-based learning, interactive discussions, and reflective practices tailored to the characteristics and competency requirements of different vocational programs (Díaz-Lauzurica & Moreno-Salinas, 2026; Nilasari & Dasining, 2018; Tsai et al., 2022).

2.2 Entrepreneurship Education Integrated with Sustainability Values and ESD

Entrepreneurship education is increasingly oriented toward preparing environmentally, socially, and economically responsible citizens by equipping students with the competencies needed to become future leaders (Uvarova et al., 2021). Within this perspective, green entrepreneurship represents an innovation-

driven business approach that simultaneously addresses economic opportunities and environmental challenges (Genoveva & Tanardi, 2022). More specifically, green entrepreneurship promotes environmentally responsible business practices, including waste reduction and management, resource efficiency, and production methods based on circular economy principles. Chinedu et al. (2023) argued that green entrepreneurship education stimulates the development of sustainable business ideas while promoting effective teaching and learning practices that support the implementation of ESD. In line with this perspective, the Ministry of Primary and Secondary Education (2025) encourages vocational education institutions to accelerate the digitalization of learning as part of broader efforts to strengthen both the digital economy and the green economy through green education initiatives.

2.3 Principles for Developing an LMS-Based Green Entrepreneurship E-Learning Platform to Strengthen Green Entrepreneurial Intention

The digitalization of learning is grounded in Constructivist Theory, particularly Vygotsky's social constructivist perspective, which emphasizes that knowledge is actively constructed through meaningful social interaction and the exchange of diverse experiences and perspectives (Wang et al., 2024; Woo & Reeves, 2007). Within this framework, reflective learning features embedded in an LMS enable students to construct new understandings of green entrepreneurship by connecting prior knowledge with authentic learning experiences. Constructivist-based e-learning further encourages learners to actively explore internet-supported learning resources while developing their capacity to solve environmental, economic, and social problems.

Recent empirical studies have highlighted the potential of digital LMS platforms to facilitate learning about sustainable business concepts, responsible resource management, and environmental quality, thereby fostering students' interest in sustainability issues (Ganefri et al., 2022; Ho et al., 2024; Liu et al., 2023). However, these studies have not adequately examined how digital learning environments can be designed to strengthen green entrepreneurial intention among students enrolled in specific vocational disciplines. This gap indicates the need for an integrated e-learning platform that simultaneously supports entrepreneurship education and sustainability learning while advancing the implementation of ESD.

The design of an LMS for green entrepreneurship should therefore incorporate interactive discussion forums (Shkoukani, 2019), collaborative case-based learning that addresses local business challenges (Okuogume & Toledano, 2024), and collaborative learning approaches that promote learner autonomy alongside environmentally responsible lifestyles (Donath et al., 2020). Equally important, the platform should be refined through iterative design cycles to ensure that it effectively supports sustainable business practices and meets users' learning needs (Kurniasari et al., 2025). These principles provide the conceptual foundation for developing the Green Entrepreneurship E-Learning Platform tailored to institutional contexts and the competency requirements of Fashion Design and Marketing programs in Vocational High Schools.

3. Methodology

3.1 Research Design and Procedures

This study employed a developmental research approach using Design-Based Research (DBR) for investigating learning tools and instructional techniques within classroom contexts (Amiel & Reeves, 2008). According to van der Akker et al. (2006), DBR generally comprises four iterative phases: (1) identifying practical problems, (2) designing and developing technological innovations, (3) conducting iterative cycles of implementation and refinement, and (4) evaluating the intervention to generate design principles. Although the DBR framework encompasses four phases, the present study only focused specifically on the first two phases: (1) identifying practical problems and (2) designing technological innovations (see Figure 1).

Restricting the study to these phases allowed the researchers to establish a robust and validated e-learning platform before proceeding to large-scale classroom implementation. The platform underwent iterative refinement through expert validation, FGDs involving teachers and school principals, and a limited user trial with students to ensure its feasibility. Consequently, the third and fourth phases of the DBR cycle, which involve large-scale implementation and the generation of comprehensive design principles, are planned for subsequent research.

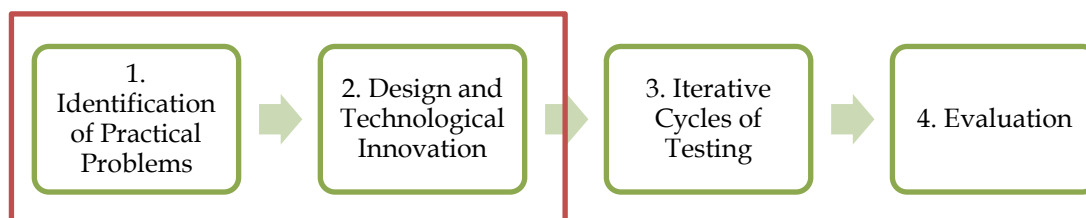


Figure 1: DBR procedures (van der Akker et al., 2006)

The first phase focused on identifying practical problems through an analysis of entrepreneurship learning practices and a needs analysis conducted in Vocational High Schools. This phase aims to identify instructional challenges and determine the requirements for developing a Green Entrepreneurship e-learning platform. The second phase involved designing and developing a technological innovation based on an LMS. The platform was customized to reflect the characteristics of each vocational specialization. For the Fashion Design program, the learning content emphasized textile waste utilization and natural dyeing techniques.

For the Marketing program, the platform focused on developing students' resilience and competencies in promoting environmentally friendly products through digital marketing strategies. Following prototype development, the platform underwent three consecutive validation phases. The first phase consisted of expert validation to evaluate the feasibility of the prototype and obtain recommendations for improvement until the product met the required standards for vocational entrepreneurship learning.

The revised prototype was subsequently examined during the second phase, which involved an FGD with teachers and school principals. The discussion aimed to evaluate the revised platform, identify remaining limitations, and formulate recommendations for further refinement. Particular attention was given to the readability of learning materials, the relevance of collaborative project assignments to the Fashion Design and Marketing programs, and the usability and navigation of the LMS interface. The platform was revised based on the feedback obtained to improve its effectiveness in fostering students' green entrepreneurial intention.

The third phase involved a limited user trial with two entrepreneurship teachers and 48 Grade 11 Vocational High School students from two classes. During this phase, participants explored the LMS features, received an orientation on the platform's workflow, and were introduced to the objectives and procedures of the study. The trial served as an initial feasibility test and dissemination stage prior to large-scale implementation.

3.2 Research Site and Participants

The study was conducted at one public Vocational High School and one private Vocational High School in Salatiga, Central Java, Indonesia. The target population comprised Grade 11 students enrolled in entrepreneurship courses and their respective teachers. Following preliminary interviews with school leaders and teachers, the study focused on students majoring in Fashion Design at the public vocational school and Marketing at the private vocational school, as these programs demonstrated the greatest need for integrating sustainability into entrepreneurship education. A total of 48 Grade 11 students participated in the platform trial and were selected using simple random sampling. In contrast, expert validators were selected through purposive sampling based on their academic qualifications and professional expertise.

The validation process involved 4 experts representing 2 areas of expertise:

- a. Subject-matter experts included one doctoral-level academic specializing in economics and entrepreneurship education with more than ten years of teaching and research experience, and one industry practitioner with at least five years of professional experience in circular economy initiatives. Their evaluation focused on the quality of entrepreneurship content, learning outcomes, and the suitability of vocational project activities.
- b. Media experts included one doctoral-level academic specializing in educational technology innovation and one professional practitioner with a minimum of five years of experience in LMS development and implementation. Their assessment focused on program functionality, interface design, technical quality, and overall system effectiveness.

Infrastructure readiness was also considered during the validation process to ensure the feasibility of platform implementation. This included the availability of internet connectivity, computer laboratories, and Fashion Design laboratory facilities. All research procedures complied with established ethical standards for educational research. The researchers obtained an official authorization letter

from the Graduate School of the Faculty of Teacher Training and Education before requesting permission from the participating Vocational High Schools. Prior to data collection, all participants received the information regarding the objectives of the study, its potential benefits, and the measures taken to minimize any risks associated with participation. Participation was voluntary, and informed consent was obtained before the study commenced.

3.3 Data Collection, Scoring Rubrics, and Data Analysis

Data collection during the practical problem identification phase was conducted between November 2024 and March 2025. Multiple data collection techniques were employed, including semi-structured interviews, classroom observations, FGDs, and questionnaires. The research instruments were developed with input from subject experts and faculty members. Students' green entrepreneurial intention was measured using a five-point Likert-scale questionnaire. Prior to the main study, the instrument was pilot tested with students who were not included in the research sample to examine its reliability. Internal consistency was assessed using Cronbach's alpha, with a minimum acceptable coefficient of 0.60.

The feasibility of the e-learning platform was evaluated through expert validation using a five-point Likert-scale questionnaire ranging from Very Poor (1) to Very Good (5). The media evaluation instrument comprised three dimensions: the program, display, and technical quality and program effectiveness. Meanwhile, the subject-matter evaluation instrument consisted of five dimensions: self-instruction, self-contained, stand-alone, adaptive, and user-friendliness. The mean values obtained from both validation instruments were subsequently converted into predetermined feasibility categories (see Table 1).

Table 1: Conversion of achievement levels on a 5-point scale (Purba et al., 2026)

Achievement level (%)	Assessment scale	Qualification	Description
90-100%	4.51-5.00	Highly Feasible	No revision required
75-89%	3.51-4.50	Feasible	Minor revisions required
65-74%	2.51-3.50	Neutral / Fair	Revised as necessary
55-64%	1.51-2.50	Less Feasible	Many aspects require revision
0-54%	1-1.50	Not Feasible	Product must be redesigned

Quantitative data were analyzed using descriptive statistics with **IBM SPSS** Statistics Version 30. The analysis included item scores, mean values, and percentage distributions (Rochmawati et al., 2025). Qualitative data obtained from interviews, observations, and FGDs were analyzed using the interactive model proposed by Miles et al. (2014) which consists of data collection, data condensation, data display, and conclusion drawing.

4. Results

The findings are organized around the two primary objectives of this study: (1) formulating the design principles of the Green Entrepreneurship LMS and (2)

examining the iterative design refinement process and the feasibility of the final platform.

4.1 Design of the Green Entrepreneurship E-Learning Platform for Fashion Design and Marketing Programs

The first phase focused on identifying the challenges in entrepreneurship learning, examining the need for a Green Entrepreneurship e-learning platform, and assessing students' initial levels of green entrepreneurial intention.

4.1.1 Analysis of entrepreneurship learning problems in vocational high schools

Initial interviews, classroom observations, and FGDs with entrepreneurship teachers and vice principals for curriculum affairs revealed that the concept of green entrepreneurship had not yet been systematically integrated into entrepreneurship education in the participating Vocational High Schools. Existing learning practices primarily emphasized business planning and business development while paying limited attention to the environmental consequences of entrepreneurial activities.

Likewise, entrepreneurship projects were generally implemented without incorporating sustainability principles throughout the business process, from raw material selection to production. Teachers acknowledged that environmental sustainability had not been explicitly incorporated into entrepreneurship instruction due to limited conceptual understanding and insufficient practical experience in teaching green entrepreneurship. As a result, students had few opportunities to explore environmentally responsible business practices during classroom learning.

With regard to digital learning, both schools demonstrated limited access to educational technology and minimal integration of digital learning platforms into entrepreneurship instruction. Classroom observations showed that several supporting facilities, including LCD projectors, were damaged or no longer functional (see Figure 2). These findings indicate that digital learning initiatives supporting the green economy have not yet been optimally implemented in Vocational High Schools in Salatiga, highlighting the need for an accessible LMS-based Green Entrepreneurship e-learning platform.



Figure 2: Damaged LCD projector limiting the implementation of digital learning

4.1.2 Results of the need analysis for the development of the green entrepreneurship e-learning platform

The needs analysis survey (N = 101) identified several factors supporting the development of a Green Entrepreneurship e-learning platform. The findings are summarized in Table 2.

Table 2: Students' needs analysis for green entrepreneurship and LMS integration

No.	Survey indicator	Key findings
Initial awareness and perceptions		
1.	Prior knowledge of the term "green entrepreneurship"	55.4% had never heard the term
2.	Perceived importance of learning about environmental sustainability	98% considered it important
Preferred Green Entrepreneurship Topics		
3.	Most preferred learning topics (top 3 topics)	a. Waste management and recycling (70.3%) b. Environmentally friendly resource utilization (62.4%) c. Understanding environmental impacts on business (40.6%)
LMS readiness and integration		
4.	Previous experience using an LMS in entrepreneurship classes	a. Never used an LMS (53.5%) b. Google Classroom (38.6%) c. Other online platforms (7.9%)
5.	Need for an integrated LMS featuring digital materials, discussion forums, online projects, and sustainable business practices	95% expressed strong interest
6.	Expectation that the LMS would provide practical guidance on environmentally responsible and socially responsible entrepreneurship	96% reported positive expectations

The diagnostic assessment revealed a substantial gap in students' green entrepreneurship literacy. More than half of the respondents (55.4%) reported that they had never encountered the term "*green entrepreneurship*" prior to the survey, suggesting that sustainability concepts have not yet been adequately integrated into the existing entrepreneurship curriculum. This limited exposure to sustainability education is likely to constrain students' green entrepreneurial intention by restricting their understanding of environmentally responsible business practices. Nevertheless, students expressed strong interest in learning about sustainability-related topics and demonstrated a high level of acceptance toward an LMS that integrates entrepreneurship and environmental education. These findings indicate a clear need for a Green Entrepreneurship e-learning platform specifically designed to support Fashion Design and Marketing programs in Vocational High Schools.

4.1.3 Analysis of initial green entrepreneurial intention of vocational high school students

Students' initial green entrepreneurial intention was assessed using nine measurement indicators, as presented in Figure 3. The results showed that although some students expressed an interest in becoming environmentally responsible entrepreneurs, many had not yet developed strong confidence in establishing sustainable businesses in the future. Overall, the findings indicate that students' green entrepreneurial intention remained at a moderate level.

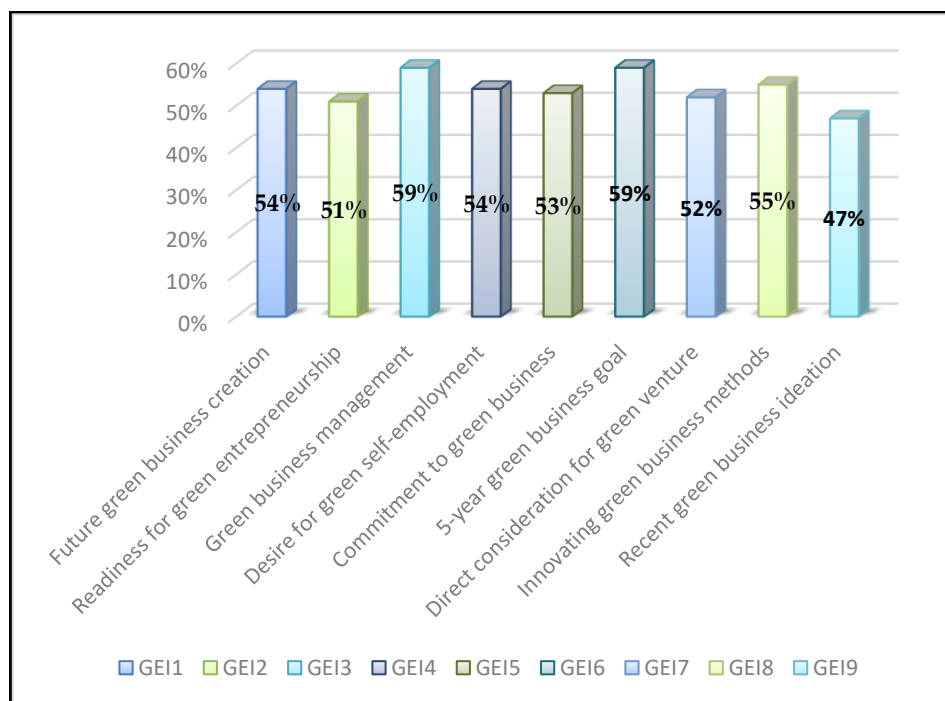


Figure 3: Initial levels of green entrepreneurial intention among Vocational High School students

4.2 Design of the Green Entrepreneurship E-Learning Platform

The second phase focused on designing the Green Entrepreneurship E-Learning Platform. The development process began with the preparation of a system flowchart, followed by the formulation of learning outcomes that integrate

entrepreneurship competencies with sustainability values. The system flowchart illustrates the sequence of interactions among administrators, teachers, and students, starting from the login process to the learning evaluation stage through quizzes (see Figure 4). Upon completion of each quiz, the LMS automatically generates students' scores, enabling teachers to monitor learning progress and provide timely feedback through the platform's built-in feedback feature.

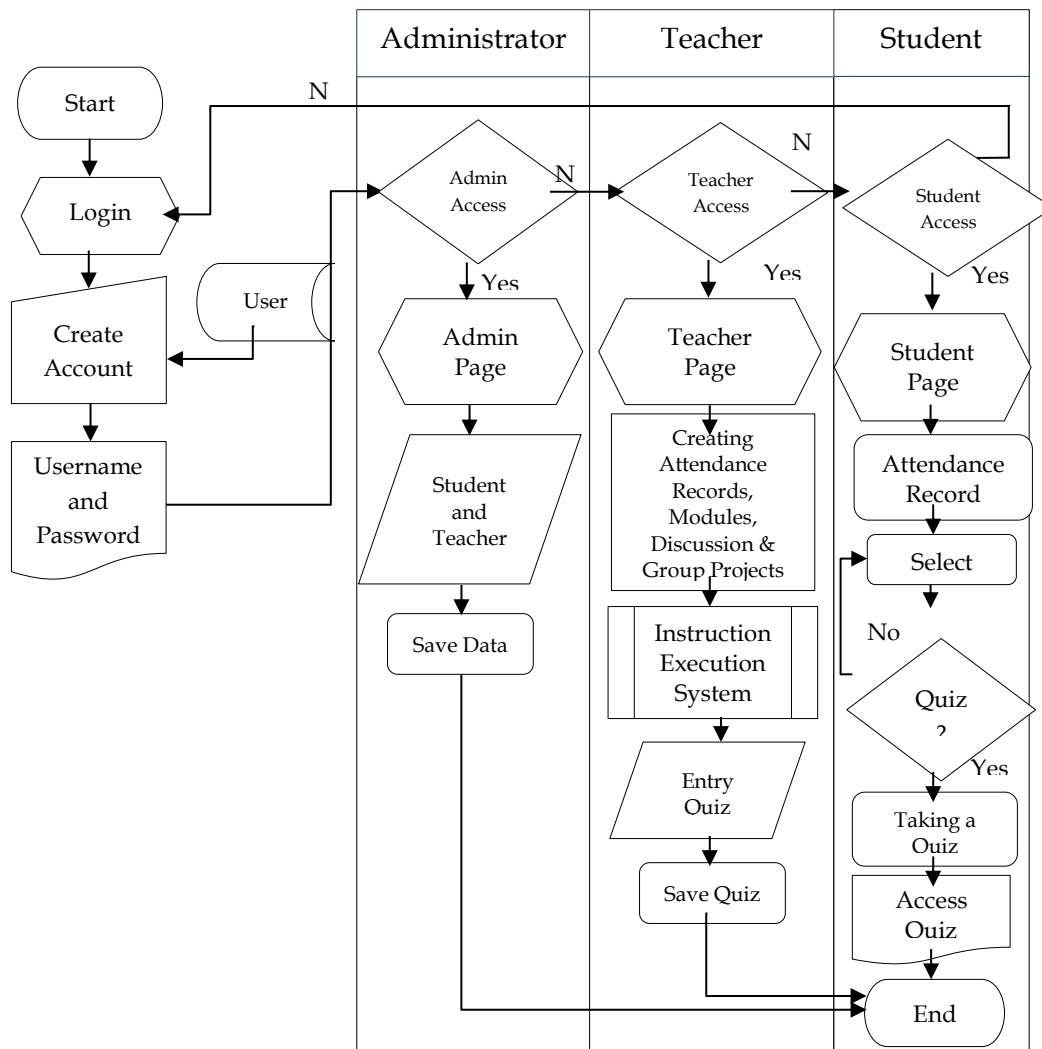


Figure 4: Green entrepreneurship e-learning platform flowchart

Following a series of FGDs with entrepreneurship teachers, the instructional design was further refined to reflect the characteristics of the two participating vocational programs, namely Fashion Design and Marketing. The initial platform consisted of six learning topics; however, teachers emphasized the importance of strengthening students' resilience and digital marketing competencies to support the promotion of green business products. Based on these recommendations, the curriculum was revised and expanded into seven learning topics (see Table 3). These intended learning outcomes subsequently served as the basis for developing a set of digital learning modules integrated into the Green Entrepreneurship LMS.

Table 3: Learning objectives of the green entrepreneurship module

Scope of material	Learning objectives
Green business production planning	Develop production plans based on sustainability principles.
	Design efficient production processes.
	Select environmentally friendly raw materials and production methods.
Developing green products for green business initiatives	Create innovative and marketable green business products.
	Analyze the use of environmentally friendly technologies and raw materials.
Management and development of green entrepreneurship	Design sustainable business management strategies.
	Determine efficient strategies for green business development.
Fundamental concepts of green entrepreneurship grounded in sustainability principles	Identify the concept of green entrepreneurship.
	Analyze the contribution of green entrepreneurship to economic, environmental, and social sustainability.
	Generate initial ideas for establishing green business ventures.
Opportunities, risks, and risk management in green entrepreneurship	Identify green business opportunities.
	Analyze potential risks and risk management strategies.
	Determine suitable green business opportunities that align with students' vocational specialization (Fashion Design or Marketing).
Preparation of green business proposals	Identify the components of green business proposals.
	Develop green entrepreneurship business proposals.
Digital marketing of green business products	Design digital marketing strategies for promoting green products.
	Demonstrate resilience and entrepreneurial persistence in promoting green products.

4.3 Results of the Green Entrepreneurship E-Learning Prototype Design

This section presents the main features of the Green Entrepreneurship E-Learning Platform developed through the iterative design process.

4.3.1 Prototype interface of the green entrepreneurship e-learning platform

The Green Entrepreneurship E-Learning Platform was developed as a cross-platform LMS that can be accessed through both web browsers and mobile devices, allowing users to participate in learning activities anytime and anywhere. To reinforce the sustainability theme, the platform adopts **green** as its dominant visual color (see Figure 5). In addition to delivering learning materials, the LMS enables teachers to monitor students' learning progress, assess their performance, and provide individualized feedback directly within the platform.



Figure 5: Homepage of the green entrepreneurship e-learning platform

The login page provides instructions for users to enter their identification information, including administrators, teachers, and students, before accessing the system. To accommodate different vocational specializations, the platform provides two institution-specific learning environments, namely Fashion Design and Marketing (see Figure 6). Although both programs use the same Green Entrepreneurship modules, the case studies, collaborative projects, and end-of-topic assessments are contextualized according to the competencies required in each vocational field.

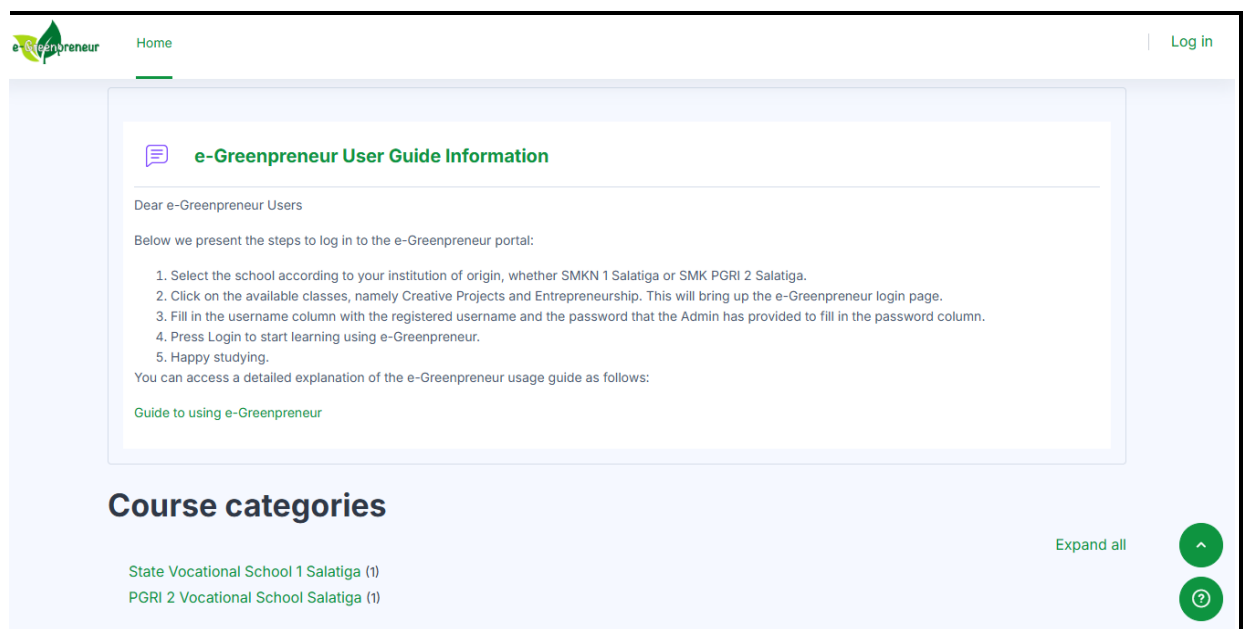


Figure 6: Login page for the fashion design and marketing programs

After logging into the platform, students are presented with learning materials organized according to the intended learning objectives and instructional sequence. The dashboard also displays students' learning progress, including the

completion status of discussion forums, assignments, and quizzes. This feature enables students to monitor their individual learning achievements while supporting teachers in tracking student participation throughout the learning process.

4.3.2 Green entrepreneurship e-learning features for supporting green entrepreneurship education

The Green Entrepreneurship E-Learning Platform provides comprehensive access to course information, intended learning outcomes, learning activities, and integrated external learning resources, including YouTube, Google Meet, and Google Drive (see Figure 7).

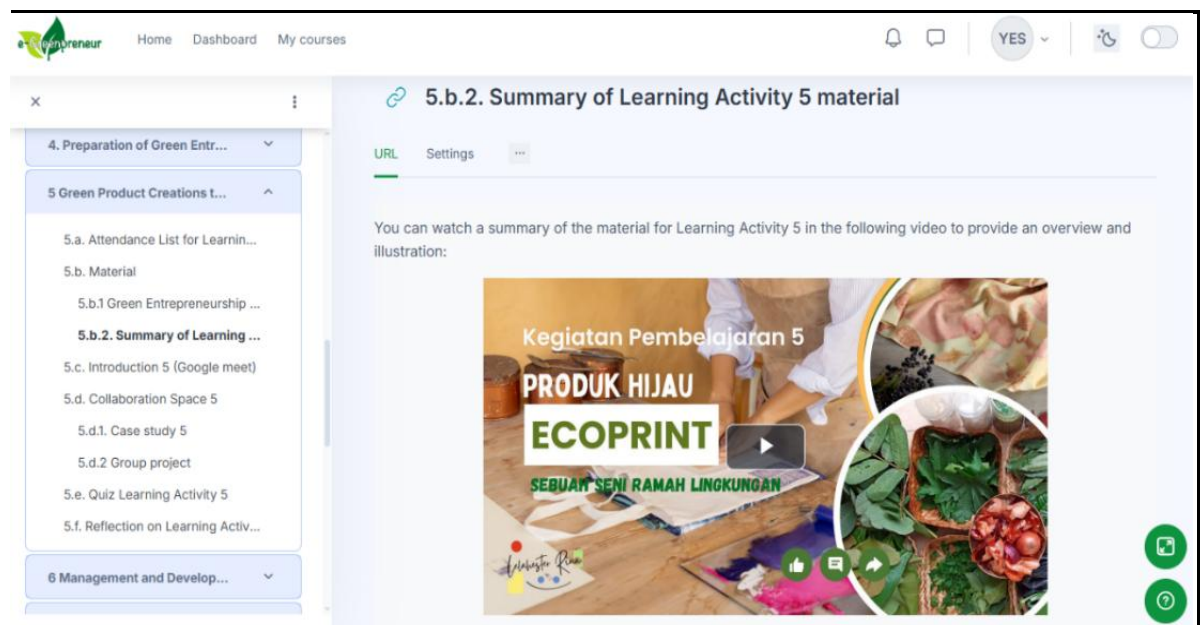


Figure 7: Digital learning materials displayed through integration of external YouTube links

Each learning topic follows a consistent instructional structure comprising attendance recording, digital learning modules, multimedia learning resources (including instructional videos, infographics, and mind maps), synchronous learning sessions via Google Meet, collaborative learning activities, such as case-study discussion forums, group projects, end-of-session quizzes, and reflective learning exercises (see Figure 8). The integration of Google Meet enables teachers and students to interact through live audio and video communication, thereby supporting real-time discussion and instructional guidance.

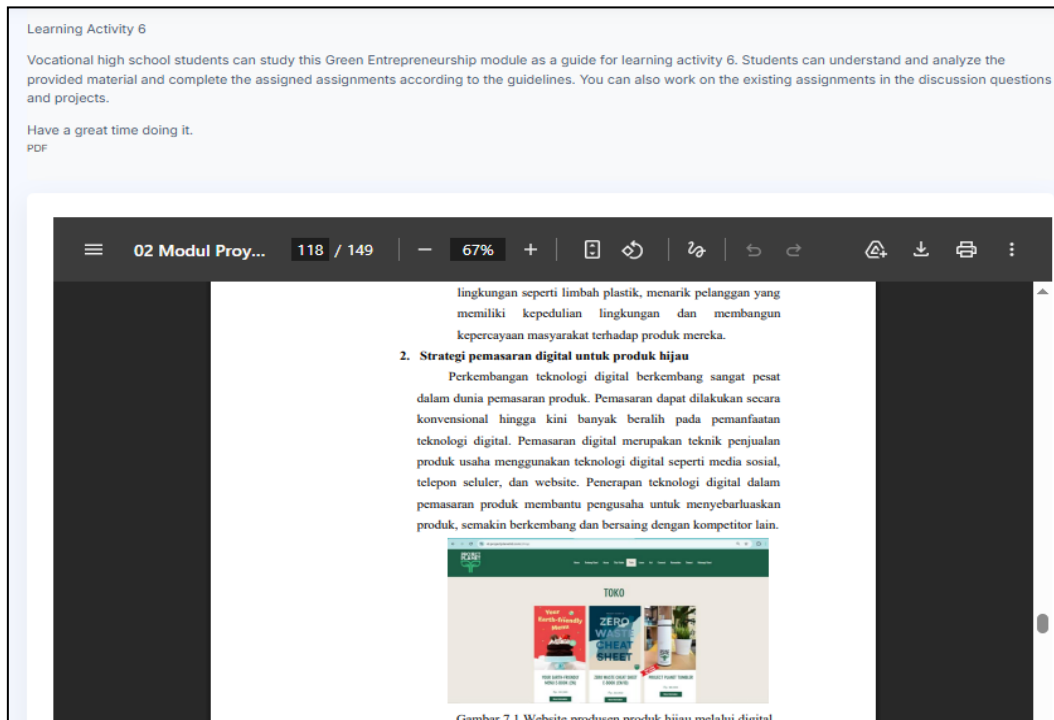


Figure 8: Green entrepreneurship digital module materials

The collaborative learning component consists of case-based discussion forums and group projects designed to encourage students to apply sustainability principles in authentic business contexts. The learning scenarios are contextualized according to students' vocational specialization. For example, students in the Fashion Design program analyze case studies on ecoprint production and environmentally friendly textile practices (see Figure 9), whereas students in the Marketing program examine digital marketing strategies for promoting green products and sustainable business campaigns (see Figure 10). These contextualized learning activities encourage students to connect entrepreneurial competencies with sustainability challenges encountered within their respective vocational disciplines.

Case Study Work Instructions

Assignment: Production and Innovation of Green Products with Ecoprint Techniques

Through this case study, students are expected to:

1. Understand the Ecoprint production process and how this technique supports environmental sustainability.
2. Analyze appropriate marketing and packaging strategies for green products to appeal to consumers.
3. Develop critical thinking and teamwork skills in designing innovative green business ideas.

Group Formation :

1. Make groups of 5-6 students.
2. Designate one person as group leader to coordinate discussions and collection of work results.

Case Study Instructions:

1. Read the material provided in Learning Activity 5.
2. Discuss in small groups to answer the case study questions. Each group member can provide an opinion based on their own understanding.
3. Answer the questions given clearly and logically.
4. Make conclusions from the results of the group discussion.
5. Present the results of the discussion in front of the class.

Assessment Criteria:

1. Conceptual understanding (30%). Students are able to demonstrate a good understanding of Ecoprint techniques and green production.

Figure 9: Case study assignment for the fashion design program

Case Study Work Instructions

Assignment: Green Product Digital Marketing Strategy

Through this case study, students are expected to:

1. Understand the promotion of environmentally friendly products.
2. Analyze and evaluate the marketing strategy of the Napak Bumi business.
3. Practice critical thinking and communication skills through group discussions, presentations, and in-class question and answer sessions.

Group Formation :

1. Make groups of 5-6 students.
2. Each group will answer the questions provided about the given case:

Case to solve:

Napak Bhumi, founded by Ebi, is a local brand that processes textile waste into eco-friendly fashion products, particularly shoes. Ebi's motivation arose from concern about environmental pollution caused by the textile industry. Napak Bhumi faces significant challenges in building consumer trust in recycled products, educating the market about sustainability, and developing effective marketing strategies amidst the competitive fashion market. They rely on promotions through communities, social media, product storytelling, and educational campaigns to strengthen their brand image. (Nabilla Ramadhian & Bestari Kumala Dewi, 2024)

<https://lifestyle.kompas.com/read/2024/08/05/174500520/cerita-di-balik-napak-bhumi-ubah-limbah-tekstil-jadi-produk-fesyen?page=all>

Based on information from Ebi's experience, try discussing with your group about:

Figure 10: Case study assignment for the marketing program

At the end of each learning topic, students complete a structured self-reflection activity to evaluate their learning experiences and monitor their achievement of the intended learning outcomes. The reflection feature includes guiding questions that encourage students to critically assess their strengths, identify areas requiring improvement, and formulate appropriate follow-up actions (see Figure 11). By promoting continuous reflection, this feature supports students in developing self-regulated learning strategies while strengthening their understanding and application of green entrepreneurship principles throughout the learning process.

The screenshot shows the '7.f. Reflection' section of the Green Entrepreneurship E-Learning Platform. The sidebar on the left lists modules from 4 to 7, with 7.f. Reflection selected. The main area has a 'Mode: Anonymous' header and two text input fields. The first field is for the question: 'What has worked in designing your digital promotional strategy for eco-friendly products?'. The second field is for the question: 'What do you need to improve for digital promotion of eco-friendly products to make them more effective and more popular?'. At the bottom right, there are buttons for 'Submit your answers' and 'Cancel'.

Figure 11: Reflection feature in green entrepreneurship learning

4.4 Feasibility of the Green Entrepreneurship E-Learning Platform for Strengthening Vocational High School Students' Green Entrepreneurial Intention

Evaluating the feasibility of the Green Entrepreneurship E-Learning Platform constituted an essential stage of the development process before large-scale implementation. The evaluation aimed to examine the platform's functionality, content quality, usability, and practicality through a series of iterative validation activities involving experts, teachers, school administrators, and students.

4.4.1 Expert validation

The Green Entrepreneurship E-Learning Platform was first evaluated by two media experts according to their respective areas of expertise and predetermined evaluation criteria. The educational technology expert assigned the platform an average mean of 4.23 out of 5 (85%), indicating that it was "Feasible" for implementation. Meanwhile, the IT/ LMS practitioner assigned an average mean of 4.94 out of 5 (99%), placing the platform in the "Highly Feasible" category. The combined evaluation resulted in an overall mean of 4.58 out of 5 (92%), demonstrating a high level of feasibility. The results of media expert validation are presented in the following Table 4:

Table 4: Results of media expert validation

Evaluation aspect	Mean		Average mean	Feasibility
	Validator 1	Validator 2		
Program	4.78	4.89	4.83	Highly Feasible
Display	3.90	5.00	4.45	Feasible
Technical quality and program effectiveness	4.00	4.92	4.46	Feasible
Overall mean	4.23	4.94	4.58	Highly Feasible

The experts also identified several strengths of the platform, including: (1) its accessibility through both web-based computers and smartphones, enabling users to choose the most suitable device based on available resources; (2) the provision of learning materials in concise formats, such as videos, infographics, and mind maps, which improves learning efficiency; and (3) the alignment of learning activities with students' vocational specialization programs. Nevertheless, the experts recommended several improvements, including refining the automatic preview display of learning resources and enhancing the synchronization between video scripts and voice narration.

The e-learning platform was further recognized for several distinctive advantages, including: (1) facilitating active interaction between teachers and students through discussion forums and collaborative project activities; (2) providing self-reflection features that assist students in developing follow-up improvement plans; and (3) encouraging students to make productive use of waste materials generated during practical classroom activities. Based on the combined evaluations of both media experts, the e-learning platform obtained an overall average feasibility score of 4.58 (92%), placing it in the "Highly Feasible" category. The results of media expert validation are described in the following Figure 12:

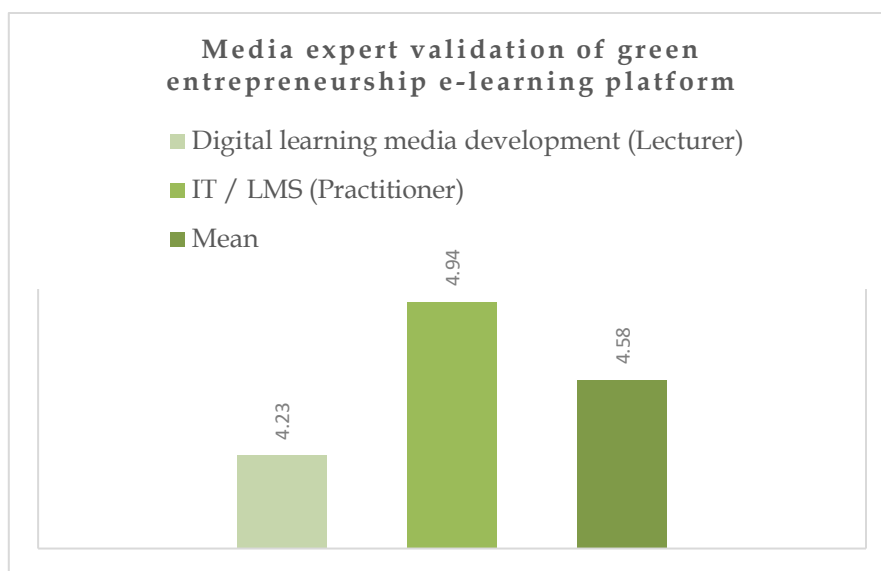


Figure 12: Results of media expert validation

Based on the evaluations of the subject-matter experts, the e-learning platform demonstrated several notable strengths, including: (1) the self-instruction aspect, which enables students to study the materials independently without relying entirely on teacher guidance; (2) the self-contained aspect, whereby the learning materials provide comprehensive content and explanations that are aligned with the intended learning objectives; (3) the stand-alone aspect, allowing the modules to function independently without requiring additional learning media; (4) the adaptive aspect, reflecting the flexibility and accessibility of the modules across various learning contexts; and (5) the user-friendliness aspect, with materials that are easy to use and presented in an engaging and interactive format.

Overall, the first subject-matter validator, an academic expert in entrepreneurship education, assigned a mean of 3.93 (79%), which was categorized as “Feasible”. In contrast, the green entrepreneurship practitioner assigned a mean of 4.70 (94%), placing the platform in the “Highly Feasible” category. Based on the combined evaluations of both subject-matter experts, the e-learning platform achieved an overall mean of 4.32 (86%) (see Table 5), indicating that it falls within the “Feasible” category.

Table 5: Results of subject-matter expert validation

Evaluation aspect	Mean		Average mean	Feasibility
	Validator 1	Validator 2		
Self-instruction	3.67	4.50	4.08	Feasible
Self-contained	4.00	4.50	4.25	Feasible
Stand-alone	3.00	4.50	3.75	Feasible
Adaptive	5.00	5.00	5.00	Highly feasible
User-friendliness	4.00	5.00	4.50	Feasible
Overall mean	3.93	4.70	4.32	Feasible

These findings confirm that the learning materials provided in the Green Entrepreneurship E-Learning Platform are suitable for implementation in vocational entrepreneurship education (see Figure 13). Although the overall evaluation confirmed the platform’s feasibility, the experts identified several technical and instructional issues that required further refinement before classroom implementation.

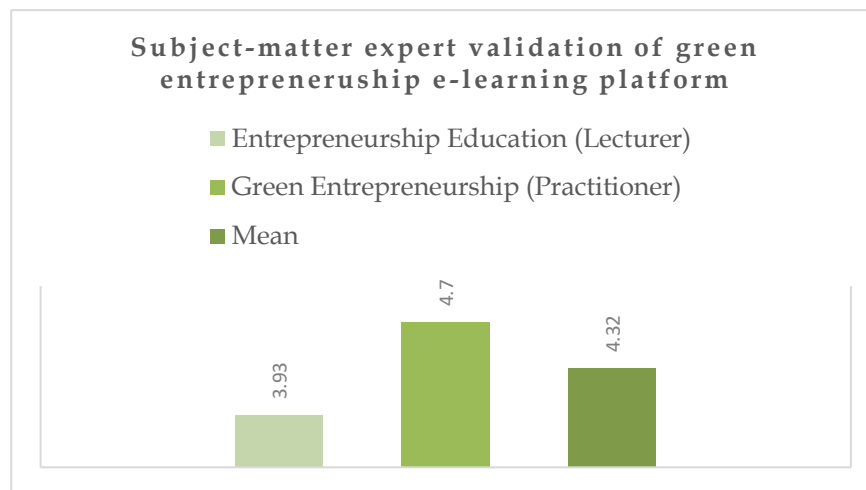


Figure 13: Results of subject-matter expert validation

Table 6: Summary of platform revisions following expert validation

No.	Initial platform condition	Revision and optimization
Media expert recommendations		
1.	Active navigation elements used blue as the primary interface color.	The interface color was changed to green to strengthen the visual identity of the Green Entrepreneurship platform.
2.	External resources (PDF files, Google Meet, and Google Drive) opened in the same browser tab.	External links were configured to open in a new browser tab to improve navigation.
3.	Topic 2 summary was presented as a static infographic.	The summary was redesigned as an interactive mind map to improve readability and concept organization.
Subject-matter expert recommendations		
1.	The language used in the digital modules was considered overly academic for Vocational High School students.	The instructional language was simplified to improve students' comprehension.
2.	Learning outcomes were presented in a relatively general form.	Learning outcomes were revised to become more explicit, measurable, and aligned with each instructional topic.

Despite these recommendations (see Table 6), the remaining platform components functioned effectively throughout the validation process. The LMS fulfilled the user-friendly criterion by supporting access through both web-based and mobile devices. Furthermore, key learning features, including attendance, discussion forums, assignments, quizzes, and self-reflection activities, operated as intended and effectively supported the learning process.

4.4.2 Results of the FGD and limited user trial

Following expert validation, the revised platform was presented in an FGD involving researchers, policymakers, and practitioners. The discussion generated two major recommendations. First, participants proposed the inclusion of additional learning materials on digital marketing strategies that emphasize entrepreneurial resilience and campaigns promoting environmentally responsible products. Second, they recommended simplifying the language used throughout the digital modules and student assignments to improve readability and accessibility for Vocational High School students.

The revised platform was subsequently evaluated through a limited user trial involving two entrepreneurship teachers and 48 Grade 11 students from the Fashion Design and Marketing programs. Students explored the platform and provided feedback regarding its usability, navigation, and overall learning experience. Representative students' feedback from the user trial is summarized in Table 7.

Table 7: Representative students' feedback from the limited user trial

No.	Student initial	Theme	Feedback	Implication
1.	SN	Content and collaboration	"The LMS is very helpful because it does not only provide comprehensive learning materials but also allows us to exchange ideas with classmates."	Supports the effectiveness of collaborative discussion forums and diverse learning resources.
2.	SNI	Sustainability comprehension	"Now, I can better understand green business practices, managing products so they do not become waste, and making a profitable business while still caring for people and the environment."	Confirms students' understanding of the circular economy, sustainability principles, and the triple bottom line.
3.	MEA	Infrastructure limitations	"The unstable internet connection made it difficult to access some video materials."	Providing learning materials in multiple formats, including downloadable modules, text, images, mind maps, and videos.
4.	OS	User experience and navigation	"I was not yet familiar with all of the platform's features."	Suggests the need for step-by-step tutorial videos and a user guide.

The limited user trial identified two primary operational challenges: students' unfamiliarity with several LMS navigation features and unstable internet connectivity. In response to this feedback, the platform was supported with a step-by-step video tutorial and a user guide to facilitate platform navigation. Additionally, downloadable learning resources were provided to ensure that students experiencing connectivity constraints could continue learning offline. Following these revisions, the Green Entrepreneurship E-Learning Platform met the expected standards of functionality, usability, and instructional quality and was considered ready for implementation in vocational entrepreneurship classrooms.

5. Discussion

5.1 Design of the Green Entrepreneurship E-Learning Platform

Integrating the Green Entrepreneurship e-learning platform into entrepreneurship education enables students to acquire entrepreneurial knowledge while simultaneously engaging with sustainability principles through collaborative learning activities based on authentic environmental challenges. Unlike conventional LMSs, such as Google Classroom, which are primarily used for distributing learning materials and managing assessments, the proposed platform was intentionally designed to integrate green entrepreneurship concepts with collaborative problem-solving activities that address real-world environmental issues.

One of the platform's most distinctive features is its "Green Framework Logic", which systematically embeds sustainability principles throughout the entrepreneurship learning process. The platform promotes the 'green' concept through paperless learning by utilizing cloud-based storage for learning materials, assignments, collaborative projects, and teacher feedback. Conventional entrepreneurship instruction often relies heavily on printed learning resources and paper-based assignments that contribute to unnecessary waste.

By replacing these practices with digital collaboration and online assessment, the platform demonstrates how educational technology can support more sustainable administrative and instructional practices. The platform also provides virtual learning spaces where students collaboratively develop environmentally responsible business solutions (Aldiab et al., 2019). Accordingly, vocational entrepreneurship education should move beyond teacher-centered theoretical instruction toward technology-enhanced learning environments that encourage students to generate practical and sustainable business solutions.

Technology-integrated learning environments allow students to collaborate more effectively in problem-solving activities. This finding is consistent with Wang (2017), who demonstrated that engaging and progressive problem-solving activities, combined with self-reflection and self-assessment practices, can encourage active participation in online learning environments. The present study extends this perspective by showing how collaborative digital learning can bridge students' abstract altruistic values and their emerging green entrepreneurial intentions.

Although previous studies have frequently conceptualized altruism as an individual psychological characteristic that is difficult to operationalize, the collaborative features embedded within the platform enabled students to transform shared environmental values into concrete green business ideas. From a practical perspective, integrating discussion forums, collaborative projects, and structured reflection into the LMS encouraged students to progress from identifying environmental problems to proposing sustainable business solutions and planning future actions. These learning experiences are expected to strengthen green entrepreneurial intention, which represents an important precursor to environmentally responsible entrepreneurial behavior (Genoveva & Tanardi, 2022).

The proposed platform also contributes to the growing body of research on digital entrepreneurship education. Previous studies have primarily focused on addressing policy and cultural barriers in entrepreneurship education (Wang et al., 2021) or developing e-learning systems for start-up education supported by mentoring activities (Liu et al., 2021). Other research has emphasized sustainability education without explicitly integrating sustainability into entrepreneurship learning within vocational education (Cocu et al., 2025; Mensah et al., 2023). In contrast, the present study contributes a contextualized LMS

design that explicitly integrates entrepreneurship education with sustainability principles for Vocational High School students.

5.2 Platform Feasibility and Its Implications for Green Entrepreneurial Intention

The validation results indicate that the Green Entrepreneurship E-Learning Platform is feasible for implementation in vocational entrepreneurship education and has considerable potential to strengthen students' green entrepreneurial intention. The platform offers several pedagogical advantages, including access to diverse digital learning resources such as videos, e-books, infographics, and interactive learning activities, while contextualizing learning materials according to students' vocational specializations. Such flexibility enables students to engage with learning resources beyond the classroom and supports the development of lifelong learning habits (Budiarto et al., 2024).

These findings reinforce previous research demonstrating that e-learning provides an effective mechanism for advancing sustainable development through improved learning experiences and educational accessibility (Donath et al., 2020). Furthermore, internet-based learning environments allow students to access real-time information that supports independent learning skills and strengthens information literacy (Chen, 2021). Interactive features and user-centered LMS designs can create engaging learning environments that encourage students' active participation (Ho et al., 2024), particularly through optimized communication and assessment systems integrated within the e-learning platform (Shkoukani, 2019).

The design principles developed in this study also have important policy implications. At the national level, the findings support ongoing efforts by the Ministry of Primary and Secondary Education to strengthen sustainability within vocational education curricula, particularly in the Creative Projects and Entrepreneurship learning outcomes. Integrating digital green entrepreneurship modules into vocational curricula provides a practical mechanism for embedding sustainability principles within entrepreneurship education while maintaining relevance to students' vocational competencies. The platform was intentionally adapted to reflect the characteristics of different vocational programs. For students in the Fashion Design program, learning activities focused on transforming textile waste into value-added products and demonstrating how locally available materials can reduce production costs while supporting circular economy practices.

For students in the Marketing program, the platform emphasized strategies for promoting environmentally friendly products while developing resilience in responding to consumer skepticism toward sustainable products. These contextualized learning experiences encourage students to think critically and creatively about environmental challenges while identifying responsible business opportunities within their respective vocational fields. Consequently, sustained exposure to these learning experiences is expected to strengthen students' green entrepreneurial intention and support the development of environmentally responsible entrepreneurial behaviors beyond graduation.

Despite the overall positive evaluation, the limited user trial also identified several implementation challenges. Approximately 10% of students expressed “uncertain” or “neutral” responses regarding their learning experience. Importantly, these responses were primarily associated with technical and infrastructural limitations rather than the learning material quality. Unstable internet connectivity, particularly the schools’ Wi-Fi network, limited access to multimedia learning resources, while some students and teachers required additional support to navigate the LMS because they had limited prior experience with technology-supported entrepreneurship learning.

These findings suggest important implications for schools, highlighting the need to address infrastructure barriers to support effective technology integration. Disparities in device availability and unstable internet connection in developing regions, such as Salatiga, may reduce the platform effectiveness. Moreover, although digital learning platforms may initially increase teachers’ workload, the integration of automated assessment, standardized digital modules, and centralized learning management can substantially reduce administrative tasks. This allows teachers to pay greater attention to facilitating discussions and mentoring collaborative projects with the student.

The platform’s feasibility assessment, 92% from media experts and 86% from subject-matter experts, can also be interpreted through the lens of the TPB. The high feasibility media of the LMS are likely to strengthen student’s perceived behavioral control, and the diverse contextualized learning materials help foster more positive attitudes toward environmentally responsible entrepreneurial practices, including textile waste management and the promotion of sustainable products. Furthermore, the collaborative discussion forums and project-based learning activities further reinforce subjective norms by encouraging interaction among teachers and peers. From the perspective of ESD, the platform also supports the achievement of SDG 4 (Quality Education) by providing learning experiences that integrate entrepreneurship, sustainability, and digital technology within authentic vocational contexts.

Considering that the learning materials in the platform was tailored to the Fashion Design and Marketing programs and connected directly to business opportunities arising from school-generated waste, students were encouraged to develop both green knowledge and environmental awareness. Consistent with Genoveva and Tanardi (2022), these competencies represent important foundations for developing green entrepreneurial intention, which may subsequently influence environmentally responsible entrepreneurial behavior. Overall, the findings demonstrate that integrating digital learning with sustainability-oriented entrepreneurship education provides a practical pathway for advancing ESD and promoting Quality Education (SDG 4) in vocational education in developing countries.

5.3 Limitations and Future Research

Despite its theoretical and practical contributions to entrepreneurship education, this study has several limitations that should be acknowledged. First, the platform

was developed and validated within a local context involving Vocational High Schools in Salatiga and was specifically designed for the Fashion Design and Marketing programs. Consequently, the findings may not be directly generalizable to other vocational specializations or broader regional contexts. Second, from a methodological perspective, this study was limited to the design, development, and expert validation phases of the DBR process. The platform has not yet been implemented through large-scale classroom intervention; therefore, its effectiveness in improving students' green entrepreneurial intention has not been empirically examined. Third, the study focused on strengthening green entrepreneurial intention without investigating whether these intentions translate into actual green entrepreneurial behavior over time. Nevertheless, the findings remain robust, because the platform was developed through a systematic needs analysis and refined through multiple cycles of expert validation and user feedback.

These limitations provide several directions for future research. First, future studies should implement and evaluate the platform across multiple vocational schools and diverse specialization programs to examine its effectiveness in different educational contexts. Second, longitudinal research is needed to investigate whether students' green entrepreneurial intentions develop into environmentally responsible entrepreneurial behavior after graduation and entry into the workforce. Third, future platform development could incorporate integration with e-commerce marketplaces, such as Tokopedia or Shopee, enabling students to market green products through authentic digital business environments.

Sustainable implementation would also benefit from funding mechanisms and partnerships with industry to support environmentally responsible student projects. Finally, integrating Artificial Intelligence (AI) into the platform represents a promising direction for future innovation, particularly its ability to provide personalized learning recommendations and automated feedback tailored to students' vocational specialization, thereby supporting the long-term achievement of SDG 4 (Quality Education).

6. Conclusion

Addressing the global challenge of integrating sustainability in vocational education requires innovative digital learning solutions, particularly in entrepreneurship education. In response to the limited green entrepreneurial intentions identified among public and private Vocational High School students in Salatiga, this study designs and validates the Green Entrepreneurship e-learning platform for fashion design and marketing programs using a DBR approach. The platform obtains a score of 4.58 out of 5 (92%) from media experts and 4.32 out of 5 (86%) from green entrepreneurship subject-matter experts, indicating that it is highly feasible for vocational entrepreneurship learning.

This finding was further supported by the positive responses and enthusiasm demonstrated by both teachers and students during the limited trial phase. Theoretically, this study extends the TPB by emphasizing the role of technology-

supported learning in strengthening entrepreneurial intentions among vocational students. Practically, the platform contributes to the implementation of SDG 4 (Quality Education) by promoting accessible and high-quality entrepreneurship learning.

This study also provides important implications for policymakers, particularly Indonesia's Ministry of Primary and Secondary Education, to accelerate the digitalization of green entrepreneurship education through sustained investment in funding and digital infrastructure for vocational schools. Furthermore, vocational institutions are encouraged to reform entrepreneurship curricula by incorporating circular economy principles and program-specific learning experiences, such as textile waste recycling and digital campaigns for environmentally friendly products.

For teachers, the platform streamlines assessment through automated evaluation, allowing greater emphasis on discussion-based and collaborative problem-solving activities. For vocational students, the engaging digital learning environment has the potential to enhance environmental awareness, creativity, and digital marketing resilience, ultimately transforming altruistic values into stronger intentions to pursue green entrepreneurship. Future research should explore the integration of AI into the platform to provide personalized learning recommendations and adaptive feedback on green literacy based on students' vocational specializations.

7. Conflict of Interest

The authors declare that there are no conflicts of interest throughout the research process, the preparation of the manuscript, and/or the publication of this study.

8. Acknowledgments

The authors gratefully acknowledge the financial support provided by the Center for Assessment and Higher Education Financing, Ministry of Higher Education, Science, and Technology of the Republic of Indonesia, through its doctoral scholarship program, which supported the completion of this research. The authors also express their sincere appreciation to Universitas Kristen Satya Wacana for its institutional support and for providing one of the authors with the opportunity to pursue doctoral studies.

9. Declaration on the Use of Artificial Intelligence

The authors acknowledge the use of Google Gemini during the preparation of this manuscript to improve language clarity and enhance the coherence of selected sections of the text, particularly the Introduction. All intellectual content, interpretation of findings, and final editorial decisions remain the sole responsibility of the authors.

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Appendix 1

Instruments of Subject-Matter Validation

A. Self-Instruction Aspect

No.	Statement	Score				
		1	2	3	4	5
1.	The learning objectives cover the entire scope of the learning materials.					
2.	The learning materials are presented in a logical and systematic sequence.					
3.	The learning materials are easy for students to understand.					
4.	The illustrations and examples provided are relevant to the learning materials.					
5.	The problems presented are related to real-world contexts.					
6.	The language used in the module is easy for students to understand.					
Total						

B. Self-Contained Aspect

No.	Statement	Score				
		1	2	3	4	5
7.	The module provides complete learning materials in accordance with the learning objectives.					
8.	The module provides clear instructions and guidelines for students on how to use it.					
Total						

C. Stand-Alone Aspect

No.	Statement	Score				
		1	2	3	4	5
9.	The learning materials can be studied independently without requiring other instructional materials.					
10.	The learning materials can be studied without the support of other learning media.					
Total						

D. Adaptive Aspect

No.	Statement	Score				
		1	2	3	4	5
11.	The learning materials are aligned with current developments in science and technology.					
Total						

E. User-Friendliness Aspect

No.	Statement	Score				
		1	2	3	4	5
12.	The learning materials can be accessed and studied anytime and anywhere.					
Total						

Scoring criteria:

- 1 = Very Poor
- 2 = Poor
- 3 = Neutral
- 4 = Good
- 5 = Excellent

Suggestions

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Overall Evaluation

Based on your responses to the validation instruments, please select one of the following conclusions:

- 1) Suitable for implementation without revision.
- 2) Suitable for implementation with revisions based on the suggestions provided.
- 3) Not suitable for implementation.

Appendix 1

Instruments of Media Validation

A. Program Aspect

No.	Statement	Score				
		1	2	3	4	5
1.	The program is easy to manage.					
2.	The program is easy to maintain.					
3.	The program is simple to operate.					
4.	The program is easy to operate.					
5.	The program can run on various PC and mobile devices.					
6.	The program is compatible with different desktop platforms.					
7.	The program can be reused for the development of other learning activities.					
8.	The program can be used simultaneously with other learning media.					
9.	The program can be accessed by the students at home for further learning.					
Total						

B. Display Aspect

No.	Statement	Score				
		1	2	3	4	5
10.	The color composition and combination are appropriate.					
11.	The icons are consistent with the modern school theme.					
12.	The font type and size are comfortable to read.					
13.	There is consistency between the text and images.					
14.	The information panel is easy to locate and read.					
15.	The combination of features is appropriate for the selected theme.					
16.	The interface design / layout can be adjusted easily.					
17.	The layout can be arranged easily according to users' needs.					
18.	The accessibility of menus (ease of locating and using features) can be adjusted according to users' needs.					
19.	The platform's logo is consistent with the learning theme.					
Total						

C. Technical Quality and Program Effectiveness

No.	Statement	Score				
		1	2	3	4	5
20.	The platform supports integration with third-party media, such as YouTube, Google Drive, and other external resources.					
21.	The platform provides features for assessing students' learning outcomes.					
22.	The program provides an internal data backup feature.					
23.	The menu layout is easy to access.					

24.	The platform supports the management of multiple data entities (e.g. student and teacher data, learning materials, assessment items, etc.).					
25.	The platform provides reliable and high-quality online access.					
26.	The platform helps students understand the learning materials.					
27.	The platform encourages active student participation through discussion forums.					
28.	The platform can motivate students to learn about green entrepreneurship.					
29.	The platform can serve as a real-time learning resource.					
30.	The platform can be used as a teaching medium that incorporates various learning resources.					
31.	The platform promotes creativity and innovation in completing group projects.					
Total						

Scoring criteria:

- 1 = Very Poor
- 2 = Poor
- 3 = Neutral
- 4 = Good
- 6 = Excellent

Suggestions

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Overall Evaluation

Based on your responses to the validation instruments, please select one of the following conclusions:

1. Suitable for implementation without revision.
2. Suitable for implementation with revisions based on the suggestions provided.
3. Not suitable for implementation.