From classroom projects to business ideas: Indonesian vocational college students' entrepreneurial skills

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This study presents a cutting-edge topic in vocational education in Indonesia. Entrepreneurship education has experienced a resurgence in popularity since the compulsory implementation of project-based learning in Indonesian vocational education in 2022. The curriculum was designed to equip students with workplace skills including entrepreneurial skills. Our study explores how project-based learning can be directed to support students' entrepreneurial skills in business courses in English. Involving vocational college students, this study employed a questionnaire, interviews, and reflective journals for data collection. Our findings highlight the merits of project-based learning for accounting students' entrepreneurial skills and technology utilisation. After the projects, students possess knowledge of entrepreneurship, identify business opportunities, intend to start a business, and become entrepreneurs in the future. This study paves the way for the implementation of projects to improve students' entrepreneurial skills in vocational colleges in Indonesia. It suggests that entrepreneurial education should not be confined solely to financial courses. Instead, it can be effectively disseminated and integrated into diverse academic disciplines.

Introduction

To progress in creating high-quality resources, a country should aim to achieve entrepreneurial quality. It is widely acknowledged that entrepreneurs play a significant role in advancing a nation's economic development (Padi et al., 2022; Toghyani Khorasgani et al., 2023). Every country should strive to have entrepreneurial qualities to advance the development of high-quality resources (Vasilescu et al. 2023). In Indonesia, many graduates aspire to be civil servants, but with limited positions available, each recruitment sees thousands of applicants competing for one position. Many who fail the civil servant exam are unemployed because of a lack of essential skills and entrepreneurship education (Nofrita & Idrus, 2022). Reflecting on this matter, students need entrepreneurial skills to prepare for post-school employment. Entrepreneurship education enables people who do not wish to rely on white-collar work as their sole source of income (Oyetunde et al., 2016).

Unemployment results from the gap between school and college graduates' skills and industry needs. To bridge the gap between vocational graduates' skills and industry demands, the Indonesian government is enhancing vocational students' productivity during studies, preparing them for the workplace or entrepreneurship upon graduation. Technical and vocational education and training (TVET) is gaining popularity among governments in both developing and developed countries as a means of producing qualified graduates for self-employment and the labour market (Padi et al., 2022) and fostering and advancing sustainable development that includes the necessary skills for economic prosperity (Oyetunde et al., 2016). It helps young people launch businesses and

makes them active participants and significant economic contributors to their countries (Olaniran & Mncube, 2018). Vocational education provides students with practical knowledge, skills, and abilities needed for the Fourth Industrial Revolution, aiming to improve the quality of human resources (Löfgren et al., 2023; Rintala & Nokelainen, 2020).

A program called *Kampus Merdeka Vokasi* was established by the Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia. It integrates vocational higher education and work experience to produce competitive graduates. In this program, project-based learning, a long-established method was made mandatory for all vocational education in Indonesia since 2022. Project-based learning was selected since it offers students an authentic environment for meaning-making (Santoso et al., 2023; St. John et al., 2023). Authentic learning is anticipated to fulfill both learning outcomes and industry requirements (O'Neill & Short, 2023), owing to the mismatch between the educational qualifications of university graduates and industry demands in Indonesia leading to a high rate of unemployment. The disparity between graduates' competences and the industry's needs leads to unemployment (Albert et al., 2021; Næss & Wiers-Jenssen, 2022). In 2018, individuals holding diplomas or bachelor degrees from higher education institutions accounted for 9.5% of Indonesia's overall unemployment (Ganefri et al., 2021). Ironically, graduates of vocational programs have experienced the highest unemployment rates (Haq, 2021). This is ironic, as vocational higher education is meant to create a job-ready workforce.

Entrepreneurship requires gradual development. Thus, educators should embed the entrepreneurial mindset into students' coursework. Since entrepreneurship education is a fairly new concept in Indonesia (Amalia & von Korflesch, 2021), this study examines how project-based learning (PjBL) in vocational education in Indonesia supports the development of entrepreneurial skills among vocational students, addressing the gap in research on PjBL's utilisation for entrepreneurial skills in accounting education. Different from other studies, our study presents a novel investigation with a particular concern for accounting students' potential future careers. This research will pave the way for opportunities to improve existing project-based learning approaches, particularly in accounting settings. This is expected to facilitate the development of vocational education that can bridge the gap between industry demands and vocational graduates' competencies. This study is guided by the following question: How does project-based learning support vocational students' development of entrepreneurial skills?

Entrepreneurship in vocational education in Indonesia

Entrepreneurship education is regarded as an essential component of the Indonesian government's efforts to combat poverty and unemployment (Linan & Fayolle, 2015). Industrial Work Culture Education (IWCE) is crucial for producing vocational school graduates who are competent and adept at quickly adapting to their workplace environment (Pambayun et al., 2023). Education in Indonesia is a major concern in entrepreneurship. The Minister of Education, Culture, Research & Technology, Republic

of Indonesia, through TVET (Technical and Vocational Education and Training) stated that Indonesia must address the gap between skill supply and demand as well as the usefulness and applicability of the practical skills taught in TVET education. The goal of vocational education is to help students develop skills and abilities for employment (Oyetunde et al. 2016). The national vocational education system equips students with the knowledge and skills they need to succeed in workforce learning (Nofrita & Idrus, 2022). A study conducted by Faraz et al. (2012) reported that in Indonesian schools, the topic of entrepreneurship is taught each semester for three years, whereas in Malaysian schools, entrepreneurship is a module or chapter in accounting and business subjects that is only taught to fifth graders. Entrepreneurship education is required at all educational levels. Many efforts have been made, particularly in higher education, to increase students' entrepreneurial intentions, such as the integrated work-learning program and the Indonesian *Student Business Competition Program* (Mukhtar, 2021). This reflects the seriousness of Indonesia's government about creating new generations of entrepreneurs in the future.

To ensure a match between vocational education and industry needs, Presidential Regulation Number 68 of 2022 concerning the "Revitalisation of Vocational Education and Vocational Training" stipulated that vocational education and training should consider the demands of the commercial, industrial, work, and entrepreneurial worlds. Specifically, the implementation of project-based learning is mandated in vocational education across Indonesia, as evidenced by the establishment of the Regulation of the Director General of Vocational Education Number 27 of 2022 concerning Guidelines for Implementing PjBL in Higher Education Providers of Vocational Education in the Republic of Indonesia (Direktur Jenderal Pendidikan Vokasi, 2022). This regulation provides an example of a lesson plan and calendar for implementing PjBL. Thus, it can be concluded that the implementation of PjBL in Indonesia is a concern for the Ministry of Education. This policy ensures the integration of PjBL with courses offered in all vocational high schools and colleges across Indonesia. Thus, Indonesian schools should incorporate updated curricula that are appropriate for the fourth industrial era and provide students with more in-depth entrepreneurial knowledge and a more entrepreneurial mindset for better entrepreneurial competence and skills (Saptono et al., 2020).

Entrepreneurial skills

Time has proven that entrepreneurship can be disseminated through learning (Rajchamaha & Prapojanasomboon, 2021). Schools play a crucial role in preparing students for future economic challenges, and implementing an economics-oriented curriculum can greatly contribute to economic development (Toghyani Khorasgani et al., 2023). Since entrepreneurial skills are honed through experience (Stuetzer et al., 2013), the classroom can be the first place where students learn entrepreneurship. Saptono et al. (2020) found that entrepreneurship education prepares Indonesian young entrepreneurs emerging from formal education paths. Entrepreneurial education fosters an entrepreneurial mindset and entrepreneurial intention. The entrepreneurial mindset refers to the tendency to identify, assess, and capitalise on opportunities (Bosman & Fernhaber,

2018). It shows the ability to recognise opportunities in the entrepreneurship domain (Sun et al., 2023). The entrepreneurial mindset consists of two main orientations: one is geared toward identifying and choosing potential solutions, and the other is concentrated on putting these solutions into action (Lynch & Corbett, 2021). An entrepreneurial mindset is marked by five attributes: actively seeking new opportunities, pursuing them with discipline, selecting only the best opportunities while avoiding risks, prioritising adaptive execution, and excelling at mobilising resources within their network (McGrath & MacMillan, 2000).

This mindset will lead to entrepreneurial intention, which is the key part of entrepreneurship (Sun et al., 2023). Entrepreneurial intention is one's belief in their ability and commitment to start a new business and their ongoing plan to achieve it (Nguyen, 2021; Ridha & Wahyu, 2017). The entrepreneurial intention has been identified as a critical component in understanding the new firm creation process (Sánchez, 2012). This explains a potential entrepreneur's subjective attitude and expectations regarding whether they will engage in entrepreneurial activities (Kong et al., 2020). García-Rodríguez et al. (2016) mention competence level in entrepreneurship intervention programs. It consists of the ability to recognise opportunities, knowledge of cutting-edge approaches in business strategy and management, expertise in a particular industry and market, and convictions regarding the viability of an entrepreneurial venture. Constructively developing entrepreneurial competence involves motivating students to put forth concerted effort during the learning process (Santoso et al., 2022).

Method

Research design

This study provides a detailed account of how accounting students completed their projects in a Business English course. Students were instructed to initiate the project by creating a brochure using software applications, followed by marketing their products through social media. Additionally, they were required to produce a video that detailed the process of their project using the English language, which involved editing software and applications.

Participants and context

This study was conducted in Politeknik Negeri Sambas, a state polytechnic situated in Sambas, Indonesia, bordered directly by Malaysia. Given the remote location of this regency, many residents opt to work in Malaysia because of limited job opportunities in Sambas. Consequently, fostering entrepreneurial skills among students in Sambas is essential to stimulating local growth and economic self-sufficiency, rather than seeking employment by leaving the country.

28 accounting students aged between 18-22, were enrolled in the Business English course and were in their second semester of a vocational college. This course marks the conclusion of two English for specific purposes (ESP) courses tailored for accounting

students at Politeknik Negeri Sambas. The first course focused on teaching accounting English terminology, registers, and vocabulary along with basic writing, speaking, reading, and listening skills. In the second course, the students engaged in project-based learning to apply English in authentic contexts and were tasked with creating projects for public use. Beyond mastering accounting in English, this course underscores the development of students' business management skills and fosters entrepreneurship for future job opportunities. Students enroll in the English Business Course, which is worth two credits, as part of their semester's curriculum. Typically, they take no more than 24 credits per semester. The course lasted for one semester, spanning 18 weeks.

Research procedure

In this study, projects entail various activities, including brochure creation and product marketing for social media advertising. Upon completion, the students produced a reflective video summarising their project activities. They were divided into four to five groups at the beginning of the semester. The students were grouped based on the location of their houses, considering that they needed to sell their products together. The students were given a project for making brochures and marketing products/food at Ramadhan (the fasting month of Muslims). Students prepared everything from the preparation of raw materials to market selling. Despite having the freedom to select their own projects, lecturers guided them to ensure that they still followed the objectives of the course. The teams exhibited their business plans, items, marketability analysis, and marketing plans in the classroom and executed them at home.

The first stage involved assigning projects to students at the beginning of the semester in the form of team formation, project rules, project output, assessment method, and project deadline. During the activity, lecturers monitored students' progress every week before the class was dismissed. This is to ensure that each team can accomplish all the projects in one semester (approximately four months).

Table 1: Research timeline

Project activities	Week
Course introduction and project planning	1
Brochure making	2-3
Product making and marketing	4-7
Video production	9-13
Project presentation	14
Reflective journals	15
Evaluation	16

Brochure making

The first project, after students' plans were authorised by the lecturers, was making a brochure for the product students were going to sell. Students in their teams first drafted the brochures. In the second week, they had personal discussions with the lecturer. At this

stage, the brochure design was incomplete. The wording used in the booklet was a major topic for discussion. Most brochures provide too much information about the product. The students then edited their brochure text to make it more succinct. In the third week, they revised their brochures. This time, the discussion focused on the colour, size of font, and pictures in the brochure. Some teams forgot to include contact information in their brochures. Even if it sounds trivial, neglecting to include contact information in a brochure could be detrimental. Brochures were collected during the third week.

Product making and marketing

After finishing the brochure, the next activity was to market the product. Since the participants were accounting students, they had experience with the same project in other courses. It was not difficult to instruct students about determining what products they were going to sell. Since the time coincided with Ramadhan, most groups decided to sell *takjil* (snacks and sweet treats consumed at breakfast before the main course). One group sold tofu milk and the other three groups sold fritters. One group was slightly different because it sold flower buckets. The participants were instructed to record their projects.

Video production

Upon concluding a month of selling their products, the students made a video of their projects in English. This video showcased the entire process of their project, starting with the acquisition of raw materials for the final product. Additionally, the students documented their marketing strategies and how they engaged with the consumers. The video was required to be no longer than five minutes and to provide a concise summary of their experience in producing and marketing their products during the fasting month. The requirements for video projects are listed in Table 2.

Table 2: Requirements for video production

Category	Requirement
Duration	4-6 minutes
Mode	Involving audiovisual, combining video clips, images, sound effects, music, etc.
Language	English
Format	MP4, 720 to 1080 pixels
Content	Introduce your team Project description Step by step of the project Write subtitles (in English)
Orientation	Landscape

Data collection

Data collection lasted for 18 weeks, starting with the writing of reflective journals during the project. Questionnaires were distributed after completion of the project, followed by focus group discussions. Our study employed a questionnaire, interviews, and reflective journals for data collection. The questionnaire comprised 17 items (see Table 4). The questionnaire is a 5-point Likert-style scale adapted from the Regulation of the Director General of Vocational Education Number 27 of 2022 concerning Guidelines for Implementing Project-Based Learning (Direktur Jenderal Pendidikan Vokasi, 2022) and Handayati et al. (2020). The first part of the questionnaire deals with students' perceptions of the implementation of project-based learning, which covers brochure making, product marketing, and video production. The second part of the questionnaire describes entrepreneurial skills, including education, mindset, and intention (Table 4).

Students kept reflective journals during the projects, focusing on their awareness of the learning journey rather than the writing itself. The students were directed to (1) reflect on their experiences, (2) suggest improvements, and (3) outline their plans for enhancement. Additionally, they were asked to consider the project's implications for their future careers and submit their reflections in PDF format using *Google Forms*.

The focus group assessed the students' entrepreneurial and technological skills through their projects. Five discussions based on reflective journals aimed to deepen the understanding of their reflections. Examples of focus group discussion questions are presented in Table 3.

Table 3: Sample focus-group discussion questions

Students' reflective journal	Examples of follow-up questions in focus-group discussion
I aspire to be an entrepreneur not only in the food industry but also in other areas.	You mentioned feeling inspired to start your own business after having the project. What specifically about the project got you thinking about entrepreneurship?
Facing moments of low sales can be disheartening, as it results in losses.	You mentioned feeling disappointed when products did not sell. How did you handle these tough times and keep following your business plans?
To succeed as an entrepreneur, it is essential to strengthen our mindset and mental resilience	You mentioned the importance of being ready and tough-minded about business. What do you think people must be ready for the ups and downs of entrepreneurship?
Technology enables us to complete the project effortlessly.	You emphasised the use of technology for business. How do you plan to use technology to help your future businesses, and what apps or tools do you think will be the most helpful?

Data analysis

Descriptive statistics, utilised here, summarised questionnaire results using means and standard deviations, aiding in categorising students' perceptions of project-based learning and their entrepreneurial skills. We also present quotes from reflective journals and interviews, since quotes are the core of qualitative research findings for their authenticity (Lingard, 2019) to help readers interpret the findings with their understanding. Using respondent quotes as research titles has become common practice in many social science-focused journals that support the publication of qualitative research articles (Parkin & Kimergård, 2021). The results from student reflective journals and focus group discussions were subjected to thematic analysis to identify recurring patterns and themes, with the aim of interpreting data from various sources.

Results

Brochure making, video production, and product marketing

Students used technology skills to complete the projects, creating brochures and videos with various applications, as illustrated in Figure 1. The students used software and websites such as Canva, Microsoft Publisher, Adobe, Brochure Maker, Poster Makers, and Microsoft PowerPoint to create brochures. For video editing, Capcut, Kinemaster, VivaVide, InShot, VideoShow, VNVideo, FilmiraGo, and PowerDirector were used. All the software used was free-downloaded software. This indicates that students mastered the technological tools necessary to complete the projects.

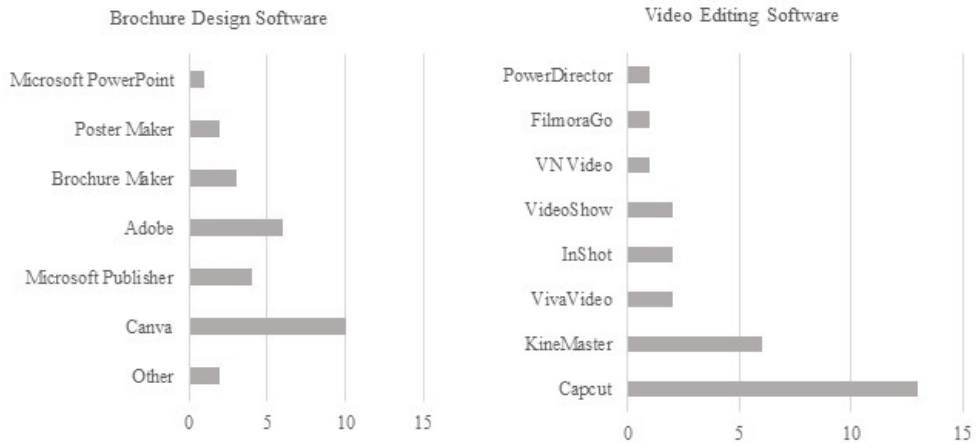

Figure 1: Software used for the project

Figure 2 displays a brochure created by students featuring bouquets composed of flowers, money, or snacks. The brochure is the result of the lecturer's final revisions.

Figure 2: Example of a brochure made by students

After creating brochures, the students moved on to their next project: marketing products. They sold items both online and offline during Ramadan, with offline sales at traditional food stalls. Additionally, they marketed their products on Instagram and WhatsApp, as depicted in Figure 3.

Project-based learning and entrepreneurial skills

Table 4 presents the frequency distribution of each statement from the questionnaire, along with the average value and standard deviation.

Table 4: The questionnaire results

Category	No	Statement	Mean	SD
Project-based learning	1	PjBL helps me think creatively to find ideas and concepts for the projects I carry out.	3.71	0.90
	2	PjBL made me more confident in appearing in public.	3.57	1.10
	3	PjBL motivated me to become an entrepreneur.	3.82	0.94
	4	PjBL supported my ability to collaborate with teams.	3.82	1.19
	5	PjBL helped me better understand the use of technology.	3.79	1.03
	6	PjBL helped me think critically.	3.93	0.77
	7	PjBL made me learn to be independent.	3.79	1.26
	All Project-based learning items		3.78	1.03

Entrepr-eneurial skills	Entrepr-eneurial educ-ation	8	The integration of entrepreneurship projects provided me with knowledge about product marketing product.	3.68	1.06
		9	Campus education encourages students' entrepreneurial skills	3.61	1.10
		10	On-campus educational activities integrate entrepreneurship and allow students to start their own business.	3.79	0.96
		All Entrepreneurial education items		3.69	1.03
	Entrepr-eneurial mindset	11	I have already determined what business I would like to do in the future.	3.25	0.93
		12	I calculated opportunities and risks when I wanted to start a business.	3.75	1.21
		13	I calculated the costs needed if I want to start a business.	3.57	1.14
		All Entrepreneurial mindset items		3.52	1.10
	Entrepr-eneurial intention	14	I am ready to become an entrepreneur in the near future.	3.32	1.06
		15	I will do whatever it takes to start a business.	3.50	1.07
		16	I will open up my business in the near future.	3.14	0.89
		17	I want to become an entrepreneur.	3.89	1.10
		All Entrepreneurial intention items		3.46	1.06
		All Entrepreneurial skills items		3.55	1.06

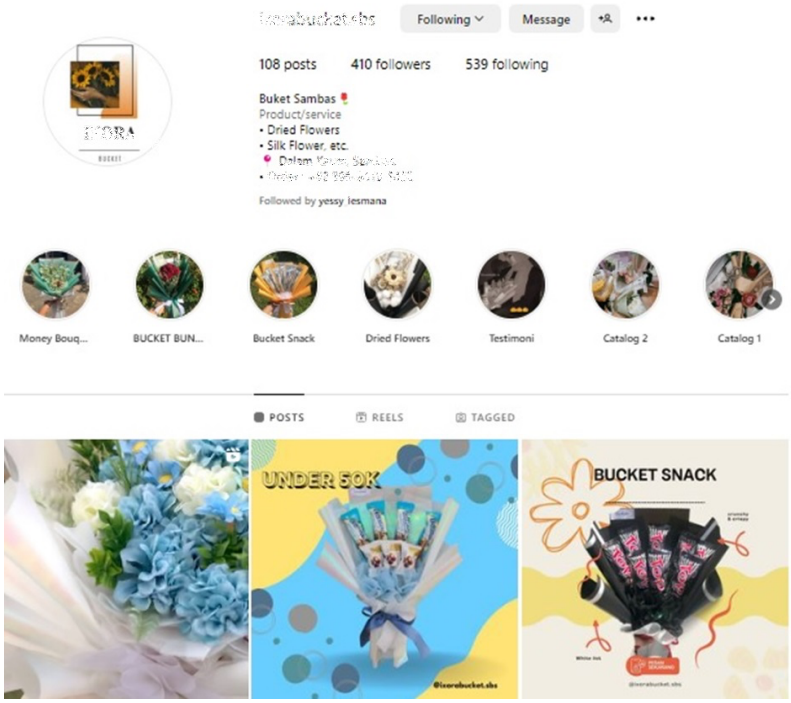

Figure 3: Product marketing through *Instagram*

Students' reflective journals unveiled 15 emerging themes, which are detailed in Table 5 to highlight the trends identified during data analysis.

Table 5: Students' reflection on project-based learning

No.	Reflection	Total
1	Fun	25
2	Teamwork/ cooperation	26
3	Persistence and resilience	7
4	Motivation	11
5	Self-determination	5
6	Gratefulness	5
7	Creativity and innovation	18
8	Technology for businesses	21
9	Real work experience	28
10	Financial management	28
11	Interacting with customers	18
12	Business startup desire	14
13	Sales and marketing	27
14	Time management	10
15	Opportunity recognition	22

Students' reflections indicated that engagement in entrepreneurship through the marketing project facilitated the acquisition of life skills, such as teamwork, creativity, time management, perseverance, persistence and resilience, and gratitude, as highlighted throughout the project. Finally, the students expressed appreciation for the project and highlighted the practical experience gained, which they believed would be useful in their future careers as entrepreneurs.

> Through creating entrepreneurial videos, I have gained valuable experiences in time management, respecting others' opinions, and cultivating patience. Marketing products and meeting consumer expectations has taught me the importance of respecting buyers and exercising patience, even in challenging situations. Facing moments of low sales can be disheartening, as it results in losses. However, it is crucial to acknowledge the potential impact on our entrepreneurial spirit. Therefore, to succeed as an entrepreneur, it is essential to strengthen our mindset and mental resilience. (Reflective journal/Student 7)

> Creating a video about our Ramadan business brought joy and relief. It was an important assignment that influenced our grades. We finished early and had a great time exploring and taking photos. We learned cake-making together and shared laughter. The video turned out well, and I'm grateful for our collaborative and learning-focused group. (Reflective journals/Student 3)

Students also mentioned that their desire to achieve high grades motivated them to complete the projects. In this course, the students had both individual and group scores, which were explained at the start of the course. While the project as a whole was graded as a group, there was a separate assessment of individual participation in the video project.

Students found it productive to collaborate with a friend during Ramadan, selling food at Ramadan stall. They enjoyed the process and camaraderie, not focusing solely on the product. The students mentioned that even if they failed, they tried to make the cake again. They enjoyed the project as they did with it. The project significantly improved the students' entrepreneurial skills and motivated them to initiate their own businesses. Firsthand business experience boosted their confidence and financial gains were valued. Most students expressed a desire to pursue entrepreneurship as their career path.

> After making a business video, we are motivated to open our own business to make our own money. It's a different feeling from relying on parental support. We appreciate this task as it provides valuable entrepreneurship experience, even if it's a small-scale venture. It has inspired us to develop innovative and useful products for everyone. The desire to have our own business has grown stronger, alongside our regular agency job, as we recognise the increasing cost of living each year. This entrepreneurial drive is also influenced by our group members and friends who share the same eagerness to start their own businesses and be financially independent. (Reflective journals/Student 14)

> After making entrepreneurship videos, my motivation has been to sell products at low prices while maintaining their delicious taste. This is what people in today's society want, and it's easy to sell both online and offline in the digital age. I aspire to be an entrepreneur not only in the food industry but also in other areas. Additionally, I'm driven to learn how to make cakes not only for selling but also for personal enjoyment, sharing them with my family and friends. (Reflective journals/Student2)

The next analysis dealt with the results of the focus group discussions with students. PjBL, in the form of video production, has been proven to make students learn in a collaborative way, which suits Student 2's description in the interview.

> The project took a lot of time and energy at first, especially during the fasting month. This made me less enthusiastic, but thanks to friends who are energetic, eager to learn, never complain, we made it. (Interview/Student 2)

> Before Eid, in the fasting month, we completed the project. Despite the chaos, we did it. (Interview/Student 9)

Due to Eid preparations during Ramadan, students prioritised time management to complete the project before the deadline. With evening prayers, there was less time for projects than in other months. Students exhibited their ability to reflect on the journey of their projects.

> However, in my opinion, many things must be prepared before becoming an entrepreneur, not just money but also a prepared mentality (Interview/Student13)

> Any entrepreneur must have failed at running a business at some point, which is what inspires me. Failure, in my opinion, does not spell the end of the world. (Interview/Student22)

> We hit a point of disappointment when the product was not sold out. We lose the money. Even though we are already aware of this, we were so disappointed. (Interview/Student22)

> Although the profit from selling *takjil* is very small, there is some profit, therefore doing so in the month of Ramadan is a new experience for me. (Interview/Student28)

> If our business is suffering losses, we can learn how to deal with it by considering risk-avoidance strategies to navigate challenges with ease. (Interview/Student13)

Students also showed their ability to recognise business opportunities and their eagerness to become entrepreneurs. They showed an intention to start a business.

> Ramadhan is only one month in a year. Everyone will look for delicious food for breakfasting. Selling food is the best choice. (Interview/Student 4)

> Eid is a special occasion; people will need flowers and gifts for their loved ones (Interview/Student3)

> I want to enter the business world and I dare to grow my business. (Interview/Student 23)

> After I graduate from college, I will start a business while utilising my education and expertise to the fullest. Interview/Student 22)

Technology was a huge aid to students as the project progressed. They engaged in business transactions and marketed products online, exposing students to real-world product marketing and sales processes.

> I learned a lot about how to sell my products on social media. (Interview/Student 1)
> I watched YouTube to help me finish the project. (Interview/Student 2)

> I looked for some applications for brochure-making and video editing in the Play Store and found the easiest one to use. (Interview/Student 2)

Students think that they are going to use technology in the future:

> I want to use technology to make money so that my parents will not have to support me financially. (Interview/Student 7)

> Technology and entrepreneurship work beautifully together and should be explored further. (Interview/Student 27)

> Making the video has challenged me to become more tech-savvy. (Interview/Student 19)

In this study, technology was used not only to support classroom instruction but also to help students market their products and create project videos. Student 1 describes:

> Through Instagram, Facebook, and WhatsApp, we found potential customers. (Interview/Student 1)

The results do not disappoint this. Many buyers began ordering *takjil*. Student 2 described how they had learned how to interact with potential buyers. They sold the product through social media platforms such as Instagram, Facebook, and WhatsApp. They listed buyers and delivered products. The transaction system consists of cash on delivery (COD).

Discussion

This study explores how project-based learning supports students' development of entrepreneurial skills. We show that entrepreneurial education can be disseminated outside of finance-related courses. The study displays students' ability to execute their entrepreneurial plan by identifying opportunities, even though entrepreneurial education is not taught as a separate course but rather integrated into other lessons. The development of entrepreneurial competencies is associated with the capacity to transform ideas and opportunities into tangible outcomes through proactive actions and resource utilisation (Akhmetshin et al., 2019). Students demonstrate an entrepreneurial mindset by considering future business ventures based on the opportunities and risks learned from projects. They also highlighted that starting a business does not have to be costly. The students in this study were motivated to start their own businesses, which reflected their entrepreneurial intention. Students gain the initiative to start a new venture through a project (Auschra et al., 2018). Entrepreneurial intention is a mindset that favors self-employment over employment and directs one's attention and actions therein (Fayolle & Gailly, 2015).

This study also demonstrates the utilisation of technological resources by students to facilitate their projects. Students selected the most appropriate software application for brochure-making and video editing. To develop brochures, Canva, Microsoft Publisher, Adobe, Brochure Maker, Poster Maker, and Microsoft PowerPoint were employed at various stages of the project, whilst Capcut, KineMaster, VivaVideo, InShot, VideoShow, VN Video, FilmoraGo, and PowerDirector were used for video editing. Students' experience in finding the best software to suit their needs honed their critical thinking skills and information literacy. This is in line with Schofield et al. (2017), who found that with the increasing affordability and user-friendliness of digital tools, such as video editing software, the integration of digital videos in tertiary education, especially in evaluations, has become prevalent. They also use Instagram, Facebook, and WhatsApp to communicate with prospective buyers when delivering products through the cash-on-delivery (COD) mode. This corroborates a previous study that found social media to be the most well-liked technology to be incorporated into PjBL (Taylor, 2017). Social media eased students' search for prospective buyers. This cultivates students' ability to seek opportunities to succeed in their projects.

In this study, PjBL showed affordances in involving students in active learning. Students strive to plan, execute, and evaluate projects on their own. Students showed engagement

in their projects, which corroborates previous studies (Guo et al., 2020; Henry, 2022). Despite being assisted by lecturers, students show that they perform independent and collaborative learning (Jung, 2021) during the projects. Students make sense of their learning, which leads to meaningful learning (Anas, 2019). This study corroborated previous studies showing that project-based learning fosters students' independent learning, creativity, and initiative (Ruiz-Rosa et al., 2021).

However, some students responded negatively, as some believed that, despite the project providing them in a real-life context, starting a business was a cumbersome task, as some students found the project challenging. The students' project work included challenging tasks that required them to use their critical thinking and decision-making abilities while creating the design (Asfihana et al., 2021). They were unprepared to execute the new project. Little do they know that while students are tackling issues and sharing their findings, learning occurs (Shin, 2018). Students can identify issues independently, develop solutions, and conduct group research through project-based learning (Guo, 2020), unintentionally aiding them in problem-solving skill development.

For the best results, as essential qualities of graduates that students must learn and apply in the future (White et al., 2017), entrepreneurship education must be conducted both separately and integrated; separately, entrepreneurship is added as a subject to the curriculum, and integrated refers to connecting and integrating entrepreneurial concepts into learning (Nofrita & Idrus, 2022). A college can foster student entrepreneurship through training, but it can also be disseminated in the teaching and learning process. PjBL will help higher education institutions boost their positions in the education market and increase graduate students' competitiveness by promptly adjusting to external changes (Chemborisova et al., 2018).

This study confirms Ruiz-Rosa et al. (2021) view that PjBL improves the perception of acquiring generic and specific skills and enhances entrepreneurial competence. PjBL shows significant potential for enhancing the career competencies of vocational students and empowering them to take ownership of their learning. This finding supports Shin's (2018) argument that effective pedagogical strategies enable students to plan and design their own lessons. Vocational higher education institutions must ensure that their curricula, learning management systems, and educational resources are tailored to meet the needs of their students (Suswanto et al., 2019). Entrepreneurship education should extend beyond finance classes and integrate into diverse courses to ensure that students acquire entrepreneurial skills. The Indonesian education system will soon set its sights into the implementation of an industrial-based curriculum. This curriculum aims to provide aspiring entrepreneurs with structured and systematic training to facilitate the development of their entrepreneurial skills (Radianto & Wijaya, 2017). Thus, schools should prioritise equipping students with entrepreneurial skills along with professional competences to better prepare them for lifelong learning and successful entry into the workforce (Toghyani Khorasgani et al., 2023).

Conclusion

The results suggest that project-based learning simulates real-world scenarios so that students can gain experience in the future when they start their own businesses. Students in the study demonstrated their ability to quickly adapt to technology by creatively using available resources to complete their assignments, which included brochure making, online and offline product sales, and video production. While the students were enthusiastic about the project, they asked for training on brochure and video creation before beginning the assignment, emphasising the importance of ensuring that students have the necessary skills for successful project execution. It is critical to train students in using the technology required to complete their projects. Project-based learning has demonstrated its adaptability to courses beyond those with a financial focus, as evidenced in this investigation within the context of an English-for-business course. This integration facilitated the enhancement of students' entrepreneurial skills while maintaining the course's primary objectives. This research supports the Indonesian government's choice to incorporate project-based learning in vocational higher education, which provides students with an authentic learning experience.

Limitations and further research

The limitation of this study is that the discussion is confined to entrepreneurial skills applied within small projects in an English course rather than encompassing typical entrepreneurial skills in business corporations. This presents an opportunity for future research to explore additional aspects of entrepreneurial education in large-scale business settings.

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