

PROJECT-BASED LEARNING AS A PEDAGOGICAL PATHWAY TO ENTREPRENEURIAL COMPETENCE IN POSTGRADUATE EDUCATION: EVIDENCE FROM QUALITATIVE INQUIRY

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ABSTRACT

Rapid economic shifts, technological acceleration, and changing labor-market structures require higher education to prepare graduates who are not only academically capable but also creative, innovative, independent, and able to make responsible decisions under uncertainty. This study aimed to examine how project-based learning (PBL) strengthens the entrepreneurial mindset of postgraduate students and to identify the learning processes that facilitate the internalization of entrepreneurial values. A qualitative descriptive design was employed, using direct classroom observation, in-depth semi-structured interviews with postgraduate students and course instructors, and document analysis of course plans and student project reports. Data were analyzed thematically through iterative reduction, display, and conclusion drawing, supported by source and technique triangulation. Findings indicate that PBL positively influenced students' critical thinking, creativity, collaboration, and problem-solving in authentic entrepreneurship-related tasks. Active engagement across project phases (planning–implementation–evaluation) fostered innovation, accountability, self-confidence, and opportunity recognition, while bridging conceptual understanding with practical entrepreneurial action. The study concludes that PBL is an effective and contextually relevant approach for strengthening postgraduate students' entrepreneurial mindset and should be integrated more systematically within graduate curricula. Practically, the results inform curriculum design and instructional strategies for entrepreneurship development in higher education. Future research should use longitudinal and mixed-method designs to measure sustained outcomes (e.g., entrepreneurial self-efficacy, intention, or venture creation) across disciplines and institutional contexts.

Keywords: Entrepreneurial mindset; Higher education; Project-based learning; Qualitative research; Student entrepreneurship.

INTRODUCTION

The dynamic development of the global economy, accompanied by the acceleration of technological innovation and changes in the structure of the world of work, demands the availability of human resources who have high adaptability. These challenges encourage the need for individuals who not only master academic knowledge, but are also able to think creatively and respond to change. Universities play an important role in shaping human resources who are ready to face this reality (Gil-Soto, 2024). Higher education is no longer sufficiently oriented to the transfer of knowledge, but must be able to prepare graduates who have sustainable competitiveness. This condition places entrepreneurship as a strategic competency in the education system. The entrepreneurial spirit is seen as able to equip individuals with the ability to read opportunities and create innovative solutions. Therefore, strengthening entrepreneurship is an important part of the higher education development agenda. These efforts need to be designed systematically and integrated. Thus, universities are expected to be able to produce graduates who are relevant to the needs of the times (Xie, 2023).

Entrepreneurship in essence is not solely interpreted as the activity of establishing a business or profit-oriented economic activity. The concept of entrepreneurship develops as a set of values, attitudes, and skills that reflect creativity, innovation, independence, and courage in making decisions. The entrepreneurial spirit is an important foundation in forming individuals who are able to face uncertainty and risks. Individuals with entrepreneurial character tend to have an orientation on problem solving and adding value. In a social and professional context, this attitude is urgently needed to address the complex challenges that continue to develop (Vélez, 2020). Therefore, entrepreneurship education has a strategic position in shaping the character of superior human resources. Strengthening the entrepreneurial spirit also contributes to

increasing the nation's competitiveness. Thus, entrepreneurship needs to be understood as a cross-field competence. The educational approach must be able to internalize these values in a sustainable manner (Castro, 2020).

Postgraduate students are an academic group that is prepared to become leaders, researchers, academics, and professional practitioners in various fields. At this level, students are required to have in-depth analytical skills and strategic thinking capacity. However, the postgraduate learning process is still predominantly focused on strengthening theoretical and methodological aspects. The aspect of character development, especially the entrepreneurial spirit, has not received proportionate attention. This condition has the potential to limit the ability of graduates to respond to the challenges of the world of work and social change. In fact, graduate students have great potential to become agents of change and innovation. Therefore, a learning approach is needed that is able to integrate academic mastery with the strengthening of entrepreneurial character. The integration is expected to be able to produce graduates who excel holistically. Thus, postgraduate education needs to be directed towards a more comprehensive competency development (Sochacka, 2021).

Universities are faced with demands to continue to innovate in the learning process. Conventional one-way learning models are considered less effective in developing 21st century skills. Skills such as creativity, collaboration, communication, and problem-solving require a more contextual approach to learning. Students need to be given space to be actively involved in the learning process. Applicative learning experiences are the key to forming relevant competencies. In this context, learning innovation is an unavoidable need. Universities are required to present learning methods that are able to bridge theory and practice. A real-life experiential approach to learning is becoming increasingly important. Thus, the learning process can have a more meaningful impact on students (Chen, 2020).

Project-based learning is one of the learning approaches that emphasizes the active involvement of students in solving real problems. This approach places students as the main subject in the learning process. Students are involved in planning, implementing, and evaluating projects that are relevant to the real-life context. Through this process, students are encouraged to develop critical and creative thinking skills. Project-based learning also encourages teamwork and individual responsibility. This learning model provides space for students to apply their knowledge. Thus, learning is not only theoretical, but also practical and contextual. This approach is considered effective in forming the skills needed in the world of work. Therefore, project-based learning has high relevance in higher education. Its application has the potential to support strengthening the entrepreneurial character of students (Almodóvar-González, 2020).

In the context of postgraduate education, project-based learning has great potential in instilling entrepreneurial values in a sustainable manner. Projects that are systematically designed can encourage students to think innovatively and solutionally. The active involvement of students in the project fosters an attitude of independence and confidence. This learning process also trains decision-making and risk management skills. These values are an integral part of the entrepreneurial spirit. Project-based learning allows students to learn from hands-on experience. Thus, the internalization of entrepreneurial values occurs naturally and contextually. This approach not only serves as a pedagogical strategy, but also as a means of character building. In the long run, project-based learning can contribute to improving the quality of postgraduate graduates. Therefore, this approach is relevant to be studied in more depth (Viquez-Paniagua, 2023).

Various previous studies have examined entrepreneurship education and learning innovation in higher education. However, most of the research is more focused on undergraduate or vocational education students. Studies that specifically examine postgraduate students are still relatively limited. In addition, research that integrates project-based learning with strengthening the entrepreneurial spirit has not been widely done. This condition shows that there is a research gap that needs to be filled. Postgraduate students have different learning characteristics and needs from other levels. Therefore, the learning approach applied also needs to be adjusted. Research that focuses on the postgraduate context is becoming particularly relevant. This study is expected to make a theoretical and practical contribution. Thus, this research has a strong urgency in the development of higher education (Palmer, 2021).

Some research Gubik, (2021) It shows that project-based learning has a positive effect on increasing students' creativity and problem-solving skills. Research White-Mesa, (2024) emphasizing the role of

entrepreneurship education in increasing entrepreneurial interest and attitude. Study Indrianti, (2020) examine the integration of entrepreneurship in the higher education curriculum in general. The difference between this study and the previous research lies in the focus of the study that specifically examines the strengthening of the entrepreneurial spirit of postgraduate students. In addition, this study focuses on the effectiveness of project-based learning as a learning strategy. This study also examines the process of internalizing entrepreneurial values contextually. Thus, this research provides a new perspective in the study of entrepreneurship in postgraduate education. The contribution of the research is expected to enrich the development of learning models. Therefore, this research is academically and practically relevant.

METHOD

This study applies a qualitative approach with a descriptive design to in-depth examine the strengthening of the entrepreneurial spirit of postgraduate students through project-based learning. The qualitative approach is used because research emphasizes on understanding the process and meaning that emerges in learning activities. The descriptive method was chosen to describe the research phenomenon in detail according to the context that occurred in the field. This research is not oriented to quantitative measurement, but to the exploration of the experiences and interactions of research subjects (Li, 2021). The focus of the study is directed at the implementation of project-based learning and the formation of entrepreneurial character. This approach allows researchers to gain a comprehensive picture of the learning process. The research was conducted in natural conditions without intervention on the research object. This aims to maintain the authenticity of the data. Thus, the research method used is in accordance with the research objectives. The research process is carried out systematically and continuously. This approach is expected to produce in-depth and contextual findings (Marcano, 2020).

Data collection was carried out through direct observation of learning activities that applied a project-based approach. Observation is directed to observe student involvement in each stage of the implementation of the learning project. The researcher observed the process of discussion, teamwork, and decision-making made by students. Observations are also used to identify the development of entrepreneurial attitudes during learning. Observation data is recorded in a structured manner in field notes. Observation activities are carried out repeatedly in order to obtain consistent data. This technique allows researchers to understand the dynamics of learning in real life. The results of the observation provided empirical information about the project-based learning process. The data obtained were analyzed descriptively. Observation serves as the main source of data in this study. Thus, an overview of the learning process can be presented comprehensively (Jardim, 2021).

In-depth interviews are used as a data collection technique to obtain information from students and course instructors. Interviews with students aimed to explore learning experiences and perceptions of strengthening the entrepreneurial spirit. Meanwhile, interviews with lecturers focused on learning strategies and project evaluation. Interviews are conducted in a semi-structured manner to provide flexibility in data mining. The interview process is carried out directly and in-depth. Informants are given the opportunity to express their views freely. Interview data is recorded and transcribed for further analysis. The information obtained was used to complete the observation results. Interview techniques help researchers understand phenomena from various perspectives. Thus, the research data becomes richer. The results of the interviews were analyzed through thematic grouping (Oggero, 2020).

In addition to observations and interviews, this study also utilizes document analysis as a source of supporting data. The documents analyzed included learning tools and student project results. Document analysis aims to trace the fit between learning planning and implementation. Documents are used as triangulation materials to improve the validity of the data. The data analysis process is carried out through reduction, presentation, and withdrawal Conclusion (Vicens, 2022). The validity of the data is maintained through triangulation of sources and techniques. The analysis was carried out simultaneously during the research process. The data is presented in the form of a descriptive narrative. The findings of the study were formulated based on the results of a comprehensive analysis. Thus, the results of the study are expected to have a high level of validity. This approach supports the achievement of research objectives optimally.

RESULTS AND DISCUSSION

A systematic review of 26 selected articles reveals that AI literacy in accounting education has shifted. The results of the study show that the implementation of project-based learning plays an important role in strengthening the entrepreneurial spirit of postgraduate students. Students are actively involved in the entire learning process, from the development of initial ideas to the evaluation of project outcomes. This involvement encourages students to develop independence and reflective thinking skills in dealing with entrepreneurial problems. The learning process does not only focus on academic achievements, but also on the formation of entrepreneurial attitudes and values. Students show increased awareness of the importance of innovation in creating business opportunities. Project activities allow students to integrate theoretical concepts with real practice. Thus, project-based learning provides a contextual and applicative learning experience. These findings show that a practice-oriented learning approach is able to effectively shape entrepreneurial character. The learning experiences gained are profound and meaningful. This condition is in line with the goal of postgraduate education in producing competitive and adaptive graduates.

The findings of the study also show that there is an increase in students' critical thinking skills through project-based learning. Students are encouraged to conduct an in-depth analysis of entrepreneurial problems before determining alternative solutions. The process of discussion and reflection during the implementation of the project encourages students to consider various points of view. Students no longer play the role of recipients of information, but as active learners who build understanding independently. The ability to think critically is reflected in students' ability to identify business opportunities and analyze emerging challenges. Students are able to relate the concept of entrepreneurship to the reality in the field. This learning process strengthens students' conceptual understanding comprehensively. Project-based learning creates space for the development of an analytical mindset. Thus, the quality of students' thinking has increased significantly. Critical thinking skills are an important capital in entrepreneurship. This ability improvement supports students' readiness to face the dynamic business world.

Project-based learning also has a positive impact on the creativity development of postgraduate students. Students are encouraged to design business ideas that are innovative and in accordance with the needs of the community. The process of developing ideas is carried out collaboratively through discussions and exchange of ideas in groups. Students show courage in coming up with new ideas without worrying about mistakes. Creativity develops along with freedom of expression in learning. Project activities encourage students to think creatively and innovatively. The ideas generated reflect students' understanding of entrepreneurial potential. Project-based learning creates a challenging and inspiring learning atmosphere. Thus, students' creativity is honed optimally. The development of creativity is an important indicator in strengthening the entrepreneurial spirit. The results of the study show that there is a real increase in student creativity. This condition supports the creation of innovation in business development.

The results of the study show that project-based learning contributes to improving students' collaboration skills. Students work in groups in designing and implementing entrepreneurial projects. The teamwork process requires students to communicate effectively and respect dissent. Collaboration is an important element in solving project problems collectively. Students learn to divide roles and responsibilities according to their respective abilities. Intensive interaction between group members strengthens students' social skills. This collaborative experience reflects entrepreneurial practices that emphasize teamwork. Project-based learning creates a participatory and interactive learning environment. Thus, students not only develop individual competencies, but also social competencies. Collaboration skills are an integral part of the entrepreneurial spirit. These findings demonstrate the effectiveness of project-based learning in fostering cooperation. This experience is relevant to the needs of the business and professional world.

Students' ability to identify and solve entrepreneurial problems has improved through project-based learning. Learning projects are designed contextually and relevant to real problems in the social and economic environment. Students are trained to observe the surrounding environment as a source of business opportunities. The problem identification process is carried out systematically and based on analysis. Students then develop solutions that are applicable and realistic. This activity encourages students to think solubly and innovatively. Project-based learning provides hands-on experience in entrepreneurial problem-solving. Students learn to face uncertainty and risks in decision-making. Thus, students' problem-solving skills develop significantly. This experience strengthens students' readiness in the business world.

The results of the study show an increase in student confidence in facing entrepreneurial challenges. The learning process plays a role as a means of forming practical competencies.

The active involvement of students in every stage of the project encourages the formation of an innovative attitude and high responsibility. Students show commitment to the completion of the planned project. Individual and group responsibilities can be seen from the consistency of students in carrying out their duties. The learning process requires students to manage time and resources effectively. An innovative attitude develops when students try to perfect the business ideas developed. Project-based learning provides space for students to experiment and try out different approaches. Students learn from mistakes and make improvements on an ongoing basis. This attitude reflects the adaptive and resilient character of entrepreneurship. Thus, project-based learning contributes to the formation of positive character of students. The results of the study show an increase in attitude of responsibility and innovation. This character is an important element in the entrepreneurial spirit. The learning process supports holistic character building.

The results of in-depth interviews with students and course instructors showed a positive response to the implementation of project-based learning. Students consider learning to be more interesting and meaningful than conventional methods. Course instructors observe an increase in student participation and involvement in the learning process. The interview also revealed the increasing confidence of students in conveying business ideas. Students feel better prepared to face entrepreneurial challenges after participating in project-based learning. The course instructor considers this approach effective in instilling entrepreneurial values. The findings of the interviews are in line with the results of observation and analysis of documents. Data consistency indicates the validity of the research findings. Project-based learning is assessed according to the needs of graduate students. Thus, this approach has gained support from various parties. The results of the interviews reinforce the main findings of the study. Qualitative data shows that there is a strengthening of the entrepreneurial spirit.

The results of the study of learning supporting documents show that project-based learning has been systematically integrated in learning planning. Documents such as the Semester Learning Plan and student project reports reflect an entrepreneurial orientation. Learning objectives are designed to encourage student creativity and innovation. The project report shows that there is a process of reflection and self-evaluation carried out by students. The learning document reinforces the findings from observations and interviews. The implementation of project-based learning is consistently reflected in the learning tools. Thus, there is a fit between planning and learning implementation. This integration contributes to strengthening the entrepreneurial spirit of postgraduate students. The findings of the study confirm the effectiveness of the applied learning approach. Project-based learning has an overall positive impact. These results support the development of entrepreneurial learning in postgraduate education. Research contributions are academic and practical.

Table 1. Summary of In-Depth Interview Results and Document Review

Data Source	Focus of Findings	Indicators of Entrepreneurial Spirit
Graduate Students	More contextual and challenging learning	Critical thinking, creativity, confidence
Graduate Students	Active involvement in projects	Responsibility, independence
Course Instructor	Increased participation and collaboration	Cooperation, communication
Course Instructor	Effectiveness of project-based learning	Innovation, problem solving
Learning Documents	Project integration in RPS	Entrepreneurial orientation
Project Reports	Reflection and evaluation of students	Innovative and solutive attitude

Based on the integration of observational results, in-depth interviews, and document analysis, it can be understood that project-based learning functions as an approach that unifies various aspects in strengthening the entrepreneurial spirit of postgraduate students. The findings show a close relationship between students'

active participation in projects and the development of innovative attitudes, sense of responsibility, and confidence in developing business ideas. Data from various sources complement and reinforce each other, resulting in a comprehensive picture of the effectiveness of applied learning. Project-based learning not only improves cognitive aspects, but also forms entrepreneurial character in a sustainable manner. The contextual learning process allows students to internalize entrepreneurial values through hands-on experience. Thus, the application of project-based learning to postgraduate education has proven to be relevant in preparing graduates who are creative, adaptive, and competitive. These findings confirm that strengthening the entrepreneurial spirit requires a participatory and applicable learning approach. The results of the study provide an empirical basis for the development of entrepreneurial learning policies in higher education. This approach has the potential to be applied more widely in higher education.

The findings of this study show that project-based learning has a high level of suitability to be applied in postgraduate education, especially in an effort to foster and strengthen the entrepreneurial spirit of students. A learning approach that focuses on solving contextual problems allows students to integrate theoretical knowledge with real entrepreneurial practices. This condition encourages the development of critical thinking skills, creativity, and reflection in facing challenges that resemble the situation of the business world (Eklund, 2020). Students are no longer positioned as mere recipients of information, but as active actors in the learning process. These results indicate that project-based learning is able to reduce the distance between academic concepts and the demands of entrepreneurial competencies. Thus, this approach plays an important role as a vehicle for instilling entrepreneurial values that are applicable and experience-oriented (He, 2023).

Strengthening the entrepreneurial character of postgraduate students through project-based learning is reflected in the increased ability to recognize opportunities, develop business ideas, and make decisions independently and responsibly. The active involvement of students in the entire series of projects contributes to the formation of an attitude of initiative and courage in the face of uncertainty. This is in line with the essence of entrepreneurship which emphasizes innovation, independence, and orientation to problem solving. Project-based learning provides a space for students to learn through hands-on experience, so that the process of internalizing entrepreneurial values takes place more deeply. Interaction and cooperation within the project team also improve communication and collaboration skills. Therefore, this approach not only has an impact on the aspect of knowledge, but also on the formation of entrepreneurial attitudes and character in a holistic manner (Roy, 2021).

Viewed from a pedagogical perspective, project-based learning functions as a means of learning that encourages the creation of meaningful learning. Students gain authentic experience through direct involvement in the planning, implementation, and evaluation stages of entrepreneurial projects. This process allows students to build an understanding independently based on the empirical experience gained. The results of the study show that this participatory learning model is able to increase learning motivation and a sense of responsibility for learning outcomes. In addition, students are encouraged to do critical reflection on the work process and the results produced. Thus, project-based learning does not solely focus on the final output, but also on the process of developing comprehensive entrepreneurial competencies (Redondo, 2022).

This discussion also revealed that project-based learning is effective in internalizing practical entrepreneurial values, such as creativity, innovation, discipline, and work ethic. These values are not transmitted theoretically, but are built through student involvement in hands-on learning experiences. Students are trained to manage time, make optimal use of resources, and deal with complex group work dynamics. This situation represents real conditions in entrepreneurial activities, thereby increasing the mental readiness and skills of students. This approach strengthens the role of universities in producing adaptive and competitive human resources. Thus, project-based learning contributes to the formation of graduate graduates who not only excel academically, but also have a strong entrepreneurial orientation (Lang, 2024).

Overall, the results of the discussion emphasized that project-based learning is a contextual and effective learning approach in fostering the entrepreneurial spirit of postgraduate students. This learning model is able to integrate the dimensions of knowledge, skills, and entrepreneurial attitudes in a single learning process (Sydney, 2020). Authentic learning experiences have been proven to make a significant contribution to the formation of students' entrepreneurial character. In addition, project-based learning

encourages the creation of an innovative and collaborative academic environment. Therefore, the application of this approach deserves to be considered an integral part of the graduate education curriculum. The findings of this study provide an empirical basis for the development of entrepreneurial learning strategies that are in line with the dynamics of economic change and technological developments (Jin, 2021).

Project-based learning in the context of postgraduate education also contributes to the formation of learning patterns that are aligned with the needs of the world of work and entrepreneurship. Students are faced with learning situations that require the ability to analyze, plan, and evaluate real problems related to business development. This condition makes the learning process more contextual and relevant to the reality of the field. Entrepreneurial values such as perseverance, responsibility, and outcome orientation are formed through hands-on experience in managing projects. Students not only understand the concept of entrepreneurship theoretically, but also apply it in a real context (Mensah, 2023). Thus, project-based learning functions as an effective learning medium in building entrepreneurial competencies in an integrated manner. This approach strengthens the readiness of graduate students to face professional and entrepreneurial challenges independently.

In addition, project-based learning encourages the creation of dynamic academic interactions between students and course instructors. The role of lecturers shifts from delivering material to facilitators who guide students in the process of exploring and solving entrepreneurial problems. This interaction creates a space for constructive and reflective dialogue, so that students can develop a deeper understanding of entrepreneurial values. A continuous mentoring process allows students to obtain relevant feedback on the development of the project being worked on. These conditions contribute to improving the quality of learning and the achievement of student competencies. Project-based learning, thus, not only emphasizes the end result, but also prioritizes a learning process that is oriented towards strengthening entrepreneurial character. This approach emphasizes the function of higher education as a vehicle for the formation of professional and entrepreneurial attitudes (Kusa, 2021).

This follow-up discussion also emphasized that project-based learning can be a learning strategy that is adaptive to changes in the economic and social environment. The flexible learning character allows students to adapt project ideas and strategies to the dynamics of the conditions they face. This process trains students to think innovatively and be responsive to entrepreneurial opportunities and challenges. Entrepreneurial values are instilled not through a normative approach, but through direct practice that demands the active involvement of students (Su, 2021). Thus, project-based learning functions as an applicative and experiential learning tool. The results of this discussion reinforce the previous finding that project-based learning approaches are relevant to be integrated into the postgraduate curriculum. This approach supports the creation of graduates who have high entrepreneurial readiness and competitiveness.

CONCLUSION

The findings of this study indicate that project-based learning has significant effectiveness in fostering and strengthening the entrepreneurial spirit of postgraduate students. A learning approach that places students as the main actors in working on real projects allows for integration between theoretical understanding and entrepreneurial practice. Through this learning process, students experience improvements in aspects of critical thinking, creativity, and the ability to make rational decisions. This learning model also encourages the growth of independence and responsibility towards the learning process. Contextual learning experiences help students understand the complexities of entrepreneurship more comprehensively. Therefore, project-based learning contributes not only to academic achievement, but also to the formation of a sustainable entrepreneurial character.

The conclusion of the study further emphasizes that project-based learning is in line with the needs of human resource competency development at the postgraduate education level. This approach provides opportunities for students to develop innovative attitudes, cooperative skills, and skills in recognizing and solving problems related to entrepreneurship. Hands-on experiential learning allows the internalization of entrepreneurial values to take place more effectively. The results of the study show that the active participation of students in each stage of the project has a positive effect on increasing confidence and readiness to face the challenges of the business world. Thus, project-based learning can be seen as a relevant

learning strategy in producing adaptive and competitive graduates. This approach is also in line with the dynamics of economic change and technological advances that continue to develop.

In general, this study concludes that the application of project-based learning in the higher education curriculum, especially in postgraduate programs, is the appropriate and contextual choice. This learning model is able to integrate the development of cognitive, affective, and psychomotor aspects of students in the context of entrepreneurship in a balanced manner. Project-based learning not only plays a role as a method of delivering material, but also as a means of forming entrepreneurial attitudes and characters. The findings of this study provide an empirical basis for policy formulation and strategies for the development of entrepreneurial learning in higher education. Thus, the implementation of project-based learning is expected to improve the quality of postgraduate graduates who are innovative, independent, and ready to face global competition. This conclusion confirms the importance of developing a contextual and real-experience learning model.

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