



Public Policy on Entrepreneurship Education in the Independent Curriculum Based on Aquaculture Entrepreneurship Values

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ABSTRAK

Di era globalisasi dan transformasi digital, kebutuhan akan sumber daya manusia yang memiliki kemampuan adaptasi, inovasi, dan keterampilan kewirausahaan semakin meningkat. Penelitian ini bertujuan menganalisis rancangan kebijakan publik di bidang pendidikan kewirausahaan dalam Kurikulum Merdeka pada mata pelajaran Ilmu Pengetahuan Sosial kelas X, dengan fokus pada integrasi nilai-nilai wirausaha tambak. Metode penelitian yang digunakan adalah kualitatif. Teknik pengumpulan data dilakukan dengan observasi, wawancara, dan dokumentasi. Subjek penelitian adalah pemangku kebijakan di bidang pendidikan. Analisis data dilakukan dengan reduksi data, penyajian data, dan penarikan kesimpulan atau verifikasi. Hasil penelitian menunjukkan bahwa integrasi nilai-nilai wirausaha tambak, seperti nilai sosial, nilai keuletan, nilai kesabaran, nilai belajar mandiri, nilai ketelatenan, dan nilai inovasi, ke dalam Kurikulum Merdeka dapat membekali siswa dengan keterampilan praktis yang relevan. Penerapan pendekatan proyek memungkinkan siswa terlibat langsung dalam pengelolaan usaha tambak untuk memperkuat keterampilan teknis dan manajerial. Penelitian ini juga menyoroti pentingnya pembentukan karakter wirausaha, seperti kerja keras dan ketahanan mental, melalui kegiatan kewirausahaan yang kontekstual. Dukungan kebijakan dari pemerintah daerah, termasuk penyediaan fasilitas dan akses pasar. Penelitian ini memberikan rekomendasi kebijakan publik di bidang pendidikan kewirausahaan berbasis nilai-nilai wirausaha tambak di Kabupaten Pohuwato. Kebaruan penelitian ini yaitu rancangan kebijakan publik terkait integrasi nilai-nilai kewirausahaan tambak pada Kurikulum Merdeka dalam konteks lokal Pohuwato, dan strategi implementasi berbasis potensi lokal.

ABSTRACT

In the era of globalization and digital transformation, the need for human resources who have the ability to adapt, innovate and entrepreneurship skills is increasing. This research aims to analyze the design of public policy in the field of entrepreneurship education in the Merdeka Curriculum in class X Social Sciences subjects, with a focus on integrating the values of fish farming entrepreneurship. The research method used is qualitative. Data collection techniques were carried out using observation, interviews and documentation. The research subjects are policy makers in the education sector. Data analysis is carried out by data reduction, data presentation, and drawing conclusions or verification. The research results show that the integration of fish farming values, such as social values, tenacity values, patience values, independent learning values, diligence values, and innovation values, into the Merdeka Curriculum can equip students with relevant practical skills. Applying a project approach allows students to be directly involved in managing fish farms to strengthen technical and managerial skills. This research also highlights the importance of forming entrepreneurial character, such as hard work and mental resilience, through contextual entrepreneurial activities. Policy support from local governments, including the provision of facilities and market access. This research provides recommendations for public policy in the field of entrepreneurship education based on pond entrepreneurial values in Pohuwato Regency. The novelty of this research is the design of public policy regarding the integration of fish farming values in the Merdeka Curriculum in the local context of Pohuwato, and implementation strategies based on local potential.

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1. INTRODUCTION

Public policy in the field of entrepreneurial education has emerged as a strategic approach for economic development, aiming to enhance individual skills and foster innovation within communities. Entrepreneurial education not only prepares individuals to start and manage businesses but also equips them with relevant skills to meet the challenges of an evolving labor market. A prominent example of this effort is the implementation of the Merdeka Curriculum in Indonesia, which integrates entrepreneurship into the Social Studies subject for Grade 10 (Phase E). The Social Studies curriculum focuses on social, cultural, and economic aspects that reflect the holistic conditions of society (Decision of the Head of the Educational Standards, Curriculum and Assessment Agency of the Ministry of Education, Culture, Research and Technology Number 032/H/KR/2024 concerning Achievements Learning in Early Childhood Education, Primary Education Level, and Secondary Education Level in the Independent Curriculum, 2024). Thus, students are trained to understand and respond to dynamic social change from an entrepreneurial perspective. One of the challenges in entrepreneurship education is the gap between the school curriculum and the reality of the world of work (Nithithanatchinnapat et al., 2024; Resch & Schrittmesser, 2023).

Entrepreneurship education integrated into the curriculum has a strategic role in advancing local economic development. Regions that have certain natural resource potential, such as Pohuwato Regency in Gorontalo Province which is famous for its aquaculture resources, can take advantage of this program to create a new generation of entrepreneurs. Integration of local potential-based entrepreneurship can prepare students to capture economic opportunities in their area. This also illustrates how entrepreneurship education can have a significant impact in building the economic independence of local communities (Deveci & Çepni, 2017; Doyle, 2020). Education can also play a role in preserving local culture and economy (Almeida & Morais, 2021; Gitau & Mbuge, 2020). Educational inequality remains a major obstacle in ensuring equal access to entrepreneurship education across society (Alenezi, 2019; Amin et al., 2022). Education gaps, which are often caused by socio-economic factors, continue to be a challenge for many countries, including Indonesia. This problem especially occurs in those who live in remote areas or in economically disadvantaged communities. Therefore, public policy must address this problem by providing fairer access for all social groups. Equal access to education, especially entrepreneurship education, is essential to enable broad participation in local economic development (Ali, 2020; Winborg & Hägg, 2019). Socio-scientific approaches and local contextualization can also increase conceptual knowledge and environmental literacy (Nurhuda et al., 2020; Treepob et al., 2019).

Experiential learning is a very effective approach in entrepreneurship education. Internships with local businesses, entrepreneurial projects, or business simulations provide students with invaluable hands-on experience. This hands-on experience not only helps students understand entrepreneurship theory but also strengthens their abilities in managing real-world businesses. Apart from that, soft skills such as leadership, communication and teamwork must also be prioritized in entrepreneurship education (Noviani et al., 2019; Odeyemi et al., 2020). These soft skills are important to face future challenges and make it easier for students to adapt in the business world (Grebe, 2019; Ofiesh & Mather, 2020). An important dimension of public policy analysis in the education sector is examining regulatory models related to the formulation and implementation of educational programs (Donkoh & Mensah, 2020; Gupta, 2019). For entrepreneurship education programs to be successful, ongoing public policy support is needed. The government plays a key role in creating a conducive environment for entrepreneurial growth through supportive policies, such as access to venture capital, training, and technology (Davis, 2020; Emon & Nipa, 2019). In addition, collaboration between the government, educational institutions and local business actors is very important to develop programs that are in line with market demand and local potential. With the right policies, entrepreneurship education can not only be a key instrument in fostering successful entrepreneurs but also contribute directly to regional economic growth, as is expected in Pohuwato Regency. Social and environmental aspects can also be included in education (Dutta et al., 2019; Nurse & Melhuish, 2019). Previous studies regarding public policy in the field of entrepreneurship education based on local values include research on the implementation of the development of Islamic boarding school-based entrepreneurship education based on local wisdom in Jombang Regency. And previous research studies examined strengthening competencies to foster an entrepreneurial spirit in grade 10 Merdeka 9 students at SMA Negeri 2 Pontianak. As well as an analysis of the impact of entrepreneurship education on the entrepreneurial interest of students majoring in marketing at SMK Negeri 1 Gorontalo City. Study of strategies for implementing entrepreneurship projects at SMA Negeri 1 Sumberlawang. Based on previous research studies related to the design of public policy in the field of entrepreneurship education in the Independent Social Sciences Curriculum for class 2023 (Aithal & Maiya, 2021; Alenezi et al., 2020; Romano et al., 2019). The development of research related to

public policy on entrepreneurship education in the context of the Independent Curriculum and its integration with entrepreneurial values shows a variety of relevant findings and trends. Previous research generally highlights the importance of entrepreneurship education as a strategy to improve 21st century skills, such as critical thinking, creativity, communication and collaboration. In the context of formal education, many studies have emphasized the need for project-based approaches and contextual learning to link theory with real practice.

At the policy level, a number of studies have identified the successes and challenges of implementing entrepreneurship education, including factors such as government support, readiness of teaching staff, and availability of infrastructure. For example, several studies show that although the Merdeka Curriculum provides flexibility in the development of learning materials, teachers often face difficulties in integrating entrepreneurial values due to a lack of specific training and detailed guidance. In the aquaculture sector, research tends to be limited, but shows great potential for integration into entrepreneurship-based education. Several studies note that this sector has high economic and ecological value, especially in countries with marine wealth such as Indonesia. Local potential-based approaches, such as fish, shrimp or seaweed cultivation, have been identified as relevant models for developing community- and environmental-based entrepreneurial skills. Overall, existing research highlights the importance of synergy between education policy, curriculum development, and local potential. This research also underlines the need for innovation in teaching strategies, increasing the competence of educators, and strengthening collaboration with other stakeholders, such as the business world, regional government and local communities. Despite many positive developments, research in this area still requires further exploration, especially in evaluating the effectiveness of sector-specific entrepreneurship education policies such as aquaculture. Conceptually, entrepreneurship education in the Merdeka Curriculum is expected to be able to utilize local resources. In Pohuwato Regency, Gorontalo Province, current conditions show that entrepreneurship education has not utilized local resources, especially fisheries cultivation.

The urgency of this research is to analyze the design of public policy regarding the integration of entrepreneurial values in aquaculture in Pohuwato Regency, Gorontalo Province in the Merdeka IPS Class 10 Curriculum (Phase E). The novelty of this research lies in its focus on public policy design related to integrating aquaculture entrepreneurial values into the Merdeka Curriculum in the local context of Pohuwato, and offers an implementation strategy based on local potential to bridge the gap between policy and practice. This research aims to analyze the design of public policy for entrepreneurship education in the Merdeka Curriculum with a focus on integrating the values of fisheries cultivation entrepreneurship in Pohuwato Regency, Gorontalo Province.

2. METHOD

This This research uses qualitative methods to understand public policy in entrepreneurship education based on fisheries cultivation entrepreneurial values in Pohuwato Regency, Gorontalo Province. The research subjects were policy makers in the field of entrepreneurship education in Pohuwato Regency, Gorontalo Province. Data collection techniques include in-depth interviews, observation, and documentation. Data was collected using a research instrument consisting of a list of in-depth interview questions and an observation sheet, both arranged according to the instrument framework. The instrument was then validated to assess its suitability for data collection. Validation is carried out by experts in the field of instrumentation. After validation, the researcher revised the instrument according to the validator's input. The revised instrument is then submitted to the validator for approval. The new instrument is used after the validator ensures its suitability. The instrument framework is presented in [Table 1](#).

Table 1. Data Collection Instrument Framework

NO	Instrument	Indicator
1	Interview	Public policy in aquaculture entrepreneurship Public policy in entrepreneurship education Sustainability of aquaculture entrepreneurship Entrepreneurial values of aquaculture Transformation of aquaculture entrepreneurial values Integration of aquaculture entrepreneurial values in education
2	Observation	Social Sciences Curriculum Social studies learning planning

NO	Instrument	Indicator
		Implementation of social studies learning Evaluation of social studies learning Social studies learning resources Social Sciences learning media

In-depth interviews were conducted with key stakeholders, including government officials, aquaculture entrepreneurs, and academics. This semi-structured interview allows researchers to dig deeper into insights and perceptions regarding entrepreneurship education policy and implementation. Observation is used to directly observe the interactions and dynamics of the aquaculture environment. This technique allows researchers to capture a realistic picture of how policies are implemented and received by society. Observations provide rich contextual data, which cannot always be obtained through interviews alone (Motta & Galina, 2020; Seim, 2018). Data analysis is carried out through data reduction, data presentation, and drawing conclusions or verification. Document analysis includes collecting and examining official documents such as government regulations, policy reports, entrepreneurship education curricula, and other educational materials. These documents provide insight into the policy framework and objectives that local governments wish to achieve. Document analysis helps identify gaps between written policies and practical implementation on the ground. To increase the validity of the research findings, data triangulation was applied. Triangulation involves using multiple data sources and collection methods to ensure consistent findings. For example, interview results are compared with observations and documentary findings to ensure consistency and accuracy of interpretation. Triangulation is important to minimize bias and increase the credibility of the research (Nalbantoğlu & Bümen, 2020; Zulfı & Ulfah, 2020). The conclusions of this research were drawn using an inductive approach, where conclusions were formulated based on findings from the data. After completing data analysis, the researcher formulated conclusions by referring to the main themes identified. This conclusion includes an understanding of the design of public policy for entrepreneurship education in the Merdeka IPS Class 10 Curriculum with a focus on integrating entrepreneurial values in aquaculture in Pohuwato Regency, Gorontalo Province.

3. RESULT AND DISCUSSION

Result

Sustainable entrepreneurial values based on fisheries cultivation potential in Pohuwato Regency include social values, perseverance, patience, independent learning, perseverance and innovation. The development of sustainable entrepreneurial values rooted in the aquaculture sector in Pohuwato Regency includes various main aspects that support long-term success. One of the fundamental values that needs to be internalized is social values which emphasize the importance of active involvement in society. In the context of fish farming, entrepreneurs need to build strong networks with fellow fish farmers, consumers and other stakeholders. Through collaboration and cooperation, aquaculture businesses not only grow individually but also make a positive contribution to the surrounding social environment, thereby fostering a healthier and more sustainable business ecosystem. Perseverance is another important value in aquaculture-based entrepreneurship in Pohuwato. Managing a fish farming business requires a lot of patience and perseverance, especially when facing challenges such as weather changes, pest attacks, or market price fluctuations. Entrepreneurs who have perseverance will be able to survive and find solutions to overcome these obstacles. They do not give up easily and continue to strive to improve production quality and operational efficiency, which ultimately leads them to success. In addition, the values of patience and independent learning are also very relevant in this context. Given the unpredictable dynamics of aquaculture, entrepreneurs must show patience in undergoing a long and complex process. They must also continue to learn independently to stay abreast of the latest technological advances and innovations in the fisheries sector. This continuous learning process allows them to quickly adapt to changes and remain competitive in the market.

The values of perseverance and innovation are equally important elements in sustainable entrepreneurship. Diligence is essential to ensure that every detail of the aquaculture production process is carefully considered, from seed selection to harvest. On the other hand, innovation opens up opportunities to introduce more efficient and environmentally friendly methods. The combination of perseverance and innovation not only increases productivity but also ensures that aquaculture businesses can thrive and thrive in the face of the challenges of globalization and climate change. Public policies related to entrepreneurship education in the Merdeka Curriculum in Pohuwato Regency, Gorontalo Province still face various implementation challenges, especially in integrating entrepreneurial values

based on fisheries cultivation. Even though the Independent Curriculum concept provides flexibility for schools to develop contextual learning materials, in practice the materials used for entrepreneurship education are still dominated by general materials. Local potential, such as significant aquaculture activities in Pohuwato Regency, has not been utilized optimally to create relevant and inspiring content for students. Entrepreneurship education is still largely dominated by general theories, without effectively integrating local values, especially aquaculture-based entrepreneurship specific to Pohuwato Regency. This approach makes it difficult for students to understand how entrepreneurial principles can be applied in local contexts they are familiar with. In fact, integrating local values, especially aquaculture-based entrepreneurship, will not only strengthen students' understanding of the concept of entrepreneurship but also increase their awareness of the great potential of the aquaculture sector in supporting the local economy. In addition, the use of local resources in education can encourage students to innovate and contribute to the development of this sector.

A project-based learning model that involves mentoring from aquaculture entrepreneurs can be a solution to concretely improve students' entrepreneurial skills. Improving public policy that is more focused and participatory is very necessary to optimize the development of entrepreneurship education based on fisheries cultivation entrepreneurial values in Pohuwato Regency. This will have a positive impact in the long term, not only for students but also for the economic and social development of the community in Pohuwato Regency. The integration of local entrepreneurial values, particularly those rooted in the aquaculture industry, has significant potential to enrich the learning experience. By incorporating these values into the curriculum, students will not only gain a deeper understanding of the concept of entrepreneurship but also develop an awareness of how the aquaculture sector can drive regional economic growth. This approach makes learning more relevant and inspiring, while increasing appreciation of the importance of local industry.

Discussion

The focus of this research is on public policy design related to the integration of entrepreneurial values in aquaculture in the Independent Curriculum in Pohuwato Regency. This aims to develop entrepreneurship education that is in line with local potential. Based on a review of previous research, it appears that the formulation of public policy regarding entrepreneurship education in the Merdeka IPS Class X Curriculum has not studied in depth the integration of aquaculture-based entrepreneurial values, especially in Pohuwato Regency, Gorontalo. Province (Somia & Vecchiarini, 2020; Uralovich et al., 2017). This lack of attention provides an opportunity to develop a curriculum that connects education with local potential, especially in the fisheries and aquaculture sectors, which are the main drivers of the regional economy (Tam et al., 2020; Thompson et al., 2019). Emphasizing aquaculture entrepreneurship can help students understand and develop skills relevant to local resources and economic potential, while nurturing young entrepreneurs in regions that have strengths in these sectors. Public policy design to improve entrepreneurship education is carried out through several steps, as described below.

Identifying local entrepreneurial values based on aquaculture businesses in Pohuwato is an important step in building a solid foundation for sustainable business development. Research findings show that sustainable entrepreneurial values based on fisheries cultivation potential in Pohuwato Regency include social values, perseverance, patience, independent learning, hard work and innovation (Mu & Zhao, 2019; No Title, 2020). Innovation appears as a key value that must be embedded in fisheries cultivation businesses. In this context, innovation can take the form of developing new, more efficient technology, environmentally friendly cultivation methods, or even the creation of derivative products from fish cultivation. Innovation not only increases productivity but also allows aquaculture businesses to remain competitive in an increasingly dynamic market. Additionally, innovation can play an important role in overcoming challenges such as climate change or pest problems.

Entrepreneurship education can be significantly improved by integrating entrepreneurial values that exist in local communities. These values must be identified and internalized by entrepreneurs to create a strong and sustainable business ecosystem in Pohuwato. By understanding and applying these values, aquaculture businesses can gain economic benefits while making a positive contribution to the environment and surrounding communities (Dal Mas et al., 2020; Martenson, 2020; Miço & Cungu, 2021). The integration of local entrepreneurial values into the Merdeka Curriculum provides students with the opportunity to develop skills and knowledge that can be directly applied in their local economic context. This approach fosters an educational system that prepares individuals not only for business success but also encourages sustainable practices that benefit society at large. Therefore, integrating aquaculture entrepreneurial values into the curriculum is a strategic approach to encourage innovation, sustainability and social responsibility among the future generation of entrepreneurs in Pohuwato. The development of teaching materials must pay attention to sustainability account. Learning content must integrate concepts

related to environmentally friendly and sustainable fish farming practices (Christodoulou et al., 2020; Cole, 2021). This approach not only helps students understand the importance of maintaining a balanced ecosystem but also prepares them to become responsible entrepreneurs in the future. For example, the topic of waste management in aquaculture can be an important part of the curriculum, ensuring that students understand the importance of reducing environmental impact while running a profitable business (Ajayi-Nifise et al., 2020; Mahardhani et al., 2019; Standar et al., 2019). To increase relevance, teaching materials can be developed using case studies from successful aquaculture businesses in Pohuwato. By utilizing real-world examples, students can better understand the challenges and opportunities in the industry. These case studies can also be a source of inspiration, encouraging students to develop innovative ideas that they can implement in the future. Additionally, instructional materials may include interviews or testimonials from local aquaculture entrepreneurs, providing richer insight into the realities of these businesses.

Teaching materials must also be designed to be integrated with modern learning technology. The use of digital media, such as video tutorials or simulation applications, can help students understand concepts more effectively and increase their involvement in the learning process. This approach also opens up opportunities for developing distance learning which is very relevant in the current digital era. The integration of digital learning is essential to overcome the challenges posed by technological advances. The preparation of aquaculture entrepreneurship practicum modules that enable students to learn directly in the field is an important step in combining theory and practice (Hung et al., 2020; Kouzes & Posner, 2020; Lubis et al., 2022). These modules should be designed to provide students with hands-on experience in managing an aquaculture operation from start to finish. All stages, from land preparation, seed selection, maintenance to harvesting, must be included in this practical module (Ersozlu et al., 2020; Lechuga-Jimenez et al., 2019). This comprehensive approach will provide students with an in-depth understanding of the processes involved in the aquaculture business.

Practical modules should cover various aspects of entrepreneurship, such as market analysis, marketing strategy, and financial management. These components are important because aquaculture is not just about cultivation but also about marketing and selling products effectively. Students should be taught how to conduct market research to identify products in high demand and manage business finances for sustainability. With these modules, students will be equipped with practical skills that are very important when entering the business world (Abulibdeh et al., 2020; Secundo et al., 2019). Additionally, this practical module can be supplemented with a group project where students collaborate to manage a small-scale aquaculture business. This project will provide valuable experience in teamwork, project management, and decision making. Students will learn how to work together, overcome challenges, and find creative solutions to the problems they face. This experience will play a role in cultivating strong entrepreneurial characteristics.

The project-based learning approach with aquaculture entrepreneurship material provides students with the opportunity to be directly involved in the entire aquaculture business management process, from planning to marketing. Through this project, students not only learn theoretical concepts but also apply their knowledge to real-world situations (Okogwu et al., 2019; Sitaridis & Kitsios, 2020). The planning stage begins with understanding the layout of the land, choosing the type of fish or shrimp to be cultivated, and calculating the costs required. This process helps students understand the importance of careful planning for the success of an aquaculture business. After planning, students proceed to the implementation stage, where they begin to learn to manage aquaculture businesses directly. They learn to maintain water quality, feed and monitor the growth of the fish or shrimp they cultivate. This hands-on experience is very important, because students face various challenges, such as weather changes, pests, or diseases that can threaten crop yields. Students' problem-solving skills are tested and honed through fieldwork, equipping them with critical thinking skills essential for business management.

Students participate in the harvest and post-harvest stages, which include processing aquaculture products and preparing them for sale. At this stage, students learn the importance of maintaining product quality so that it meets market standards (Samadkulov, 2024; Sucipto, 2020; Urefe et al., 2023). They also gain skills in effective packaging techniques and appropriate marketing strategies to attract consumers. The marketing aspect provides insight into identifying potential markets and innovating ways to attract consumer interest, so that products become more competitive and attractive in the market. This project-based approach offers valuable experience in managing the entire business operation. Students gain a deeper understanding of the interconnectedness of each stage in the aquaculture process and how decisions made at one stage can impact the overall outcome. This experience not only improves their technical skills but also fosters strong entrepreneurial qualities, such as perseverance, responsibility, and initiative. A project-based approach to learning with aquaculture entrepreneurship material allows students to learn through direct practice. This builds comprehensive skills and fosters an entrepreneurial

mindset, which is essential for long-term success in this industry. This method effectively bridges the gap between theory and practice, ensuring that students are ready to face the challenges of managing an aquaculture business in the real world. Collaboration with local aquaculture entrepreneurs is a key element in ensuring the success of aquaculture-based projects. By engaging local business owners as mentors, students gain deeper insight into industry best practices. These mentors can share experiences, including challenges they have faced and strategies for overcoming them, thereby giving students a more realistic understanding of the business world. This involvement also strengthens the relationship between education and industry, thereby creating mutually beneficial synergies (Ibeh et al., 2024; Michaelsen et al., 2020). This collaboration also supports local community development. The involvement of local entrepreneurs in student projects encourages the transfer of knowledge and skills that benefits all parties involved. Students learn directly from industry experts, while local business owners contribute to the education of the younger generation and can find potential employees for their businesses. These partnerships not only improve relations between schools and communities but also encourage local economic growth.

In addition, collaboration between students and entrepreneurs creates opportunities for innovation and mutual learning. Entrepreneurs get a fresh perspective from students, who may introduce new ideas or approaches to problem solving. This exchange of knowledge and innovation not only improves business practices but also ensures that students stay up to date with the latest trends and technological advancements in the aquaculture industry (Bellei & Munoz, 2024; Khademi-Vidra et al., 2023). Mentoring provided by experienced entrepreneurs helps students develop important soft skills, such as leadership, communication, and teamwork, which are essential for business success. Practical insights from mentors complement the theoretical knowledge gained in the classroom, ensuring that students are better prepared to manage their own ventures or contribute effectively to existing companies. Collaboration with local aquaculture entrepreneurs creates a learning environment based on practical experience. This collaboration not only improves the educational process but also strengthens links between education and industry, supports community development, and contributes to the sustainability of local businesses and the wider economy.

Evaluation of aquaculture-based projects should be designed to assess key aspects of student learning. The first evaluation criterion to consider is creativity. Students should be encouraged to think outside the box when facing challenges that arise throughout the project. Are they able to develop innovative solutions when faced with problems in the aquaculture environment? How do they utilize limited resources to achieve optimal results. Creativity is measured not only by the end result but also by the thought process they demonstrate throughout the project. Project evaluation should also include aspects of self-reflection. Students should be encouraged to reflect on their experiences during the project and assess what they have learned (Alvarado Valenzuela et al., 2021; Bennett et al., 2023). This reflection can take the form of a reflective journal, where students write about the challenges they faced, what worked well, and things that need to be improved in the future. These reflections not only help students understand their learning process but also provide insight into how they can develop into future entrepreneurs.

Instilling a strong work ethic through aquaculture activities is a strategic step in forming strong and responsible students. In managing aquaculture ponds, students face various tasks that require hard work, such as preparing the land, feeding the fish regularly, and monitoring the environmental conditions of the pond. This activity demands persistence and consistency, because the success of an aquaculture project depends greatly on the student's ability to maintain this routine. Through this hands-on experience, students learn that good results can only be achieved through genuine effort. The work ethic developed through aquaculture activities equips students with skills and attitudes that are valuable not only in an educational context but also in their daily lives and future careers. A strong work ethic—which includes hard work, perseverance, and responsibility—is fundamental for individuals who wish to achieve success, whether in the field of entrepreneurship or other social roles (Biswas, 2023; Brugere et al., 2019; Chen et al., 2020). Developing leadership skills through aquaculture projects offers students the opportunity to practice managerial skills in real situations. In group projects, students are encouraged to take on leadership roles, where they must coordinate the team, delegate tasks, and ensure all members are working toward a common goal. This role helps students understand the responsibilities of a leader, including how to make fair and effective decisions while considering the interests of all team members. Leadership also involves the ability to inspire and motivate team members, especially when facing challenges. In aquaculture projects, student leaders must maintain team spirit, even when faced with problems such as crop failure or infrastructure damage (Ingaldi et al., 2020; Mashfufah et al., 2020). Through this experience, students learn that leadership is not just about giving orders but also about building trust and encouraging teams to work together toward a greater goal. Learning from failure is an

important aspect of managing aquaculture projects that strengthens students' entrepreneurial mindset. In aquaculture, failure can arise from various factors, such as poor harvest results, disease outbreaks, or planning errors. Rather than seeing failure as an endpoint, students are encouraged to see it as an opportunity to learn and grow. They learn to analyze what went wrong, identify the root of the problem, and find ways to fix it in the future. An environment that encourages learning from failure also teaches students the importance of resilience. Although failure often brings disappointment, with the right guidance, students learn to get back up and try again. This process helps them develop the mental resilience that is essential in entrepreneurship, where failure is often part of the journey to success. This resilience also builds students' character, ensuring they don't give up easily and stay focused on their long-term goals (Goswami et al., 2021; McDiarmid & Zhao, 2020).

Educational infrastructure support is an important element in implementing aquaculture-based entrepreneurship education in schools. The development of supporting facilities such as aquatic laboratories and aquaculture ponds provides students with the opportunity to learn and practice in an environment that is similar to real world conditions. For example, water laboratories allow students to study various water quality parameters that are important for successful aquaculture, such as pH, temperature, and oxygen levels. With these facilities, students gain understanding and ability to control the pond environment which is very important for maintaining the health of farmed fish or shrimp (Amin et al., 2022; Guerola-Navarro et al., 2020). The presence of these supporting facilities can also attract the interest of prospective students. Schools with complete infrastructure for aquaculture practices are more attractive to students interested in entrepreneurship and aquaculture. Thus, educational infrastructure support not only provides benefits for enrolled students but also enhances the school's reputation as an innovative and future-oriented educational institution.

Rewards and incentives play an important role in encouraging schools to implement aquaculture entrepreneurship education effectively. Rewarding schools that excel in this area not only rewards their hard work but also motivates other schools to follow suit. These awards can take the form of certificates, trophies, or even additional funds to improve facilities or enhance entrepreneurship education programs. By providing awards, schools are encouraged to innovate and continue to improve the quality of their programs (Ajayi-Nifise et al., 2020; Ali, 2020). These awards and incentives not only motivate schools and individuals to excel but also serve as a tool to increase public awareness and support for the importance of aquaculture entrepreneurship education. By highlighting successful schools, these awards can draw public, government, and industry attention to the achievements of these programs and the need for continued support. This attention opens up opportunities for further investment and collaboration, ultimately strengthening the aquaculture entrepreneurial ecosystem in Indonesia.

Cross-sector collaboration between the education sector, government and the aquaculture industry is key to creating a supportive and sustainable entrepreneurial ecosystem. The education sector can provide a platform for training and skills development, while governments can offer regulations and incentives that support the growth of the aquaculture industry. Meanwhile, the aquaculture industry can contribute practical knowledge, the latest technology and job opportunities for its graduates. This collaboration ensures that aquaculture entrepreneurship education in schools remains relevant to industry needs and supports local economic growth (Alenezi, 2019; Amin et al., 2022). The aquaculture industry plays an important role in this collaboration by providing resources and practical expertise to help schools implement aquaculture entrepreneurship programs. Aquaculture companies can contribute by providing pond facilities for students to practice, offering teacher training, or acting as mentors for students in entrepreneurial projects. Industry involvement not only helps improve the quality of aquaculture entrepreneurship education but also ensures that the curriculum is aligned with market demands. As a result, graduates of this program will be better prepared to enter the world of work or even start their own business. This cross-sector collaboration also creates opportunities for further innovation and development in the aquaculture industry. By working together, the education, government and industry sectors can identify challenges and opportunities in aquaculture and develop innovative solutions collaboratively. For example, joint research between universities and aquaculture companies could lead to the development of more efficient or environmentally friendly technologies, which could then be taught to students. This collaboration not only strengthens the aquaculture entrepreneurial ecosystem but also encourages the development of the aquaculture industry as a whole. Regular curriculum reviews are essential to ensure the relevance and effectiveness of aquaculture-based entrepreneurship education programs. A well-designed curriculum must be able to adapt to the ever-evolving aquaculture industry. Regular reviews enable schools to identify weaknesses in the existing curriculum and make necessary improvements. For example, if students are having difficulty with a particular aspect of pool management (Alvarado Valenzuela et al., 2021; Treepob et al., 2019). The curriculum can be revised to provide more in-depth material or practical experience in that area. This

review also offers schools the opportunity to incorporate feedback from students and teachers directly involved in implementing the curriculum. Ongoing curriculum reviews aim to ensure that aquaculture entrepreneurship education programs remain relevant to student needs and industry demands. By carrying out regular revisions, schools can ensure that their curriculum meets high educational standards and provides added value for students. This process also shows the school's commitment to quality education, which in turn can improve the school's reputation and attract more prospective students (Emon & Nipa, 2019; Urefe et al., 2023). Stakeholder involvement in curriculum development and adaptation is critical to creating comprehensive and relevant aquaculture entrepreneurship education programs. Stakeholders such as the public, academics and industry practitioners have valuable knowledge and experience that can enrich the curriculum. For example, local aquaculture entrepreneurs can provide input on real challenges in the field, which can be integrated into the curriculum to provide students with a deeper understanding. By involving stakeholders, schools can ensure that the curriculum is not only theoretical but also practical and aligned with industry needs (Ibeh et al., 2024; Odeyemi et al., 2020). Academics, with their research and educational backgrounds, can contribute to curriculum development based on the latest scientific knowledge and industry trends. They can provide insight into the latest developments in aquaculture technology, business management, and environmental policy relevant to the industry. Involving academics ensures that the curriculum is evidence-based and incorporates current best practices. In addition, collaboration with academics opens up joint research opportunities that can improve the quality of education and encourage innovation in the aquaculture industry.

Aquaculture practitioners, as active participants in the industry, offer valuable practical insight during curriculum development. They can provide feedback on the most important skills needed in the field and strategies for overcoming the daily challenges of pond management. The involvement of professionals in the curriculum adaptation process ensures that students acquire not only theoretical knowledge but also practical skills that can be directly applied in the workplace. This collaboration also helps create networking opportunities between students and industry practitioners, opening the door to internships, mentoring, and potential employment after graduation. Adapting to change is an important aspect in designing an aquaculture entrepreneurship curriculum, especially considering continuously developing technology and market dynamics. Like many other sectors, the aquaculture industry is undergoing significant transformation due to technological advances, such as the use of advanced sensors to monitor water quality or the implementation of automated systems in pond management. Curricula must be designed to adapt quickly to these changes, ensuring students acquire knowledge and skills relevant to current industry conditions. This approach prepares students to face challenges in an ever-changing work environment (Kouzes & Posner, 2020; Uralovich et al., 2017).

Adaptive curricula should also reflect market trends in the aquaculture industry. For example, the increasing market demand for organic and environmentally friendly aquaculture products should be integrated into the curriculum by teaching students sustainable aquaculture practices and how to market these products to environmentally conscious consumers. By following market trends, the curriculum remains relevant and helps students understand industry dynamics and how to adapt to consumer demands. Adapting to technological and market changes requires schools to continuously update their educational resources. This may involve implementing new teaching technologies, such as the use of agricultural simulation software or interactive online learning platforms. These resources not only make the learning process more engaging and effective but also ensure that students have access to the tools they will use in the field. In this way, students learn not only from textbooks but also through practical experience that reflects the real conditions of the aquaculture industry.

A curriculum that is adaptive to change is a curriculum that is lively, dynamic, and able to develop with the times. This requires the commitment of all parties involved, including teachers, students and educational policy makers. With a flexible and responsive curriculum, schools can ensure that they not only teach skills that are relevant to today but also prepare students to face the challenges and opportunities of the future. This is a long-term investment that will bring great benefits to students, schools and the aquaculture industry itself. The results of this research provide a significant contribution to the development of public policy in entrepreneurship education in the Merdeka Curriculum, especially with the integration of fisheries cultivation entrepreneurial values in Pohuwato Regency. Through a locally focused approach, this research encourages closer links between education and regional economic development, thereby increasing the relevance of the curriculum to real-life community needs. The strength of this research lies in its innovative approach which links entrepreneurship education with local potential, especially the aquaculture sector in Pohuwato Regency so that it is more relevant to regional needs. This approach also encourages synergy between education and the local economy, preparing students to become entrepreneurs who understand the strengths of their local economy. However, this study has limitations in geographical scope, namely it is limited to Pohuwato Regency. Based on these

limitations, it is recommended to conduct further research to cover other areas that have similar characteristics and involve more stakeholders to strengthen the resulting findings and recommendations.

4. CONCLUSION

The findings of this research indicate that public policy design concerns the integration of aquaculture entrepreneurial values into Merdeka Curriculum Class 10 social studies learning in Pohuwato Regency is a strategic step in developing entrepreneurship education that is in line with local potential. Independent Flexibility Curriculum enabling schools to adapt educational content to local needs and the natural resources available in Pohuwato, particularly in the aquaculture sector. Policy support from the local government is an important factor in the successful implementation of aquaculture-based entrepreneurship education in Pohuwato. In addition, regional governments are expected to continue to develop policies that are responsive to the growth of the aquaculture industry, including sustainable curriculum development.

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