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Creating Sustainable Business Interest Through Innovation in Early Childhood Education

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ABSTRACT

This article examines the important role of innovation in early childhood education to foster interest in sustainable business. Facing global economic challenges and rapid social change, early childhood education plays an important role in developing an entrepreneurial spirit that is not only focused on profit, but also sustainability. This research highlights how innovation in service programs, curriculum, teaching methods, and use of technology can encourage educators to create businesses that are environmentally friendly, ethical, and have a positive impact on society. By combining entrepreneurial principles with social and environmental awareness, early childhood education can be a driving force in creating a generation of entrepreneurs with a long-term vision. This article also discusses various early childhood education initiatives that have succeeded in fostering interest in sustainable entrepreneurship among early childhood education managers. In the end, this article provides recommendations that early childhood education must continue to innovate to produce entrepreneurs who are not only financially successful, but also environmentally and socially responsible.

Keywords: Entrepreneurship; Sustainability; Early Childhood Educational Innovation

INTRODUCTION

Over the past few decades, sustainability issues have become a major concern around the world, prompting various sectors to adopt more responsible practices, including in the field of entrepreneurship. Sustainable entrepreneurship is not only oriented towards economic benefits but also contributes to social welfare as well as environmental protection. In this case, early childhood education also has an important role in shaping the generation of entrepreneurs with a vision of sustainability. Early Childhood Education (PAUD) is an important phase in child development, and innovation in this field is indispensable to support effective and enjoyable learning.

Various innovations in early childhood education, such as integrated early *childhood care services*. project-based learning approaches, integration of digital technology, and curriculum that emphasizes sustainability. It is hoped that this will be able to increase the interest of managers, educators, students and the younger generation in sustainable entrepreneurship. Research shows that learning that prioritizes solutions to real problems and involves education in sustainability issues can encourage creative, critical, and visionary thinking skills.

To realize this, the implementation of early childhood education innovations requires a holistic approach, including the integration of sustainability principles in the curriculum, collaboration with industry or the business world, and the provision of facilities that support entrepreneurial exploration. Schaltegger & Wagner (2006) defines sustainable entrepreneurship as a business strategy that aligns social, economic, and environmental goals through the creation of opportunities that benefit society and ecosystems (Rosário et al., 2022). Meanwhile, Cohen & Winn (2007) highlighting the importance of innovation to address

market failures that are detrimental to the environment and society through an entrepreneurial approach.

Educational innovation is often defined as a set of ideas, processes, and strategies that aim to change educational practices to be more effective in improving learning outcomes (Rosário et al., 2022). Guerra describes educational innovation as "a systematic process to introduce changes in current educational practices" to improve the learning experience (Lomba et al., 2022). At the higher education level, innovation is generally associated with the development of competencies through new teaching approaches, such as the use of technology and the integration of sustainability principles in the curriculum. This aims to create a learning process that is relevant to the needs of modern society and supports the achievement of the Sustainable Development Goals (SDGs) (Krstikj et al., 2022; Rubia-Avi, 2022). Educational innovation includes interventions designed to change culture, models, and pedagogical practices. This transformation also involves using technology to produce a more creative approach to building knowledge(Rubia-Avi, 2022). This approach emphasizes that educational innovation is not solely related to technology, but also includes a paradigm shift in teaching methods and organizing the early childhood learning process to be more flexible and adaptive. If you need more in-depth access to related literature, additional references can be searched.

The concept of "sustainable efforts through innovation in early childhood education" refers to the application of sustainability principles in the early childhood education system to prepare future generations to face increasingly complex global challenges. In this case, innovation encompasses more than just the development of products or services, but also includes changes in the ways and approaches of learning in the educational process that support sustainability goals.

Based on various studies, innovations in sustainable early childhood education aim to integrate sustainability principles in the curriculum, use environmentally friendly technology, and create an inclusive and equitable early childhood learning environment. This concept emphasizes the development of skills necessary for the future, such as critical thinking skills, creativity, and adaptability, which form the basis for facing pressing social and environmental challenges (Shields, 2023).

It is important to note that innovation in sustainable early childhood education is not only limited to changing teaching materials, but also involves collaboration between educational institutions, governments, local communities and the private sector. This collaboration aims to create an education system that is more responsive to global sustainability issues. The implementation of this innovation can include the development of more efficient learning technologies, as well as the application of circular economy principles that manage resources wisely (Hallstedt & Thompson, 2010).

METHODS

Library research is an approach used to explore theories, concepts, and related findings that already exist in the scientific literature. The first step in literature research is the determination of a clear topic and research objectives. In this case, the focus is on the application of innovations in education that support social and environmental sustainability. The things that are done at this stage are: a) Evaluating how innovations in education can contribute to sustainability. b) Develop a conceptual framework regarding sustainable innovation in the world of education. c) Identify challenges and opportunities that exist in the implementation of continuing education.

The next step is to identify and gather relevant literature. Some of the resources that can be used include: a) international journals that discuss topics related to sustainability, innovation in education, and their impact on society and the environment, such as

Sustainability and Educational Technology Research and Development. b) books that explain theories of continuing education, educational technology, and sustainability-based curriculum development. c) reports from international institutions such as UNESCO, as well as government reports discussing continuing education policies.

After collecting the literature, the next stage is to analyze the relevant content, which includes: a) Basic concepts and Theories: Understand the underlying theories of continuing education and innovation in education, including concepts such as social sustainability, the use of technology in education, and environmentally friendly curriculum approaches. b) Practice and Case Studies: Analyze examples of the application of sustainable innovation in early childhood education, for example the use of child-friendly technology devices or the development of sustainability-based early childhood curriculum. c) Challenges and Opportunities: Identify challenges in the implementation of sustainable educational innovations and explore existing opportunities, such as new technologies or collaborations between the education sector and industry.

After analyzing the existing literature, researchers will synthesize the findings to provide a more comprehensive understanding of the relationship between innovation in education and sustainability. This synthesis includes: a) a deeper understanding of how sustainable early childhood education can be combined with innovation. b) an explanation of the role of technology and curriculum in early childhood education in creating an environmentally friendly and inclusive learning environment. c) compiling recommendations related to the development of sustainable early childhood education from policy and practice aspects.

RESULT AND DISCUSSION

Sustainable efforts in early childhood education focus on creating models that not only prioritize economic benefits, but also have a lasting positive impact on society and the environment. In this case, innovation has a very important role in achieving these goals. Here are some of the key aspects of the concept of entrepreneurship through early childhood education innovation:

Application of Environmentally Friendly Practices in Early Childhood Education Institutions

Early childhood education institutions can implement various environmentally friendly practices, such as the use of simple technology-based tools and loose materials available in the surrounding environment for learning. These steps not only function to process and utilize plastic waste such as plastic bottles and caps, but can also be included in the curriculum as part of education regarding sustainability. An example is the practice of sorting waste and processing plastic waste as a learning tool which is included in the co-curricular curriculum structure with the theme I love the earth.

A variety of project-based play activities are implemented in the Pancasila Student Profile Strengthening Project (P5) Children learn to design fashion, serving hoods, flower vases, room decorations made of plastic waste. Children can also use vehicle wheel waste as a playground tool, and others. In addition to plastic materials, early childhood also utilizes loose materials from the surrounding environment such as twigs, dry leaves, grains, pebbles, stones as learning literacy and numeracy, sensory and many more.

The implementation of environmentally friendly measures in early childhood education institutions is very important to face global sustainability issues. Early childhood education has a strategic role in shaping environmental awareness and encouraging positive change from an early age. Several initiatives have been designed to integrate sustainability

principles both in daily activities and in learning in PAUD units and subsequent levels of education.

Waste management also plays an important role, where organic waste that is no longer used will be collected into compost. Early childhood learns with a scientific approach to observe, question, collect information, associate their knowledge in play activities to communicate the results found through the learning process of processing organic waste into compost fertilizer that can fertilize plants. Fun and environmentally friendly early childhood learning activities are seen in play activities such as; Waste exploration by honing children's ability to sort waste, process waste into handicrafts is of course part of stimulating children to think logically, critically and creatively to solve problems from an early age. This is important to spark children's curiosity through meaningful play using a scientific approach. (Donatirin et al, 2017)

Many education units are now beginning to adopt sustainability evaluation tools to assess the impact of environment-related policies and programs. This evaluation tool helps measure the achievement of the Sustainable Development Goals (SDGs) and increase the effectiveness of education in supporting sustainability(Basheer et al., 2024).

Thus, the application of eco-friendly practices in educational institutions not only serves to educate the nation's generation on the importance of sustainability, but also provides them with the tools and knowledge to become agents of change that can reduce their ecological footprint and create a more sustainable world.

Innovation in Learning and Teaching

The use of innovative educational technology can improve the accessibility and quality of early childhood education. The use of digital technology such as tablets and educational applications has brought significant changes in early childhood education teaching methods. Interactive tools and specially designed software help children learn basic skills through games and digital interactions, making learning more interesting and adaptive, especially in the digital era.

Innovation in teaching and learning aims to revolutionize the way teaching and learning is done to create a more effective and engaging experience for students. Technology plays an important role in this, with the application of advanced tools such as artificial intelligence (AI), virtual reality (VR), and game-based learning. For example, AI can help teachers by automating administrative tasks, giving them more time to interact with students, and enriching the learning experience through a more personalized approach(Cheng & Mok, 2008).

In addition, the application of immersive learning technologies, such as VR, provides opportunities for students to experience real situations or learn knowledge concepts in a more engaging and interactive way. This allows them to be more active and creative in the learning process. This technology not only enriches teaching materials but also offers practical experiences that can deepen their understanding of the real world. Gamification, which adds elements of the game such as rewards and challenges, is also growing in popularity in education. Nonetheless, for gamification to be more effective, game design must be innovative, not only incentivizing to complete tasks quickly, but also to develop critical thinking and problem-solving skills (Fischer et al., 2020).

Early childhood is closely related to the learning that is packaged in the game. Learning at this age, emphasizes that children acquire some skills through play (Akman & Guchan, 2015). Thus, the use of digital educational games provides an interactive, fun learning experience and social interaction according to their developmental needs. First, children need stimulation to develop fine motor skills before heading to the cognitive realm. Children can interact such as touching the screen or pressing a button, then learn skills such as understanding simple rules or making choices. The use of this game can expand children's

imagination and experience, create solutions, build retention and build a digital play culture according to their developmental stages. (Andri Setiawan, et al., 2019)

With these approaches, innovation in education goes beyond updating teaching materials; It includes new ways to interact with learners that allow them to be more independent, creative, and ready for future challenges. Spark technology opens up business opportunities for educators to prepare learning games based on sustainable application innovation. The activity of playing learning games is more directed and controlled than unlimited games on children's gadgets today.

Collaboration with Industry and Development of Relevant Curriculum

To realize sustainable education, PAUD units need to establish close collaboration with industry to design products according to the PAUD curriculum that are in line with the needs of the job market and technological developments. This collaboration creates innovative solutions to social and environmental challenges faced by the industrial sector.

This kind of collaboration plays a crucial role in maintaining the relevance of education to global dynamics. Educational institutions can leverage this relationship to update curricula, integrate practical skills needed by industry, as well as bridge the gap between academic theory and practical needs in the field.

One of the most widely applied approaches is the development of an industry-driven curriculum (IDC), in which industry experts participate in the evaluation and preparation of the curriculum. This approach allows for curriculum adjustments to meet the latest professional standards, while increasing the competitiveness of graduates in the global job market (Mahalingam, 2024). Collaboration with industry in early childhood education technology (PAUD) can take various forms that are innovative and have a positive impact. Here's an example of technology development:

1. Learning Application Creation. Cooperation between software developers and educational institutions to create educational applications designed specifically for early childhood. These apps can include interactive games that teach basic skills such as reading, writing, and counting in a fun and engaging way.
2. Teacher Training and Development. Joint Training Program. The technology industry can collaborate with educational institutions to organize training for early childhood education teachers. This training aims to introduce new technologies and innovative learning methods, such as the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach that integrates various disciplines in learning.
3. Provision of Resources and Infrastructure. Device Support and Internet Connection: Technology companies can provide hardware such as tablets or laptops as well as internet access for early childhood education schools, especially in remote areas. It supports distance learning and ensures that all children have access to quality educational resources.

Through these forms of collaboration, the educational technology industry can make a significant contribution to the development of early childhood education and sustainable entrepreneurship. Overall, strategic collaboration between educational institutions and industry not only ensures that the curriculum remains relevant, but also creates an education that is adaptive and responsive to global needs, supporting sustainable economic development.

Integrated Social Entrepreneurship as Part of Education

Managers and observers of PAUD units are encouraged to develop social entrepreneurship that is not only oriented to economic benefits, but also has a positive impact on society and the environment. This social entrepreneurship program aims to inspire

students to create solutions that are beneficial to various sectors, such as health, the environment, and education (Soam et al., 2023).

Social entrepreneurship as part of education is a strategy to integrate entrepreneurial values with social goals, aiming to make students become agents of change who are able to face global challenges. Social Entrepreneurship Education (SEE) focuses on developing the skills, knowledge, and attitudes necessary to create innovative solutions to social and environmental problems. One of them is through integrated services between formal and non-formal services. Such as preparing integrated Kindergarten services with Daycare. The working community certainly needs this service very much. The market share of this service is very related to the lifestyle of the working community in urban areas where you are workers. So that integrated services are a solution, of course, the community will see integrated services that are safe and comfortable with a positive parenting pattern.

According to Ndou (2021), SEE includes approaches that combine the exploitation and exploration of knowledge, designed to strengthen entrepreneurial competence in a social context. This learning utilizes project-based methods, cross-sector collaboration, and real-world problem-solving, allowing students to understand social issues while creating sustainable solutions (Zhong et al., 2022).

In addition, social entrepreneurship education creates awareness of the importance of innovation in overcoming challenges such as economic inequality, climate change, and limited access to education and market needs. This learning process connects theory with practice through an action-based approach, creating a more relevant and dynamic learning environment. By integrating social entrepreneurship in the curriculum, educational institutions not only help address real-world challenges, but also contribute to the development of a more inclusive and sustainable society.

Research and Development for Sustainability

Education units need to continuously conduct research and development (R&D) to create innovations that support a more effective, inclusive, and sustainable education system. A focus on research in educational technology, education policy, and science and technology-based solutions allows for the creation of a more environmentally friendly approach and is able to face global challenges.

R&D has a strategic role in sustainability, especially through technological innovations that support the adoption of green practices. Developing countries such as BRICS members (Brazil, Russia, India, China, and South Africa) show that the adoption of information and communication technology (ICT) not only improves energy efficiency but also optimizes the use of resources. This emphasizes the importance of technological innovation to support sustainable development (Shahid & Alarifi, 2021). The development of patents in renewable energy also reflects the need for synergy between the government, the industrial sector, and academia. This collaboration is important to ensure that the research conducted is relevant to sustainability needs and is able to drive the transition to a green economy

Thus, investment in R&D has a dual impact: economic benefits as well as a direct contribution to sustainability goals, such as climate change mitigation and resource efficiency. This strategy is an important foundation for the creation of an inclusive, adaptive, and resilient education and economic system to global challenges.

CONCLUSION

The application of sustainability principles in early childhood education is the key to overcoming increasingly complex global challenges. Innovation plays an important role in shaping an education system that is more responsive, inclusive, and in accordance with the times. This includes the integration of environmentally friendly technologies, learning

innovations in teaching, sustainability-oriented curriculum development, and collaborations between educational institutions, the industry sector, and governments that strengthen entrepreneurship through sustainable educational innovation.

Innovation-driven early childhood education not only aims to produce a golden generation that excels in children's cognitive development, but also equips them with independence, critical thinking skills, creativity, and adaptability to address social and environmental problems. By collaborating between innovation, education, and sustainability, educational institutions can play a crucial role in creating stronger, fairer, and more sustainable societies. Therefore, sustainability in education is not just an idea, but a collective responsibility to create positive change that starts from the education system itself.

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