

Aprender haciendo en Ecuador: Promover la experiencia práctica en la enseñanza técnica

Learning by Doing in Ecuador: Promoting Practical Experience in Technical Education

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RESUMEN

Este artículo examina el papel del aprender haciendo en la educación técnica en Ecuador. El artículo destaca la importancia de la experiencia práctica en la construcción de una fuerza laboral calificada y competitiva a través de la revisión de la literatura relevante y el análisis de las políticas e iniciativas gubernamentales. El Plan Nacional de Educación Técnica, desarrollado en 2011, enfatiza la necesidad de alianzas entre las instituciones educativas y la industria para proporcionar a los estudiantes habilidades relevantes para el mercado laboral. Varias escuelas técnicas y vocacionales en Ecuador ofrecen programas en mecánica, electrónica, soldadura e informática, que a menudo incluyen pasantías o programas de aprendizaje. El artículo concluye discutiendo los posibles beneficios y desafíos de aprender haciendo en Ecuador y destaca la necesidad de más investigación.

Palabras clave: aprender haciendo; enseñanza técnica; Ecuador; formación profesional; experiencia práctica

ABSTRACT

This article examines the role of learning by doing in technical education in Ecuador. The article highlights the importance of practical experience in building a skilled and competitive workforce through reviewing relevant literature and analyzing government policies and initiatives. The National Technical Education Plan, developed in 2011, emphasizes the need for partnerships between educational institutions and industry to provide students with relevant skills for the job market. Several vocational and technical schools in Ecuador offer programs in mechanics, electronics, welding, and computer science, often including internships or apprenticeships. The article concludes by discussing the potential benefits and challenges of learning by doing in Ecuador and highlighting the need for further research.

Key words: learning by doing; technical education; Ecuador; vocational education; practical experience

Introduction

Ecuador is a developing country that faces significant challenges in building a skilled and competitive workforce. Technical and vocational education is seen as a critical strategy to address these challenges and promote economic development. However, traditional approaches to education that focus on theoretical knowledge have been criticized for not adequately preparing students for the job market. In response, there has been a growing emphasis on learning by doing as an approach to technical education that emphasizes the importance of practical experience in learning.

This article examines the role of learning by doing in technical education in Ecuador. The article highlights the importance of practical experience in building a skilled and competitive workforce through reviewing relevant literature and analyzing government policies and initiatives. The article also explores this approach's potential benefits and challenges and discusses the need for further research in this area.

Literature Review

Learning by doing is a pedagogical approach that emphasizes the importance of practical experience in the learning process. According to Kolb's experiential learning theory, individuals learn best through a four-stage cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation (Kolb, 1984). This approach has been widely applied in vocational and technical education, where practical experience is essential to develop skills in mechanics, carpentry, or computer programming (Billett, 2011).

Kolb's book "Experiential Learning: Experience as the Source of Learning and Development" is one of the most influential works on experiential learning. In the book, Kolb introduces the experiential learning cycle, which includes four stages: concrete experience, reflective observation, abstract conceptualization, and active experimentation. Kolb argues that learning is a continuous process

that involves a cycle of experience, reflection, conceptualization, and experimentation.

To support his theory, Kolb conducted several studies comparing the learning outcomes of students who had engaged in experiential learning activities to those who had engaged in more traditional forms of learning. In one study, for example, he found that students who had participated in an outdoor experiential education program demonstrated more significant gains in problem-solving ability, critical thinking skills, and interpersonal communication than a control group of students who had not participated. This study supports Kolb's assertion that experiential learning can lead to more meaningful and effective learning outcomes.

In Billett's book "Learning in the workplace: Strategies for effective practice," he discusses his research on learning in the workplace and presents strategies for effective practice. He draws on a range of case studies to explore how workplace learning can be used to enhance individual and organizational performance. The book also includes a discussion of the role of workplace learning in developing professional identity and the importance of integrating work and learning (Billett, 2001).

Billett's book analyzes the learning experiences of apprentice chefs in a hotel kitchen. Billett found that the apprentices learned technical skills and developed social and cognitive skills by participating in the workplace community. He emphasizes the importance of providing opportunities for apprentices to engage in various tasks and to work with a range of people to support their learning and development.

In recent years, technical and technological education has received increasing attention in Ecuador as it seeks to modernize and diversify its economy. Several researchers have conducted studies in this area to understand better the current state of technical and technological education in Ecuador. For example, Córdova et al. (2019) researched technical and technological education in Ecuador, exploring its history, current status, and prospects. Larrea and Maldonado (2019)

focused on the trends and challenges of technical and technological education in Ecuador. Finally, Rentería and Jara (2019) analyzed the curricula of Ecuador's technical and technological education programs and their relevance to the labor market.

In addition, the Ecuadorian government has also made efforts to promote technical and technological education. The National Plan for Technical and Technological Education 2018-2025, developed by the Ministry of Education of Ecuador, aims to strengthen and expand technical and technological education in the country (Ministerio de Educación del Ecuador, 2018). The National Plan for the Development of Human Talent 2019-2023, developed by the Ministry of Labor of Ecuador, also includes measures to promote technical and technological education (Ministerio de Trabajo del Ecuador, 2019).

Despite these efforts, technical and technological education in Ecuador still faces challenges, such as the lack of resources and equipment, the low social status of technical professions, and the mismatch between the skills taught in technical and technological education programs and the needs of the labor market (Farias, 2018; Zambrano et al., 2019). Therefore, more research and collaboration are needed between the government, educational institutions, and the private sector to address these challenges.

While technical and technological education has progressed in recent years in Ecuador, there is still much room for improvement. Therefore, the government and other stakeholders must work together to address the challenges and create an educational system that can provide Ecuadorians with the technical and technological skills needed for economic development.

In Ecuador, the National Technical Education Plan, developed in 2011, highlights the importance of learning by doing in technical education. Furthermore, the plan emphasizes the need for partnerships between educational institutions and the industry to provide students with practical experience and relevant skills for the job market (Ministerio de Educación del Ecuador, 2018). The plan also calls for developing

internship and apprenticeship programs to provide students with on-the-job training.

Several vocational and technical schools in Ecuador offer programs in mechanics, electronics, welding, and computer science, often including internships or apprenticeships. For example, the Technical University of Machala offers a program in industrial mechanics, including a six-month internship in the local industry (Technical University of Machala, 2021). Similarly, the National Institute of Higher Technological Education offers a program in welding that includes an apprenticeship component (National Institute of Higher Technological Education, 2021).

Promoting learning by doing in technical education in Ecuador is also reflected in the policies and initiatives of international organizations such as the Inter-American Development Bank (IADB) and the Organization for Economic Cooperation and Development (OECD). For example, the IADB has funded several projects in Ecuador to improve the quality and relevance of technical education, including developing curricula and providing equipment and materials (Inter-American Development Bank, 2021). The OECD has also supported technical education in Ecuador through its Programme for the International Assessment of Adult Competencies (PIAAC), which measures the skills and knowledge of adults in different countries.

Successful Examples of Learning by Doing in Other Contexts

Learning by doing has been implemented in various countries worldwide, with many successful outcomes. In addition to the programs and initiatives discussed in the previous sections of this paper, there are several other examples worth noting.

One example of successful learning by doing is the “Duolingo Language Learning App.” Duolingo is a free language-learning platform that includes a language-learning website and app and a digital language proficiency assessment exam. It was developed in 2011 by Luis von Ahn

and Severin Hacker, and since then has become one of the most popular language-learning platforms in the world, with over 500 million registered users (Von Ahn & Hacker, 2012).

The learning experience is based on a gamified approach, where learners earn points, badges, and virtual currency as they complete lessons and exercises. The app offers a range of features to support learning by doing, such as grammar explanations, vocabulary exercises, and conversation practices. In addition, users are encouraged to engage in hands-on, interactive activities to reinforce their learning, similar to Kolb's experiential learning model.

The impact of the Duolingo app has been impressive, with studies indicating that users can learn a new language in as little as 34 hours of using the app. In addition to its impact on language learning, Duolingo has also been recognized for its potential to increase access to education, particularly for underserved populations who may not have access to traditional language learning resources.

Overall, the Duolingo Language Learning App is a successful example of a learning-by-doing program, leveraging gamification and interactive activities to provide an engaging and practical language learning experience and make language learning more accessible and inclusive.

Some other examples happen in the United States. For example, the City Year program is an AmeriCorps initiative that allows young adults to serve as mentors, tutors, and role models for children in under-resourced schools. This program has successfully improved educational outcomes for students and promoted civic engagement among young adults (Lakshmikanth, 2022).

Moreover, the "dual education system" in Germany combines classroom learning with on-the-job training, allowing students to gain practical skills and work experience while earning academic credentials. This system has been credited with helping to reduce youth unemployment and providing a steady supply

of skilled workers for industry (The Federal Ministry of Education and Research, n.d.).

In addition, the SkillsFuture program in Singapore aims to provide lifelong learning opportunities for all citizens, focusing on developing practical skills and knowledge relevant to the changing demands of the economy. This program has successfully promoted workforce development and enhanced the country's competitiveness in the global market (SkillsFuture Singapore, n.d.).

Furthermore, the Finnish education system is often cited as a model for emphasizing experiential learning and student-centered teaching. In addition to highlighting hands-on learning activities, such as woodworking and cooking, Finnish schools prioritize student well-being and individualized instruction (Sahlberg, 2011).

Many countries have implemented successful programs and initiatives that incorporate learning by doing. For example, in Norway, the Vg1 Technical and Industrial Production program provides students with hands-on experience in various technical fields, leading to high levels of engagement and learning (Nordahl, 2018). Similarly, the Dual Training System in Germany has successfully prepared students for the workforce through classroom instruction and practical training in actual workplaces (BMBF, 2018).

Other successful initiatives include the Swiss Apprenticeship System, which has been lauded for its ability to integrate practical training with classroom learning, leading to low levels of youth unemployment and a highly skilled workforce (Cedefop, 2017), and the Australian Apprenticeships program, which provides opportunities for individuals to learn and earn on the job in a variety of industries (Australian government, 2021).

Canada is known for its robust technical education system, which emphasizes experiential learning and hands-on training. The country's community colleges and

technical institutes offer a range of programs that incorporate work-integrated learning, cooperative education, and apprenticeships to help students gain practical skills and experience in their chosen fields (Bourdon & Collins, 2019). For example, the British Columbia Institute of Technology offers a “learning by doing” approach to education through its focus on applied research and industry partnerships, which has led to high graduate employment rates and strong ties to the local economy (British Columbia Institute of Technology, n.d.).

These examples demonstrate the diverse ways in which learning by doing can be implemented and the positive outcomes it can achieve. By providing students with opportunities to apply their knowledge and skills in real-world contexts, these programs and initiatives have helped to promote workforce development, reduce youth unemployment, and improve educational outcomes.

Benefits of Learning by Doing in Ecuador

Promoting learning by doing in technical education in Ecuador has several potential benefits. First, it can help address the skills gap between what is taught in schools and what is needed in the job market. By providing students with practical experience, they are better prepared to meet the demands of employers and contribute to economic development (Beyene, 2019).

Second, learning by doing can enhance the quality and relevance of technical education in Ecuador. Traditional approaches to education that focus on theoretical knowledge can be disconnected from the needs of industry and the labor market. By integrating practical experience with theoretical knowledge, students gain a deeper understanding of the subject matter and can better apply what they have learned in real-world situations (Rosero & Contero, 2020).

Third, learning by doing can promote innovation and entrepreneurship in Ecuador. By providing students with the skills and knowledge they need to develop and implement new ideas,

they are better positioned to start their businesses or contribute to the growth of existing ones.

Challenges of Learning by Doing in Ecuador

While learning by doing has the potential to be a practical approach to technical education in Ecuador, several challenges must be addressed. One challenge is the lack of resources and infrastructure to support practical experience. Many technical and vocational schools in Ecuador lack the necessary equipment and materials to provide students with hands-on training. In addition, there is often a shortage of qualified instructors with practical experience in their teaching fields.

Another challenge is the need for effective partnerships between educational institutions and the industry. While the National Technical Education Plan calls for such partnerships, there is often a lack of coordination and communication between the two sectors. As a result, educational institutions may not have a clear understanding of the needs of industry, and the industry may not understand the skills and knowledge students acquire in school.

A third challenge is the need for practical evaluation and assessment of learning by doing. While practical experience is essential, it is also vital to ensure that students acquire the necessary knowledge and skills to succeed in the job market. Therefore, practical evaluation and assessment methods are needed to ensure that learning by doing is effective and identify improvement areas.

Conclusion

Learning by doing has the potential to be a practical approach to technical education in Ecuador. By providing students with practical experience, they are better prepared to meet the demands of employers and contribute to economic development. However, several challenges must be addressed, including the lack of resources and infrastructure, effective partnerships between educational institutions and the industry, and practical evaluation and assessment.

Learning by doing has shown promising results in countries worldwide, including Singapore, Australia, and Canada. However, it is essential to note that the success of these initiatives does not guarantee the same outcomes in Ecuador. The effectiveness of learning by doing in the Ecuadorian context depends on various factors, including the level of institutional support, the quality of the training and educational programs, and the availability of resources. Therefore, it is crucial for policymakers and educators in Ecuador to carefully evaluate the potential benefits and challenges of learning by doing and to tailor such initiatives to the specific needs and characteristics of the Ecuadorian workforce. Ultimately, the success of learning by doing in Ecuador will depend on a concerted effort to build strong partnerships between educational institutions, employers, and policymakers to create a supportive and dynamic environment that fosters continuous learning and innovation.

Further research is needed to better understand the effectiveness of learning by doing in Ecuador and to identify best practices for implementing this approach. This research should include qualitative and quantitative methods, such as case studies, surveys, and evaluating specific programs. By addressing these challenges and promoting learning by doing, Ecuador can build a more skilled and competitive workforce and contribute to its economic development.

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