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Environmental education for sustainable development in engineering education in Colombia

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Abstract

Introduction: Environmental education (EE) has been extensively studied and promoted in Latin America, particularly in Colombia, through educational policies and regulations at all educational stages. While EE is well-established, Education for Sustainable Development (ESD) is gaining increasing global importance, especially with the advent of the Sustainable Development Goals (SDGs). Despite this, there remains a lack of knowledge, application, and research of ESD within engineering programs in higher education. This study aims to explore these gaps and assess the acceptance of ESD compared to EE among engineering students in Colombia. **Methods:** A survey was conducted among 406 engineering students from eight universities in Colombia that offer undergraduate engineering programs. The survey included both Likert scale questions and open-ended questions. The objective was to measure students' knowledge and perception of ESD, identify the roots of EE within engineering programs, and evaluate the progressive integration of ESD in these curricula. **Results:** The results revealed the deep-rooted presence of EE in Colombian engineering programs and a gradual incorporation of ESD into these curricula. However, significant gaps were identified. The majority of students demonstrated limited knowledge of ESD and Sustainable Development (SD). Furthermore, there was a noticeable lack of academic areas

or subjects within the engineering curriculum that specifically promote the knowledge and application of ESD. Students’ responses also highlighted the unusual convergence between EE, a traditionally conservationist field, and ESD, which is more development-oriented. Discussion: This research identifies several critical challenges faced by engineering education in Colombia. The limited awareness of ESD among students suggests a need for enhanced integration of sustainable development concepts within engineering curricula. The lack of academic subjects dedicated to ESD further exacerbates this issue. Based on these findings, a transition strategy is proposed to bridge the gap between EE and ESD in Colombian higher education. This strategy aims to provide a smoother transition and better integration of sustainable development principles within engineering programs, ultimately supporting the development of engineers equipped to address contemporary global challenges. Copyright © 2024 Acosta-Castellanos, Queiruga-Dios and Camargo-Mariño.

Author keywords

Colombia; critical reflection; education for sustainable development; engineering education; environmental education; higher education; sustainability

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Abstract

Introduction: Environmental education (EE) has been particularly in Colombia, through educational policies established, Education for Sustainable Development (ESD) the advent of the Sustainable Development Goals (SDGs) application, and research of ESD within engineering programs and assess the acceptance of ESD compared to a survey was conducted among 406 engineering students in undergraduate engineering programs. The survey in The objective was to measure students' knowledge and engineering programs, and evaluate the progressive revealed the deep-rooted presence of EE in Colombian into these curricula. However, significant gaps were knowledge of ESD and Sustainable Development (SD)

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Recognizing the Social Innovation Route of School Environmental Projects in Colombia as a Historical Contribution to Environmental Education

[Reconociendo la Ruta de Innovación Social de los Proyectos Ambientales Escolares en Colombia como aporte Histórico para la Educación Ambiental]

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Abstract

Environmental education has made significant progress with the implementation of various strategies in the world. However, the environmental problems that have been analyzed within the framework of different historical environmental issues and that are experienced on the planet, show that such education is still a pending task. This article proposes a route of social innovation for environmental education through the formulation of the School Environmental Project, which arises as a product of a research developed within the framework of the qualitative paradigm with the methodology of Action-Participatory Research with students, teachers, parents and community leaders of 58 educational institutions, having social innovation as its epistemological basis. The restatement of the environmental project was developed in eight progressive stages based on the five phases for social innovation -

enlist; understand and analyze; create; implement; package and scale-. This route strengthens empathy with the natural environment, citizen participation and the empowerment of the educational community to generate collaborative territorial proposals from a critical perspective. © 2024 Centro Universitario de Anapolis. All rights reserved.

Author keywords

education for citizenship; environmental education; environmental history; social innovation

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Abstract

Environmental education has made significant progress in the last decades. However, the environmental problems that have been increasing are environmental issues and that are experienced on the ground. This article proposes a route of social innovation for environmental education: the Environmental Project, which arises as a product of the social innovation paradigm with the methodology of Action-Participation. A total of 58 educational institutions, having social leaders, participated in the environmental project was developed in eight programs.

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Social Integration in Colombia from the Voices of Venezuelan Migrant Students

[Integración Social en Colombia desde las Voces de Estudiantes Migrantes Venezolanos]

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Abstract

The crisis that Venezuela is facing has caused thousands of people to migrate out of the country, including children and adolescents of school age. This article, from the theoretical approach of integration and social imaginaries, analyses the elements that Venezuelan elementary and high school students in Colombia identify as fundamental for their integration in the educational field. Through a qualitative method of exploratory type, eight focus groups with students were carried out in the Orlando Higueta Rojas and San Cayetano schools in Bogotá and the Camilo Daza in Cúcuta. The research allows us to identify how, despite of the discrimination that affects integration, the academic commitment of the students persists, in a scenario that requires permanent dialogues to ensure the participation and rights of the students. © 2024, Hipatia Editorial. All rights reserved.

Author keywords

Colombia; Education; integration; migration; Venezuela

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Abstract

The crisis that Venezuela is facing has caused thousands of children and adolescents of school age. This article, from the perspective of the students, analyses the elements that Venezuelan elementary and secondary students need for their integration in the educational field. Through qualitative research with students were carried out in the Orlando Higuera Daza in Cúcuta. The research allows us to identify how the academic commitment of the students persists, in a context of participation and rights of the students. © 2024, Hipatia Editorial

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University pedagogical formation and socioeconomic impact on graduates: an econometric study

[Formación pedagógica universitaria e impacto socioeconómico en egresados: un estudio econométrico]

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Abstract

This study investigates the impact of pedagogical training in the Business Administration program at the Universidad de Los Andes Táchira and its relationship with the socioeconomic development of its graduates. With a mixed methodological approach, surveys and interviews were conducted with graduates, professors and employers. In addition, a Multinomial Logit econometric model was applied to analyze how pedagogical training influences graduates' professional competencies and job opportunities. The results revealed that those graduates who received pedagogical training report higher levels of job satisfaction and better income, especially highlighting the positive impact on women, who experience greater social mobility. These findings underscore the need to integrate solid pedagogical training into academic programs to improve professional skills and enhance graduates' socioeconomic impact in the Venezuelan context. This study contributes to understanding how education can be an engine of social and economic change in times of crisis. © 2024 Universidad de Santander. All rights reserved.

Author keywords

economic and social development; higher vocational training; pedagogical innovation

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