Understanding the teaching of STEM education through dialogue and transformative learning in Mexico

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31 Campi
98,935 Students
Tecnologico de Monterrey
STEM Education

§ Technology-based jobs and careers, and economic growth

§ Reduction of marginalization

§ KIA motors plant in Monterrey, Mexico - 10,000 technology-based jobs
STEM Education

- Uneven development and inequalities in the same fashion as the plant has solved social needs
- Automatization of processes - low salaries
- Overcrowded economic housing
- Other urban problems around the factory
Globalization and STEM education

§ Panacea for inequality?

§ STEM education can be similarly contradictory.
Dialogue and transformative learning

- Education can replicate or restructure the existing social order
- Education should develop a critical consciousness
- Dialogic teaching moves away from the privileging of one voice, towards the development of a dialogic space
- Ethics involved in a space in which two or more voices can express themselves without trying to silence each other
Vexation

How can we overcome the seemingly contradictory agenda of STEM education in order to simultaneously create economic development and meet the social needs of participants?
What sorts of innovations and new approaches are being introduced with regards to the teaching of STEM in Mexico?
Dialogic participation in the community

The case of Community Centre “Bicentenary of Independence”

Video available at:

https://youtu.be/618MCoEJ_dk
participará en Copa Mundial en Alemania

HornoBots, el equipo de robótica del Museo del Acero Horno3, participará en la Copa Mundial de Robótica (RoboCup) en Leipzig, Alemania del 30 de junio al 4 de julio del presente año. El conjunto se prepara para la competencia internacional, tras obtener su pase al ganar el primer lugar del VIII Torneo Mexicano de Robótica, realizado en la Universidad Politécnica de Ciudad Victoria, Tamaulipas.
Introduction

Teaching STEM education through dialogue and transformative learning: global significance and local interactions in Mexico and the UK

Catherine Montgomery & Juan Manuel Fernández-Cárdenas
Pages 1-12 | Received 10 Sep 2017, Accepted 08 Dec 2017, Published online: 07 Jan 2018

The role of non-formal contexts in teacher education for STEM: the case of horno³ science and technology interactive centre

Claudia Fernández-Limón, Juan Manuel Fernández-Cárdenas & Alma Adrianna Gómez Galindo
Pages 1-19 | Received 03 Feb 2017, Accepted 08 Dec 2017, Published online: 09 Jan 2018
Higher Education Links – British Council

Reducing marginalization and promoting inclusive education with the mediation of digital technology
Tec21

Educational model

1. Challenge-based learning
2. Flexibility in time, space and mode
3. Memorable experience
4. Inspiring lecturers
LAE: Licenciado en Administración Financiera
LCPF: Licenciado en Contaduría Pública y Finanzas
LCDE: Licenciado en Creación y Desarrollo de Empresas
LEM: Licenciado en Mercadotecnia
LMC: Licenciado en Mercadotecnia y Comunicación
LIN: Licenciado en Negocios Internacionales
LLN: Licenciado en Logística Internacional
Conclusion

STEM education can be a tool for empowering people locally and globally, if the model is part of an agenda privileging social innovation.

Marginalized people can engage in the global economy in meaningful ways, if they are afforded access to identities with strong agency.

Marginalized people can also benefit from the careful design of educational resources, using UDL.

Higher education students can be part of a social transformative agenda through STEM education, if they are allowed to be creative and engage in authentic dialogues with participants in real life situations.

Tecnológico de Monterrey has been working in the development of an innovative educational model, with 4 components leading to the construction of flexible academic trajectories, which are also relevant for promoting social and economic change.
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