

Global Collaborative Engineering: Intercultural Competencies and Diverse Student Participation Fully Considered?

Patrick Stärke
Tampere University of Applied Science
Tampere, Finland
patrick.staerke@biz.tamk.fi

Abstract: Globally Networked Learning Environments (GNLE) allow for exposure to different cultures and international learning based on online communication and technology. This paper presents a case of GNLE, the Global Collaborative Engineering course, and explores the dimensions of intercultural competency development in students as well as participation of and program conduct for students with diverse backgrounds as an alternative to traditional study abroad. Whereas both aspects are much discussed in research, they are not fully addressed and realized for the presented case. Suggestions will be made on how to change this status quo.

Introduction and Research Questions

Environments for Globally Networked Learning (GNLE) and its European sister concept of Virtual Mobility (VM) (Villar-Onrubia and Rajpal 2015) have been said to have similar effects as traditional study abroad participation. Specifically, studies posit that students engaged in GNLE as an experiential learning format increase their content knowledge as well as their intercultural and transdisciplinary competencies (de Kraker, Cörvers, Ivens, Lansu and Dam-Mieras 2007, Herrington 2010, MacLeod, Yang and Xu 2016, Op de Beeck and Van Petegem 2010, Tereseviciene and Volungeviciene 2013, Villar-Onrubia and Rajpal 2015), all of which are also afforded by study abroad. However, some contest the assumption that intercultural sensitivity development in GNLEs takes place automatically and point to power imbalances (Bégin-Caouette 2013) and the need to include opportunities for student reflection into the curriculum in order to prevent stereotyping and attain the goal of intercultural understanding (Boehm, Kurthen and Aniola-Jedrezejek 2010).

What is more, many authors and policy makers discuss GNLE as a vital option for students who do not have the means or capabilities to physically move and study abroad (Marcillo-Gomez and Desilus 2016, Risner and Kumar 2016) thus broadening the scope of participation in institutional efforts to develop skill sets needed in students to work and live in a globalized world. Therefore, GNLEs offer the opportunity for “higher education institutions for a renewal of social responsibility within the university” (Wilson 2010, 187).

TCC 2019 Conference Papers

With my exploratory study, I intend to investigate if and how the domain of intercultural competency development has been considered as a constitutive element by the academic facilitators who design and conduct the “Global Collaborative Engineering Program” at a German institution of higher education together with partner universities in the US and China. What is more, the question arises whether the inclusion of a more diverse student body that embraces those who would not be able to pursue traditional study abroad represents a motivation for the facilitators of the program. Also, the project seeks to find out about students’ motivations and if these were directed by dimensions of access to an international educational experience as a substitute for study abroad. In this way, the study applies findings and theoretical considerations from previous research to the given case and broadens the base of the emerging body of knowledge on GNLEs.

Global Collaborative Engineering Program: Case Study Description

The case addresses a program which is realized among three universities in Germany, China and the United States. Small groups of undergraduate students (about eight per institution) can participate in the program which takes place over the course of one semester to learn about automotive engineering aspects. Specifically, students engage in project-based work to design the frame and interior of a vehicle. For this task, the transnational cohort is divided into subgroups of three to four students in which each nationality is represented. The subgroups are in charge of the design for one of the three markets (the German, Chinese, and US). Each week the self-directed group collaborations are supplemented with online video lectures by professors from each university and guest speakers. Grading is based on self-study progress, team project progress and a final presentation (Global Collaborative Engineering). The student subgroups are supported by graduate students throughout the course of program.

Methods

To gather insights into the motivations and perspectives of both academic facilitators and students involved in the program, data collection for the case study will be based on qualitative semi-structured interviews. This will render a concise frame to the interviews while at the time same allowing for individuals’ free elaborations. Data analysis will unfold along categories and common topical threats that emerge from the contents.

Expected Results

Professors and graduate students who facilitate the program assume the development of intercultural competencies through mere transnational contact and collaboration. Explicit tasks that foster intercultural understanding are not structurally embedded in the program, and impediments like lack of individual student reflection or stereotyping in this process remain unaddressed. Motivations for program conduct, however, encompass the development of these skills in students. Program facilitators are interested in offering a

TCC 2019 Conference Papers

content-rich and collaborative international course that is open to all students of engineering, but have not regarded the program as a mechanism for students with diverse backgrounds to have an international experience as a substitute for traditional study abroad. Students participate in the program for a variety of reasons with one being international learning (through experience and collaboration). Moreover, some students specifically decided to take the course as they see no other option for themselves to go abroad for study, research or gaining an international work experience.

Implications and Conclusion

In order to strengthen and ensure the development of intercultural understanding in students, tasks that stimulate individual and group reflection about differences in behaviors and attitudes should be systematically integrated into the curriculum. What is more, the potential of the course as a viable alternative to traditional study abroad needs to be clearly articulated and promoted to students. These measures would enhance the institution's efforts in educating students (with diverse backgrounds) to become global citizens.

References

- Bégin-Caouette, O. 2013. Globally Networked Learning Environments as Eduscapes for Mutual Understanding. *Critical Intersections in Education: An OISE/UT Students' Journal*, 1(2). 54-70.
- Boehm, D., Kurthen, H. & Aniola-Jedrzejek, L. 2010. Do International Online Collaborative Learning Projects Impact Ethnocentrism? *E-Learning and Digital Media*, 7(2). 133-46.
- De Kraker, J., Cörvers, R., Ivens, W., Lansu, A. & van Dam-Mieras, R. 2007. Crossing Boundaries – Competence-based Learning for Sustainable Development in a Virtual Mobility Setting. Open University of the Netherlands. Retrieved December 12, 2018. <https://core.ac.uk/download/pdf/55535314.pdf>
- Global Collaborative Engineering. N.d. Technical University Darmstadt. Retrieved December 12, 2018. https://www.dik.tu-darmstadt.de/lehre_dik/advanced_design_projects_dik/collaborative_engineering_1/index.de.jsp
- Herrington, T. 2010. Crossing Global Boundaries: Beyond Intercultural Communication. *Journal of Business and Technical Communication*, 24(4). 516-39.
- MacLeod, J., Harrison, H.Y. & Xu, J. 2016. Collaborative Online Learning: A Case Study between USA and Thailand. 2016 International Symposium on Educational

TCC 2019 Conference Papers

- Technology (ISET). Retrieved December 12, 2018.
<https://ieeexplore.ieee.org/document/7685604>
- Marcillo-Gomez, M., & Desilus, B. 2016. Collaborative Online International Learning Experiences in Practice. Opportunities and Challenges. *Journal of Technology Management and Innovation*, 11(1). 30-35.
- Op de Beeck, I. & Van Petegem, W. 2010. Virtual Mobility: An Alternative or Complement to Physical Mobility? Media Learning Unit KU Leuven. Retrieved December 12, 2018.
https://www.researchgate.net/profile/Mart_Achten/publication/228561095_Virtual_mobility_as_an_alternative_or_complement_to_physical_mobility/links/0c960517e361940b1a000000/Virtual-mobility-as-an-alternative-or-complement-to-physical-mobility.pdf?origin=publication_detail
- Risner, M. & Kumar, S. 2016. Graduate Student Perceptions of a Globally Networked Course. *Journal of Applied Research in Higher Education*, 8(3). 287-301.
- Tereseviciene, M., Volungeviciene, A. & Dauksiene, E. 2013. Forstering Internationalization in Higher Education by Virtual Mobility. *Acta Technologica Dubnicae*, 3(2). 1-15.
- Villar-Onrubia, D. & Rajpal, B. 2015. Online International Learning: Internationalizing the Curriculum through Virtual Mobility at Coventry University. *Perspectives: Policy and Practice in Higher Education*, 20(2-3). 75-82.
- Wilson, M. 2010. The Impact of Globalization on Higher Education: Implications for Globally Networked Learning Environments. *E-Learning and Digital Media*, 7(2). 182-187.