204

Understanding the perspectives of engineering students on global competency in the 21st century

Lillian Yun Yung Luk

The University of Hong Kong, Hong Kong, Hong Kong. University College London, London, United Kingdom

Abstract

Global competency (GC) is an essential competency for students to work towards achieving UNESCO's Sustainable Development Goals (SDGs). Given that engineers play an important role in designing and implementing sustainable development strategies, it is crucial for engineering educators to develop students' global competency. Considering that existing research either primarily focuses on the Western context (e.g. Ortiz-Marcos et al., 2020) or employs a top-down approach based on pre-existing theories to define global competency (e.g. Han & Zhu, 2022), it offers limited insight into understanding engineering students' perceptions of global competency in the Chinese context. By examining global competency education from the perspective of engineering students in Hong Kong, this poster will present a study which seeks to bridge the gap between Western-focused research and the unique context of Chinese engineering education, and piece together a more student-centered understanding of global competency.

Full paper

Global competence is defined by OECD (2018) as "the capacity to examine local, global and intercultural issues, to understand and appreciate the perspectives and world views of others, to engage in open, appropriate and effective interactions with people from different cultures, and to act for collective well-being and sustainable development" (p. 7). While this definition is widely used, experts in the field of global and international education such as Mansilla & Wilson (2020) warned about hasty generalization of this definition of global competency which was developed in the West and pointed out the need to re-conceptualize the concept in the Chinese context. It is evident from the definition that global competency is not simply made up of a collection of independent individual skills, but an integration of various holistic competencies. These include information literacy, analytical skills, empathy, intercultural communication skills and sustainability literacy, which must also be contextualized within disciplinary context (Jones, 2009).

While the training of globally competent and sustainability-conscious engineers is endorsed by various organisations, including accreditation bodies such as ABET, existing studies fail to provide a holistic, reliable picture of engineering students' understanding of global competence in the Chinese context. This is because the majority of these studies were either conducted in

the Western context (e.g. Richter & Kjellgren, 2023; Downey et al., 2006; Lohmann et al, 2006), focused on undergraduate students in general (e.g., Li, 2020), or defined global competency based on the authors' own theoretical lens or by adapting Western-developed global competency models (e.g. Han & Zhu, 2022; Liu, Yin, & Wu, 2020). As a result, they do not necessarily take into account the experiences or perceptions of key stakeholders (e.g. engineering students and teachers).

Thus, this study aims to grasp engineering students' understanding of global competency by identifying components of global competency from engineering students' point of view in Hong Kong universities. Focus group interview, and the Q methodology which draws on the strengths of both qualitative and quantitative methods will be used in the study. It is hoped that findings from the study will inform the development of a curriculum design framework for global competency development in engineering, which consider different dimensions of global competency based on the perceptions of engineering students regarding global competency development in the university.

References

Downey, G. L., Lucena, J. C., Moskal, B. M., Parkhurst, R., Bigley, T., Hays, C., Jesiek, B. K., Kelly, L., Miller, J., Ruff, S., Lehr, J. L., & Nichols-Belo, A. (2006). The globally competent engineer: Working effectively with people who define problems differently. *Journal of Engineering Education*, *95*(2), 107-122. https://doi.org/10.1002/j.2168-9830.2006.tb00883.

Han, S., & Zhu, Y. (Re)conceptualizing 'global competence' from the students' perspective. *Asia Pacific Journal of Education*, 1-13. https://doi.org/10.1080/02188791.2022.2148091

Li, J. (2020). Exploring the emerging idea of comprehensive global competence in contemporary China. In *Comprehensive global competence for world-class universities in China: Context, concept, model and evaluation* (pp. 77-87). Springer Singapore. https://doi.org/10.1007/978-981-15-1640-5_5

Liu, Y., Yin, Y., & Wu, R. (2020). Measuring graduate students' global competence: Instrument development and an empirical study with a Chinese sample. *Studies in Educational Evaluation*, *67*, 100915. https://doi.org/10.1016/j.stueduc.2020.100915

Lohmann, J. R., Rollins, H. A., & Joseph Hoey, J. (2006). Defining, developing and assessing global competence in engineers. *European Journal of Engineering Education*, *31*(1), 119-131. https://doi.org/10.1080/03043790500429906

Mansilla, V. B., & Wilson, D. (2020). What is global competence, and what might it look like in Chinese schools? *Journal of Research in International Education*, *19*(1), 3-22. https://doi.org/10.1177/1475240920914089

OECD. (2018). *Preparing our youth for an inclusive and sustainable world: The OECD PISA global competence framework*. OECD

Ortiz-Marcos, I., Breuker, V., Rodríguez-Rivero, R., Kjellgren, B., Dorel, F., Toffolon, M., Uribe, D., & Eccli, V. (2020). A framework of global competence for engineers: The need for a sustainable world. *12*(22), 9568.

Richter, T., & Kjellgren, B. (2023). Engineers of the future: student perspectives on integrating global competence in their education. *European Journal of Engineering Education*, 1-18. https://doi.org/10.1080/03043797.2023.229831