Application of designed based learning for Sustainable Development Goals Education

Namita Maharjan[1], Kyohei Kuroda [2]

Choolaka Hewawasam [3], Takashi Yamaguchi [4], Makoto Ichitsubo [5]

[1]Nagaoka National Institute of Technology, 888 Nishikatakai, Nagaoka, Niigata, Japan
namita.maharjan@yahoo.com
[2]National Institute of Advanced Industrial Science and Technology, Sapporo, Hokkaido
[3] University of Sri Jayewardenepura, Colombo, Sri Lanka
[4,5]Nagaoka University of Technology, Nagaoka, Niigata, Japan

Abstract

Knowledge on Sustainable Development Goals (SDGs) has become indispensable to attain sustainable future. The educational institutions have significant role in disseminating education on these goals. Teaching SDGs needs an attention grabbing and engaging teaching approach and Design based Learning (DBL) holds much potential. The main objective of this investigation is to examine the competencies developed in engineering students during the design thinking process. SDGs educational games were developed by using stages of DBL which integrated scientific and creative approaches. This study methodology was divided into five stages; Analysis and problem framing, Solution development, Basic Facilitation, Testing and Reflection. The results indicated that design based learning is positively correlated to the development of competencies in the students. This study showed how design specific games can help people of different categories, interests and abilities to understand SDGs through simplified and easier approaches. Besides, it motivated self-learning in students to acquire long term knowledge and also enhanced their generic skills during the process. The results of this study will contribute to the domain of sustainable education by articulating an effective pedagogy based on design thinking and offer faculty invigorating teaching experiences to help achieve SDGs for better future.

Keywords: Assessment; Competencies; Facilitation; Games; Group work