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A Case Study on How Biomedical Engineering (BME) Outreach Programmes Serve as An Alternative Educational Approach to Form and Develop the BME Community in Hong Kong

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Abstract : Biomedical engineering (BME) is an interdisciplinary subject where knowledge about biology and medicine is applied to novel applications, solving clinical problems. This subject is crucial for cities such as Hong Kong, where the burden on the medical system is rising due to reasons like the ageing population. Hong Kong, who is actively boosting technological advancements in recent years, sets BME, or biotechnology, as a major category, as reflected in the 2018-19 Budget, where biotechnology was one of the four pillars for development. Over the years, while resources in terms of money and space have been provided, there has been a lack of talents expressed by both the academia and industry. While exogenous factors, such as COVID, may have hindered talents from outside Hong Kong to come, endogenous factors should also be considered. In particular, since there are already a few local universities offering BME programmes, their curriculum or style of education requires to be reviewed to intensify the network of the BME community and support post-academic career development. It was observed that while undergraduate (UG) studies focus on knowledge teaching with some technical training and postgraduate (PG) programmes concentrate on upstream research, the programmes are generally confined to the academic sector and lack connections to the industry. In light of that, a “Biomedical Innovation and Outreach Programme 2022” (“B.I.O.2022”) was held to connect students and professors from academia with clinicians and engineers from the industry, serving as a comparative approach to conventional education methods (UG and PG programmes from tertiary institutions). Over 100 participants, including undergraduates, postgraduates, secondary school students, researchers, engineers, and clinicians, took part in various outreach events such as conference and site visits, all held from June to July 2022. As a case study, this programme aimed to tackle the aforementioned problems with the theme of “4Cs” (connection, communication, collaboration, and commercialisation). The effectiveness of the programme is investigated by its ability to serve as an adult and continuing education and the effectiveness of causing social change to tackle current societal challenges, with the focus on tackling the lack of talents engaging in biomedical engineering. In this study, B.I.O.2022 is found to be able to complement the traditional educational methods, particularly in terms of knowledge exchange between the academia and the industry. With enhanced communications between participants from different career stages, there were students who followed up to visit or even work with the professionals after the programme. Furthermore, connections between the academia and industry could foster the generation of new knowledge, which ultimately pointed to commercialisation, adding value to the BME industry while filling the gap in terms of human resources. With the continuation of events like B.I.O.2022, it provides a promising starting point for the development and relationship strengthening of a BME community in Hong Kong, and shows potential as an alternative way of adult education or learning with societal benefits.

Keywords : biomedical engineering, adult education for social change, comparative methods and principles, lifelong learning, faced problems, promises, challenges and pitfalls
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