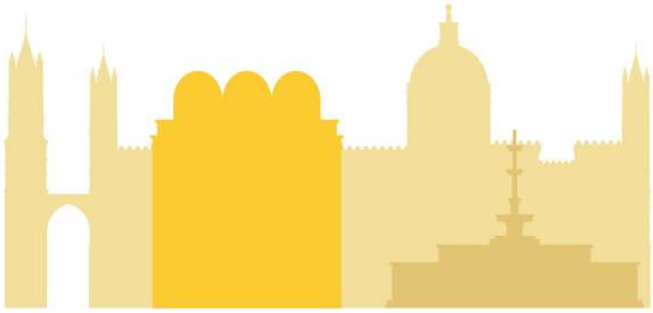

HELMeTO 2022

4th International Conference on
Higher Education Learning Methodologies and Technologies Online
HELMeTO2022

September 21-23, 2022
Palermo, Italy

Book of Abstracts

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Università degli Studi di Palermo

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Adapting education programs to the requirements of industry and society

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1 Introduction

To implement the knowledge and skills related to technologies from the Industry 4.0 area in the education process, universities monitor the situation in the industry, identify newly implemented technologies, conduct a dialogue with the industry, analyze their own study programs, and then introduce improvements to the existing study programs or offer new programs. For some time, universities have also started to become interested in introducing issues related into sustainable development to their study programs. The introduced issues emphasize not only the economic analysis of production processes, but also the environmental analysis of the work carried out and the impact of these processes and the methods of their implementation on employees and, more broadly, on society. In addition, the recent pandemic has also required the introduction of new teaching methods, as existing methods were not appropriate during the isolation period. Furthermore, it was observed that even after the pandemic period, when it was possible to implement activities again and no online tasks were required, the public saw the benefits of minimizing travel and found that the new methods could be equally effective in achieving educational goals. This work presents activities and results of four international projects, the aim of which was to conduct research to identify changes necessary in the educational process and their implementation to prepare staff for the industry of the future.

The paper deals with the following aspects: (1) distance learning techniques to activate students to work independently, (2) methods of motivating students to expand their knowledge and present solutions for specific industries, (3) industrial research to identify currently used technologies and strategies for implementing new technologies, and (4) analysis of educational programs offered by universities in order to identify opportunities for their improvement and better matching of graduates' skills to the needs of the industry. Some previously published works elaborate these issues [1, 2, 3, 4, 5].

2 Review of completed work and achieved goals

The work on better preparation of graduates to perform tasks in the industry is carried out in many ways. In this article, we refer to four selected projects and selected works

carried out in their field to show the complementarity of implemented projects and their joint efforts to better prepare graduates from different points of view (Fig.1.).

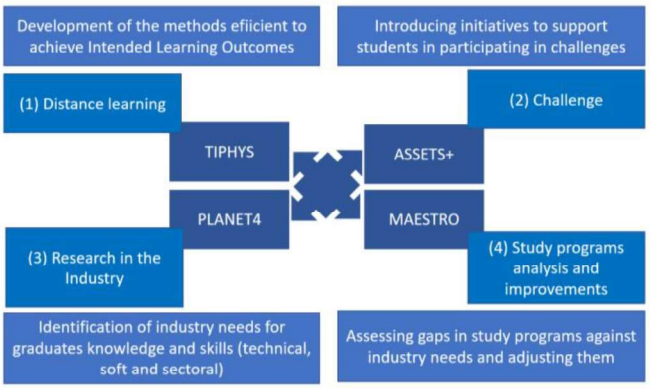

Fig. 1. Complementarity of projects in providing personnel to work in the industry of the future.

In the context of the TIPHYS project [6] a distance learning methodology was discussed which activates students to perform independent work and at the same time is based on the need to achieve goals as part of the cooperation between students. In the frame of ASSETs+ project [7] a methodology of the competition that motivates students not only to independently search for knowledge, but also to present their proposals was developed. Information on the two completed editions of the challenge is available in [8]. In the framework of the PLANET4 project [9] industrial research was carried out, the main purpose of which was to identify the needs of industry and related technologies. It was found, among others, that there is relatively little knowledge about the possibilities of practical application of edge computing. Finally, in the MAESTRO project [10], a way of introducing sustainable development into education was proposed.

Acknowledgement

This work has been partially funded by Erasmus+ Programmes: No 621639-EPP-1-2020-1-IT-EPPKA2-KA, PLANET4: Practical Learning of Artificial iNtelligence on the Edge for indusTry 4.0; No 2019-1-SE01-KA203-060572, MAESTRO: Manufacturing Education for a Sustainable Fourth Industrial Revolution; No 612678-EPP-1-2019-1-IT-EPPKA2-SSA-B, ASSETs+: Alliance for Strategic Skills Addressing Emerging Technologies in Defence; No 2017-1-SE01-KA203-034524, TIPHYS: Social Network Based Doctoral Education on Industry 4.0.

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