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Introduction to the Special Issue

Educational Alliance: A Global Partnership between Education and Industries Addressing the 4th Sustainable Development Goal

According to the United Nations' sustainable development goals education has a central role and progress has been made to offer a quality educational lifelong learning path to all. Unfortunately, recent crises, namely the pandemic and wars, have hampered progress and a prompt recovery is mandatory. Similarly, OECD recommendations on creating better opportunities for young people[1] addressing key areas such as: ensuring relevant knowledge and allowing to develop appropriate skills and competencies; supporting youth in the transition to the labor market; promoting social inclusion. In this regard computing is considered important with a central role both as a discipline "per se" and as a supporting cognitive tool for all knowledge domains. The informatics reference framework for schools (Caspersen, 2022) offers a solid foundation, as does the STEM teaching framework (Tasiopoulou, 2022). Considering the current shortage in computing and information technology professionals and the projected need of a highly skilled workforce with increasing cognitive competencies, the importance of a quality lifelong education, including computing, is considered mandatory. An alliance between the educational system, from school to universities both formal and informal, and the Information Technology (IT) sectors has the potential for a win-win collaboration offering a more focused education with the right mix of foundational competencies and cutting-edge technical skills. Supporting all learners in improving their education by offering both quality content, pedagogies, technologies, and financial support is of highest importance and should be considered central to any organization's corporate social responsibility agenda. In this respect the guest editors would like to rise a call for action for an even greater collaboration between the whole educational system and etenterprises with the ultimate goal of reducing the number of young people who are neither employed nor in education and training. The work for this special issue has been embraced with the aim to contributing with a grain of sand in this direction.

This special issue offers a variegated view of collaborations between academia and the commercial sector. The first group of papers deals with live educational experiences designed and developed with industries. In particular, CHANG and SHOKROLAH SHIRAZI present experiences related to capstone projects in software development. CONDORELLI and MALCHIODI reflect on the design and development of a master program in data science while VINCENTI presents a multiyear, multicourse collabora-

[1] https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0474

tion experience with NASA as the industrial partner. This is in line with case studies utilizing open-source software (Ellis, 2015). An internship experience is explored by BUSUTTIL outlining the collaborative tripartite relationship between academia, industry, and the individual student.

The second group of papers offers a set of tools, methods, and instruments useful in the interaction between education and enterprises. In particular, the importance of socio-affective relations both in presence and in an online setting is highlighted by AKAZAKI *et al.* who discuss pedagogical strategies useful in the daily teaching practice. TRIANTAFYLLOU and GEORGIADIS present a systematic literature review on gamification design patterns and their use in an industry educational setting. While TURAN-GÜNTEPE and ABDÜSSELAM present a tool for competencies determination in the realm of education 4.0 with a broad eye to industry 4.0 competencies. Finally, WILINSKI *et al.* present a method, based on multiple intelligence, for selecting and recruiting informatics students for the IT market.

It is the editors' intention that this special issue, firstly celebrates the symbiotic relationship between education and industry as they collaborate to address the United Nations' sustainable developmental goals and ensure that all learners have equal opportunities as indicated by the OECD council recommendation. Secondly, it provides a challenge to all computing educators as to how they can ensure that the computing curriculum they teach is accessible, relevant, concurrent, and able to ensure the curiosity for a robust lifelong learning path contributing to reducing the number of NEETs (Maiorana, 2022).

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