Chapter 11
Towards the Promotion of STEM and Technology Education in K–12 Schools

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ABSTRACT

The primary task of society and the academic community is to motivate young people from an early age to study in technology-based fields. In the Republic of Serbia, the reason for the increasing popularity of professions that cover STEM fields, but also the application of computer technology and AI support within K-12 schools, is that the professions in the IT sector, as well as engineering science, have proven to be extremely profitable and in that sense, very desirable for young people who choose these desired courses while still in high school. Limited or insufficient knowledge of the advantages that new technological education offers to young people in K-12 education and professions in the Republic of Serbia was noticed. This would mean a more intensive promotion of STEM and AI fields in the educational system, which would be carried out not only within earlier teaching activities, but also numerous extracurricular and other activities that children and young people attend at an early age

DOI: 10.4018/979-8-3693-9806-7.ch011

INTRODUCTION

Today, technological development has shown that the economic strength of a country is primarily conditioned by the number of qualified workers who are employed in the science, technology, engineering and mathematics (STEM) fields who master computational thinking and artificial intelligence (AI). In accordance with the aforementioned, innovations in the mentioned field, their application and highly qualified personnel in the indicated spheres form the backbone of any social progress. It is evident that both developed countries and developing countries believe that the improvement and implementation of new types of technological education form the basis for stimulating economic growth and development.

In this sense, there are increasing efforts to further promote the STEM and AI sphere in education and arouse interest among children and young people when it comes to professions related to science, technology, engineering and mathematics, with the application of computer literacy and the application of artificial intelligence from early days of the education process. Therefore, it is essential to encourage and motivate young people at an early age to opt for one of the mentioned areas because, at an early age, an intense desire to create one's own interests and abilities is formed and created.

From a promotional aspect, STEM education is defined as a kind of knowledge platform in which all important skills and competencies necessary for the modern market are integrated. The same implies constant research, critical and creative perception of problematic real situations that are mostly solvable through team cooperation and, very often, the implementation of entrepreneurship (Honei et al., 2014). The need for education of this kind arose due to the lack and shortage of young professionals who would work in spheres based on innovative processes. Observing it as a kind of meta-discipline, there is certainly a unique approach that STEM education is based on the promotion and implementation of the development of science, technology, engineering and mathematical concepts, which together represent the synergy of access to a new form of education.

STEM education originally had a completely different acronym - SMET and was represented by the words science, mathematics, engineering and technology (Sanders, 2009), and was proposed by the National Science Foundation. The purpose of this extraordinary initiative in the field of education was to provide students in schools with a critical approach to various topical issues of interest to the labour market. It was considered that students in the K-12 education system who take a direct part in STEM education have a better predisposition to continue studying the same and similar subjects in their later education. At the same time, cooperation between teachers who are responsible for the implementation of STEM disciplines in education is constantly emphasized (Margot & Ketller, 2019).