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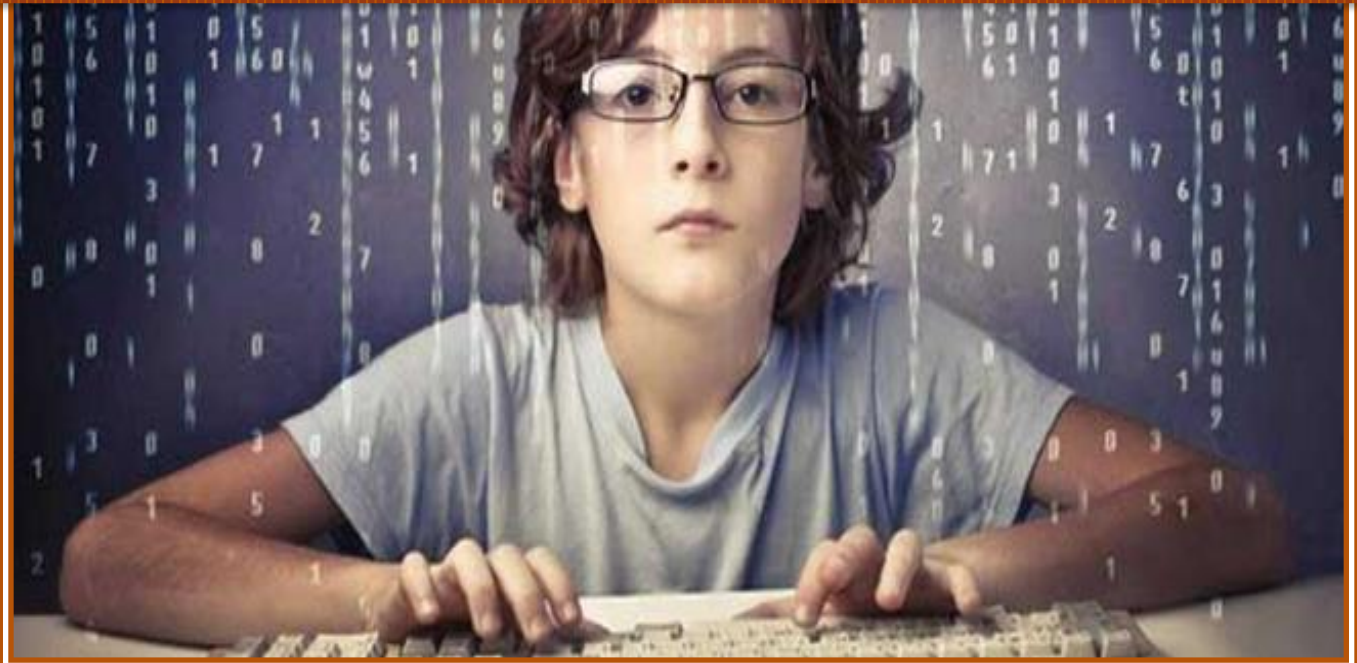
CURRICULUM

Increasing The Competency of Computer Science Teaching Undergraduates On Coding Education

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Introduction

In the age that we live, technological developments are getting incredible speed. Today's children are born into technology and are heavily influenced by technological developments. In every information environment, which people are exposed to, the human brain is shaped together with the information coming from the stimuli in the environment and the schemas are based on these experiences. Therefore, the acquisition of "algorithmic thinking" starting from early ages and making it sustainable by further coding education is considered important for children to better understand the rapidly developing and changing world.

The understanding and learning of the specific language of the technology that is now confronted in every usage will also save the children from becoming a technology consumer and open their way to being a technology producer. More effective technology production and the quicker actualization of new ideas will contribute greatly to the development of countries. Today's children will be able to adapt to changing living conditions at an incredible rate tomorrow.

General Purpose

In this framework, a curriculum for coding education was prepared for the teaching practices of ICT / STEM undergraduate students studying at the partner universities in the EDUCODE project.

The purpose of this program is to raise the awareness of ICT /STEM undergraduate students who are studying in the partner universities about the topic, emphasize the importance of coding education, and to show how to deliver coding education effectively, how to use educational materials and tools and how to evaluate the gain levels in the delivered education. Therefore, practical studies will took part during the training and how to prepare the sample lesson plans will be shared with the undergraduate students.

Target Group of The Training

ICT/STEM Undergraduate Students

Unit 1	Outcomes- Acquisitions	Content	Teaching Methods	Teaching Materials	Evaluation Methods
Lesson 1 (10% out of 20%) Lesson 2 (10% out of 20%)	• Discuss the basic concepts underlying coding and programming education. • Explain the importance of computational thinking and problem solving. • Describe the critical role of ICT & STEM Teachers for the successful delivery of coding education. • Explain the importance of coding education in STEM • Outline how to use and integrate coding into STEM, robotics and internet of things. • Identify software and hardware for teaching coding.	The importance of Coding Education and ICT /STEM Teachers	•	•	•
Unit 2	Outcomes- Acquisitions	Content	Teaching Methods	Teaching Materials	Evaluation Methods
Covers the 20% of the total duration allocated to	• Evaluate relevant websites for teaching coding.	Teaching Materials and	•	•	•

the training activity. Lesson 1 (10% out of 20%) Lesson 2 (10% out of 20%)	• Select appropriate motivational tools (e.g. CS unplugged, algorithm visualization) to engage students in coding education. • Identify collaborative platforms which can facilitate teaching coding. • Find free digital resources e.g. e-textbooks/video/movie/cartoon etc. which can be used in coding education	Tools of Coding Education			
Unit 3	**Outcomes- Acquisitions**	**Content**	**Teaching Methods**	**Teaching Materials**	**Evaluation Methods**
Covers the 30% of the total duration allocated to the training activity.	• Explain the importance of using various teaching strategies, methods and techniques. • Describe different teacher-centred techniques in coding education. • Describe different student-centred techniques in coding education. • Implement problem/project/game-based learning in coding • Compare advantages and limitations of teacher centred and student-centred coding education.	• Teaching methods of Coding Education	•	•	•

	• Select the appropriate methods of how to engage students in the topic of coding.				
Unit 4	**Outcomes- Acquisitions**	**Content**	**Teaching Methods**	**Teaching Materials**	**Evaluation Methods**
Covers the 15% of the total duration allocated to the training activity.	• Describe assessment methods for coding education. • Use different applications which can support assessment (e.g. Kahoot, Socrative and book widgets for instance). • Check plagiarism in the context of coding education. • Evaluate code and working examples of projects written by children. • Use peer assessment in the context of coding. • Conduct formative assessments as a continuous form of providing feedback to students.	**Assessment of Coding Education**	•	•	•

Unit 5	Outcomes- Acquisitions	Content	Teaching Methods	Teaching Materials	Evaluation Methods
Covers the 15% of the total duration allocated to the training activity.	• Define learning outcomes for a coding lesson. • Create a lesson plan for a coding lesson. • Develop a time plan for a lesson plan.	**Design lessons plans for relevant coding topics**	•	•	•