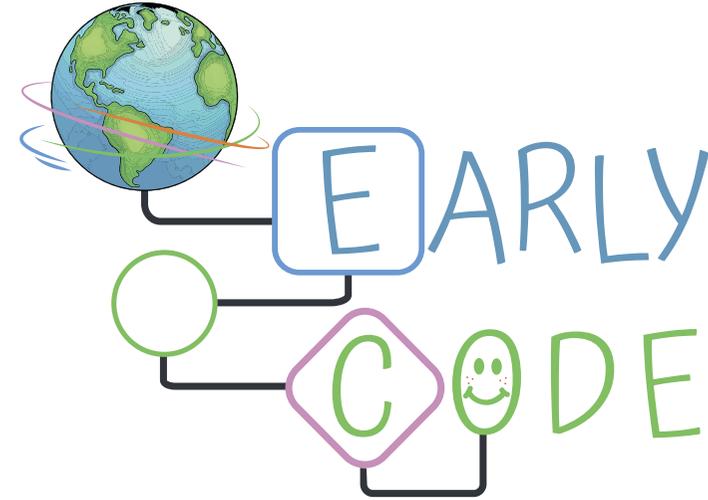




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Erasmus+ Programme  
of the European Union



Developing Teaching Materials for  
Preschool Teaching Undergraduates on  
Computational Thinking and Introduction to Coding

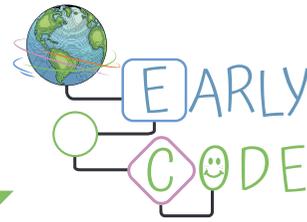
[EARLYCODE]

2018-1-TR01-KA203-058832

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# ABOUT THE PROJECT



## WHAT IS EARLY CODE ?

*EARLYCODE is an European project (2018-1-TROJ-KA203-058832), having the main aim of fostering and developing computational and algorithmic thinking in the early years.*

*Within the project, the following outputs will be produced: a curriculum, teaching materials and linked games for undergraduates to practice with in early childhood settings and will teach them how to produce their own materials for preschool children. In addition, a lecturer's manual will be prepared to be used in the training activity.*

*EARLYCODE is an European project (2018-1-TROJ-KA203-058832), having the main aim of fostering and developing computational and algorithmic thinking in early years. The project's consortium is made up of public and private organizations from five countries: Turkey, Romania, UK, Italy and Latvia.*

## DEVELOPING KNOWLEDGE & SKILLS

*The outputs will be specifically developed to ensure Preschool Teaching Undergraduates will have up-to-date and highly sought after knowledge and skills such as:*

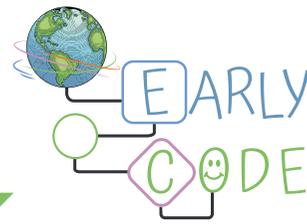
*Motivating children to learn computational thinking through fun and engaging games and teaching materials;*

*Fostering and developing children's decision making, problem solving and critical thinking skills;*

*Teaching very simple functions, algorithms, loops, sequences and conditionals with playful and exciting educational games and toys.*

# ABOUT THE PROJECT

## GOALS & OBJECTIVES



*The main goal of the project is to raise preschool teachers' skills and to provide training opportunities to enthuse and motivate children's interest in this new future. The project will build capacity within the education sector to provide high quality computational thinking teaching at preschool level in the partner countries.*

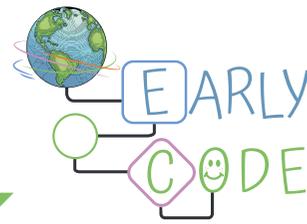
*The project will specifically target higher education students studying to become preschool teachers.*

*The specific objective of the project will be up-skilling preschool teaching undergraduates on Introduction to Coding Education and equipping them to inspire and teach children computational thinking principals utilising effective, innovative and engaging methods.*



## PROJECT TEAM

*The EARLYCODE consortium is experienced on all the project theme and activities. The partnership ensures a breadth of knowledge and experience from teacher training, preschool education, project delivery, designing seminars and courses related to ICT topics and personal and academic professional development. The highly experienced partners will ensure that there is a high level of cooperation in the project and also ensure the sustainability of the project outcomes. The consortium is made up of five universities, two small and medium sized enterprises and a NGO. The researchers and academics are engaged in the project implementation.*



## COMPUTATIONAL THINKING

*Computational thinking is the use of problem-solving methods, by formulating problems and searching for solutions in a way that a computer could understand.*

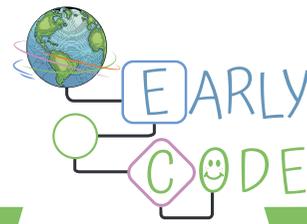
*Currently, Computational Thinking (CT) and programming are at the centre of the debate on exploiting the full potential of ICT for education. Computational thinking has emerged as a new concept to help prepare children for future challenges in an increasingly digital society. Indeed, these skills are now considered by many as being as fundamental as numeracy and literacy.*



## EARLY COMPUTATIONAL THINKING

*Contributes to a better understanding of using computer-based technologies, necessary for today's world and the future. Enhancing computational thinking and teaching coding, encourages children to create and develop new products instead of just being passive users of technology. ECE forms the basis of social, emotional, physical and cognitive development of children and contributes to achieving best outcomes for children throughout the lifelong learning process. Developing computational thinking skills will enable children to be effective decision makers, problem solvers and creative innovators in the future.*

# OUTPUTS



## CURRICULUM FOR PRESCHOOL TEACHING UNDERGRADUATES

*This curriculum aims to develop the following competencies in Preschool Teaching Students in order to create the technology builders of the future:*

- how to motivate preschool children to learn algorithmic and computational thinking;*
- how to illustrate basic algorithms, sequences, loops, conditionals;*
- how to make the subject of Coding fun and engaging for children;*
- how to teach children to make meaningful collaboration with others;*
- how to develop critical thinking, decision making and problem solving skills;*
- where to find and how to develop engaging educational robotics (ER) at preschool level;*
- how to apply code-teaching games without using computers;*
- where to find more sources of information.*

## EDUCATIONAL RESOURCES FOR FOSTERING AND DEVELOPING COMPUTATIONAL THINKING AND INTRODUCTION TO CODING

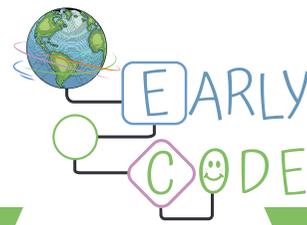
*The training resources will target all preschool teaching undergraduates who will teach preschool children all over the world. The training resources will be designed to facilitate transfer of information during the course delivery. It will also provide children the opportunities to get engaged with learning processes more easily. Strong computational thinking skills will contribute to the cognitive development of children.*

## MANUAL FOR THE COMPUTATIONAL THINKING AND INTRODUCTION TO CODING

*The training manual will guide lecturers to implement the developed curriculum. This manual will provide core teaching strategies for computational thinking including pedagogical information and tips about how children learn, their learning motivators, learning style and involvement along with links to relevant educational resources.*

*This resource will be available in each partner country with reference to the relevant National and International resources. It will be designed to allow local updating as required.*

*In addition this manual will be a reference for any preschool teaching professionals to develop academic research, lesson plans, or modules.*



# EXPECTED IMPACT

## On Literature And Academics

*Project partners will develop new strategies and add innovative approaches within the scope of literature reviews, needs analysis, development of teaching materials and implementation of a piloting process in the scope of the training in Genoa. Through the implementation of this project a standard study example will have been set.*

## On Preschool Teaching Undergraduates

*The project activities will directly impact on the acquisition of professional skills/competencies which enable preschool teaching undergraduates to respond to the changing requirements of their teaching practice. This project will give opportunities to preschool teaching undergraduates who will work with these preschool children, their parents and principals to articulate their needs, when they become teachers.*

## On Partners

*Partners will have the opportunity to integrate the developed curriculum into the existing preschool teaching curriculum, to transfer the knowledge and skills gained during the piloting process to a wider community of practitioners, to up-skill preschool teaching undergraduates on the very basics of Coding Education and make them well equipped to foster and develop children's computational thinking skills using effective, innovative and engaging methods.*

## On Interested People Whose Expertize Are Different

*People whose expertize areas are different but who work with preschool children will have the information and be able to experience the subject in detail. People who are interested in these strategies, throughout Europe, will gain a new awareness about it by meeting the outcomes of benchmarking activities published on the project website and other project partners' websites.*



# MULTIPLIER EVENTS

## FIVE EARLY CODE PANEL DISCUSSIONS

*During the five panel discussions, the project aims to disseminate the intellectual outputs IO1 (Curriculum ) IO2 (Training Resources) IO3 (Training Manual) of the project through EARLYCODE PANEL DISCUSSIONS. 30 people in each country will be targetted to engage in the panel discussions - preschool teaching lecturers, preschool teachers, relevant academicians, computer science lecturers, robotics experts, relevant NGO and company representatives.*

*The panels will be hosted by each country from the consortium.*

## TRAINING ACTIVITIES

### UNDERGRADUATES TRAINING

*The training activities will create added value by testing out the curriculum, training resources and the manual on preschool teaching undergraduates. The training will consist of an intensive 40 hours (5 days) programme and will be delivered to undergraduates from each partner country (5 undergraduates from each partner country and 10 from Italy).*

*At the end of the training activity, the undergraduates will complete a quality evaluation to gather their feedback on the curriculum. The curriculum will be modified based on the results of this evaluation This pilot process will also present the opportunity to test the applicability and appropriateness of the training in each of the National Contexts. Furthermore, it will demonstrate the validity of the curriculum to the Management of Preschool Teaching programmes in each of the Universities and facilitate discussion on how this curriculum can be integrated into the relevant full time curriculum within the organisations.*



Scuola di Robotica



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