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ALGORITHMIC THINKING SKILLS THROUGH PLAY-BASED LEARNING FOR FUTURE'S CODE LITERATES

2020-1-TR01-KA203-092333

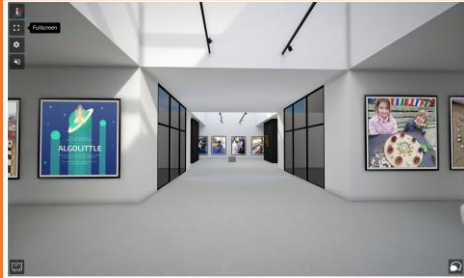
Welcome to the third e-newsletter of the Project ALGOLITTLE. We are glad to share news and updates about the project practices. Computational and algorithmic skills are more and more relevant and important in modern life and give both the chance to understand the ICT fields and to use these skills in today's life.

We aim to provide undergraduates, teachers and children with tools, methods and technologies that keep pace with the new demands of the contemporary world and that can help their students to grow as people capable of improving their knowledge, becoming active and aware citizens and meeting the demands of the professions they will have.



VIRTUAL GALLERY

Preschool teachers applied LTTA from the project Handbook. We took some photos from that and published in a virtual gallery available at www.algolittle.org/algolittle-gallery-learning-activities/



OTHER ACTIVITIES



Seminar in Turkey

ERASMUS DAYS

ALGO LITTLE

Webinar: Erasmus+ Projects ALGO-LITTLE Example

15 October Friday 20.00
Zoom ID: 802 545 7426
Password: 2345

Virtual Exhibition:
<http://www.algolittle.org/algolittle-gallery-learning-activities/>

Co-funded by the Erasmus Programme of the European Union

Partners: University of Maribor, Politecnico de Viseu, Scuola di Robotica, EduCloud

Erasmus day webinar

DISSEMINATION ACTIVITIES



INTERNATIONAL CONFERENCE ON EDUCATIONAL RESEARCH

IDU team presented the project during the Izmir Democracy University 3rd International Conference on Educational Research (ICCI EPOK - 2021 and ICER) on 04 November, 2021.

Speakers both discussed the project (aims, objectives, needs, outcomes, ...) and introduced the topic of Algorithmic Thinking to the attendees.

Abstract

ALGO LITTLE: An Erasmus+ Project*

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Introduction

Algorithms are the ways and steps of action that are designed to solve a problem or achieve a specific goal (Katai, 2014). Algorithmic thinking, which is derived from this concept, is defined as thinking by planning the processing steps in detail in line with the determined goals (Brown, 2011). Algorithmic thinking is considered as thinking about the problem-solving process and includes efficient and process-oriented thinking by evaluating all possible stages on the way to the result (Futschek, 2006). At this point, algorithmic thinking includes a work plan created by planning all the actions to reach the result one by one and evaluating the positive and negative aspects. These work plans are one of the most effective ways to make the solution of a problem clear and understandable, because determining the order of the steps according to the stated goals and creating the algorithm itself involves a creative process (Futschek & Mouschitz, 2010). In this sense, the acquisition of algorithmic thinking skills helps individuals to organize their daily activities appropriately, to become coders of their own cognition by producing more creative and effective solutions to the difficulties they encounter. As a matter of fact, in today's digital transformation era, acquiring algorithmic thinking from early childhood is an important step in preparing them for the future. In this sense, early childhood teacher education appears as a reasonable way to acquire and disseminate algorithmic thinking skills. Moreover, the acquisition of algorithmic thinking skills by preservice teachers will contribute to their use of this skill in their future lessons (Games for learning algorithmic thinking, 2017). In the literature review, it was determined that there is no curriculum for the development of algorithmic thinking skills in early childhood in teacher education institutions. In this context, under the coordination of Turkey, with the partnership of Italy, Portugal, Slovenia and Croatia, a curriculum aimed at developing digital teaching materials and a curriculum aiming to provide preservice teachers with the competence to design and implement teaching-learning activities for the development of algorithmic thinking skills in early childhood has been prepared. The project titled "Algorithmic Thinking Skills through Play-Based Learning for Future's Code Literate" (ALGO LITTLE) was supported by the Turkish National Agency within the scope of Erasmus+ Key Action 2 Higher Education Strategic Partnerships. In this study, it is aimed to introduce the ALGO LITTLE Project and to share the development process of the curriculum and digital teaching materials, which are the main intellectual outputs of the project, with the academy.

Methodology

The ALGO LITTLE project, which aims to provide preschool teacher candidates with the ability to design and implement activities to develop algorithmic thinking skills in early childhood, Turkey (Izmir Democracy University and EduCloud Education Technologies Company), Italy (Robotex School), Portugal (Viseu Polytechnic Institute), Slovenia (It is carried out by researchers from the University of Maribor) and Croatia (University of Rijeka). In the project, a design-based research method was adopted. This method emerged in the 2000s as a research method that facilitates the transition between theory and practice (Anderson & Shattuck, 2012). Later, it started to be used in educational research to structure teaching-learning processes and make learning environments effective (Bakker & Van Eerde, 2015).

* ALGO LITTLE Project (Ref. No: 2020-1-TR01-KA201-092333) is carried out within the scope of Erasmus+ KA2.

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The Ninth International Congress on Curriculum and Instruction (ICCI-EPOK) November 4-6, 2021 Izmir

LAUNCH OF YOUTUBE CHANNEL

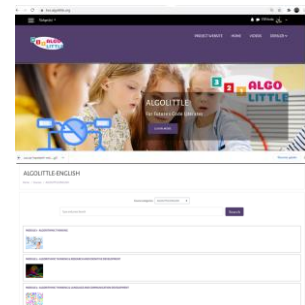
The project You Tube channel has been created, and it's now hosting the digital interactive presentations videos. It can be found at:

<https://www.youtube.com/channel/UCqXqE8W0tAc8zsz-KvaziOZg>

MOODLE

The project team established a LMS hosted on our website. It will be used during the piloting process.

Available at www.lms.algolittle.org



PLAY BASED LEARNING

As shown in our knowledge paper, play is a meaningful activity for children in preschool education and one of their basic rights. Learning occurs during play in multiple ways and children could gain a lot from supportive teachers or other adults allowing them space, time, and interaction to develop their play activities. Algorithmic thinking skills can be developed on the whole continuum between free play and highly structured play-based learning.

PlayBL in preschool education motivates children to engage with educational learning material in a playful and dynamic way. The PlayBL environment in preschool education should support active learning with exploration, problem-solving, inclusive access to PlayBL for all groups of children and clear introduction to play activities for all.

PlayBL in preschool education should include playful learning, socializing with peers or adults, active learning, exploration, development of communication skills and self-talk, overcoming mental and physical challenges, learning of new skills, consolidation of knowledge, having fun and relaxation.

Teacher in early childhood education should primarily use unplugged activities for simulating algorithmic thinking through play, games and puzzles without the use of computer or other digital technologies, as suggest national curriculums for early childhood education in several countries.

INTEGRATION OF AT IN PRESHCOOL EDUCATION

EXAMPLE ACTIVITY

Below an example activity, extracted from the booklet published on our website. Both it and the knowledge paper are available at: <http://www.algolittle.org/curriculum/>

Title: Neighbour Octopuses

Aim: Planning, Sequencing, Evaluation

Preparation: Coding carpet, images of arrows, toy octopuses (change the toys if not available), place the toys on the coding carpet side by side.

Process/Instructions:

- Tell a story to children. Hold the puppet/toy of the story and support your story with the puppet.
- Example story: There were two octopuses once upon a time. (Show the toys on the coding carpet.) They lived as neighbours. One day, one of them (let's name it blue octopus) went for a walk alone and got lost. We need to help the other one (let's name it red octopus) to find its friend.
- Ask children where the blue octopus went, let them take the blue octopus to a point away from the red one.
- Children will use the arrows and code the route to the blue octopus. One of them will take the red octopus and follow the coded route.
- Children will watch the walking child and when the child followed the route they will evaluate if the walking child was taking the steps correctly.
- You can repeat the activity with different children for a few times. So, let them draw their own paths each time. You can also change the toys and repeat the activity.



CURRICULUM

We finalised the realisation of the Curriculum. It is an **higher education course curriculum** which will be used by the project partners in the piloting process. It has been developed as shown below, and it has been published on our website at <http://www.algolittle.org/curriculum/>

We started the process drafting a **knowledge paper**, that included a literature **review** and analysis. We also collected **comments** and ideas from teachers and **education experts** during the workshops, to define the curriculum elements.

Then we outlined the curriculum, and we defined to organise it in **seven** different **modules**, according to different **learning areas**: introduction to AT, sciences, math, literature and languages, motor development, creativity, SEL and self-help skills.

Then the curriculum has been **translated** in each partner's languages, so that it will be available in each partner countries. It has been **published** onto our website, and it will be tested during the **piloting** process.

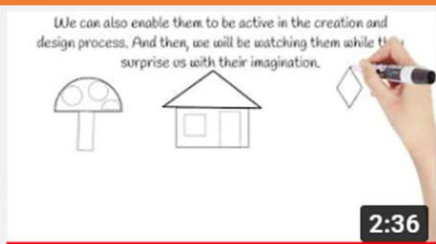
The screenshot displays a PDF viewer interface for the document 'ALGOLITTLE-Curriculum...'. The document content includes the ALGO LITTLE logo, the title 'Curriculum', and the subtitle 'Integration of Algorithmic Thinking Skills into Preschool Education'. Below this, a blue banner reads 'ALGORITHMIC THINKING SKILLS THROUGH PLAY-BASED LEARNING FOR FUTURE'S CODE LITERATES'. A central image shows a young boy sitting at a table with several small, colorful robots. At the bottom, there are logos for the Erasmus+ Programme of the European Union, the European Union flag, the Erasmus+ logo, the Turkish flag, and the ALGO LITTLE logo. The viewer interface shows page 1 of 43 at 60% zoom.



ALGOLITTLE - MODULE 3 -
LESSON 2



ALGOLITTLE - MODULE 3 -
LESSON 1



ALGOLITTLE - MODULE 2 -
LESSON 2



ALGOLITTLE - MODULE 2 -
LESSON 1



ALGOLITTLE - MODULE 3 -
LESSON 1

ONGOING AND UPCOMING ACTIVITIES

ANIMATED PRESENTATIONS

The project consortium is now working on the realisation of the IO-2: **interactive animated presentations**.

They will include learning/teaching activities, and give the learners the opportunity to choose different options in the decision stages. This will **engage** the learners with the content of the presentations, increase the **motivation** and **focusing** time.

Each partner submitted their static presentations, and now the technical project is ongoing. EDUCLLOUD will convert these materials into the **animated** ones, that will publish on our channels (images on the left).

PILOTING

After the finalisation of the IO's each University partner will organise **experimental pilot courses**, to have a **trial** of our project.

We will test the **effectiveness** of the curriculum and the teaching materials, until the spring semester of the 2022.

We will **assess** the piloting process using pre and post-test, and we will collect **comments** and **feedback** from the participant in the trials, so that we will be able to **settle** the final version of our intellectual outputs according to the results collected during these trials.

Each University partner will be able to reach 20 undergraduates from Education Faculty, and they will be able to join a **virtual classroom** where they can interact with each other and with the istructors, using the **flipped learning** approach.

