3rd Edition – January 2019

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What is new?

Between 8th and 12th January, the University of Aveiro hosted in Portugal the first edition of the European course TangIn teachers training on tangible programming.

As a pilot edition, this first edition addressed selected teachers of the TangIn project partners schools, teaching at primary school level. A total of 16 teachers coming from Portugal, Spain, Bulgaria, and Latvia were together for one-week training, to learn and share experiences about tangible programming and how it can be used in daily activities at primary school level when delivering STEM-based lessons.

Teachers training participants feedback

The European course TangIn was a great experience for most of the participants. The course focused on the promotion of primary teachers' competencies in using tangible programming concepts and tools to foster student's inclusion and computational thinking in STEM-based subjects.

Together, trainers and participating teachers learned how to use attractive and funny pedagogical exercises on STEM-based subjects, using physical interfaces (e.g. controlled robots by blocks or incorporated buttons). Teachers were also introduced to the TangIn project resources, such as the toolbox of educational activities and the teacher's handbook. All the participants were engaged in the activities and provided very positive and enthusiastic feedback. Several comments support this outcome and focus different benefits that the use of tangible programming can bring. The following aspects were shared in the last session of the course:

- "…it can be used in science, mathematics to stimulate students to learn and to be more active in class."
- "…the lessons are more interesting, more fun and it's easy for students to learn by playing, and they also learn how to work in groups."
- "All the activities can be used in real classrooms. The new resources will enable the use of new working strategies for teachers."
- "It allowed us to know several digital tools that can contribute to the design of innovative educational resources, that will promote student's imagination and creativity, critical thinking, computational thinking, and problem-solving skills."
- "It allows students to solve problems in a ludic and attractive way."
- "The tools are important to promote the cooperative work in the classroom and that will support students' inclusion."

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TangIn toolbox of resources

The toolbox of educational resources offered by Tangin includes a set of educational resources in the form of ready to use lessons plans. The resources aim to support teachers at the primary school level to deliver STEM-based topics using the concepts and tools of tangible programming, thus creating more fun and attractive lessons for students, stimulating their interest in sciences, mathematics, and technology, whereas introducing concepts of programming and computational thinking. Furthermore, the activities were designed in a way that group and collaborative work will be necessary, promoting students' abilities to communicate, active listening and reasoning, while fostering their inclusion as well.

Neither teachers neither the students will have to possess digital skills or computers to use these resources and learn about tangible programming. By using physical interfaces (e.g. controlled robots by blocks or incorporated buttons), some markers and a board, teachers will be able of introducing the activities to students making them learn while playing.

The toolbox is composed of 12 lessons plans. The first two lesson plans are introductory activities that will help both teachers and students to get familiarized with the basic concepts of tangible programming and the key features of the physical interfaces. It is advisable that, for starters, teachers use these two lesson plans with their classes. After, the toolbox presents ten more lessons plans with thematic activities to explore and experiment, including topics such as:

- Calculation: basic arithmetic operations - addition, subtraction, multiplication, and division
- Geography: countries, flags and their capitals
- Mathematics: measuring units and orientation in space
- Mathematics and geometry: introducing to angles

Several other STEM-based topics are covered in other lessons. It is important to highlight that when exploring the activities with students, teachers will find in the lesson plans other thematic related to the activity that can also be explored in the lesson, such as concepts of citizenship and multiculturality.

What is next?

Pilot sessions in four countries

After the participation at the TangIn European Teacher Training course the 16 teachers from will act as ambassadors and trainers in their local schools. Their mission is to gather the interest of another colleague and peer-train him/her on the concepts of tangible programming and introducing them to the toolbox of educational activities. Then, at each of the schools, a total of eight teachers (32 in Europe) will have a period of four months to use at least five lesson plans (of their choice) with their classes and evaluate their experience. This larger pilot will enable the research team of collecting real feedback from the field to improve the lesson plans and finalized the teachers' handbook (guiding and support document for teachers).

Consortium:

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