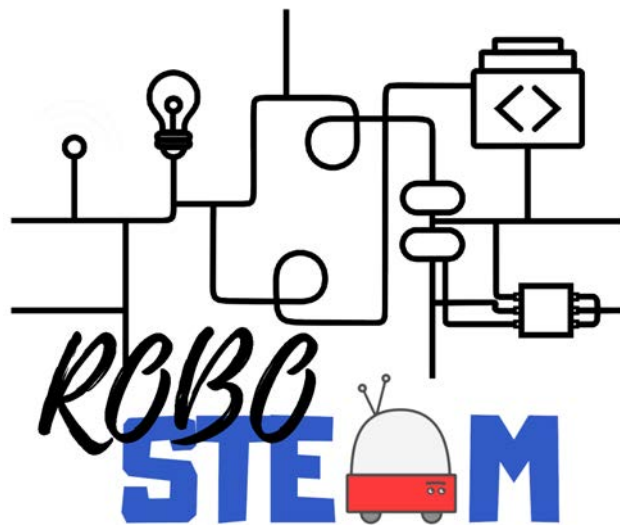

E6 – RoboSTEAM Local Multiplier Event - Finland



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Project Number: 2018-1-ES01-KA201-050939

Version History

Version	Date	Comments
1.0	25/03/2021	First Draft after finishing the event
1.1	31/03/2021	Compiled signatures and contents
1.2	29/05/2021	Format and data corrections

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1. E6. RoboSTEAM Local Multiplier Event - Finland

This document describes E6-Multiplier Event carried out in University of Eastern Finland Teacher Training School in the context of RoboSTEAM project [1-8], on the 25th of March of 2021. The document includes the event description.

2. Event Description

This section describes the aim of the activity, the program and the tools or applications used during the activity if any.

2.1. Description and aim of the activity

The aim was to share experiences and information about technology kit used in pilots and train teacher in eastern Finland area.

2.2. Agenda of the activity

Agenda for Multiplier Event

9:00 – 10:00 Introduction of project

10:00 – 11:00 Hummingbird kit: basic tools

11:00 – 11:30 Coffee break

11:30 – 13:00 Hands on - session 1

13:00 – 14:00 Lunch break

14:00 – 15:30 Hands on – session

15:30 – 16:00 Comments

2.3. Tools used during the activity

Hummingbird kit and mobile devices. Humming kit description can be seen in Table 1.

Table 1. - Humming bird kit description

Title	<i>Hummingbird Kit</i>
Reference	
Components	
<p style="text-align: center;"><i>Hummingbird Bit Premium Kit Contents:</i></p> <ul style="list-style-type: none"> • 1 - Bit Controller • 1 - Terminal Tool • 1 - Battery Pack (4x AA) <ul style="list-style-type: none"> • 1 - Green LED • 1 - Red LED • 1 - Yellow LED • 2 - Tri-colour LED • 2 - FS5103B Servo • 2 - FS5103R Servo • 2 - Servo Wheels • 2 - Lego Adapters • 4 - Servo Extension Cables <ul style="list-style-type: none"> • 1 - Light Sensor • 1 - Dial Sensor • 1 - Distance Sensor • 1 - Sound Sensor • 1 - User Manual • 1 - Premium Kit Case 	
Sample of use	
<p style="text-align: center;"><i>You can build many different types of robots with the Hummingbird kit. Some robots are stationary, and others move around their environment. A wheeled robot is called a mobile robot or a rover.</i></p>	
User Manual	
<p><u>https://store.birdbraintechnologies.com/collections/hummingbird-bit/products/hummingbird-bit-premium-kit</u></p>	
Other information	
<p><u>https://www.birdbraintechnologies.com/hummingbirdbit/</u></p>	



3. Signatures

**ROBO
STEM**

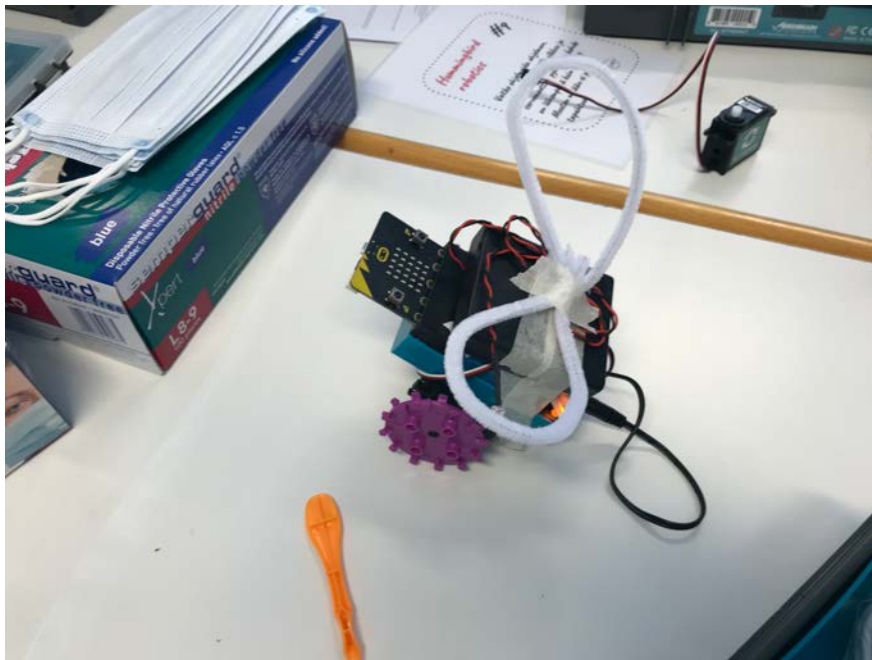
Name	School	Signature
Jana Vuolteenaho	Juensuun mediakeskus	[Handwritten Signature]
Ulla Pajarinen	Juensuun mediakeskus	[Handwritten Signature]
Tuomo Parkki	Juensuun Mediakeskus	[Handwritten Signature]

4. Results

Event was successful and participants were satisfied.

6. Photos





7. Documentation

7.1. Leaflet

Partnership

UNIVERSITY OF SALAMANCA
 UNIVERSITY OF LEÓN
 POLYTECHNIC INSTITUTE OF BRAGANÇA
 UNIVERSITY OF EASTERN FINLAND
 COLEGIO INTERNATO DOS CARVALHOS
 IES ERAS DE RENUEVA
 Karlsruhe Institut for Technology
 AGRUPAMENTO DE ESCOLAS ENDRIO GARCIA

PROJECT

ROBO STEAM

<http://roboteamproject.eu/>

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<https://www.facebook.com/groups/ROBOTEAMproject>
<http://roboteamproject.eu>

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TARGET GROUPS

- Teachers and school staff concerned with actions for integrating STEAM through challenges where PD&R is used.
- Staff of the partners institution Students (secondary school level).
- Physical Devices and Robotics (PD&R) developers.

CONTEXT

The present project aims to experiment with STEAM integration projects that help learners to develop computational thinking by using/programming physical devices and robotics (PD&R) in pre-university education environments. To this end, the present project proposes the exchange in the European context of experiences related to this topic. This would allow training of in-service and future teachers in such a way that they can apply this knowledge in class. This project will define a set of challenges and tools to address them. Two pilot cycles will be carried out exchanging these challenges and tools between institutions so it is possible to analyze the impact of the context where they are used. From the results achieved and the instruments used, good-practice guides will be defined about the development of computational thinking from STEAM integration.

OBJECTIVES

- Definition of a knowledge base to facilitate integrating STEAM and computational thinking by using robots.
- Analyse the different existing activities that deal with STEAM integration.
- Define some challenges and instruments to facilitate STEAM integration and computational thinking development.
- Define metrics to evaluate both the integration and the competence development.
- Establish guides for the definition of integration STEAM challenges by using PD&R.
- Define educational resources for in-service teachers and future teachers.
- Establish ways of collaboration between robotic companies and educational institutions.
- Publish the obtained results in order to involve other educational institutions of the same and different contexts.

ACTIVITIES

- Project Management.
- Quality Assurance.
- Pilot Phase 1.
- Pilot Phase 2.
- Dissemination and Mainstreaming.

OUTCOMES

- Analysis of current STEAM integration background in European schools.
- Set of methodological and diagnose tools that facilitate integrating STEAM through PD&R.
- Bank of instruments to assess STEAM related competences acquisition.
- Analysis of the application of PD&R in educational contexts and sample PD&R toolkits for integrating STEAM.
- Design and implementation of training actions.
- Guides for defining integrating STEAM challenges that use PD&R in different contexts.
- ICT tools (questionnaires, rubrics, learning analytics tools) to track how STEAM integrating is carried out and gather evidences.
- Contact networks among the companies that develop PD&R for educational contexts.

Acknowledgements

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References

- [1] RoboSTEAM Consortium, "RoboSTEAM Project," presented at the RoboSTEAM Erasmus+ project Kick-Off, Bragança, Portugal, February 15-16, 2019, 2019. [Online]. Available: <https://goo.gl/Ni43mK>.
- [2] M. Á. Conde *et al.*, "RoboSTEAM - A Challenge Based Learning Approach for integrating STEAM and develop Computational Thinking," in *TEEM'19 Proceedings of the Seventh International Conference on Technological Ecosystems for Enhancing Multiculturality (Leon, Spain, October 16th-18th, 2019)*, M. Á. Conde-González, F. J. Rodríguez-Sedano, C. Fernández-Llamas, and F. J. García-Peñalvo Eds. New York, NY, USA: ACM, 2019, pp. 24-30.
- [3] J. Gonçalves *et al.*, "Educational Robotics Summer Camp at IPB: A Challenge based learning case study," in *TEEM'19 Proceedings of the Seventh International Conference on Technological Ecosystems for Enhancing Multiculturality (Leon, Spain, October 16th-18th, 2019)*, M. Á. Conde-González, F. J. Rodríguez-Sedano, C. Fernández-Llamas, and F. J. García-Peñalvo Eds. New York, NY, USA: ACM, 2019, pp. 36-43.

- [4] C. Fernández-Llamas and M. Á. Conde-González, "RoboSTEAM Project – A brief review," 2019. [Online]. Available: <https://zenodo.org/record/3531941>.
- [5] M. Á. Conde, F. J. Rodríguez Sedano, C. Fernández-Llamas, J. Gonçalves, J. Lima, and F. J. García-Peñalvo, "RoboSTEAM Project Systematic Mapping: Challenge Based Learning and Robotics," in *2020 IEEE Global Engineering Education Conference (EDUCON), (27-30 April 2020, Porto, Portugal)*. USA: IEEE, 2020, pp. 214-221.
- [6] M. Á. Conde *et al.*, "Exchanging Challenge Based Learning Experiences in the Context of RoboSTEAM Erasmus+ Project," in *Learning and Collaboration Technologies. Design, Experiences. 7th International Conference, LCT 2020, Held as Part of the 22nd HCI International Conference, HCII 2020, Copenhagen, Denmark, July 19–24, 2020, Proceedings, Part I*, P. Zaphiris and A. Ioannou Eds., (Lecture Notes in Computer Science, no. 12205). Cham, Switzerland: Springer Nature, 2020, pp. 442-455.
- [7] M. Á. Conde *et al.*, "Adaption of RoboSTEAM Project to the Pandemic Situation," in *Proceedings TEEM'20. Eighth International Conference on Technological Ecosystems for Enhancing Multiculturality (Salamanca, Spain, October 21st - 23rd, 2020)*, F. J. García-Peñalvo Ed., (ICPS: ACM International Conference Proceedings Series. New York, NY, USA: ACM, 2020.
- [8] M. Á. Conde, F. J. Rodríguez-Sedano, C. Fernández-Llamas, J. Gonçalves, J. Lima, and F. J. García-Peñalvo, "Fostering STEAM through Challenge Based Learning, Robotics and Physical Devices: A systematic mapping literature review," *Computer Application in Engineering Education*, vol. 29, pp. 46-65, 2021, doi: 10.1002/cae.22354.