FREDERICK UNIVERSITY

Partner Search

Institution	Frederick University, Cyprus
Project title	**C**reative use of **R**obots in **E**ducation for **A**ttracting s**T**udents **I**n **V**ision **E**xperiential learning (C.R.E.A.T.I.V.E.) in STEM
Call for Proposals	**Call for making science education and careers attractive for young people** Topic: Innovative ways to make science education and scientific careers attractive to young people http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/2423-seac-1-2014.html
Theme	Robotics in the classroom has taken a global momentum especially because of their positive contributions in the teaching of science, technology, engineering and mathematics (STEM); STEM is closely associated with different aspects of our lives and of society. Studies and developments in all of them are essential for the overall progress of society. It is suggested that there are two approaches related to robotics in education; 1) robotics as a subject matter and 2) integrating robotics as a tool within the educational practice to achieve specific learning objectives (Eteokleous, et al, 2013). The proposed project aims to employ both philosophies since numerous research studies suggest that robotics integration for educational purposes is an effective teaching method; arguing that if robotics activities are appropriately designed and implemented, they have great potential to significantly improve and enhance the teaching and learning process (Bauerle, & Gallagher, 2003; Papert, 1993).
Project objectives	Some of the main objectives of the project are to: - Attract boys and girls in STEM through robotic activities - Develop a robotic package (using materials that can be easily found in any DIY store – off the shelve material) and a programming platform (user friendly drag and drop programming environment) - Create and test curricula for robotics as a subject matter for formal educational settings (secondary school - Science courses) and for informal educational settings (i.e. Robotics Academies, Technology Institutes and Camps) - Create and test interdisciplinary curricula for primary school students (Mathematics, Science and Design and Technology Courses) - Train teachers on employing robotics as a subject matter and as a tool within the teaching and learning process - Define and test a comprehensive pedagogical theoretical methodological framework for assessing the impact and benefits of learning with/through robotics. - Introduce children in robotics exhibitions and competitions as a means to boost their creativity and competiveness
Duration of the project	3 years
Information about lead partner	Frederick University (FU) (www.frederick.ac.cy) is a private university dedicated to providing high quality education through teaching and research in the areas of Technology, Business, Art and Design, Education, Humanities and Social Sciences,. FU's academic staff, either organized in multidisciplinary teams or individually, is involved in a wide range of research activities relevant to their specializations. The research initiatives and activities that are being carried out by its faculty, place the University among the most successful organizations in Cyprus with respect to the level of financial support

	received for research projects from external sources through competitive national and European programs, including FP7, LLP, Life and Regional Funds. The University staff has implemented or currently running more than a hundred R&D and consulting projects, the majority of which coordinated by FU faculty and researchers. As a consequence, the necessary services have been developed (e.g. Research, Financial, International & Public Relations) that provide the necessary support for the administrative, legal and financial management of funded projects. The FU Faculty of the school of Engineering and Applied Sciences, and more specifically the Department of Engineering and Computer Science have been involved in a number of **robotics related projects**. The department houses a **Robotics Laboratory** that emphasizes on robots used in education and research. The latest project that the Robotics Laboratory has been involved in was for the development of the **Engino Robotics Controller (ERC) for the "Engino Toys"** company that develops educational toys. The project was funded by the Cyprus Research Promotion Foundation (RPF) and ended in July of 2013. The FU Faculty of Education has been undertaking various research initiatives and activities the past few years. Specifically, the faculty of Education addressed the pedagogical part of the aforementioned project **Robotics' Models for Teaching** "Systems Control" within the Design and Technology course. Additionally, throughout the years experience was gained through participation in various research projects such as Cyber Ethics – Safer Internet funded by the Safer Internet plus Programme of the European Commission; The MYTecC – Mediterranean Youth Technology Club, funded by UNDP-ICTDAR (Program Information and Communication Technology for Development in the Arab Region), the Youth Ambassadors for Millennium Development Goals (MDGs) funded by European Union and European Development NGOs. As of 2013, the **Robotics Academy** (http://akrob.frederick.ac.cy/) has also been established aiming to promote the use of robotics was established in order to promote robotics to the educational system and society. It is a research and educational unit that aims to promote and conduct research in the area of robotics but primarily in the area of robotics education. It researches how to best integrate robotics in the educational system as a subject-matter, as well as a cognitive-learning tool within the teaching and learning process. In collaboration with the Robotics and Automated Systems Lab (RAS Lab) of Frederick University it conducts research on system development, on computer application development, and on other robotics related topics. The Robotics Academy is equipped with various educational robotics packages such as Lego Mindstorms NXT, Lego WeDo, bee-bots, Lego EV3.
Type of partners	**Types of Institutions that we are looking for:** - Universities (Schools of Education & Schools of Computer Science and Engineering) o Faculty Specializations: Educational Technology, Science Education, Mathematics Education, Robotics and Computer Engineering - Related Research and Educational Units/ Centres - Primary and Secondary Schools (Public and/or Private) - Ministries of Education - Association of Science Teachers - Technology Institutes / Camps / Clubs
Activities	Some of the main activities of the project are: - Development of a robotic package which will include materials that can be easily

	found in any DIY store – off the shelve material. The robotic package will include several material (i.e. bricks, wires, sensors) to meet the instructional goals of formal (primary, secondary) and informal curricula - Design and development of the robotics programming platform. - Pilot testing of the system (hardware and software) – robotic kit and programming platform - Development of the educational packages (curricula) for primary, secondary, and higher education - Development of a Pedagogical theoretical framework for assessing the impact and benefits of learning with/through robotics - Design and Organize educator training for primary, secondary and higher education levels. - Pilot test the products (robotic package and programming platform) and the educational packages in all educational levels - Development of final products and final documents
Expression of interest	Deadline August 30
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