

Abstract

RAČek: Promoting computational thinking through the use of STEM kits in early education

The RAČek project – Developing Computational Thinking through the Integration of STEM Kits – addresses current challenges in education. The aim is to equip teachers and students with the skills necessary for the transition to a green and digital future. The main objective of the project is to strengthen digital competences and basic knowledge in the fields of computer science and informatics, especially by promoting computational thinking in kindergartens and primary schools (grades 1–5).

Computational thinking includes skills such as decomposition, pattern recognition, abstraction and algorithmic thinking, all of which are essential for effective problem solving in various fields. By integrating STEM kits into the educational process, the project promotes hands-on, experiential learning that connects different subject areas while fostering children's critical thinking, creativity and problem-solving skills. By emphasising modern pedagogical approaches such as interdisciplinary learning and inquiry-based teaching, an engaging learning environment is created that caters to children's natural curiosity and inquiring minds.

As part of the project, we are developing training programmes for teachers, a catalogue of learning objectives, didactic guidelines and teaching scenarios that will be freely accessible and applicable in practise. Through an experimental and research-led approach, the RAČek project aims to establish a replicable model of best practise while fostering a culture of collaboration and knowledge sharing among educators. By emphasising green and digital education, the project contributes to the European Recovery and Resilience Plan and equips students with the skills they need for the professions of the future.

Keywords: computational thinking, STEM kits, primary school, kindergarten, interdisciplinary learning

Povzetek

RAČek: Spodbujanje računalniškega mišljenja z uporabo STEM kompletov v zgodnjem izobraževanju

Projekt *RAČek – Razvijanje računalniškega mišljenja z vključevanjem kompletov STEM* naslavlja izzive sodobnega izobraževanja s namenom opremiti učitelje in učence z veščinami, potrebnimi za prehod v zeleno in digitalno prihodnost. Osrednji cilj projekta je krepitev digitalnih kompetenc ter osnovnega znanja s področja računalništva in informatike, zlasti z razvijanjem računskega mišljenja v vrtcih in osnovnih šolah (1.–5. razred).

Računalniško mišljenje vključuje spretnosti, kot so dekompozicija, prepoznavanje vzorcev, abstrakcija in algoritmično razmišljanje, ki so ključne za reševanje problemov na različnih področjih. Z vključevanjem STEM kompletov v vzgojno-izobraževalni proces projekt spodbuja praktično in izkustveno učenje, ki povezuje različna predmetna področja ter pri otrocih razvija kritično mišljenje, ustvarjalnost in reševanje problemov. Poudarek na sodobnih pedagoških pristopih, kot sta medpredmetno povezovanje in na raziskovanju temelječe učenje, ustvarja spodbudno učno okolje, ki ustreza naravnemu raziskovalnemu duhu otrok.

V okviru projekta razvijamo programe usposabljanja za učitelje, katalog učnih ciljev, didaktična priporočila ter učne scenarije, ki bodo prosto dostopni in uporabni v praksi. Z eksperimentalnim

pristopom projekt RAČek oblikuje ponovljiv model dobre prakse ter spodbuja kulturo sodelovanja in izmenjave znanja med izobraževalci. S poudarkom na zelenem in digitalnem izobraževanju projekt prispeva k evropskemu načrtu za oživitev in odpornost ter učencem budi znanja, potrebna za poklice prihodnosti.

Ključne besede: računalniško mišljenje, STEM kompleti, osnovna šola, vrtec, medpredmetno povezovanje