Digital competences of teachers for developing pupils' algorithmic thinking / Digitalne kompetencije učitelja za razvoj algoritamskog načina razmišljanja učenika

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Abstract

Developing children’s algorithmic thinking is closely related to the principles of constructivism and it should start at preschool and early school age. In Serbia, the subject Digital World was introduced in the 2020/2021 school year as a compulsory subject in the first cycle of primary education. This subject aims to develop pupils' digital competencies in order to train them for the safe and proper use of digital devices, communication, cooperation, and the development of algorithmic thinking. Primary school classroom teachers are responsible for teaching the subject Digital World within the first cycle of primary education. The aim of this paper is to detect the readiness of the educational system to support classroom teachers in the implementation of Digital World teaching. Using the 4C method, a syllabus analysis of the initial education courses at Teacher Education Faculties in Serbia, as well as professional training and development programs for educators was carried out. Our findings indicate that, within the initial education of future classroom teachers, their digital competencies are being developed through different teaching subjects and at different levels of student knowledge. However, it has been detected that insufficient attention is paid to the development of students’ algorithmic thinking. Additionally, the number of professional development programs specifically focused on this topic is insufficient. Therefore, we conclude that it is necessary to introduce dedicated teaching subjects at Teacher Education faculties to equip teachers with the necessary skills for implementing the subject Digital World, with a special emphasis on the development of algorithmic thinking. Furthermore, it is necessary to introduce a larger number of quality seminars for permanent professional development.

Key words

initial teacher education, professional development of teachers, subject Digital World

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Sažetak

S razvojem algoritamskog načina razmišljanja kod dece, koje je tesno povezano sa konstruktivističkim učenjem, treba početi još na predškolskom i ranom školskom uzrastu. U Srbiji je od školske 2020/2021. godine u okviru prvog ciklusa osnovnog obrazovanja po prvi put uveden obavezni nastavni predmet Digitalni svet, čiji je cilj razvijanje digitalnih kompetencija učenika radi osposobljavanja za bezbednu i pravilnu upotrebu digitalnih uređaja, komunikaciju, saradnju i razvoj algoritamskog načina razmišljanja. Nastavu predmeta Digitalni svet u okviru bazičnog obrazovanja izvode profesori razredne nastave (učitelji). Cilj ovog rada je detekcija spremnosti obrazovnog sistema da podrži profesore razredne nastave u realizaciji nastave Digitalni svet. Metodom 4C, izvršena je analiza silabusa nastavnih predmeta inicijalnog obrazovanja u okviru fakulteta u Srbiji koji obrazuju buduće profesore razredne nastave, kao i programa profesionalnog razvoja i stručnog usavršavanja zaposlenih u obrazovanju. Rezultati ukazuju da se u okviru inicijalnog obrazovanja budućih profesora razredne nastave kroz različite nastavne predmete i na različitim nivoima znanja razvijaju njihove digitalne kompetencije. Uočeno je da se razvoju algoritamskog načina razmišljanja kod studenata ne poklanja dovoljna pažnja, kao i da, na ovu temu, ne postoji dovoljan broj obuka u okviru stručnog usavršavanja zaposlenih. Možemo zaključiti da je neophodno uvesti nastavne predmete na fakultetima koji metodički obrazuju učitelje za realizaciju nastavnog predmeta Digitalni svet, sa posebnim akcentom na razvoju algoritamskog načina razmišljanja. Također je potrebno uvesti veći broj dodatnih kvalitetnih seminara permanentnog stručnog usavršavanja.

Ključne riječi

inicijalno obrazovanje učitelja; predmet Digitalni svet; stručno usavršavanje učitelja

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