**Z MATEMATIKO V PROGRAMIRANJE**

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POVZETEK

Medpredmetno povezovanje daje možnost razmišljanja širše, izven okvirjev. Temeljna znanja RIN je zaradi njihove uporabnosti smiselno povezovati v ostala MINUT področja. Tako zagotovimo, da se dijak uri v računalniškem mišljenju. Digitalno komuniciranje in sodelovanje nam omogoča vključevanje učnih dejavnosti, nalog ter vrednotenja, ki od učencev zahtevajo učinkovito in odgovorno rabo digitalnih tehnologij.

V projektu MINUT – Z matematiko v programiranje, sva želeli, da dijaki razvijajo algoritmično razmišljanje. Snov geometrije v ravnini sva iz fizičnega (ročne konstrukcije kotov) najprej prenesli v program GeoGebra (merjenje in načrtovanje kotov, načrtovanje likov), nato pa v programiranje z delčki (želvja grafika, pri kateri morajo uporabiti znanje o merjenju kotov). Uporaba okolij kot npr. GeoGebra, dijakom omogoča učenje ravninske geometrije s preverjanjem rešitve, razumevanjem ozadja uporabljene funkcije, zamenjavo koraka risanja s primerljivo funkcijo. S pomočjo problemskega pristopa tako vpeljemo osnovna računalniška znanja. Pri uporabi okolja Pišek pa dijaki znanje matematike uporabijo posredno – če želijo izris določene slike, morajo upoštevati znanje ravninske geometrije in znanje algoritmičnega razmišljanja.

Želiva, da dijaki digitalno tehnologijo razumejo kot pripomoček, ki jim pomaga pri reševanju geometrijskih problemov, vizualizaciji funkcij ter raziskovanju lastnosti funkcij. Dijaki pri tem razvijajo tudi t. i. mehke spretnosti, kot so vztrajanje od začetka do konca, sodelovanje in **komuniciranje z in v zvezi s tehnologijo.** Posledično se motivirajo za reševanje kompleksnejših problemov ter imajo boljšo predstavo o tekoči snovi. Znanje, ki ga dijaki pri tem dosežejo, je bolj trajnostno. Hkrati se lažje zagotavlja na dijaka osredotočen pristop k delu.

KLJUČNE BESEDE

matematika, informatika, digitalna tehnologija, algoritmično mišljenje, programiranje z delčki

**USING MATHS FOR PROGRAMMING**

ABSTRACT

Cross-curricular integration provides opportunities for thinking creatively and outside the box. The applicability of the basic knowledge concerning RIN allows for their integration into other MINUT fields. This ensures the student’s drilling of computational skills. Digital communication and cooperation enable us to make lessons, tasks and evaluation encouraging efficient and responsible use of digital technology.

The objective of the MINUT project was to encourage algorithmic thinking with students. We transformed the course material of geometry from the practical level (constructing an angle in geometry) into the GeoGebra programme (making geometric constructions) and finally to block coding (motion blocks, with which students have to apply their knowledge of measuring angles). Using programmes such as GeoGebra enables students to study geometry, verifying solutions, understanding the background of the function used and altering the drawing steps with an appropriate function. Using a problem approach enables us to integrate basic computer-related knowledge. When using the Pišek programme, students use their math knowledge directly. If they want to make a plotting of a certain picture, they must have to take into consideration their knowledge of geometry and algorithmic thinking.

The objective is for students to perceive digital technology as a tool aiding them to resolve geometrical problems, the visualisation of functions and exploring the characteristics of functions. By doing this, students develop “soft skills” such as persisting from start to finish and communicating with and in relation to technology. Therefore, they are more motivated to resolve more complex problems and have a better understanding of the course material. The knowledge the students obtain in more profound. At the same time this enables for a student-centred approach to work.

KEY WORDS:

math, information science, digital technology, algorithmic thinking, *block coding*