

Međunarodni naučni skup
32. OKRUGLI STO O DAROVITIMA

Izazovi primene IKT alata za
podsticanje samoregulacije u
razvoju izvrsnosti darovitih

CHALLENGES IN THE IMPLEMENTATION
OF ICT TOOLS FOR ENCOURAGING
SELF-REGULATION IN THE
DEVELOPMENT OF EXCELLENCE
OF THE GIFTED

ZBORNİK REZİMEA
BOOK OF ABSTRACTS

Vršac, 2026.

The International Conference
32nd ROUND TABLE ON GIFTEDNESS



32. OKRUGLI STO O DAROVITIMA

IZAZOVI PRIMENE IKT ALATA ZA PODSTICANJE SAMOREGULACIJE U RAZVOJU IZVRSNOSTI DAROVITIH

ZBORNİK REZIMEA

SA MEĐUNARODNOG NAUČNOG SKUPA

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**IZAZOVI PRIMENE IKT ALATA ZA PODSTICANJE SAMOREGULACIJE U RAZVOJU
IZVRSNOSTI DAROVITIH**

**CHALLENGES IN THE IMPLEMENTATION OF ICT TOOLS FOR ENCOURAGING SELF-
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Danimir Mandić – Univerzitet u Beogradu, Fakultet za obrazovanje učitelja i vaspitača, Srbija

Tema: *VEŠTAČKA INTELIGENCIJA KAO POKRETAČ OBRAZOVNIH REFORMI:*

PERSONALIZOVANO UČENJE, DIGITALNI BLIZANCI I NOVA ULOGA NASTAVNIKA

Danimir Mandić – University of Belgrade Faculty of Education, Serbia

Key note speech topic: *ARTIFICIAL INTELLIGENCE AS A DRIVER OF EDUCATIONAL REFORMS:
PERSONALIZED LEARNING, DIGITAL TWINS, AND THE NEW ROLE OF THE TEACHER*

Biljana Lungulov – Univerzitet u Novom Sadu, Filozofski fakultet, Srbija

Tema: *OD POTENCIJALA DO IZVRSNOSTI: DIGITALNO OKRUŽENJE I SAMOREGULISANO
UČENJE DAROVITIH UČENIKA*

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SELF-REGULATED LEARNING IN GIFTED STUDENTS*

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NASTAVNIKA: DEJSTVO PSIHOLOŠKIH VARIJABLI I SREDINSKIH OMETAČA*

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PERSPECTIVES OF STUDENTS AND TEACHERS: THE EFFECTS OF PSYCHOLOGICAL
VARIABLES AND ENVIRONMENTAL DISTRACTORS*

11.¹⁵ – 14.¹⁵

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Zaključci / Conclusions



SADRŽAJ / CONTENTS:

UVODNE NAPOMENE	14
Grozdanka Gojkov IZAZOVI PRIMENE IKT ALATA ZA PODSTICANJE SAMOREGULACIJE U RAZVOJU IZVRSNOSTI DAROVITIH	14
Grozdanka Gojkov INTRODUCTORY REMARKS CHALLENGES IN THE IMPLEMENTATION OF ICT TOOLS FOR ENCOURAGING SELF-REGULATION IN THE DEVELOPMENT OF EXCELLENCE OF THE GIFTED.....	17
UVODNI IMPULSI / INTRODUCTORY IMPULSES	21
Данимир Мандић ВЕШТАЧКА ИНТЕЛИГЕНЦИЈА КАО ПОКРЕТАЧ ОБРАЗОВНИХ РЕФОРМИ: ПЕРСОНАЛИЗОВАНО УЧЕЊЕ, ДИГИТАЛНИ БЛИЗАНЦИ И НОВА УЛОГА НАСТАВНИКА	22
Danimir Mandić ARTIFICIAL INTELLIGENCE AS A DRIVER OF EDUCATIONAL REFORMS: PERSONALIZED LEARNING, DIGITAL TWINS, AND THE NEW ROLE OF THE TEACHER	22
Biljana Lungulov OD POTENCIJALA DO IZVRSNOSTI: DIGITALNO OKRUŽENJE I SAMOREGULISANO UČENJE DAROVITIH UČENIKA	23
Biljana Lungulov FROM POTENTIAL TO EXCELLENCE: THE DIGITAL ENVIRONMENT AND SELF-REGULATED LEARNING IN GIFTED STUDENTS	24
Jelena Davidović Rakić SAMOREGULISANO UČENJE I NJEGOVI ALATI KROZ PERSPEKTIVE UČENIKA I NASTAVNIKA: DEJSTVO PSIHOLOŠKIH VARIJABLI I SREDINSKIH OMETAČA.....	24
Jelena Davidović Rakić	

SELF-REGULATED LEARNING AND ITS TOOLS THROUGH THE PERSPECTIVES OF STUDENTS AND TEACHERS: THE EFFECTS OF PSYCHOLOGICAL VARIABLES AND ENVIRONMENTAL DISTRACTORS	25
REZIMEI / ABSTRACTS	26
Radovan Antonijević USLOVI FUNKCIONALNE UPOTREBE IKT ALATA ZA UNAPREĐENJE KVALITETA UČENJA DAROVITIH UČENIKA	27
Radovan Antonijević CONDITIONS FOR THE FUNCTIONAL USE OF ICT TOOLS TO IMPROVE THE QUALITY OF LEARNING IN GIFTED STUDENTS	27
Adrijan Božin RAZVOJ REFLEKSIVNE REGULACIJE EMOCIJA U IKT OKRUŽENJU	28
Adrijan Božin DEVELOPMENT OF REFLEXIVE EMOTION REGULATION IN THE ICT ENVIRONMENT	29
Gordana Bursać DIGITALNA PODRŠKA LINGVISTIČKOJ KREATIVNOSTI I SAMOREGULISANOM UČENJU DAROVITIH UČENIKA	29
Gordana Bursać DIGITAL SUPPORT FOR LINGUISTIC CREATIVITY AND SELF-REGULATED LEARNING IN GIFTED STUDENTS	30
Ante Čurlin GEA – GLOBALNA EDUKATIVNA AVANTURA	31
Ante Čurlin GEA – GLOBAL EDUCATIONAL ADVENTURE	31
Lina Dečman Molan VLOGA IKT ORODIJ PRI RAZVOJU SAMOREGULACIJE UČENJA IN PODJETNIŠKIH KOMPETENC NADARJENIH DIJAKOV	32
Lina Dečman Molan THE ROLE OF ICT TOOLS IN THE DEVELOPMENT OF SELF-REGULATED LEARNING AND ENTREPRENEURIAL COMPETENCIES OF GIFTED STUDENTS	33
Biljana Drobňak PRIMENA AI ALATA U RAZVOJU SAMOREGULACIJE KOD DAROVITIH UČENIKA GIMNAZIJE	33
Biljana Drobňak APPLICATION OF AI TOOLS IN THE DEVELOPMENT OF SELF-REGULATION AMONG GIFTED HIGH SCHOOL STUDENTS	34
Глаголев В. С. ТЕНЕВЫЕ СТОРОНЫ ЦИФРОВИЗАЦИИ ОБРАЗОВАТЕЛЬНОГО ПРОЦЕССА	34
Glagolev V. S.	

THE DOWNSIDES OF DIGITALIZATION IN THE EDUCATIONAL PROCESS	35
Aleksandra Gojkov Rajić Radmila Palinkašević	
MODELI AI-PODRŽANIH MULTIMODALNIH ZADATAKA U NASTAVI STRANOG JEZIKA ZA DAROVITE	37
Aleksandra Gojkov Rajić Radmila Palinkašević	
AI-SUPPORTED MULTIMODAL TASK MODELS IN FOREIGN LANGUAGE TEACHING FOR GIFTED LEARNERS	37
Bisera S. Jevtić	
MULTIMEDIJALNA AKCIONA KOMPETENTNOST PEDAGOGA U RADU SA DAROVITIM UČENICIMA	38
Bisera S. Jevtić	
MULTIMEDIA ACTION COMPETENCE OF TEACHERS IN WORKING WITH GIFTED STUDENTS	39
Milica Jovanov	
DIGITALNA REFLEKSIJA U VIZUELNIM UMETNOSTIMA KAO ODGOVOR NA IZAZOVE PRIMENE IKT ALATA U PODSTICANJU SAMOREGULACIJE I IZVRSNOSTI DAROVITIH	39
Milica Jovanov	
DIGITAL REFLECTION IN VISUAL ARTS AS A RESPONSE TO THE CHALLENGES OF ICT IMPLEMENTATION IN FOSTERING SELF-REGULATION AND EXCELLENCE IN THE GIFTED	40
Simona Kanjevac	
IZMEĐU AI I DIDAKTIČKIH KOMPETENCIJA: PRAKSA I POTREBE NASTAVNIKA DAROVITIH UČENIKA	41
Simona Kanjevac	
BETWEEN AI AND DIDACTIC COMPETENCIES: PRACTICE AND NEEDS OF TEACHERS OF GIFTED STUDENTS.....	41
Slavica Komatina	
MODERNIZACIJA NASTAVE SOCIOLOGIJE U VISOKOŠKOLSKOM OBRAZOVNOM KONTEKSTU	42
Slavica Komatina	
MODERNIZATION OF SOCIOLOGY TEACHING IN THE HIGHER EDUCATION CONTEXT	42
Ljiljana Krneta	
SOCIOEMOCIONALNI ASPEKTI SAMOREGULACIJE I DIGITALNOG UČENJA DAROVITIH UZ POMOĆ IKT ALATA.....	43
Ljiljana Krneta	
SOCIO-EMOTIONAL ASPECTS OF SELF-REGULATION AND DIGITAL LEARNING OF GIFTED STUDENTS USING ICT TOOLS	44
Zora Krnjaić	
OBRAZOVANJE U DIGITALNOM OKRUŽENJU: IZAZOVI I PODRŠKA SAMOREGULACIJI UČENJA DAROVITIH	44

Zora Krnjaić EDUCATION IN THE DIGITAL ENVIRONMENT: CHALLENGES AND SUPPORT FOR THE SELF-REGULATED LEARNING OF GIFTED STUDENTS	45
Марина Кузмановска Горица Попоска Нлевска ПЕРЦЕПЦИИ НА НАСТАВНИЦИТЕ ЗА ИКТ И АЛАТКИТЕ СО ВЕШТАЧКА ИНТЕЛИГЕНЦИЈА ЗА ПОДДРШКА НА САМОРЕГУЛИРАНО УЧЕЊЕ КАЈ НАДАРЕНИ УЧЕНИЦИ.....	46
Marina Kuzmanovska Gorica Poposka Nlevska TEACHERS' PERCEPTIONS OF ICT AND ARTIFICIAL INTELLIGENCE TOOLS TO SUPPORT SELF-REGULATED LEARNING AMONG GIFTED STUDENTS	46
Danimir Mandić Aleksandar Stojanović Grozdanka Gojkov DAROVITI STUDENTI: USKLAĐENOST KARAKTERISTIKA Z GENERACIJE I DIDAKTIČKIH STRATEGIJA	47
Danimir Mandić Aleksandar Stojanović Grozdanka Gojkov GIFTED STUDENTS: ALIGNMENT BETWEEN GENERATION Z CHARACTERISTICS AND DIDACTIC STRATEGIES	48
Tanja Nedimović Ivana Đorđev MOTIVISANOST VASPITAČA ZA PROFESIONALNO USAVRŠAVANJE U OBLASTI PODSTICANJA RANOG RAZVOJA DAROVITE DECE	49
Tanja Nedimović Ivana Đorđev MOTIVATION OF PRESCHOOL TEACHERS FOR PROFESSIONAL DEVELOPMENT IN THE FIELD OF FOSTERING THE EARLY DEVELOPMENT OF GIFTED CHILDREN	50
Nataša Nikolić DAROVITI UČENICI I AUTONOMIJA U UČENJU	51
Nataša Nikolić GIFTED STUDENTS AND AUTONOMY IN LEARNING	52
Mirjana Nikolić Duška Pešić IKT ALATI U FUNKCIJI PREPOZNAVANJA RANE MATEMATIČKE DAROVITOSTI I PODSTICANJA SAMOREGULISANOG UČENJA	52
Mirjana Nikolić Duška Pešić	

ICT TOOLS IN THE FUNCTION OF IDENTIFYING EARLY MATHEMATICAL GIFTEDNESS AND ENCOURAGING SELF-REGULATED LEARNING	53
Humphrey Oborah	
ANTHROPO-BIOMETRIC TALENT ASSESSMENT AND TALENT-CENTERED SELF-REGULATION: AN ICT-ENABLED FRAMEWORK FOR DEVELOPING EXCELLENCE AMONG GIFTED LEARNERS IN THE ARTIFICIAL INTELLIGENCE ERA	53
Jelena Osmanović Zajić	
Aleksandra Milanović	
Jelena Maksimović	
OD METODOLOGIJE DO REFLEKSIVNE PRAKSE: BUDUĆNOST ISTRAŽIVANJA DAROVITOSTI U EPOHI VEŠTAČKE INTELIGENCIJE	54
Jelena Osmanović Zajić	
Aleksandra Milanović	
Jelena Maksimović	
FROM METHODOLOGY TO REFLECTIVE PRACTICE: THE FUTURE OF GIFTEDNESS RESEARCH IN THE AGE OF ARTIFICIAL INTELLIGENCE ...	55
Snežana Prtljaga	
Danica Veselinov	
Ljiljana Kelemen Milojević	
ANALIZA IZAZOVA I MOGUĆNOSTI PRIMENE IKT ALATA U PODSTICANJU SAMOREGULACIJE I RAZVOJA IZVRSNOSTI DAROVITE DECE PREDŠKOLSKOG UZRASTA U METODICI UPOZNAVANJA OKOLINE I METODICI RAZVOJA GOVORA.....	56
Snežana Prtljaga	
Danica Veselinov	
Ljiljana Kelemen Milojević	
ANALYSIS OF THE CHALLENGES AND OPPORTUNITIES OF APPLYING ICT TOOLS FOR ENCOURAGING SELF-REGULATION AND THE DEVELOPMENT OF EXCELLENCE IN GIFTED PRESCHOOL CHILDREN WITHIN THE METHODOLOGY OF ENVIRONMENTAL STUDIES AND SPEECH DEVELOPMENT METHODOLOGY.....	57
Dragana Radenović	
KOMPETENCIJE NASTAVNIKA ZA PRIMENU VEŠTAČKE INTELIGENCIJE U PODSTICANJU SAMOREGULISANOG UČENJA I RAZVOJA POTENCIJALNO DAROVITIH UČENIKA	58
Dragana Radenović	
TEACHER COMPETENCIES FOR IMPLEMENTING ARTIFICIAL INTELLIGENCE IN SUPPORTING SELF-REGULATED LEARNING AND THE DEVELOPMENT OF POTENTIALLY GIFTED STUDENTS.....	58
Ranko Rajović	
Jelena Davidović Rakić	
PILOT NALAZI SKALE ZA PROCENU POSLEDICA RAZVOJA I KORIŠĆENJA VEŠTAČKE INTELIGENCIJE.....	59

Ranko Rajović	
Jelena Davidović Rakić	
PILOT FINDINGS OF A SCALE FOR ASSESSING THE CONSEQUENCES OF THE DEVELOPMENT AND USE OF ARTIFICIAL INTELLIGENCE	59
М. В. Силантьева	
ЦИФРОВЫЕ ИНСТРУМЕНТЫ ОБУЧЕНИЯ И (КОНСЕРВАТИВНЫЕ) ЦЕННОСТИ ОБРАЗОВАНИЯ: «ЗАПРЕТИТЬ НЕЛЬЗЯ РАЗРЕШИТЬ»	60
М. V. Silantieva	
DIGITAL LEARNING TOOLS AND (CONSERVATIVE) EDUCATIONAL VALUES: 'PROHIBIT NOT PERMIT'	62
Nataša Sturza Milić	
Tamara Korać Živojinović	
SAMOREGULACIJA UČENJA MOTORIČKI DAROVITE DECE I UČENIKA POMOĆU VEŠTAČKE INTELIGENCIJE	63
Nataša Sturza Milić	
Tamara Korać Živojinović	
SELF-REGULATION OF LEARNING IN MOTORICALLY GIFTED CHILDREN AND STUDENTS USING ARTIFICIAL INTELLIGENCE	64
Katarina Subotić	
SAMOREGULACIJA KAO FAKTOR RAZVOJA IZVRSNOSTI DAROVITIH U KONTEKSTU IKT OKRUŽENJA	65
Katarina Subotić	
SELF-REGULATION AS A FACTOR IN THE DEVELOPMENT OF EXCELLENCE IN GIFTED STUDENTS IN THE CONTEXT OF ICT ENVIRONMENTS	65
Tomislav Suhecki	
VEŠTAČKA DAROVITOST ZAMENJUJE PRIRODNU	66
Tomislav Suhecki	
ARTIFICIAL GIFTEDNESS IS REPLACING NATURAL GIFTEDNESS	67
Jelisaveta Šafranj	
Jelena Prtljaga	
PRIMENA IKT ALATA ZA PODSTICANJE SAMOREGULACIJE U NASTAVI STRANIH JEZIKA KOD DAROVITIH UČENIKA	68
Jelisaveta Šafranj	
Jelena Prtljaga	
APPLICATION OF ICT TOOLS TO ENCOURAGE SELF-REGULATION IN TEACHING FOREIGN LANGUAGES IN GIFTED STUDENTS	69
Даница Веселинов	
Јасмина Мирковић	
ВЕШТАЧКА ИНТЕЛИГЕНЦИЈА КАО ПОДРШКА РАЗВОЈУ ДАРОВИТОСТИ	69
Danica Veselinov	
Jasmina Mirković	
ARTIFICIAL INTELLIGENCE AS SUPPORT FOR THE DEVELOPMENT OF GIFTEDNESS	70

Снежана Влајковац Зорица Влајковац ДИГИТАЛНЕ КОМПЕТЕНЦИЈЕ НАСТАВНИКА СА ЦИЉЕМ ОСНАЖИВАЊА САМОРЕГУЛАЦИЈЕ УЧЕНИКА	71
Snezana Vlajkovic Zorica Vlajkovic DIGITAL COMPETENCES OF TEACHERS TO EMPOWER STUDENT SELF- REGULATION	72
Маја Џиберт ЕТИКА, ODGOVORNA RAVA IN PEDAGOŠKA VREDNOST UI PRI POUKU DRUŽBOSLOVJA	73
Маја Џиберт ETHICS, RESPONSIBLE USE, AND THE PEDAGOGICAL VALUE OF AI IN SOCIAL SCIENCE EDUCATION	74
Бриндуша Жујка ВЕШТАЧКА ИНТЕЛИГЕНЦИЈА И НОВИ ПРАВЦИ У НАСТАВИ МАТЕРЊЕГ ЈЕЗИКА У МУЛТИКУЛТУРАЛНИМ КОНТЕКСТИМА.....	74
Brindusa Zujka ARTIFICIAL INTELLIGENCE AND NEW DIRECTIONS IN MOTHER TONGUE TEACHING IN MULTICULTURAL CONTEXTS	75
BELEŠKE / NOTES.....	77

UVODNE NAPOMENE

IZAZOVI PRIMENE IKT ALATA ZA PODSTICANJE SAMOREGULACIJE U RAZVOJU IZVRSNOSTI DAROVITIH

Tradicija održavanja Okruglog stola o darovitima, koja traje duže od tri decenije, kao i kontinuitet saradnje sa suorganizatorima, istraživačima i institucijama sa evropske i svetske akademske mape, svedoče o dugoročnom nastojanju da se kroz povezivanje naučnih zajednica razvija sistematsko proučavanje darovitosti i puteva njenog pretvaranja u ostvarenu izvrsnost. Ovaj kontinuirani istraživački i stručni dijalog predstavlja značajnu osnovu i za ovogodišnju razmenu teorijskih uvida, empirijskih nalaza i praktičnih iskustava u oblasti obrazovanja darovitih. Ovogodišnji, 32. okrugli sto, već samim naslovom *Izazovi primene IKT alata za podsticanje samoregulacije u razvoju izvrsnosti darovitih*, usmeren je ka jednom od najaktuelnijih pitanja savremenog obrazovanja – na koji način informaciono-komunikacione tehnologije mogu biti pedagoški osmišljene i funkcionalno uključene u razvoj samoregulacije, autonomije i stvaralačkih potencijala darovitih učenika i studenata.

U diskursu savremenih teorijskih pristupa, rezultata istraživanja i primera obrazovne prakse, ovaj skup nastoji da sagleda mogućnosti, ali i ograničenja primene IKT alata u podsticanju razvoja izvrsnosti darovitih. Poseban značaj ima povezivanje teorijskih promišljanja sa praktičnim iskustvima, jer upravo njihova međusobna interakcija omogućava kritičko preispitivanje postojećih modela i traganje za novim, efikasnijim strategijama podrške razvoju darovitosti.

Rezimeji sadržani u ovom Zborniku predstavljaju doprinos otvaranju novih istraživačkih pitanja, razmeni originalnih ideja i pronalaženju odgovora na izazove koje donosi digitalno obrazovno okruženje. Oni istovremeno ukazuju na potrebu da se tehnologija ne posmatra samo kao sredstvo, već kao deo šireg pedagoškog i didaktičkog okvira u kojem se, uz odgovarajuće vođenje, mentorstvo i razvoj samoregulacije, mogu stvarati uslovi za ostvarivanje punih potencijala darovitih.

Savremeno obrazovanje nalazi se u periodu dubokih i ubrzanih promena koje su posledica složenih društvenih, tehnoloških i kulturnih transformacija. Digitalizacija obrazovnog prostora, razvoj informaciono-komunikacionih tehnologija (IKT), kao i ubrzana primena veštačke inteligencije (engl. AI) menjaju način na koji se znanje stvara, prenosi, usvaja i primenjuje. Ove promene posebno dobijaju na značaju u oblasti obrazovanja darovitih učenika i studenata, čiji razvoj zahteva fleksibilne, diferencirane i podsticajne obrazovne pristupe usmerene ka ostvarivanju njihovih potencijala i razvoju izvrsnosti.

U savremenim koncepcijama darovitost se više ne posmatra kao stabilna i izolovana osobina pojedinca, već kao dinamičan razvojni potencijal koji nastaje kroz međudelovanje različitih činilaca – kognitivnih sposobnosti, kreativnosti,

motivacije, ličnih karakteristika, socijalnog okruženja i obrazovnih prilika. U tom okviru posebno mesto zauzima razvoj samoregulacije u učenju, kao jedne od ključnih kompetencija koja omogućava učeniku da planira, prati, usmerava i vrednuje sopstveni proces učenja i razvoja.

Samoregulacija predstavlja važan preduslov za dugoročnu izvrsnost, jer omogućava darovitim učenicima ne samo da postižu visoka postignuća, već i da razvijaju autonomiju, istraživački odnos prema znanju, refleksivnost i sposobnost kontinuiranog usavršavanja. Poseban izazov savremenog obrazovanja jeste pitanje na koji način digitalno okruženje može doprineti razvoju ovih sposobnosti, ali i kako izbeći rizike površnog učenja, prekomerne zavisnosti od tehnologije i smanjenja aktivnog misaonog angažovanja učenika.

Generacije učenika i studenata koje odrastaju u digitalnom okruženju donose nove obrazovne potrebe i očekivanja. Generacija Z, a sve više i Generacija Alfa, karakterišu drugačiji obrasci komunikacije, pristupa informacijama i učenja. Ove generacije odrastaju uz internet, mobilne uređaje, digitalne platforme i veštačku inteligenciju, zbog čega digitalna kompetentnost za njih predstavlja sastavni deo svakodnevnog funkcionisanja. Istovremeno, istraživanja ukazuju na potrebu za preispitivanjem tradicionalnih nastavnih modela, jer učenici sve više očekuju interaktivnost, personalizaciju, povezivanje znanja sa realnim životnim situacijama i aktivno učešće u procesu učenja.

U tom kontekstu, primena IKT alata ne može se posmatrati samo kao tehnološka inovacija ili zamena tradicionalnih nastavnih sredstava. Njena prava vrednost ostvaruje se tek kada je pedagoški i didaktički osmišljena, kada doprinosi razvoju viših kognitivnih procesa, istraživačkog pristupa, kreativnosti i samostalnosti učenika. Tehnologija sama po sebi ne garantuje kvalitet obrazovanja; ona predstavlja sredstvo čiji efekti zavise od načina na koji je uključena u nastavnu praksu, od kompetencija nastavnika i od kvaliteta obrazovnog dizajna.

Poseban izazov predstavlja primena veštačke inteligencije u obrazovanju. AI alati otvaraju mogućnosti za personalizaciju učenja, prilagođavanje sadržaja individualnim potrebama učenika, razvoj kreativnih i istraživačkih aktivnosti, kao i efikasnije praćenje napredovanja. Međutim, njihova upotreba istovremeno zahteva kritičko promišljanje, etičku odgovornost i razvoj digitalne i medijske pismenosti. U radu sa darovitim učenicima naročito je važno očuvati ravnotežu između korišćenja tehnoloških mogućnosti i razvoja autentičnih ljudskih sposobnosti – kreativnosti, kritičkog mišljenja, emocionalne regulacije, saradnje i stvaralačkog doprinosa.

Značajno mesto u ovom procesu ima nastavnik kao dizajner obrazovnog iskustva, mentor i facilitator razvoja. Savremena uloga nastavnika više nije ograničena na prenošenje informacija, već podrazumeva sposobnost kreiranja podsticajnog okruženja u kojem učenik razvija autonomiju, istražuje, postavlja pitanja, rešava probleme i konstruiše sopstveno znanje. Posebno u radu sa darovitima, mentorski

pristup predstavlja važan okvir za povezivanje individualnih potencijala učenika sa odgovarajućim izazovima i mogućnostima za razvoj.

Tematsko usmerenje 32. okruglog stola **Izazovi primene IKT alata za podsticanje samoregulacije u razvoju izvrsnosti darovitih** predstavlja odgovor na navedene izazove i potrebe savremenog obrazovanja. *Cilj skupa jeste stvaranje interdisciplinarnih i međunarodnih platforme za razmenu teorijskih, empirijskih i praktičnih saznanja o ulozi digitalnih tehnologija u razvoju samoregulacije i izvrsnosti darovitih učenika i studenata. Posebna pažnja usmerena je na mogućnosti i ograničenja IKT alata, razvoj didaktičkih modela, ulogu mentorstva, personalizaciju obrazovanja i profesionalni razvoj nastavnika.*

Radovi predstavljeni u ovom Zborniku rezimea obuhvataju različite perspektive – pedagošku, didaktičku, psihološku, metodološku i praktičnu – čime se osvetljava složenost odnosa između tehnologije, učenja i razvoja ljudskih potencijala. Razmatraju se pitanja samoregulisanog učenja, digitalne kompetencije nastavnika, primena AI alata, razvoj kreativnosti, socioemocionalni aspekti digitalnog okruženja, kao i izazovi etičke i odgovorne upotrebe tehnologije.

Posebna vrednost skupa ogleđa se u povezivanju teorijskih promišljanja i praktičnih iskustava, odnosno u nastojanju da se prevaziđe redukovano shvatanje digitalizacije kao tehničkog procesa. Digitalna transformacija obrazovanja zahteva istovremeno transformaciju nastavnih strategija, obrazovnih odnosa i razumevanja uloge učenika u procesu sopstvenog razvoja. U tom smislu, IKT alati treba da budu u funkciji razvoja čoveka, a ne zamena za njegove stvaralačke, refleksivne i socijalne potencijale.

Zbornik rezimea 32. okruglog stola predstavlja doprinos savremenim raspravama o budućnosti obrazovanja darovitih i otvara prostor za nova istraživanja, interdisciplinarnu pristupe i razvoj inovativnih obrazovnih modela. *Njegova osnovna poruka jeste da se izvrsnost darovitih ne razvija tehnologijom samom po sebi, već promišljenim povezivanjem ljudskih potencijala, kvalitetnog pedagoškog vođenja i odgovorne primene savremenih digitalnih mogućnosti.*

Grozdanka Gojkov

INTRODUCTORY REMARKS

CHALLENGES IN THE IMPLEMENTATION OF ICT TOOLS FOR ENCOURAGING SELF-REGULATION IN THE DEVELOPMENT OF EXCELLENCE OF THE GIFTED

The tradition of holding the Round Table on Giftedness, which has continued for more than three decades, as well as the continuity of cooperation with co-organizers, researchers, and institutions from the European and global academic landscape, testifies to a long-term commitment to developing the systematic study of giftedness and the ways in which it can be transformed into achieved excellence through networking of scholarly communities. This ongoing research and professional dialogue also represents an important foundation for this year's exchange of theoretical insights, empirical findings, and practical experiences in the field of gifted education.

This year's 32nd Round Table, as reflected in its very title, "Challenges in the Implementation of ICT Tools for Encouraging Self-Regulation in the Development of Excellence of the Gifted," is focused on one of the most current issues in contemporary education: how information and communication technologies can be pedagogically designed and functionally integrated into the development of self-regulation, autonomy, and creative potential among gifted pupils and students.

Within the discourse of contemporary theoretical approaches, research findings, and examples of educational practice, this conference seeks to examine both the possibilities and the limitations of applying ICT tools in encouraging the development of excellence among the gifted. Of particular importance is the connection between theoretical reflections and practical experiences, since it is precisely their mutual interaction that enables a critical reconsideration of existing models and the search for new, more effective strategies to support the development of giftedness.

The abstracts included in this Book of Abstracts contribute to opening new research questions, exchanging original ideas, and finding answers to the challenges brought about by the digital educational environment. At the same time, they point to the need for technology to be viewed not merely as a tool, but as part of a broader pedagogical and didactic framework in which, with appropriate guidance, mentorship, and the development of self-regulation, conditions can be created for gifted individuals to realize their full potential.

Contemporary education is undergoing a period of profound and rapid change resulting from complex social, technological, and cultural transformations. The digitalization of the educational environment, the development of information and communication technologies (ICT), and the accelerated application of artificial intelligence (AI) are changing the ways in which knowledge is created, transmitted,

acquired, and applied. These changes are particularly significant in the field of education for gifted pupils and students, whose development requires flexible, differentiated, and stimulating educational approaches aimed at realizing their potential and developing excellence.

In contemporary conceptions, giftedness is no longer viewed as a stable and isolated characteristic of an individual, but rather as a dynamic developmental potential that emerges through the interaction of various factors: cognitive abilities, creativity, motivation, personal characteristics, the social environment, and educational opportunities. Within this framework, the development of self-regulation in learning occupies a particularly important place, as one of the key competencies that enables learners to plan, monitor, direct, and evaluate their own process of learning and development.

Self-regulation represents an important prerequisite for long-term excellence, as it enables gifted pupils not only to reach high achievements, but also to develop autonomy, an exploratory attitude towards knowledge, reflectiveness, and the capacity for continuous improvement. A particular challenge of contemporary education is the question of how the digital environment can contribute to the development of these abilities, while also avoiding the risks of superficial learning, excessive dependence on technology, and a reduction in pupils' active cognitive engagement.

Generations of pupils and students growing up in a digital environment bring new educational needs and expectations. Generation Z, and increasingly Generation Alpha, are characterized by different patterns of communication, access to information, and learning. These generations are growing up with the internet, mobile devices, digital platforms, and artificial intelligence, which is why digital competence represents an integral part of their everyday functioning. At the same time, research points to the need to reconsider traditional teaching models, as pupils increasingly expect interactivity, personalization, the connection of knowledge with real-life situations, and active participation in the learning process.

In this context, the use of ICT tools cannot be viewed merely as a technological innovation or as a replacement for traditional teaching aids. Its true value is realized only when it is pedagogically and didactically well designed, and when it contributes to the development of higher-order cognitive processes, an inquiry-based approach, creativity, and learner autonomy. Technology in itself does not guarantee the quality of education; it is a tool whose effects depend on the way it is integrated into teaching practice, on teachers' competencies, and on the quality of educational design.

A particular challenge is the application of artificial intelligence in education. AI tools open up opportunities for the personalization of learning, the adaptation of content to students' individual needs, the development of creative and inquiry-based

activities, as well as more efficient monitoring of progress. However, their use also requires critical reflection, ethical responsibility, and the development of digital and media literacy. In working with gifted students, it is especially important to maintain a balance between using technological opportunities and developing authentic human abilities — creativity, critical thinking, emotional regulation, cooperation, and creative contribution.

The teacher, as a designer of the educational experience, mentor, and facilitator of development, plays a significant role in this process. The contemporary role of the teacher is no longer limited to the transmission of information, but involves the ability to create a stimulating environment in which students develop autonomy, explore, ask questions, solve problems, and construct their own knowledge. Especially in working with gifted students, a mentoring approach represents an important framework for connecting students' individual potentials with appropriate challenges and opportunities for development.

The thematic focus of the 32nd Round Table, **Challenges in the Implementation of ICT Tools for Encouraging Self-Regulation in the Development of Excellence of the Gifted**, responds to the aforementioned challenges and needs of contemporary education. *The aim of the event is to create an interdisciplinary and international platform for the exchange of theoretical, empirical, and practical knowledge on the role of digital technologies in the development of self-regulation and excellence among gifted pupils and students. Special attention is directed towards the possibilities and limitations of ICT tools, the development of didactic models, the role of mentoring, the personalization of education, and the professional development of teachers.*

The studies presented in this Book of Abstracts encompass various perspectives — pedagogical, didactic, psychological, methodological, and practical — thereby shedding light on the complexity of the relationship between technology, learning, and the development of human potential. They address issues of self-regulated learning, teachers' digital competence, the application of AI tools, the development of creativity, the socio-emotional aspects of the digital environment, as well as the challenges of the ethical and responsible use of technology.

The particular value of the event is reflected in the connection between theoretical reflections and practical experiences, that is, in the effort to overcome a reduced understanding of digitalization as a merely technical process. The digital transformation of education simultaneously requires the transformation of teaching strategies, educational relationships, and the understanding of the learner's role in the process of their own development. In this sense, ICT tools should serve the development of the human being, rather than act as a substitute for their creative, reflective, and social potential.

The Book of Abstracts of the 32nd Round Table represents a contribution to contemporary discussions on the future of gifted education and opens up space for new research, interdisciplinary approaches, and the development of innovative educational models. *Its central message is that the excellence of gifted individuals is not developed through technology itself, but through the thoughtful integration of human potential, high-quality pedagogical guidance, and the responsible application of contemporary digital opportunities.*

Grozdanka Gojkov

UVODNI IMPULSI / INTRODUCTORY IMPULSES

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ВЕШТАЧКА ИНТЕЛИГЕНЦИЈА КАО ПОКРЕТАЧ ОБРАЗОВНИХ РЕФОРМИ: ПЕРСОНАЛИЗОВАНО УЧЕЊЕ, ДИГИТАЛНИ БЛИЗАНЦИ И НОВА УЛОГА НАСТАВНИКА

Савремено образовање налази се у фази дубоке трансформације условљене развојем вештачке интелигенције, дигиталних технологија, нових модела учења и промењених потреба друштва знања. Циљ рада је да се анализирају кључни правци образовних реформи у контексту примене вештачке интелигенције и да се укаже на значај преласка са традиционалног модела преношења наставног градива ка моделу усмереном на исходе, компетенције, персонализовано учење и решавање реалних проблема. Посебна пажња посвећена је улози наставника у дигитално трансформисаном образовном окружењу, у којем наставник све више постаје дизајнер наставе, ментор, фасилитатор и етички посредник у употреби технологије. У раду се истиче значај формативног вредновања, повратне информације као покретача учења, развоја критичког мишљења, креативности, дигиталне и AI писмености, као и нових компетенција потребних ученицима за живот и рад у 21. веку. Као пример институционалне подршке савременим реформама анализира се улога Центра за роботiku и вештачку интелигенцију у образовању – CRAIE, који развија и примењује иновативна решења као што су AI аватари, дигитални близанци, 3D симулације, виртуелна и проширена стварност, образовна роботика и интерактивна дигитална окружења. Закључује се да вештачка интелигенција не треба да замени наставника, већ да омогући дубљу индивидуализацију, боље праћење напредовања, квалитетније вредновање и развој компетенција које су неопходне за будућност образовања и друштва.

Кључне речи: вештачка интелигенција у образовању, образовне реформе, CRAIE, персонализовано учење, дигитални близанци, AI аватари, нова улога наставника, дигиталне компетенције, формативно вредновање, образовне технологије.

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ARTIFICIAL INTELLIGENCE AS A DRIVER OF EDUCATIONAL REFORMS: PERSONALIZED LEARNING, DIGITAL TWINS, AND THE NEW ROLE OF THE TEACHER

Contemporary education is undergoing a profound transformation driven by the development of artificial intelligence, digital technologies, new learning models, and the changing needs of the knowledge society. The aim of this paper is to analyze the

key directions of educational reforms in the context of the application of artificial intelligence and to highlight the importance of moving from the traditional model of content transmission toward a model focused on learning outcomes, competencies, personalized learning, and the solving of real-life problems. Special attention is devoted to the role of teachers in a digitally transformed educational environment, in which the teacher increasingly becomes an instructional designer, mentor, facilitator, and ethical mediator in the use of technology. The paper emphasizes the importance of formative assessment, feedback as a driver of learning, the development of critical thinking, creativity, digital and AI literacy, as well as new competencies required for students' life and work in the 21st century. As an example of institutional support for contemporary reforms, the paper analyzes the role of the Center for Robotics and Artificial Intelligence in Education – CRAIE, which develops and applies innovative solutions such as AI avatars, digital twins, 3D simulations, virtual and augmented reality, educational robotics, and interactive digital learning environments. The paper concludes that artificial intelligence should not replace the teacher, but should enable deeper individualization, better monitoring of student progress, higher-quality assessment, and the development of competencies essential for the future of education and society.

Keywords: artificial intelligence in education, educational reforms, CRAIE, personalized learning, digital twins, AI avatars, new role of the teacher, digital competencies, formative assessment, educational technologies.

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OD POTENCIJALA DO IZVRSNOSTI: DIGITALNO OKRUŽENJE I SAMOREGULISANO UČENJE DAROVITIH UČENIKA

Digitalne tehnologije sve snažnije oblikuju načine učenja, pristup informacijama i organizaciju školskog rada, što otvara pitanje na koji način one mogu podržati, ali i ugroziti razvoj samoregulacije učenika. Polazeći od Cimermanovog (Zimmermanovog) modela samoregulisano učenja, u radu se razmatra na koji način digitalni alati mogu podržati planiranje, realizaciju i refleksiju učenika u procesu učenja. S druge strane, u radu se ukazuje da digitalno okruženje, posebno društvene mreže i algoritamski vođeni sadržaji, može doprineti fragmentaciji pažnje i površnijim pristupima učenju. Cilj rada je da se kroz teorijsko-kritičku analizu razmotre mogućnosti, značaj i izazovi primene IKT alata u podsticanju samoregulisano učenja, sa posebnim osvrtom na razliku između darovitosti kao potencijala, i izvrsnosti, kao njegove realizacije. Analiza upućuje na zaključak da tehnologija podstiče samoregulaciju samo kada je pedagoški osmišljena i usmerena na razvoj metakognicije, autonomije, pažnje i motivacije, te da darovitost sama po sebi ne podrazumeva nužno razvijene strategije samoregulacije, već zahteva pažljivo osmišljene aktivnosti koje podstiču transformaciju od potencijala do izvrsnosti.

Ključne reči: daroviti učenici, digitalne tehnologije, samoregulacija, model samoregulisano učenja, izvrsnost.

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FROM POTENTIAL TO EXCELLENCE: THE DIGITAL ENVIRONMENT AND SELF-REGULATED LEARNING IN GIFTED STUDENTS

Digital technologies are increasingly shaping the ways students learn, access information, and organize their schoolwork, raising the question of how these technologies can both support and undermine the development of students' self-regulation. Drawing on Zimmerman's model of self-regulated learning, the paper examines how digital tools can support students' planning, performance, and self-reflection throughout the learning process. At the same time, the paper highlights that the digital environment, particularly social media and algorithm-driven content, can contribute to attention fragmentation and more superficial approaches to learning. The aim of the paper is to critically examine, through a theoretical analysis, the possibilities, significance, and challenges of using ICT tools to foster self-regulated learning, with particular attention to the distinction between giftedness as potential and excellence as its realization. The analysis suggests that technology fosters self-regulation only when it is pedagogically designed and oriented toward the development of metacognition, autonomy, attention, and motivation, and that giftedness alone does not necessarily entail well-developed self-regulation strategies, but rather requires carefully designed activities that support the transformation from potential to excellence.

Keywords: gifted students, digital technologies, self-regulation, self-regulated learning model, excellence.

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SAMOREGULISANO UČENJE I NJEGOVI ALATI KROZ PERSPEKTIVE UČENIKA I NASTAVNIKA: DEJSTVO PSIHOLOŠKIH VARIJABLI I SREDINSKIH OMETAČA

Rad analizira koncept samoregulisano učenja u kontekstu savremenog tehničko-tehnološkog napretka i digitalnog jaza između predavača i učenika. Cilj istraživanja bio je da se ispita prediktivna moć psiholoških varijabli (zanesenosti i prokrastinacije) i znanja i korišćenja informaciono-komunikacionih tehnologija (IKT) na samoregulisano učenje, odnosno uvežbavanje sviranja, kao i da se identifikuju ključni sredinski ometači ovog procesa. Uzorak je prigodan i čine ga

učenici Srednje muzičke škole „Isidor Bajić” u Novom Sadu. Podaci su prikupljeni primenom prilagođenih skala zanesenosti i samoregulisano učenja, odnosno uvežbavanje sviranja, skale prokrastinacije, kao i namenski konstruisanog upitnika o poznavanju i korišćenju IKT alata u svrhu samoregulisano učenja i liste mogućih sredinskih ometača učenja, odnosno uvežbavanja sviranja. Integrisanjem teorijskih postavki i empirijskih nalaza, rad pruža širi uvid u moderne obrazovne izazove u muzičkom obrazovanju i nudi praktične implikacije za unapređenje pedagoške prakse sa darovitim učenicima.

Ključne reči: samoregulisano učenje, IKT alati, daroviti učenici, zanesenost (flow), prokrastinacija.

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SELF-REGULATED LEARNING AND ITS TOOLS THROUGH THE PERSPECTIVES OF STUDENTS AND TEACHERS: THE EFFECTS OF PSYCHOLOGICAL VARIABLES AND ENVIRONMENTAL DISTRACTORS

This paper analyzes the development of the concept of self-regulation, emphasizing its foundation independent of modern technological advancements. Furthermore, it addresses the generational differences between the key actors in the educational system (teachers and students), which create a digital divide in terms of competence for utilizing information and communication technologies (ICT) for self-regulated learning. The aim of the research was to examine the predictive power of flow, procrastination, and proficiency in ICT tools on self-regulated learning/instrumental practice. The sample consisted of students and teachers from the "Isidor Bajić" Secondary Music School in Novi Sad. Students were administered adapted scales of flow and self-regulated learning, an original procrastination scale, and a survey regarding ICT tools; concurrently, teachers assessed the extent to which self-regulated learning/instrumental practice is present among students across different grades, as well as what they recognize as the primary environmental distractors in this process. By integrating theoretical frameworks and research findings, this paper provides a broader insight into contemporary educational challenges and offers implications for the improvement of educational practice.

Keywords: self-regulated learning, ICT tools, gifted students, flow experience, procrastination.

REZIMEI / ABSTRACTS

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USLOVI FUNKCIONALNE UPOTREBE IKT ALATA ZA UNAPREĐENJE KVALITETA UČENJA DAROVITIH UČENIKA

Upotreba IKT alata potencijalno može u značajnoj meri da unapredi kvalitet učenja darovitih učenika, te samim tim i njihova školska postignuća u pojedinim oblastima realizacije nastave i učenja. I pored činjenice da upotreba različitih IKT alata u procesu učenja može darovitim učenicima biti zanimljiva, što predstavlja uslov razvijanja unutrašnje motivacije za upražnjavanje različitih aktivnosti učenja, postoje dimenzije efikasnog i efektivnog učenja na koje bi trebalo obratiti pažnju kada se osmišljavaju modeli primene različitih IKT alata u tom procesu. Naime, radi se o tome da zanimljiva nastava, kao i učenje koje se odvija na zanimljiv način, nije jedini uslov efikasnog i efektivnog učenja. Zbog toga, obratićemo pažnju na još neke od važnih uslova unapređenja kvaliteta učenja darovitih učenika upotrebom IKT alata, i to na sledeće uslove: (1) učenje zasnovano na otkriću novog, (2) učenje koje podstiče radoznalost, i (3) učenje koje izaziva produžena sazajna interesovanja. Učenje putem otkrića, nasuprot reproduktivnom učenju, može biti u značajnoj meri funkcionalno potpomognuto upotrebom IKT alata, što bi omogućilo veću raznovrsnost u osmišljavanju različitih problemskih situacija, izazovnih za rešavanje. To je neposredno povezano i sa mogućnošću intenziviranja radoznalosti učenika u oblastima u kojima se ovakav model učenja primenjuje. Potpunija funkcionalnost upotrebe IKT alata ostvaruje se i kada oni doprinose razvoju produženih sazajnih interesovanja kod darovitih učenika, koja se očitavaju kroz razvoj unutrašnje motivacije da se određenim sadržajima i dalje bavi, u smislu proširivanja i produbljivanja stečenih znanja. Na osnovu toga, neophodno je da osmišljavanje modela upotrebe IKT alata za unapređenje funkcionalnosti učenja darovitih učenika podrazumeva obraćanje posebne pažnje na ove značajne uslove efikasnog i efektivnog učenja.

Ključne reči: daroviti učenici, kvalitet učenja, IKT alati, učenje otkrivanjem, radoznalost, produžena sazajna interesovanja.

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CONDITIONS FOR THE FUNCTIONAL USE OF ICT TOOLS TO IMPROVE THE QUALITY OF LEARNING IN GIFTED STUDENTS

The use of ICT tools can potentially significantly improve the quality of learning in gifted students, and therefore their academic achievements in certain areas of teaching and learning. Despite the fact that the use of various ICT tools in the

learning process can be interesting for gifted students, which is a condition for developing internal motivation for practicing various learning activities, there are dimensions of efficient and effective learning that should be paid attention to when designing models for the application of various ICT tools in this process. Namely, the point is that interesting teaching, as well as learning that takes place in an interesting way, is not the only condition for efficient and effective learning. Therefore, we will pay attention to some of the other important conditions for improving the quality of learning of gifted students through the use of ICT tools, namely the following conditions: (1) learning based on the discovery of the new, (2) learning that encourages curiosity, and (3) learning that enables prolonged cognitive interests. Discovery learning, in contrast to reproductive learning, can be significantly functionally supported by the use of ICT tools, which would enable greater diversity in the design of various problem situations, challenging to solve. This is directly related to the possibility of intensifying students' curiosity in the areas in which this learning model is applied. More complete functionality of the use of ICT tools is also achieved when their use can enable prolonged cognitive interests in gifted students, which is reflected in the development of internal motivation to continue to engage in certain content, in terms of expanding and deepening the acquired knowledge. Based on this, it is necessary that the design of a model for the use of ICT tools to improve the functionality of gifted students' learning involves paying special attention to these important conditions for efficient and effective learning.

Keywords: gifted students, quality of learning, ICT tools, discovery learning, curiosity, prolonged cognitive interests.

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RAZVOJ REFLEKSIVNE REGULACIJE EMOCIJA U IKT OKRUŽENJU

Jedna od upečatljivih karakteristika sadašnjeg razvojnog okruženja je upotreba, neretko čak i prekomerna, informaciono-komunikacionih tehnologija (IKT) od strane dece i relevantnih odraslih. Praktično neizbežne situacije konflikta motiva, koje sa uzrastom teže da postaju sve složenije i zahtevnije, iziskuju voljno uticanje pojedinca na emocije koje tom prilikom nastaju i koje neki autori (npr. Holodyski i Oerter, 2012) nazivaju reflektivnom regulacijom emocija. Ovaj oblik samoregulacije čini neophodnim sticanje, tokom vremena, izvesnih kompetencija kao što su efikasne regulacione strategije, sposobnost primene egzekutivnih funkcija na svojim emocijama i korišćenja jezika kao sredstva distanciranja, kao i za čoveka karakteristične sposobnosti odlaska na „mentalno vremensko putovanje” (Bischof-Köhler, 2011) tj. zamišljanja prošlih i budućih zbivanja, postupaka i motiva i vođenje računa o svemu tome prilikom planiranja svog ponašanja u datoj situaciji. Na razmatranje o tim kompetencijama nadovezuje se, uz poseban osvrt na

darovite, analiza mogućih posledica IKT okruženja po razvoj refleksivne regulacije emocija kao veoma važnog oblika samoregulacije.

Ključne reči: samoregulacija, refleksivna regulacija emocija, IKT okruženje, daroviti.

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DEVELOPMENT OF REFLEXIVE EMOTION REGULATION IN THE ICT ENVIRONMENT

One striking feature of the current development environment is the use, often even excessive use, of information and communication technologies (ICT) by children and relevant adults. Practically inevitable situations of conflict of motives, which tend to become more complex and demanding with age, require the individual's voluntary influence on the emotions that arise on that occasion and which some authors (e.g. Holodynski & Oerter, 2012) call reflexive emotion regulation. This form of self-regulation makes it necessary to acquire, over time, certain competencies such as effective regulation strategies, the ability to apply executive functions to one's emotions and to use language as a means of distancing, as well as the characteristic human ability to go on a "mental time travel" (Bischof-Köhler, 2011), i.e. imagining past and future events, actions and motives and taking all of this into account when planning one's behavior in a given situation. The consideration of these competencies is followed, with a special focus on the gifted, by an analysis of the possible consequences of the ICT environment for the development of reflexive emotion regulation as a very important form of self-regulation.

Keywords: self-regulation, reflexive emotion regulation, ICT environment, gifted.

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DIGITALNA PODRŠKA LINGVISTIČKOJ KREATIVNOSTI I SAMOREGULISANOM UČENJU DAROVITIH UČENIKA

Rad razmatra ulogu lingvističke kreativnosti u razvoju talenata darovitih učenika u nastavi jezika i književnosti, sa posebnim fokusom na mogućnosti primene IKT alata u podsticanju samoregulisano učenja. Polazi se od shvatanja da jezička kompetencija obuhvata ne samo normativno znanje, već i sposobnost kreativne, refleksivne i funkcionalne upotrebe jezika u različitim komunikacijskim i estetskim kontekstima. Lingvistička kreativnost sagledava se kao sposobnost inoviranja jezičkih struktura, razvijanja stilističke izražajnosti i korišćenja jezika kao sredstva ličnog i kognitivnog izraza. U tom okviru, IKT alati (digitalne platforme,

kolaborativni alati i alati zasnovani na veštačkoj inteligenciji) posmatraju se kao podrška procesima planiranja, praćenja i evaluacije sopstvenog učenja, čime se podstiče razvoj samoregulacije. Posebno se ističe uloga nastavnika kao facilitatora i epistemološkog moderatora u usmeravanju učenika ka reflektivnoj i kritičkoj upotrebi digitalnih resursa. Polazeći od stava da pedagoški osmišljena integracija lingvističke kreativnosti i IKT alata može doprineti razvoju samoregulacije i izvrsnosti darovitih učenika, uz istovremeno prevazilaženje izazova vezanih za didaktički dizajn i smislenu upotrebu tehnologije, u radu se razrađuju konkretni didaktički modeli i aktivnosti za podsticanje lingvističke kreativnosti uz upotrebu IKT alata, kao što su: kreativno preoblikovanje teksta uz digitalne alate, kolaborativno pisanje i uređivanje, digitalno pripovedanje, kao i kritička analiza i transformacija sadržaja generisanih veštačkom inteligencijom.

Ključne reči: lingvistička kreativnost, IKT alati, samoregulacija, daroviti učenici, nastava jezika i književnosti.

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DIGITAL SUPPORT FOR LINGUISTIC CREATIVITY AND SELF-REGULATED LEARNING IN GIFTED STUDENTS

The paper examines the role of linguistic creativity in the development of gifted students' talents in language and literature education, with a particular focus on the potential of ICT tools to foster self-regulated learning. It is based on the understanding that language competence encompasses not only normative knowledge, but also the ability to use language creatively, reflectively, and functionally across diverse communicative and aesthetic contexts. Linguistic creativity is viewed as the capacity to innovate linguistic structures, develop stylistic expressiveness, and use language as a means of personal and cognitive expression. Within this framework, ICT tools (digital platforms, collaborative tools, and AI-based tools) are conceptualized as support for the processes of planning, monitoring, and evaluating one's own learning, thereby promoting the development of self-regulation. Particular emphasis is placed on the role of the teacher as a facilitator and epistemological moderator in guiding students toward a reflective and critical use of digital resources. Starting from the assumption that the pedagogically grounded integration of linguistic creativity and ICT tools can contribute to the development of self-regulation and excellence in gifted students—while simultaneously addressing challenges related to instructional design and the meaningful use of technology—the paper elaborates concrete didactic models and activities for fostering linguistic creativity through the use of ICT tools. These include creative text transformation using digital tools, collaborative writing and editing, digital storytelling, as well as the critical analysis and transformation of AI-generated content.

Keywords: linguistic creativity, ICT tools, self-regulation, gifted students, language and literature education.

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GEA – GLOBALNA EDUKATIVNA AVANTURA

GEA je interaktivna, multimedijalna, animirana, onlajn i oflajn, naučna, istraživačka, simulaciona, inovativna, takmičarska, zabavna softverska aplikacija! Na primer, obiđite ceo svet u direktnom prenosu za 5 minuta! Proverite koliko možete da skočite u vis na Suncu i Plutonu! Saznajte zašto čovek vlada svetom, a ne neko drugo biće! Otkrijte tajnu dešifrovanja hijeroglifa i ispišite svoje ime na tom drevnom pismu! Slušajte kako su govorili naši preci pre 50.000 godina! Učestvujte u totalnim kvizovima znanja i dobro se zabavite! I još mnogo, mnogo toga! GEA nije zamišljena kao poseban predmet, već kao INTEGRALNA, TOTALNA podrška mnogim nastavnim predmetima! PEDAGOŠKA uloga nastavnika, učitelja, profesora je od KLJUČNE VAŽNOSTI, jer ON (vodič kroz GEU) je taj koji čini tu važnu emocionalno-socijalnu, vaspitnu, usmeravajuću spregu ka humanoj, obrazovanoj LIČNOSTI UČENIKA! GEA stavlja akcenat na NAČIN PRENOŠENJA ZNANJA, RAZVOJ MORALA, VEŠTINU STICANJA ZNANJA, kao i OPŠTE ZNANJE!!! NEKE OD PREPORUKA INSTITUCIJA I ŠKOLA ŠIROM SRBIJE: ZAVOD ZA UNAPREĐENJE OBRAZOVANJA I VASPITANJA, BEOGRAD; OŠ „VELIZAR STANKOVIĆ“, KRUŠEVAC; GIMNAZIJA „VUK KARADŽIĆ“, TRSTENIK; TEHNIČKA ŠKOLA „9. MAJ“, BAČKA PALANKA; GIMNAZIJA, PRIBOJ; SREDNJA TEHNIČKA ŠKOLA „ŠINKOVIĆ JOŽEF“, BAČKA TOPOLA ITD. Implementacija dvadesetčetvorogodišnjeg projekta GEA obuhvata korisničku obuku, kao i obuku i program. To je moguće raditi, jer je GEA koncipirana kao OTVORENI SISTEM! Zbog toga će biti moguće dodavati, po potrebi, i module VEŠTAČKE INTELIGENCIJE. Na kraju, svaki učitelj (nastavnik, profesor) će moći da koristi GEU na SVOJ JEDINSTVENI NAČIN, interpretirajući probleme i činjenice u okviru svog nastavnog predmeta!

Ključne reči: edukacija, interaktivnost, istraživanje, inovacija, simulacija.

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GEA – GLOBAL EDUCATIONAL ADVENTURE

GEA is an interactive, multimedia, animated, online and offline, scientific, research, simulation, innovative, competitive, fun software application! For example, go around the whole world in a live broadcast in 5 minutes! See how high you can jump

on Sun and Pluto! Find out why "Man" rules the World and not another being! Discover the secret of deciphering the hieroglyphs and write your name on that ancient script! Listen to how our ancestors spoke 50,000 years ago! Take part in total knowledge quizzes and have fun! And much, much more! GEA is not intended as a separate subject, but as an INTEGRAL, TOTAL support for many subjects! The PEDAGOGICAL role of teachers, teachers, professors is of KEY IMPORTANCE, because HE (the guide through GEA) is the one who makes that important emotional-social, educational, guiding link towards a humane, educated PERSONALITY OF THE STUDENT! "GEA" emphasizes the WAY OF TRANSFERRING KNOWLEDGE, DEVELOPMENT OF MORALS, SKILLS OF ACQUIRING KNOWLEDGE, as well as GENERAL KNOWLEDGE!!! SOME OF THE RECOMMENDATIONS OF INSTITUTIONS AND SCHOOLS THROUGHOUT SERBIA: INSTITUTE FOR THE IMPROVEMENT OF EDUCATION AND EDUCATION, BELGRADE; PRIMARY SCHOOL "VELIZAR STANKOVIĆ", KRUSEVAC; HIGH SCHOOL "VUK KARADŽIĆ", TRSTENIK; TECHNICAL SCHOOL "9. MAJ", BAČKA PALANKA; HIGH SCHOOL, PRIBOJ; MIDDLE SCHOOL TECHNICAL SCHOOL "ŠINKOVIĆ JOŽEF", BAČKA TOPOLA ETC. The implementation of the twenty-four-year GEA project includes user training, as well as the training of developers who will constantly add new modules, in accordance with the curriculum. It is possible to do this, because GEA is designed as an OPEN SYSTEM! Therefore, it will be possible to add, if necessary, the modules of ARTIFICIAL INTELLIGENCE. In the end, each teacher (teacher, professor) will be able to use GEA in THEIR UNIQUE WAY, interpreting problems and facts within their subject!

Keywords: Education, Interactivity, Exploration, Innovation, Simulation.

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VLOGA IKT ORODIJ PRI RAZVOJU SAMOREGULACIJE UČENJA IN PODJETNIŠKIH KOMPETENC NADARJENIH DIJAKOV

Integracija startup podjetništva v delo z nadarjenimi dijaki predstavlja učinkovit pristop k razvoju podjetniške miselnosti ter samostojnega in inovativnega učenja. V prispevku predstavljamo primer projektne delo, ki vključuje uporabo sodobnih IKT orodij, kot so Veed za pripravo video predstavitev, Canva za vizualizacijo idej, SolidWorks za 3D modeliranje ter Microsoft Word za pisanje dokumentacije. Našteta orodja omogočajo načrtovanje, spremljanje in refleksijo lastnega učnega procesa. Skozi timsko delo, mentorsko podporo in sodelovanje s podjetniškim inkubatorjem dijaki razvijajo sposobnosti samostojnega odločanja, kritičnega vrednotenja idej in prilagajanja strategij. Poseben poudarek je na spodbujanju inovativnega učenja, motivacije ter razvoja novih rešitev v avtentičnih učnih situacijah (startup vikend, projekti, natečaji). Ugotovitve kažejo, da uporaba IKT

orodij v povezavi z mentorstvom pomembno prispeva k razvoju kompetenc nadarjenih dijakov in k večji učinkovitosti učnega procesa.

Ključne besede: nadarjeni dijaki, IKT, podjetništvo, mentorstvo, inovativnost.

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THE ROLE OF ICT TOOLS IN THE DEVELOPMENT OF SELF-REGULATED LEARNING AND ENTREPRENEURIAL COMPETENCIES OF GIFTED STUDENTS

The integration of startup entrepreneurship into work with gifted students represents an effective approach to fostering an entrepreneurial mindset as well as independent and innovative learning. This paper presents an example of project-based work that incorporates the use of modern ICT tools, such as Veed for video presentations, Canva for idea visualization, SolidWorks for 3D modeling, and Microsoft Word for documentation. These tools enable students to plan, monitor, and reflect on their own learning process. Through teamwork, mentorship support, and collaboration with a business incubator, students develop the ability to make independent decisions, critically evaluate ideas, and adapt strategies. Special emphasis is placed on encouraging innovative learning, motivation, and the development of new solutions in authentic learning contexts (startup weekends, projects, competitions). The findings indicate that the use of ICT tools, in combination with mentorship, significantly contributes to the development of competencies of gifted students and enhances the effectiveness of the learning process.

Keywords: gifted students, ICT, entrepreneurship, mentoring, innovation.

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PRIMENA AI ALATA U RAZVOJU SAMOREGULACIJE KOD DAROVITIH UČENIKA GIMNAZIJE

Rad se bavi analizom primene alata veštačke inteligencije u razvoju samoregulacije učenja kod darovitih učenika gimnazije. U fokusu su kognitivne, metakognitivne i motivacione dimenzije samoregulacije, kao i potencijal AI alata za personalizaciju učenja, praćenje napretka i razvoj autonomije učenika. Posebna pažnja posvećena je specifičnostima darovitih učenika i njihovim obrazovnim potrebama u digitalnom okruženju. U radu je prikazan i primer istraživanja koje ispituje stavove učenika o korišćenju AI alata u učenju. Rezultati ukazuju na pozitivan uticaj AI tehnologija na organizaciju učenja i motivaciju, ali i na potrebu za pedagoški promišljenom i etički odgovornom primenom.

Ključne reči: veštačka inteligencija, samoregulacija, daroviti učenici, gimnazija, digitalno učenje.

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APPLICATION OF AI TOOLS IN THE DEVELOPMENT OF SELF-REGULATION AMONG GIFTED HIGH SCHOOL STUDENTS

This paper analyzes the application of artificial intelligence tools in developing self-regulated learning among gifted high school students. The focus is on cognitive, metacognitive, and motivational dimensions of self-regulation, as well as the potential of AI tools for personalized learning, progress monitoring, and the development of learner autonomy. The paper also presents a small-scale study examining students' attitudes toward the use of AI tools in learning. The results indicate a positive impact of AI technologies on learning organization and motivation, along with the need for pedagogically grounded and ethically responsible use.

Keywords: artificial intelligence, self-regulated learning, gifted students, high school, digital learning.

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ТЕНЕВЫЕ СТОРОНЫ ЦИФРОВИЗАЦИИ ОБРАЗОВАТЕЛЬНОГО ПРОЦЕССА

В наши дни Россия, как и ряд других стран, переживает настоящий бум цифровизации образования. В оценках этого процесса оптимистические мотивы соседствуют с пессимистическими. Пределом массовых мечтаний является надежда, что «цифра» решит все проблемы – если не всего человечества, то по крайней мере той его части, которая перейдет на максимальное использование цифровых образовательных средств. В советском студенческом фольклоре середины XX в. подобный оптимизм был увековечен формулой «Нам электричество заменит всякий труд». Однако средства – это только средства. Содержание образования, как и его цели, не сводимы ни к каким, пусть даже самым передовым, технологиям. Здесь возникают две очевидных проблемы. Во-первых, как отделить научно достоверное знание от возможного, а возможное – от домыслов нейросетей, которые нередко «домысливают» реальность по принципу художественной игры. Если в процессе получения образования человек не обучен искать подвохи такого рода, он рискует стать «рабом машины», которая – то ли,

играя, «обманывает» его, то ли сама «заблуждается». Во-вторых, возникает риск «раз-учивания» (как антоним *об-учению*) детей в ходе взаимодействия с цифровыми технологиями (как за счет переключения внимания на простые операции вместо того, чтобы управлять процессом, так и за счет угасания способности к выполнению когнитивных действий как таковых – они оказываются перепоручены тем же нейросетям). Есть и третий риск, связанный непосредственно с одаренными обучаемыми. Он касается потери стимула к самореализации вне виртуальной среды, которая способна «угасить» интерес к живому общению, уводя в «самоценное» общение с ИИ. Не менее опасно возможное угасание интереса к *новому* как таковому: новое, созданное за счет «больших данных», начинает казаться намного более ценным, чем то новое, на которое способен не столь «многомерный» человек; отсюда склонные к синдрому самозванца одаренные могут приобрести устойчивое представление о своей ущербности по сравнению с могучей «цифрой», что, безусловно, поставит под вопрос реализацию их изначально немалого интеллектуального потенциала. Сказанное не означает дискредитацию «цифры». Однако при выработке национальных стратегий цифровизации образования необходимо учитывать тот факт, что она – всего лишь инструмент, за которым скрывается не только чрезвычайно сложный, противоречивый и неоднозначный процесс выработки, постижения и трансляции результатов деятельности *саморазвивающейся системы научного знания*, но и регулярные усилия *конкретных людей*, участвующих в работе этой системы отнюдь не как ее марионетки, но как те, кто ее создал и способен задавать ей вопросы и ставить задачи. Внедрение цифры в педагогический процесс предполагает таким образом параллельное обеспечение готовности не просто к совершенствованию освоения цифровых инструментов, но развитие самих образовательных стратегий ее использования. Иначе участники цифровизации образования рискуют оказаться в плену недостоверных сведений, недоказанных допущений и сомнительных гипотез, формирующих в том числе из одаренных детей не передовых ученых, а эпигонов, которые не могут угнаться за собственной цифровой копией.

Ключевые слова: цифровизация, современное образование, система научного знания, динамики исследований, критическое отношение к содержанию цифровых программ.

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THE DOWNSIDES OF DIGITALIZATION IN THE EDUCATIONAL PROCESS

These days, Russia, like a number of other countries, is experiencing a real boom in the digitization of education. Assessments of this process range from optimistic to pessimistic. The ultimate dream is the hope that “digital technology” will solve all

problems—if not for all of humanity, then at least for that part of it that will make maximum use of digital educational tools. In Soviet student folklore of the mid-20th century, such optimism was immortalized by the phrase “Electricity will replace all labor for us.” However, tools are just tools. The content of education, like its goals, cannot be reduced to any technology, no matter how advanced. This raises two obvious problems. First, how can we distinguish scientifically valid knowledge from the possible, and the possible from the speculations of neural networks, which often “speculate” about reality according to the principles of a fictional game? If, in the course of their education, people are not taught to look for pitfalls of this kind, they risk becoming “slaves to the machine,” which—whether by playing games to “deceive” them or by “making mistakes” itself—can lead them astray. Second, there is a risk of “unlearning” (as the antonym of learning) in children during their interaction with digital technologies (both by shifting attention to simple operations instead of managing the process, and by the fading of the ability to perform cognitive actions as such—these end up being delegated to the same neural networks). There is also a third risk, directly related to gifted learners. It concerns the loss of motivation for self-realization outside the virtual environment, which can “dampen” interest in live communication, leading to “self-sufficient” interaction with AI. No less dangerous is the possible waning of interest in the new as such: the new, created through “big data”, begins to seem far more valuable than the new that a less “multidimensional” person is capable of; hence, gifted individuals prone to imposter syndrome may develop a persistent perception of their own inadequacy compared to the mighty “digital realm”, which will undoubtedly call into question the realization of their inherently considerable intellectual potential. This does not imply a discrediting of “the number.” However, when developing national strategies for the digitalization of education, it is necessary to take into account the fact that it is merely a tool behind which lies not only the extremely complex, contradictory, and ambiguous process of developing, comprehending, and disseminating the results of a self-developing system of scientific knowledge, but also the regular efforts of specific individuals who participate in this system not as its puppets, but as those who created it and are capable of asking it questions and setting tasks for it. The integration of digital technology into the educational process thus requires a parallel commitment not merely to improving the mastery of digital tools, but to developing the educational strategies for their use. Otherwise, those involved in the digitalization of education risk becoming captive to unreliable information, unproven assumptions, and dubious hypotheses, which will result in even gifted children becoming not leading scientists, but mere imitators who cannot keep up with their own digital counterparts.

Keywords: digitalization, modern education, system of scientific knowledge, research dynamics, critical approach to the content of digital programs.

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MODELI AI-PODRŽANIH MULTIMODALNIH ZADATAKA U NASTAVI STRANOG JEZIKA ZA DAROVITE

Ovaj rad razvija konceptualni model multimodalnih zadataka za nastavu stranog jezika kod darovitih učenika, zasnovan na integraciji informaciono-komunikacionih tehnologija (IKT) i veštačke inteligencije (AI). Polazište istraživanja je teorijsko shvatanje darovitosti kao dinamične interakcije kognitivnih, kreativnih i metakognitivnih procesa, kao i multimodalno razumevanje učenja u digitalnom okruženju. Metodološki okvir rada zasniva se na kvalitativno-deskriptivnom i dizajn-orientisanom pristupu, uz primenu interpretativne i komparativne analize relevantne literature i didaktičkih modela. Razvijeni model obuhvata četiri tipa zadataka: analitičko-refleksivne, produkcione, simulaciono-problemske i integrativno-multimodalne, usmerene na razvoj kritičkog mišljenja, lingvističke kreativnosti i samoregulacije učenja. Veštačka inteligencija u ovom okviru ima funkciju kognitivnog i didaktičkog amplifikatora, dok IKT omogućava realizaciju kompleksnih, adaptivnih i interaktivnih nastavnih scenarija. Rezultati ukazuju da se razvoj viših kognitivnih i jezičkih kompetencija ostvaruje kroz didaktički strukturisane, multimodalne i refleksivne oblike učenja, a ne kroz instrumentalnu upotrebu tehnologije.

Ključne reči: nastava stranih jezika, daroviti, samoregulacija, multimodalni zadaci, veštačka inteligencija.

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AI-SUPPORTED MULTIMODAL TASK MODELS IN FOREIGN LANGUAGE TEACHING FOR GIFTED LEARNERS

This paper develops a conceptual model of multimodal task design for foreign language instruction in gifted education, based on the integration of information and communication technologies (ICT) and artificial intelligence (AI). The study is grounded in a theoretical understanding of giftedness as a dynamic interaction of cognitive, creative, and metacognitive processes, as well as in multimodal perspectives on learning in digital environments. The methodological framework is

based on a qualitative-descriptive and design-oriented approach, combining interpretative and comparative analysis of relevant literature and instructional models. The proposed model consists of four types of tasks: analytical-reflective, productive, simulation-based problem-solving, and integrative-multimodal tasks, all aimed at fostering critical thinking, linguistic creativity, and self-regulated learning. Within this framework, artificial intelligence functions as a cognitive and instructional amplifier, while ICT enables the implementation of complex, adaptive, and interactive learning scenarios. The findings suggest that the development of higher-order cognitive and linguistic competences is primarily achieved through structurally designed, multimodal, and reflective learning environments rather than through the mere instrumental use of technology.

Keywords: foreign language teaching, gifted learners, self-regulated learning, multimodal tasks, artificial intelligence.

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MULTIMEDIJALNA AKCIONA KOMPETENTNOST PEDAGOGA U RADU SA DAROVITIM UČENICIMA

Danas je jasno da je nastupilo vreme učeće civilizacije koje podrazumeva koncept pedagogije učenja usmerene na futurologiju obrazovanja. Daroviti vaspitanici XXI veka su deca tehnologije, medija u kojima je izražen informaciono-komunikacioni senzibilitet i digitalna kultura, tako da pedagogija treba da iskoristi taj poligon sa ciljem celovitijeg vaspitanja i obrazovanja. Poziv pedagoga je po svojoj prirodi veoma složen, višesmeran i veoma kompleksan – sam po sebi podrazumeva stalnu potrebu da se odgovarajućom naučnom i stručnom kulturom permanentno osnažuju uverenja u sopstvene profesionalne moći. Razvoj kao trend i dečje ovladavanje novim tehnologijama su u disproporcionalnom odnosu sa prevazilaženjem problema koji nastaju konzumiranjem medijskih sadržaja iz istih, te se stoga problem našeg istraživanja sastoji u odgovoru na pitanje: Da li je suština postavljenog problema u proučavanju relevantnosti pedagoških dimenzija i multimedijalnih kompetencija u radu sa darovitim učenicima? Uzajamni odnos pedagoških dimenzija i multimedijalno-digitalnih kompetencija ne može se postaviti u jedan hijerarhijski položaj. Rezultati istraživanja ukazuju na mogućnost prevazilaženja postavljenog problema kroz pronalaženje kreativnih i inovativnih načina realizovanja pedagoškog procesa sa darovitom populacijom. Vrednost multimedijalnih kompetencija je u razvoju medijski posredovane komunikacije i interakcije kao obeležja savremenog društva. Upravo atraktivnost samog predmeta istraživanja probudila je našu potrebu za njegovim dubljim sagledavanjem i proučavanjem.

Ključne reči: multimediji, daroviti učenici, akciona kompetentnost, pedagoške dimenzije, inovativnost.

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MULTIMEDIA ACTION COMPETENCE OF TEACHERS IN WORKING WITH GIFTED STUDENTS

Today it is clear that the time of learning civilization has arrived, which implies the concept of learning pedagogy focused on the futurology of education. Gifted students of the 21st century are children of technology, media in which information and communication sensibility and digital culture are expressed, so pedagogy should make use of that training ground for the purpose of more complete upbringing and education. The vocation of a pedagogue is by its very nature very complex, multidirectional and very complex – in itself it implies a constant need to permanently strengthen beliefs in one's own professional powers with appropriate scientific and professional power. Development as a trend and children's mastery of new technologies are in a disproportionate relationship with overcoming the problems that arise from the consumption of media content from them, and therefore the problem of our research consists in answering the question: Is the essence in the posed problem, the question of studying the relevance of pedagogical dimensions in working with gifted students in multimedia competences? The mutual relationship between pedagogical dimensions and multimedia-digital competences cannot be placed in one hierarchical position. The results of the research indicate the possibility of overcoming the problem by finding creative and innovative ways of implementing the pedagogical process with the gifted population. The value of multimedia competences lies in the development of media-mediated communication and interaction as a feature of modern society. It was the attractiveness of the research subject itself that awakened our need for its deeper insight and study.

Keywords: multimedia, gifted students, action competence, pedagogical dimensions, innovation.

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DIGITALNA REFLEKSIJA U VIZUELNIM UMETNOSTIMA KAO ODGOVOR NA IZAZOVE PRIMENE IKT ALATA U PODSTICANJU SAMOREGULACIJE I IZVRSNOSTI DAROVITIH

Rad polazi od potrebe usklađivanja tehnologije sa humanističkim ciljevima vaspitno-obrazovnog rada, uz svest o riziku od algoritamske uniformnosti. Usmerenje je na digitalnoj refleksiji unutar vizuelnih umetnosti i njenom potencijalu za razvoj samoregulacije i metakognicije darovitih. Ispituje se uloga video-zapisa

sopstvenog rada u objektivizaciji stvaralačkog procesa. Uzorak čini trinaestoro darovitih (predškolski i osnovnoškolski uzrast) iz Pančeva i Vršca, identifikovanih od strane vaspitača i učitelja. Primenjene su analitička i deskriptivna metoda, uz kvalitativnu tematsku analizu refleksivnih razgovora i video-zapisa. Nalazi ukazuju na to da digitalna refleksija doprinosi prelasku ka svesnijim strategijama rada. Uočene su razvojne razlike u načinu korišćenja zapisa. Mlađi učesnici reaguju pretežno emotivno, prepoznajući sopstveni proces, dok stariji transformišu snimak u alat za rešavanje konkretnih prepreka. Svesna upotreba IKT alata u vizuelnim umetnostima pruža značajnu podršku razvoju metakognitivnih sposobnosti i samoregulacije, čime se postavlja u funkciju individualnog razvoja i podsticanja izvrsnosti darovitih.

Ključne reči: digitalna refleksija, izazovi primene IKT alata, podsticanje izvrsnosti darovitih, samoregulacija, vizuelne umetnosti.

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DIGITAL REFLECTION IN VISUAL ARTS AS A RESPONSE TO THE CHALLENGES OF ICT IMPLEMENTATION IN FOSTERING SELF-REGULATION AND EXCELLENCE IN THE GIFTED

The paper explores the alignment of technology with the humanistic goals of education, acknowledging the risk of algorithmic uniformity. The focus is on digital reflection within visual arts and its potential for developing self-regulation and metacognition in gifted learners. The study examines the role of video recordings of one's own work in the objectification of the creative process. The sample consists of thirteen gifted participants (preschool and primary school age) from Pančevo and Vršac, identified by teachers. Analytical and descriptive methods were applied, along with qualitative thematic analysis of reflective dialogues and video recordings. The findings indicate that digital reflection contributes to a shift toward more conscious work strategies. Developmental differences were observed in the ways recordings are used. Younger participants respond predominantly on an emotional level, recognizing their own process, while older participants transform the recording into a tool for addressing specific challenges. The conscious use of ICT tools in visual arts provides significant support for the development of metacognitive abilities and self-regulation, thereby contributing to individual development and fostering excellence in gifted learners.

Keywords: digital reflection, challenges of ICT implementation, fostering excellence in gifted learners, self-regulation, visual arts.

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IZMEĐU AI I DIDAKTIČKIH KOMPETENCIJA: PRAKSA I POTREBE NASTAVNIKA DAROVITIH UČENIKA

Nastavni rad sa darovitim učenicima u srednjoj umetničkoj školi iziskuje didaktičke kompetencije neophodne za odgovaranje na specifične potrebe svakog učenika, dok dodatni izazov profesije predstavlja prisustvo veštačke inteligencije (AI). Ovo eksplorativno istraživanje ima za cilj da ispita modalitete primene AI alata u didaktičkoj praksi, ali i da mapira specifične potrebe nastavnika za stručnim usavršavanjem. Posebno se razmatra uloga AI u razvoju didaktičkih kompetencija, ali i nužnost AI unutar predmetnih kompetencija. Ispitivanjem su obuhvaćeni nastavnici stručnih predmeta (N=10) koji rade sa umetnički darovitim učenicima, a podaci prikupljeni putem intervjua obrađuju se sistematskom analizom sadržaja. Rezultati ukazuju na jaz između predmetne nužnosti za primenom AI alata i adekvatne didaktičke podrške, ističući potrebu za sistemskim programima stručnog usavršavanja.

Ključne reči: veštačka inteligencija (AI), nastavničke kompetencije, daroviti učenici, didaktičke kompetencije, stručno usavršavanje nastavnika.

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BETWEEN AI AND DIDACTIC COMPETENCIES: PRACTICE AND NEEDS OF TEACHERS OF GIFTED STUDENTS

Teaching gifted students in secondary art schools requires didactic competencies necessary to respond to the specific needs of each student, while the presence of artificial intelligence (AI) poses an additional professional challenge. This exploratory research aims to examine the modalities of AI tool application in didactic practice and map teachers' specific needs for professional development. Particular consideration is given to the role of AI in the development of didactic competencies, as well as the necessity of AI within subject-specific competencies. The study involves vocational teachers (N=10) working with artistically gifted students, and the data collected through interviews are processed using systematic content analysis. The results indicate a gap between the subject-related necessity for applying AI tools and adequate didactic support, highlighting the need for systemic professional development programs.

Keywords: artificial intelligence (AI), teacher competencies, gifted students, didactic competencies, professional teacher development.

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MODERNIZACIJA NASTAVE SOCIOLOGIJE U VISOKOŠKOLSKOM OBRAZOVNOM KONTEKSTU

U radu se analizira inovativni pristup u proučavanju društvenih pojava u visokoškolskom obrazovnom kontekstu, koji je uspešno testiran u nastavi, gde svi studenti imaju slobodu da se pozicioniraju u kolektivu pronalaženjem svoje najbolje uloge, a posebno daroviti studenti imaju priliku za razvijanje svojih punih potencijala. Ovaj pristup osmišljen je kroz tri podjednako važna aspekta u mentorskom radu prilikom izvođenja samostalnih studentskih grupnih istraživanja, a to su: a) kreativni pristup u proučavanju savremenog društva; b) timski rad i c) primena savremenih informaciono-komunikacionih tehnologija u istraživanjima aktuelnih društvenih pojava. Kreativni pristup omogućuje slobodu istraživanja onih društvenih pojava koje studenti sami izaberu, praktikovanjem demokratije na delu prilikom izbora teme i argumentacije sopstvenog stanovišta i uz konsultaciju veštačke inteligencije. Timski rad je praktična primena naučenih teorijskih principa funkcionisanja savremenih radnih timova tokom obavljanja zajedničkog zadatka; u njemu se neminovno prepliću digitalne i realne interakcije i studenti povezuju u specifičnu mikrozajednicu. Konačno, metodologija socioloških istraživanja u svim istraživačkim postupcima inovira se, obogaćuje i pojednostavljuje izvanrednim mogućnostima koje pruža savremena informaciono-komunikaciona tehnologija u svim fazama istraživačkog procesa, doprinoseći kvalitetu i brzini dobijenih rezultata: od novih načina prikupljanja podataka i lakše dostupnosti ispitanika, preko brze i kvalitetne obrade podataka, do tumačenja dobijenih sopstvenih rezultata u kontekstu dostupnosti brojnih sličnih istraživanja. Čitav pristup izazovan je za podsticanje samoregulacije darovitih studenata i razvijanje kreativnosti u istraživanju i razumevanju savremenih društvenih procesa.

Cljučne reči: inovativni pristup, daroviti studenti, timski rad, sociološka istraživanja, savremene informaciono-komunikacione tehnologije.

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MODERNIZATION OF SOCIOLOGY TEACHING IN THE HIGHER EDUCATION CONTEXT

The paper analyzes an innovative approach to the study of social phenomena in the higher education context, successfully tested in teaching practice, in which all students are given the freedom to position themselves within the group by finding the role that suits them best, while gifted students in particular have the opportunity to develop their full potential. This approach is designed through three equally important aspects of mentoring work in the implementation of independent student

group research projects: a) a creative approach to the study of contemporary society; b) teamwork; and c) the application of modern information and communication technologies in research on current social phenomena. The creative approach enables students to freely explore social phenomena of their own choosing, by practicing democracy in action when selecting a topic and arguing their own position, in consultation with artificial intelligence. Teamwork represents the practical application of the theoretical principles learned regarding the functioning of modern work teams while carrying out a joint task; within it, digital and real-life interactions inevitably intertwine, and students become connected in a specific micro-community. Finally, the methodology of sociological research, in all research procedures, is innovated, enriched, and simplified by the exceptional possibilities provided by modern information and communication technology in all phases of the research process, contributing to the quality and speed of the results obtained: from new methods of data collection and easier access to respondents, through fast and high-quality data processing, to the interpretation of the obtained results in the context of the availability of numerous similar studies. The entire approach is challenging in terms of encouraging the self-regulation of gifted students and developing creativity in researching and understanding contemporary social processes.

Keywords: innovative approach, gifted student, teamwork, sociological research, modern information and communication technologies.

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SOCIOEMOCIONALNI ASPEKTI SAMOREGULACIJE I DIGITALNOG UČENJA DAROVITIH UZ POMOĆ IKT ALATA

U radu „Socioemocionalni aspekti samoregulacije i digitalnog učenja darovitih uz pomoć IKT alata” analizira se uloga kognitivnih, emocionalnih i socijalnih faktora u učenju darovitih učenika u digitalnom okruženju, s naglaskom na samoregulaciju i primjenu IKT alata. Samoregulacija učenja obuhvata planiranje, praćenje i evaluaciju vlastitog učenja uz upravljanje motivacijom i metakognitivnim strategijama, što omogućava veću autonomiju i dublje učenje. Socioemocionalni aspekti obuhvataju samopouzdanje, intrinzičnu motivaciju, emocionalnu regulaciju, otpornost na stres te saradnju i komunikaciju. Daroviti učenici se suočavaju s perfekcionizmom, osjetljivošću na neuspjeh i socijalnom izolacijom, pa je podrška mentora ključna. IKT alati omogućavaju individualizaciju učenja i razvoj kritičkog mišljenja, ali zavise od samoregulacije i podrške. Integracija ovih elemenata ključna je za razvoj darovitih učenika te pripremu za savremeno digitalno društvo, zasnovano na znanju i tehnologiji u 21. stoljeću.

Ključne riječi: socioemocionalni aspekt darovitih, samoregulacija, IKT alati.

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SOCIO-EMOTIONAL ASPECTS OF SELF-REGULATION AND DIGITAL LEARNING OF GIFTED STUDENTS USING ICT TOOLS

The paper “Socio-emotional Aspects of Self-Regulation and Digital Learning of Gifted Students Using ICT Tools” analyzes the role of cognitive, emotional, and social factors in the learning of gifted students in a digital environment, with a particular focus on self-regulated learning and the application of ICT tools. Self-regulated learning encompasses planning, monitoring, and evaluating one’s own learning, alongside the management of motivation and metacognitive strategies, thereby enabling greater autonomy and deeper learning. Socio-emotional aspects include self-confidence, intrinsic motivation, emotional regulation, stress resilience, as well as cooperation and communication skills. Gifted students face challenges such as perfectionism, sensitivity to failure, and social isolation; therefore, mentor support is essential. ICT tools enable individualization learning and the development of critical thinking; however, their effectiveness depends on the level of self-regulation and pedagogical support. The integration of these elements is crucial for the development of gifted students and their preparation for a contemporary digital society based on knowledge and technology in the 21st century.

Keywords: socio-emotional aspects of giftedness, self-regulation, ICT tools.

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OBRAZOVANJE U DIGITALNOM OKRUŽENJU: IZAZOVI I PODRŠKA SAMOREGULACIJI UČENJA DAROVITIH¹

Uticaj digitalnih tehnologija i IKT alata na sve sfere života, posebno na učenje, razvoj i svakodnevno funkcionisanje dece i mladih, danas je nesporan. Najmlađe generacije odrastaju uz digitalne medije i tehnologije i nemaju iskustvo života pre njihove ekspanzije. Istovremeno, uočava se jaz između intenzivne izloženosti dece i mladih IKT alatima u svakodnevnom životu i njihove primene u školskom kontekstu. Istraživanja pokazuju da učenje u onlajn okruženju i korišćenje digitalnih nastavnih materijala zahtevaju viši nivo motivacije i samoregulacije učenja u odnosu na klasične oblike nastave. Bez obzira na to da li se obrazovni proces odvija u klasičnom ili digitalno podržanom okruženju, značajna je uloga nastavnika u

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pružanju podrške i vođenju učenika. Izazovi primene IKT alata prevazilaze isključivo digitalni i onlajn kontekst, a potreba za razvojem samoregulacije učenja i autonomije izražena je kod darovitih učenika, što je potvrđeno tokom pandemije Kovid-19.

Ključne reči: digitalne tehnologije, IKT alati, samoregulacija učenja, daroviti učenici.

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EDUCATION IN THE DIGITAL ENVIRONMENT: CHALLENGES AND SUPPORT FOR THE SELF-REGULATED LEARNING OF GIFTED STUDENTS²

The impact of digital technologies and ICT tools on all spheres of life, particularly on the learning, development, and everyday functioning of children and young people, is now undeniable. The youngest generations are growing up surrounded by digital media and technologies and have no experience of life prior to their widespread expansion. At the same time, a gap can be observed between student's extensive exposure to ICT tools in everyday life and their implementation within the school context. Research indicates that learning in online environments and the use of digital educational materials require higher levels of motivation and self-regulation compared to traditional forms of instruction. Regardless of whether the educational process takes place in conventional or digitally supported settings, the role of teachers in providing guidance and support to students remains essential. The challenges associated with the implementation of ICT tools extend beyond exclusively digital and online contexts, while the need to foster self-regulated learning and learner autonomy is evident among gifted students, as confirmed during the COVID-19 pandemic.

Keywords: digital technologies, ICT tools, self-regulated learning, gifted students.

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ПЕРЦЕПЦИИ НА НАСТАВНИЦИТЕ ЗА ИКТ И АЛАТКИТЕ СО ВЕШТАЧКА ИНТЕЛИГЕНЦИЈА ЗА ПОДДРШКА НА САМОРЕГУЛИРАНО УЧЕЊЕ КАЈ НАДАРЕНИ УЧЕНИЦИ

Саморегулирано учење се смета за клучен фактор во развојот на извонредност кај надарените ученици. Информациско-комуникациските технологии (ИКТ), вклучувајќи ги алатките за вештачка интелигенција (ВИ), нудат нови можности за персонализирано учење, поставување цели, самомониторинг, повратни информации и рефлексивност. Целта на ова истражување е да се испитаат перцепциите на наставниците во врска со употребата на ИКТ и алатките со вештачка интелигенција во поддршката на саморегулирано учење кај надарените ученици. Ке се користи квантитативен истражувачки дизајн со помош на анкета спроведена на наставници од основно и средно образование. Студијата ќе ги истражи ставовите на наставниците кон ефикасноста на дигиталните алатки и алатките базирани на вештачка интелигенција, нивната фреквенција на употреба, перципираните образовни придобивки и предизвиците поврзани со нивната имплементација во образованието на надарени ученици. Се очекува наодите да придонесат за подобро разбирање на тоа како новите технологии можат да го поддржат развојот на саморегулација и извонредност кај надарените ученици, како и да дадат препораки за зајакнување на дигиталните компетенции и образовната пракса на наставниците.

Клучни зборови: надарени ученици, саморегулирано учење, ИКТ алатки, вештачка интелигенција, перцепции на наставниците.

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TEACHERS' PERCEPTIONS OF ICT AND ARTIFICIAL INTELLIGENCE TOOLS TO SUPPORT SELF-REGULATED LEARNING AMONG GIFTED STUDENTS

Self-regulated learning is considered a key factor in the development of excellence in gifted students. Information and communication technologies (ICT), including artificial intelligence (AI) tools, offer new opportunities for personalized learning, goal setting, self-monitoring, feedback, and reflection. The aim of this research is to examine teachers' perceptions regarding the use of ICT and AI tools in supporting

self-regulated learning in gifted students. A quantitative research design will be used using a survey of primary and secondary school teachers. The study will explore teachers' attitudes towards the effectiveness of digital and AI-based tools, their frequency of use, perceived educational benefits, and challenges associated with their implementation in the education of gifted students. The findings are expected to contribute to a better understanding of how new technologies can support the development of self-regulation and excellence in gifted students, as well as to provide recommendations for strengthening teachers' digital competencies and educational practice.

Keywords: gifted students, self-regulated learning, ICT tools, artificial intelligence, teacher perceptions.

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DAROVITI STUDENTI: USKLAĐENOST KARAKTERISTIKA Z GENERACIJE I DIDAKTIČKIH STRATEGIJA

Cilj ove eksplorativne studije jeste da ispita u kojoj meri postojeće nastavne strategije odgovaraju potrebama darovitih studenata Generacije Z i da li oni drugačije procenjuju adekvatnost nastave u odnosu na ostale studente. Istraživanje je kvantitativnog i korelacionog karaktera, realizovano primenom dva Likertova upitnika: OKGZ i skale procene adekvatnosti didaktičkih strategija. Doprinos rada ogleda se u povezivanju didaktike darovitih, karakteristika Generacije Z i savremenih modela univerzitetske nastave. Istraživanje pokazuje da studenti Generacije Z izraženo vrednuju smisleno, praktično, interaktivno i personalizovano učenje, kao i psihološku dobrobit, ravnotežu i samorealizaciju. Postojeće didaktičke strategije procenjene su kao samo umereno usklađene sa njihovim obrazovnim potrebama, dok je potreba za restrukturacijom nastave veoma izražena. Studenti posebno ističu potrebu za više otvorenih problema, dubinskog i kritičkog mišljenja, argumentovane diskusije i smislenije primene IKT i AI alata u nastavi. Kao najpozitivniji aspekti nastave izdvajaju se jasni kriterijumi vrednovanja, povezivanje sadržaja sa realnim životnim situacijama, dijaloška atmosfera i pravovremene povratne informacije. Nasuprot tome, kao najslabije tačke prepoznati su dominantno reproduktivno vrednovanje znanja, retke rasprave i površna upotreba digitalnih tehnologija. Studenti sa visokim akademskim postignućem pokazuju nešto izraženije

karakteristike Generacije Z, ali se značajno ne razlikuju od ostalih u proceni adekvatnosti nastavnih strategija, niti u potrebi za njihovim unapređivanjem. Korelacione i regresione analize potvrđuju da izraženije karakteristike Generacije Z prate i viša očekivanja od savremene, fleksibilne i razvojno usmerene nastave.

Cljučne reči: Generacija Z, akademski daroviti studenti, didaktičke strategije, visoko obrazovanje.

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GIFTED STUDENTS: ALIGNMENT BETWEEN GENERATION Z CHARACTERISTICS AND DIDACTIC STRATEGIES

The aim of this exploratory study is to examine the extent to which existing teaching strategies correspond to the needs of gifted Generation Z students and whether they assess the adequacy of instruction differently compared to other students. The research is quantitative and correlational in nature and was conducted using two Likert-scale questionnaires: the OKGZ and the scale for assessing the adequacy of didactic strategies. The contribution of this paper lies in connecting the didactics of gifted students, the characteristics of Generation Z, and contemporary models of university teaching. The findings indicate that Generation Z students highly value meaningful, practical, interactive, and personalized learning, as well as psychological well-being, balance, and self-realization. Existing didactic strategies were assessed as only moderately aligned with their educational needs, while the need for restructuring teaching is highly pronounced. Students particularly emphasize the need for more open-ended problems, deep and critical thinking, argument-based discussion, and a more meaningful use of ICT and AI tools in teaching. The most positively evaluated aspects of teaching include clear assessment criteria, linking content with real-life situations, a dialogical atmosphere, and timely feedback. In contrast, the weakest points identified were predominantly reproductive knowledge assessment, infrequent discussions, and the superficial use of digital technologies. Students with high academic achievement demonstrate somewhat more pronounced Generation Z characteristics, but they do not differ significantly from other students in their assessment of the adequacy of teaching strategies or in their perceived need for their improvement. Correlational and regression analyses confirm that more pronounced Generation Z characteristics are accompanied by higher expectations of contemporary, flexible, and development-oriented teaching.

Keywords: Generation Z, academically gifted students, didactic strategies, higher education.

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MOTIVISANOST VASPITAČA ZA PROFESIONALNO USAVRŠAVANJE U OBLASTI PODSTICANJA RANOG RAZVOJA DAROVITE DECE

U savremenom vaspitno-obrazovnom kontekstu, obeleženom rastućim profesionalnim zahtevima i sve većom primenom informaciono-komunikacionih tehnologija (IKT), usavršavanje vaspitača, nastavnika i drugih obrazovnih stručnjaka dobija poseban značaj, pri čemu *motivisanost za profesionalni razvoj* predstavlja važan preduslov unapređivanja kvaliteta vaspitno-obrazovne prakse uopšte, a posebno u oblasti podsticanja razvoja darovitih. Istraživanje čije rezultate prikazujemo u ovom radu sprovedeno je 2024. godine na teritoriji AP Vojvodine, Republika Srbija. Ukupan uzorak činilo je 147 ispitanika (vaspitača i studenata – budućih vaspitača). Cilj istraživanja bio je da se ispita *motivisanost* vaspitača i studenata – budućih vaspitača za profesionalno usavršavanje u oblasti podsticanja ranog razvoja, kao i utvrdi koji su kod vaspitača najzastupljeniji oblici usavršavanja u ovom domenu. Komparativni pogled na dobijene rezultate pokazao je sledeće: 1. obe grupe ispitanika – i vaspitači i studenti – budućih vaspitača – pokazuju *visok nivo* motivacije za usavršavanje u domenu podsticanja ranog razvoja *sve dece* i među ispitanim grupama nema statistički značajnih razlika; 2. obe grupe ispitanika – i vaspitači i studenti – budućih vaspitača pokazuju *visok nivo motivacije* za usavršavanje u domenu podsticanja ranog razvoja *darovite dece*, a uočeno je da nivo obrazovanja, odnosno usavršavanje stečeno kroz formalno obrazovanje, statistički značajno utiče na motivisanost vaspitača da se dalje osnažuju za podsticanje ranog razvoja darovite dece i 3. tek nešto više od polovine vaspitača koji su učestvovali u istraživanju tvrdi da su se do sada stručno usavršavali u oblasti ranoga razvoja i njegovog podsticanja i to u najvećoj meri putem horizontalne razmene. Iako postoji visoka motivisanost vaspitača i studenata – budućih vaspitača za osnaživanje u podsticanju ranoga razvoja, kako su pokazali dobijeni nalazi, jedno od polja profesionalnog razvoja ovih relevantnih odraslih *jeste omogućavanje uslova da se za isto usavršavaju*. Ovo je posebno značajno u kontekstu savremenog digitalnog okruženja, koje od vaspitača zahteva i kontinuirano osnaživanje za primenu IKT alata i u funkciji prepoznavanja, kao i razvoja potencijala darovite dece. Dakle, iako vaspitači i studenti – budućih vaspitača putem samoprocena izveštavaju o svojoj visokoj motivisanosti za stručno usavršavanje u podsticanju ranog razvoja, nalaz dobijen u ovom istraživanju koji pokazuje da se tek nešto više od polovine ispitivanih vaspitača do sada stručno usavršavalo u ovom domenu, može ukazivati na diskrepancu između motivacije i stvarne realizacije u oblasti stručnog usavršavanja. Rezultati predstavljaju prilog unapređivanju vaspitno-obrazovne

prakse i profesionalnog razvoja vaspitača, kompatibilni su sa prethodnim istraživanjima u ovoj oblasti, mogu doprineti koncipiranju različitih oblika (stručnog) usavršavanja, unapređivanju kvaliteta visokoškolske nastave za vaspitače i mogu poslužiti kao motivacija za dalja istraživanja i promišljanja u funkciji ostvarivanja dobiti sve dece u ranom detinjstvu. Rezultati predstavljaju prilog razumevanju *značaja motivisanosti za profesionalno usavršavanje vaspitno-obrazovnih radnika kao jednog od važnih preduslova za integraciju IKT alata* u vaspitno-obrazovnu praksu, uključujući i njihovu primenu u identifikaciji i podsticanju razvoja (izvrsnosti) darovitih.

Ključne reči: motivacija, podsticanje ranog razvoja, IKT alati, daroviti, vaspitači, studenti – budući vaspitači, usavršavanje i profesionalni razvoj, celoživotno učenje.

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MOTIVATION OF PRESCHOOL TEACHERS FOR PROFESSIONAL DEVELOPMENT IN THE FIELD OF FOSTERING THE EARLY DEVELOPMENT OF GIFTED CHILDREN

In the contemporary educational context, characterized by growing professional demands and the increasing use of information and communication technologies (ICT), the professional development of preschool teachers, educators, and other educational professionals is gaining particular importance, with motivation for professional development representing an important prerequisite for improving the overall quality of educational practice, and especially in the field of fostering the development of excellence in gifted children. The research presented in this paper was conducted in 2024 in AP Vojvodina, Republic of Serbia. The total sample consisted of 147 respondents (teachers and students – future preschool teachers). The goal of the research was to examine the motivation of preschool teachers and students – future preschool teachers – for professional development in the area of fostering encouraging early development, as well as to determine which forms of development are most common among preschool teachers in this domain. A comparative look at the obtained results showed the following: Both groups of respondents – preschool teachers and students (future preschool teachers) – demonstrated a high level of motivation for improvement in the field of fostering the early development of all children, with no statistically significant differences between the examined groups. Both groups showed a high level of motivation for improvement in the field of fostering the early development of gifted children. Moreover, it was observed that the level of formal education has a statistically significant effect on the motivation of preschool teachers to further strengthen their abilities to encourage the early development of gifted children. Only slightly more than half of the preschool teachers who participated in the research reported having received professional training in the field of early development and its encouragement, mostly through horizontal exchange. This is particularly significant

in the context of the contemporary digital environment, which requires preschool teachers to continuously strengthen their competencies for the use of ICT tools in the identification and development of gifted children's potential. Although both preschool teachers and students – future preschool teachers – report high motivation for professional development in fostering early development, the finding that only slightly more than half of the examined preschool teachers have received such training may indicate a discrepancy between motivation and actual professional development. The results contribute to the improvement of educational practice and the professional development of preschool teachers, are compatible with previous research in this area, and can inform the conception of various forms of professional training. They also highlight the need for enhanced higher education quality for preschool teachers and can serve as motivation for further research and reflection toward achieving the well-being of all children in early childhood. The results contribute to understanding the importance of the motivation of educational professionals for professional development as one of the key prerequisites for the integration of ICT tools into educational practice, including their application in the identification and fostering of the development of excellence in gifted children.

Keywords: motivation, fostering early development, ICT tools, gifted children, preschool teachers, students – future preschool teachers, training and professional development, lifelong learning.

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DAROVITI UČENICI I AUTONOMIJA U UČENJU

Rad se bavi značajem autonomije u učenju za razvoj samoregulacije i izvrsnosti darovitih učenika u savremenom obrazovanju. Polazi se od pretpostavke da daroviti učenici imaju izraženu potrebu za samostalnošću, istraživanjem i aktivnim učešćem u procesu učenja, zbog čega tradicionalni modeli nastave često ne odgovaraju njihovim obrazovnim potrebama i potencijalima. Posebno se razmatra doprinos problemske nastave i istraživačkog učenja razvoju reflektivnog mišljenja, unutrašnje motivacije i sposobnosti samostalnog planiranja, praćenja i evaluacije sopstvenog učenja. Ukazuje se na značaj nastavnika u kreiranju podsticajnog okruženja koje učenicima omogućava veću autonomiju i aktivniju ulogu u nastavi. Takođe se razmatra uloga savremenog digitalnog okruženja kao moguće podrške individualizovanom i samousmerenom učenju, uz naglašavanje potrebe za pedagoški promišljenom primenom tehnologije u radu sa darovitim učenicima.

Cljučne reči: daroviti učenici, autonomija u učenju, samoregulacija, problemska nastava, reflektivno mišljenje, istraživačko učenje.

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GIFTED STUDENTS AND AUTONOMY IN LEARNING

The paper examines the importance of learning autonomy for the development of self-regulation and excellence in gifted students in contemporary education. It is based on the assumption that gifted students have a pronounced need for independence, inquiry, and active participation in the learning process, which is why traditional teaching models often fail to meet their educational needs and potential. Particular attention is given to the contribution of problem-based teaching and inquiry-based learning to the development of reflective thinking, intrinsic motivation, and the ability to independently plan, monitor, and evaluate their own learning. The paper also emphasises the importance of teachers in creating a stimulating environment that enables students to achieve greater autonomy and assume a more active role in the teaching process. In addition, the role of the contemporary digital environment is considered as a possible support for individualised and self-directed learning, while highlighting the need for a pedagogically grounded use of technology in work with gifted students.

Keywords: gifted students, learning autonomy, self-regulation, problem-based learning, reflective thinking, inquiry-based learning.

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IKT ALATI U FUNKCIJI PREPOZNAVANJA RANE MATEMATIČKE DAROVITOSTI I PODSTICANJA SAMOREGULISANOG UČENJA

Matematička darovitost kod dece predškolskog uzrasta ispoljava se u ranoj sposobnosti razumevanja apstraktnih koncepata, logičkog mišljenja, prepoznavanja obrazaca i rešavanja problema. Savremena tehnologija nudi brojne mogućnosti za prepoznavanje i podsticanje matematičke darovitosti, kroz interaktivne digitalne sadržaje. U radu se prikazuju i razmatraju dva aspekta: 1) nastavni model u kojem studenti master studija – vaspitači, kroz predispitne obaveze razvijaju kompetencije za prepoznavanje i podsticanje matematičke darovitosti primenom IKT alata; 2) prepoznavanje, praćenje napredovanja i samoregulacije matematički darovite dece osmišljavanjem interaktivnih matematičkih aktivnosti uz primenu alata ScratchJr i GeoGebra. Prikazuje se kako digitalno okruženje podstiče planiranje, praćenje sopstvenog rada, ispravljanje grešaka, istrajnost u radu i refleksiju vaspitača i dece. Ukazuje se i na izazove primene IKT alata: potrebu za pedagoški osmišljenom

upotrebom tehnologije, individualizacijom zadataka i razvijanjem digitalnih kompetencija vaspitača.

Ključne reči: IKT alati, samoregulacija, darovita deca, matematička darovitost, predškolsko obrazovanje.

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ICT TOOLS IN THE FUNCTION OF IDENTIFYING EARLY MATHEMATICAL GIFTEDNESS AND ENCOURAGING SELF-REGULATED LEARNING

Mathematical giftedness in preschool children manifests as an early ability to understand abstract concepts, logical thinking, pattern recognition, and problem-solving. Modern technology offers numerous opportunities for identifying and encouraging mathematical giftedness through interactive digital content. This paper presents and discusses two aspects: 1) an instructional model in which master's degree students (preschool teachers) develop competencies for identifying and encouraging mathematical giftedness using ICT tools through their pre-exam obligations; 2) the identification, progress monitoring, and self-regulation of mathematically gifted children by designing interactive mathematical activities using ScratchJr and GeoGebra tools. The paper demonstrates how the digital environment encourages planning, monitoring one's own work, error correction, persistence, and reflection among both teachers and children. Furthermore, it highlights the challenges of implementing ICT tools, such as the need for pedagogically designed technology use, individualization of tasks, and the development of teachers' digital competencies.

Keywords: ICT tools, self-regulation, gifted children, mathematical giftedness, preschool education.

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ANTHROPO-BIOMETRIC TALENT ASSESSMENT AND TALENT-CENTERED SELF-REGULATION: AN ICT-ENABLED FRAMEWORK FOR DEVELOPING EXCELLENCE AMONG GIFTED LEARNERS IN THE ARTIFICIAL INTELLIGENCE ERA

The increasing integration of Information and Communication Technologies (ICT), Artificial Intelligence (AI), learning analytics, and adaptive educational systems presents new opportunities for identifying and nurturing giftedness in contemporary society. However, conventional educational systems continue to rely predominantly

on academic achievement and standardized examinations, often overlooking innate abilities, experiential competence, and non-academic forms of intelligence. This paper proposes the Anthro-Biometric Talent Assessment (ABTA) Framework as an emerging ICT-enabled model for talent identification and development. The framework integrates Oral Screening, Psycho-Screening, and Anthro-Biometric Assessment to generate personalized Talent-Based Learning Prescriptions that support self-regulated learning and excellence development. Drawing upon theories of giftedness, self-regulation, motivation, multiple intelligences, and artificial intelligence, the paper introduces the Theory of Talent-Centered Self-Regulation (TCSR). Selected case studies from The African Talent University are used to demonstrate practical applications of the framework. The paper argues that self-regulation is strengthened when learning pathways align with innate abilities and demonstrated talent. It concludes that ICT-supported talent-centered education may provide a viable complement to conventional educational models and contribute to more inclusive approaches to human potential development.

Keywords: giftedness, talent-based learning, self-regulation, artificial intelligence, learning analytics, anthro-biometrics, personalized learning, human potential development.

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OD METODOLOGIJE DO REFLEKSIVNE PRAKSE: BUDUĆNOST ISTRAŽIVANJA DAROVITOSTI U EPOHI VEŠTAČKE INTELIGENCIJE

Razvoj veštačke inteligencije donosi nove mogućnosti za istraživanje, prepoznavanje i podršku darovitim učenicima, ali istovremeno otvara značajna metodološka i etička pitanja. Cilj rada je da analizira metodološke implikacije primene veštačke inteligencije u oblasti darovitosti, polazeći od savremenih teorijskih shvatanja darovitosti i primene veštačke inteligencije. Rad je usmeren na analiziranje mogućnosti upotrebe veštačke inteligencije u identifikaciji darovitih učenika, individualizaciji učenja, kao i praćenju razvoja njihovih potencijala. Poseban akcenat je na razmatranju mogućnosti primene kvantitativnih, kvalitativnih i mešovitih istraživačkih pristupa, kao i izazova koji se odnose na validnost podataka i zaštitu privatnosti. Zaključuje se da je za odgovornu primenu veštačke inteligencije u oblasti darovitosti neophodan interdisciplinarn pristup koji povezuje pedagošku teoriju, istraživačku metodologiju i refleksivnu praksu.

Ključne reči: darovitost, veštačka inteligencija, identifikacija darovitih učenika, reflektivna praksa.

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FROM METHODOLOGY TO REFLECTIVE PRACTICE: THE FUTURE OF GIFTEDNESS RESEARCH IN THE AGE OF ARTIFICIAL INTELLIGENCE

The development of artificial intelligence brings new opportunities for research, recognition and support of gifted students, but at the same time opens significant methodological and ethical issues. The aim of the research is to analyze the methodological implications of the implementation of artificial intelligence in the field of giftedness, starting from modern theoretical understandings of giftedness and the application of artificial intelligence. Research is aimed at analyzing the possibility of using artificial intelligence in the identification of gifted students, individualization of learning as well as monitoring the development of their potential. Special emphasis is placed on considering the possibility of applying quantitative, qualitative and mixed research approaches, as well as challenges related to data validity and privacy protection. It is concluded that for the responsible application of artificial intelligence in the field of giftedness, an interdisciplinary approach that connects pedagogical theory, research methodology and reflexive practice is necessary.

Keywords: giftedness, artificial intelligence, identification of gifted students, reflective practice.

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ANALIZA IZAZOVA I MOGUĆNOSTI PRIMENE IKT ALATA U PODSTICANJU SAMOREGULACIJE I RAZVOJA IZVRSNOSTI DAROVITE DECE PREDŠKOLSKOG UZRASTA U METODICI UPOZNAVANJA OKOLINE I METODICI RAZVOJA GOVORA

Savremeno obrazovanje sve više prepoznaje značaj informaciono-komunikacionih tehnologija (IKT) u podsticanju samoregulacije i razvoja potencijala darovite dece još u predškolskom uzrastu. Rad se bavi analizom izazova i mogućnosti primene IKT alata u okviru Metodike upoznavanja okoline i Metodike razvoja govora, sa posebnim osvrtom na razvoj samostalnosti, istraživačkog pristupa, komunikativnih kompetencija i unutrašnje motivacije dece predškolskog uzrasta. Posebna pažnja usmerena je na to kako digitalni alati mogu doprineti bogaćenju rečnika, razvoju narativnih sposobnosti, verbalnom izražavanju, planiranju aktivnosti, praćenju sopstvenog napretka i razvoju kritičkog mišljenja kod dece sa izraženim sposobnostima i interesovanjima. U radu se razmatraju i ključni izazovi primene IKT u predškolskom obrazovanju, poput prilagođenosti sadržaja uzrastu, digitalne kompetentnosti vaspitača, balansiranja između digitalnih i iskustvenih aktivnosti, kao i potrebe za očuvanjem socijalne interakcije i igre kao dominantnih oblika učenja. Zaključuje se da pažljivo odabrani i pedagoški osmišljeni IKT alati mogu predstavljati značajnu podršku razvoju samoregulacije, govora, komunikativnih kompetencija i izvrsnosti darovite dece, ukoliko se primenjuju u skladu sa razvojnim karakteristikama i principima savremene predškolske pedagogije.

Ključne reči: IKT alati, samoregulacija, darovita deca, Metodika upoznavanja okoline, Metodika razvoja govora, komunikativne kompetencije, digitalne kompetencije, istraživačko učenje.

Snežana Prtljaga

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**ANALYSIS OF THE CHALLENGES AND OPPORTUNITIES OF
APPLYING ICT TOOLS FOR ENCOURAGING SELF-REGULATION AND
THE DEVELOPMENT OF EXCELLENCE IN GIFTED PRESCHOOL
CHILDREN WITHIN THE METHODOLOGY OF ENVIRONMENTAL
STUDIES AND SPEECH DEVELOPMENT METHODOLOGY**

Contemporary education increasingly recognizes the importance of information and communication technologies (ICT) in fostering self-regulation and the development of the potential of gifted children from an early preschool age. This paper analyzes the challenges and opportunities related to the application of ICT tools within the Methodology of Environmental Studies and Speech Development Methodology, with particular emphasis on the development of independence, the inquiry-based approach, communicative competencies, and intrinsic motivation among preschool children. Special attention is given to the ways in which digital tools can contribute to vocabulary enrichment, the development of narrative skills, verbal expression, activity planning, monitoring personal progress, and developing critical thinking skills in children with pronounced abilities and interests. The paper also discusses the key challenges of ICT implementation in preschool education, such as the age-appropriateness of content, the digital competencies of preschool teachers, balancing digital and experiential activities, as well as the need to preserve social interaction and play as dominant forms of learning. It is concluded that carefully selected and pedagogically designed ICT tools can provide significant support for the development of self-regulation, speech, communicative competencies, and excellence in gifted children, provided that they are applied in accordance with developmental characteristics and the principles of contemporary preschool pedagogy.

Keywords: ICT tools, self-regulation, gifted children, Methodology of Environmental Studies, Speech Development Methodology, communicative competencies, digital competencies, inquiry-based learning.

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KOMPETENCIJE NASTAVNIKA ZA PRIMENU VEŠTAČKE INTELIGENCIJE U PODSTICANJU SAMOREGULISANOG UČENJA I RAZVOJA POTENCIJALNO DAROVITIH UČENIKA

Savremeno obrazovanje suočava se s izazovom razvoja nastavničkih kompetencija neophodnih za pedagoški osmišljenu primenu veštačke inteligencije u radu s potencijalno darovitim učenicima. Cilj rada je teorijsko-analičko razmatranje kompetencija koje nastavnik treba da poseduje kako bi AI alate koristio kao podršku samoregulisano učenju, razvoju metakognitivnih strategija i podsticanju unutrašnje motivacije darovitih. U radu se razmatra odnos između digitalne pedagoške pismenosti nastavnika, diferenciranog pristupa nastavi i primene adaptivnih AI sistema u identifikaciji i razvoju potencijala učenika. Zaključuje se da efektivna integracija AI u obrazovanju darovitih pretpostavlja nastavnika kao reflektivnog praktičara koji tehnologiju koristi u funkciji didaktičkih ciljeva, a ne kao zamenu za mentorski odnos.

Ključne reči: veštačka inteligencija, nastavničke kompetencije, samoregulisano učenje, daroviti učenici, digitalna pedagogija.

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TEACHER COMPETENCIES FOR IMPLEMENTING ARTIFICIAL INTELLIGENCE IN SUPPORTING SELF-REGULATED LEARNING AND THE DEVELOPMENT OF POTENTIALLY GIFTED STUDENTS

Contemporary education faces the challenge of developing teacher competencies necessary for pedagogically purposeful application of artificial intelligence in working with potentially gifted students. The paper aims to provide a theoretical-analytical examination of the competencies teachers need in order to use AI tools as support for self-regulated learning, development of metacognitive strategies, and fostering intrinsic motivation in gifted students. The relationship between teachers' digital pedagogical literacy, differentiated instruction, and the use of adaptive AI systems in identifying and developing student potential is analyzed. It is concluded that effective AI integration in gifted education presupposes a teacher as a reflective practitioner who employs technology in service of didactic goals, rather than as a substitute for the mentoring relationship.

Keywords: artificial intelligence, teacher competencies, self-regulated learning, gifted students, digital pedagogy.

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PILOT NALAZI SKALE ZA PROCENU POSLEDICA RAZVOJA I KORIŠĆENJA VEŠTAČKE INTELIGENCIJE

Veštačka inteligencija (AI) relativna je novina koja u sve većoj meri postaje deo naše svakodnevice, posebno obrazovnog sistema. Uz AI menja se način funkcionisanja obrazovnog sistema i njegovih aktera. Stoga procene prosvetnih radnika smatramo važnim za istraživanje u ovom području. Rad predstavlja pilot ispitivanje latentne strukture i metrijskih karakteristika skale konstruisane za procenu percepcije posledica razvoja AI i njene upotrebe na ljudsko društvo. Skala sadrži 27 ajtema, a odgovori se daju na petostepenoj Likertovoj skali. U istraživanju je učestvovalo 100 prosvetnih radnika, od kojih je 89% ženskog pola. Prosečna starost ispitanika iznosila je $AS=44,97$ godina ($SD=10,27$), a prosečan radni staž 17,29 godina ($SD=10,31$). U osnovnoškolskom obrazovanju radi 65% ispitanika, a u visokom obrazovanju 12%. Paralelna analiza pokazala je postojanje tri faktora, stabilnu strukturu i ukupnu objašnjenu varijansu od 63,36%. Prvi faktor imenovan je kao Društveno-sistemske i emocionalne posledice AI ($\alpha=,80$), drugi kao Kognitivno-perceptivne posledice AI ($\alpha=,76$), a treći kao Posledice AI po životni stil i socijalne odnose ($\alpha=,76$). Svi faktori distribuiraju se normalno, a najizraženiji je faktor Društveno-sistemske i emocionalne posledice AI.

Ključne reči: veštačka inteligencija (AI), skala, posledice korišćenja AI, metrijske karakteristike, pilot istraživanje.

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PILOT FINDINGS OF A SCALE FOR ASSESSING THE CONSEQUENCES OF THE DEVELOPMENT AND USE OF ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) is a relatively new phenomenon that is increasingly becoming a part of everyday life, and also within the educational system. Along with the development of AI, the functioning of the educational system and its elements (teachers, pupils) is also changing. Therefore, the perceptions of educational professionals are considered important for research in this field. This paper presents a pilot study examining the latent structure and metric characteristics of a scale constructed to assess perceptions of the consequences of AI development

and its use on human society. The scale consists of 27 items rated on a five-point Likert scale. The sample included 100 educational professionals, predominantly female (89%), with a mean age of $M=44.97$ years ($SD = 10.27$) and an average work experience of 17.29 years ($SD=10.31$). Most participants worked in primary education (65%), while 12% were employed in higher education. Parallel analysis indicated a three-factor structure with stable characteristics and a total explained variance of 63.36%. The first factor was labeled Social-Systemic and Emotional Consequences of AI ($\alpha=.80$), the second Cognitive-Perceptual Consequences of AI ($\alpha=.76$), and the third Consequences of AI for Lifestyle and Social Relations ($\alpha=.76$). All factors showed normal distribution, while the most prominent factor was Social-Systemic and Emotional Consequences of AI.

Keywords: artificial intelligence (AI), scale, consequences of AI use, metric characteristics, pilot study.

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ЦИФРОВЫЕ ИНСТРУМЕНТЫ ОБУЧЕНИЯ И (КОНСЕРВАТИВНЫЕ) ЦЕННОСТИ ОБРАЗОВАНИЯ: «ЗАПРЕТИТЬ НЕЛЬЗЯ РАЗРЕШИТЬ»

Актуальность уточнения концептуальной рамки современных процессов в области образования связана с нарастающим конфликтом между традиционно консервативными ценностными установками этого механизма трансляции культуры – и современными технологиями, которые активно включаются в процесс обучения, соответствующего уровню современных требований к специалисту на рынке труда. Особую группу здесь составляют одаренные обучаемые – те, в ком этот рынок заинтересован сегодня больше, чем в тех, кто может безынициативно выполнять рутинные процедуры (таких работников стремительно вытесняют те же самые цифровые технологии). Данное исследование посвящено вопросу о параметрах, по которым происходит размежевание запросов на ИКТ со стороны обучаемых и обучающихся в современном вузе. Рассмотрен кейс использования генеративных нейросетей (конкретно – ChatGPT и DeepSeek) в процессе преподавания гуманитарных дисциплин в двух высокорейтинговых вузах России. Методология исследования опирается на аксиологический и компаративный подходы; использованы данные, полученные в ходе экспертных интервью со студентами и преподавателями по результатам освоения курса философии студентами 1 курса; применены SWOT-анализ, метод кейсов и дискурс-анализ. Период, который охватывает исследование, составляет 8 месяцев текущего учебного года. Цель исследования – установить предпочтения одаренных студентов (рейтинг выше 90 по 100-балльной шкале) и их преподавателей по соответствующей дисциплине. Задачи: (1) выделить наиболее чувствительные позиции, связанные с использованием нейросетей; (2) установить

приоритетные задачи, которые решают с их помощью студенты и преподаватели; (3) выявить точки «согласия» и «несогласия» на использование этих инструментов со стороны обучаемых и обучающихся, проследить их возможную зависимость от возраста преподавателя. В результате исследования установлено, что и студенты, и преподаватели солидарны в том, что ИКТ-инструменты должны войти в число «разрешенных» для обучения. Среди обеих групп есть как сторонники ограничений (использовать нейросеть с обязательным отчетом об этом и (в некоторых случаях) исключительно как метод сбора и обработки информации), так и сторонники предельно широкого использования в ходе обучения (включая написание текстов любых уровней с последующим редактированием). Поскольку использование нейросетей в конкретном кейсе охватывает 100% как студентов, так и преподавателей (возрастные преподаватели – на минимальном пользовательском уровне, предоставляемом поисковиками), можно сделать вывод о 100% вовлечении агентов исследуемого кейса в эту технологию. Студенты выделяют в качестве проблем (а) несамостоятельный характер получения за счет этой технологии знаний и (б) этические аспекты, связанные с академической успеваемостью – она оказывается в среднем выше у тех, кто «бессовестно» пользуется нейросетями, «списывает» на контрольных и экзаменах. Для преподавателей более важна уязвимость тех, кто, по их мнению, не поддерживает свои когнитивные навыки, передоверяя систематизацию и отбор важной информации нейросети. Однако обе группы едины: нейросети в ходе современного обучения нужны. При этом студенты в основном используют для систематизации незнакомой информации, затем – для подбора литературы по теме и перевода; на третьем месте – релаксация («разговор по душам» с нейросетью, обучение продвинутым игровым практикам и т.д.). Для преподавателей на первое место выходит поиск литературы с последующей проверкой, затем – систематизация больших объемов информации, на третьем месте для некоторых из них также находится релаксация. Данных о востребованности перевода с помощью ИКТ-инструментов по преподавателям получено не было. Неожиданным побочным следствием интервью стало установление низкого теоретического уровня продвинутого студента, который в результате освоения курса счел своим успехом «открытие» научной результативности изысканий в духе «народной лингвистики». Анализ кейса показал, что востребованность ИКТ-инструментов в образовании велика и признается всеми сторонами процесса обучения. При этом ее регламентация со стороны администрации вузов колеблется от «запретить полностью» до «разрешить частично», то есть наиболее консервативной частью образовательных структур по вопросам о ценностных границах использования ИКТ-инструментов являются организационные структуры, частично представленные преподавателями – продвинутыми пользователями этих инструментов.

Ключевые слова: ценности современного образования, ИКТ-инструменты, нейросети, этические рамки, когнитивные навыки, регламентация применения нейросетей в обучении.

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DIGITAL LEARNING TOOLS AND (CONSERVATIVE) EDUCATIONAL VALUES: 'PROHIBIT NOT PERMIT'

The relevancy of clarifying the conceptual framework of contemporary processes in the field of education stems from the growing conflict between the traditionally conservative values of this mechanism for transmitting culture and modern technologies, which are actively integrated into the learning process to meet the current demands on professionals in the labor market. A special group here comprises gifted students – those in whom this market is more interested today than in those who can passively perform routine procedures (such workers are rapidly being displaced by the very same digital technologies). This study examines the parameters that distinguish the demands for IT from students and faculty in modern universities. It considers a case study of the use of generative neural networks (specifically ChatGPT and DeepSeek) in the teaching of humanities disciplines at two highly ranked universities in Russia. The research methodology is based on axiological and comparative approaches; data obtained from expert interviews with students and faculty regarding first-year students' performance in a philosophy course were utilized; SWOT analysis, the case study method, and discourse analysis were applied. The period covered by the study spans 8 months of the current academic year. The aim of the study is to identify the preferences of gifted students (scoring above 90 on a 100-point scale) and their instructors in the relevant discipline. Objectives: (1) to identify the most sensitive issues related to the use of neural networks; (2) to determine the priority tasks that students and teachers solve with their help; (3) identify points of “agreement” and “disagreement” regarding the use of these tools among students and instructors, and examine their possible dependence on the instructor's age. As a result of the study, it was found that both students and teachers agree that IT tools should be included among those “permitted” for teaching. Among both groups, there are both supporters of restrictions (using neural networks with mandatory reporting and, in some cases, exclusively as a method for collecting and processing information) and supporters of the broadest possible use during instruction (including writing texts of any level followed by editing). Since the use of neural networks in this specific case involves 100% of both students and instructors (older instructors at the basic user level provided by search engines), we can conclude that 100% of the agents in the case study are engaged with this technology. Students identify as problems (a) the non-independent nature of acquiring knowledge through this technology and (b) ethical aspects related to academic performance—which turns out to be higher on average among those who “unscrupulously” use neural networks and “cheat” on tests and exams. For instructors, the vulnerability of those who, in their opinion, fail to maintain their own cognitive skills by delegating the organization and selection of important information to neural networks is of greater concern. However, both

groups agree: neural networks are necessary in modern education. Students primarily use them to organize unfamiliar information, followed by selecting literature on a topic and translation; relaxation comes in third place (having a “heart-to-heart” with the neural network, learning advanced gaming practices, etc.). For instructors, literature search followed by verification comes first, then the systematization of large volumes of information; for some of them, relaxation also ranks third. No data was obtained regarding the demand for translation using IT tools among instructors. An unexpected side effect of the interviews was the discovery of a low theoretical level among advanced students, who, as a result of completing the course, considered it a success to “discover” the scientific value of research in the spirit of “folk linguistics.” The case analysis showed that the demand for IT tools in education is high and is recognized by all parties involved in the learning process. At the same time, university administration regulations on this matter range from “completely prohibit” to “partially allow”; that is, the most conservative segment of educational structures regarding the ethical boundaries of IT tool use consists of organizational structures, some of which are represented by faculty members who are advanced users of these tools.

Keywords: values of modern education, IT tools, neural networks, ethical framework, cognitive skills, regulation of the use of neural networks in education.

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SAMOREGULACIJA UČENJA MOTORIČKI DAROVITE DECE I UČENIKA POMOĆU VEŠTAČKE INTELIGENCIJE

Integracija veštačke inteligencije u svakodnevno okruženje za učenje uvodi nove mogućnosti i izazove u obrazovanju, uključujući i proces samoregulisano učenja koji omogućava darovitoj deci i učenicima da planiraju, prate svoj napredak i razmišljaju o sopstvenim aktivnostima učenja. Platforme zasnovane na veštačkoj inteligenciji mogu ponuditi dinamična i adaptivna okruženja za učenje, osnažujući darovite da upravljaju sopstvenim iskustvima učenja. U radu će biti prikazano kako motorički darovita deca i učenici mogu koristiti sisteme i alate veštačke inteligencije kao „metakognitivne partnere” u okviru svojih svakodnevni rutina učenja (planiranja, praćenja, organizacije stila i okruženja za motoričko učenje, vizuelizacije analitike, analize obrazaca kretanja i sportske igre i sl.). Veštačku inteligenciju ne treba posmatrati kao model koji isključivo deluje na individualni i zatvoren proces samoregulacije učenja, već kako na inherentan način u obrazovnom i sportskom kontekstu pospešuje interakciju, zdravlje i napredak motorički darovite dece i učenika. Načini na koje motorički darovita deca i učenici koriste i oslanjaju se

na veštačku inteligenciju (primera radi, na automatizovane sisteme za povratne informacije i personalizaciju učenja, kontrolne table za analitiku učenja, agente za razgovor i sl.), bilo kao pasivni potrošači informacija ili aktivni kokreatori, mogu uticati na njihovu motivaciju i veštine samoregulacije na različite načine. U radu će biti prikazana novija istraživanja koja dolaze do kontradiktornih zaključaka: pojedina smatraju da je samoregulisana sposobnost učenja ključni faktor u smanjenju tehnološke zavisnosti i promociji autonomije učenja, dok druga ukazuju na to da široka upotreba alata veštačke inteligencije negativno utiče na kritičko i kreativno mišljenje darovite dece i učenika i stvara zavisnost koja može da poremeti dugoročnu autonomiju u učenju. Upravo je razumevanje ove progresije od zavisnosti do namerne integracije veštačke inteligencije od vitalnog značaja za unapređenje samoregulacije učenja i osnaživanja motorički darovitih pojedinaca i njihovih sposobnosti na putu ka izvrsnosti.

Ključne reči: samoregulisano učenje, veštačka inteligencija, motorička darovitost.

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SELF-REGULATION OF LEARNING IN MOTORICALLY GIFTED CHILDREN AND STUDENTS USING ARTIFICIAL INTELLIGENCE

The integration of artificial intelligence into everyday learning environments introduces new opportunities and challenges in education, including the process of self-regulated learning, which enables gifted children and students to plan, monitor their progress and reflect on their own learning activities. AI-based platforms can provide dynamic and adaptive learning environments, empowering gifted learners to manage their own learning experiences. The paper demonstrates how motorically gifted children and students can use artificial intelligence systems and tools as "metacognitive partners" within their daily learning routines (planning, monitoring, organization of styles and environments for motor learning, visualization of analytics, analysis of movement and sports game patterns, etc.). Artificial intelligence should not be viewed as a model that acts solely on the individual and isolated process of self-regulation of learning, but also as an inherent way in the educational and sports context which promotes the interaction, health and progress of motorically gifted children and students. The ways in which motor gifted children and students use and rely on artificial intelligence (for example, automated feedback and personalized learning systems, learning analytics dashboards, conversational agents, etc.), whether as passive consumers of information or active co-creators, can influence their motivation and self-regulation skills in different ways. The paper presents recent research that has reached contradictory conclusions: some studies suggest that self-regulated learning ability is a key factor in reducing technological dependence and promoting learning autonomy, while others indicate that the widespread use of artificial intelligence tools negatively affects the critical and

creative thinking of gifted children and students and creates dependency that may undermine long-term learning autonomy. It is understanding this progression from dependence to intentional integration of artificial intelligence that is vital to advancing self-regulated learning and empowering motorically gifted individuals and their abilities on the path to excellence.

Keywords: self-regulated learning, artificial intelligence, motor giftedness.

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SAMOREGULACIJA KAO FAKTOR RAZVOJA IZVRSNOSTI DAROVITIH U KONTEKSTU IKT OKRUŽENJA

Savremeno obrazovanje suočeno je sa izazovom adekvatnog odgovora na potrebe darovitih učenika, čiji razvoj zahteva podsticajno, fleksibilno i diferencirano okruženje. Jedan od ključnih faktora tog procesa jeste samoregulacija u učenju, što obuhvata sposobnost planiranja, praćenja i evaluacije sopstvenog kognitivnog i emocionalnog angažovanja. U kontekstu ubrzanog razvoja IKT-a, rad analizira na koji način digitalni alati mogu da doprinesu, ali i otežaju razvoj samoregulacije kod darovitih učenika. Ističu se njihove prednosti u individualizaciji učenja, praćenju napretka i razvoju metakognitivnih veština, ali i rizici poput distrakcije, površnog učenja i oslanjanja na spoljašnju motivaciju. Posebna pažnja posvećena je neskladu između visokih sposobnosti i nedovoljno razvijenih strategija samoregulacije kod darovitih učenika. Zaključuje se da IKT ima značajan potencijal ukoliko se koristi promišljeno, uz ključnu ulogu nastavnika u kreiranju balansirano okruženja.

Ključne reči: darovitost, samoregulacija, IKT alati, digitalno učenje, izvrsnost.

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SELF-REGULATION AS A FACTOR IN THE DEVELOPMENT OF EXCELLENCE IN GIFTED STUDENTS IN THE CONTEXT OF ICT ENVIRONMENTS

Contemporary education faces the challenge of adequately responding to the needs of gifted students, whose development requires a stimulating, flexible, and differentiated environment. One of the key factors in this process is self-regulated learning, which includes the ability to plan, monitor, and evaluate one's own cognitive and emotional engagement. In the context of the rapid development of information and communication technologies (ICT), this paper analyzes how digital tools can both support and hinder the development of self-regulation in gifted students. Their advantages are reflected in the individualization of learning, monitoring of progress, and the development of metacognitive skills, but also in

risks such as distraction, superficial learning, and reliance on external motivation. Special attention is given to the discrepancy between high abilities and insufficiently developed self-regulation strategies among gifted students. It is concluded that ICT has significant potential if used thoughtfully, with the teacher playing a key role in creating a balanced learning environment.

Keywords: giftedness, self-regulation, ICT tools, digital learning, excellence.

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VEŠTAČKA DAROVITOST ZAMENJUJE PRIRODNU

Veštačka inteligencija, koja nam na tom nivou još uvek nije u potpunosti dostupna, dovodi u sumnju mnoge zakonitosti i saznanja koja predstavljaju vrhunac ljudskog stvaralaštva i sposobnosti. Ljudska darovitost, čiji su plodovi do sada pokretali civilizaciju, još uvek predstavlja fenomen i svojevrsnu misteriju. Nauka još nije odgonetnula gde ona nastaje i kako se aktivira – naprosto izmiče svim metodama racionalizacije. Ipak, mi smo je do sada koristili bez mnogo pitanja. S druge strane, pojavljuju se nova naučna saznanja i uvidi koje već danas može da ispolji veštačka inteligencija. Za razliku od ljudske darovitosti, njen nastanak i poreklo poznajemo, a ona pokazuje sve veću superiornost u odnosu na određene aspekte ljudske kreativnosti i inteligencije. Upravo ta „veštačka darovitost“ sve više čini mnoge ljudske sposobnosti suvišnim. Kompjuterski dizajneri godinama koriste veštačku inteligenciju u svom radu. Odnedavno to čine i programeri, često po nalogu svojih poslodavaca, što višestruko povećava njihovu radnu efikasnost, ali istovremeno smanjuje obim posla i čini programere sve manje potrebnim. Razvoj ljudske izvrsnosti i darovitosti, kao i njihovo podsticanje, nekada su predstavljali vrednost koja je donosila rezultate i bila cenjena na tržištu rada. Međutim, potražnja za tim sposobnostima danas je sve manja. Pojam singularnosti, koji se decenijama spominje kao trenutak kada će se veštačka inteligencija izjednačiti sa ljudskom inteligencijom, dugo je delovao kao daleka mogućnost. Ipak, taj proces se odvija gotovo neprimetno, bez velikih potresa i vidljive drame, ali to ne znači da izostaju velike promene. Veštačka inteligencija predstavlja ogromnu pomoć ljudima koji programiraju, jer više ne moraju da budu vrhunski stručnjaci za algoritme; veliki deo posla danas se obavlja gotovo rutinski i sa znatno manje intelektualnog napora. Praktično, veštačka inteligencija olakšava posao, ali ga istovremeno i preuzima, jer njen potencijal neprestano raste, dok ljudski stagnira. Čak je primećeno da se u poslednjih nekoliko decenija prosečan ljudski IQ globalno smanjio za nekoliko procenata, što se objašnjava sve većim mehaničkim usvajanjem informacija, a sve manjim intuitivnim i dubinskim promišljanjem sadržaja. Definitivno, nove generacije višestruko manje čitaju, dok im suštinska umetnička iskustva, koja podstiču i razvijaju čovekovo mišljenje, postaju sve manje interesantna. I umetnički talenti – slikanje, pisanje poezije, gluma i pisanje scenarija – odnosno sve ono što

oblikuje subjektivni doživljaj čoveka, a objektivno predstavlja veliku vrednost za društvo, polako nestaje. Umesto da voljom, naporom i samokontrolom razvijamo svoje potencijale i darovitost, sve češće posežemo za gotovim rešenjima i alatima dostupnim na mreži. Dok mi prihvatamo takve obrasce, vlasnici većine poslova sve više prepoznaju ljudski rad kao manje konkurentan i manje potreban. Ljudi ostaju bez poslova, smanjuje se kupovna moć stanovništva, a samim tim opada i proizvodnja. Tako globalni trend svojevrsnog „ledenog doba” svetske ekonomije polako kuca na vrata potrošačke civilizacije. Naravno, takve procese mogla bi da reguliše veštačka inteligencija, ali ona je nečije vlasništvo – roba kojom upravljaju vlasnici kapitala, a oni često nisu ni empatični ni dovoljno etični. Tu se otvara dubok jaz između ljudskog prava na rad i egzistenciju i prava vlasništva koje kontroliše većinu dobara savremenog sveta. Postavlja se pitanje: kako će ljudska darovitost unaprediti svoju izvrsnost da bi mogla da parira veštačkoj darovitosti?

Ključne reči: darovitost, veštačka inteligencija, konkurencija, ljudska kreativnost, singularnost, tržište rada.

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ARTIFICIAL GIFTEDNESS IS REPLACING NATURAL GIFTEDNESS

Artificial intelligence, which is still not fully available to us at that level, calls into question many principles and forms of knowledge that represent the pinnacle of human creativity and ability. Human giftedness, whose achievements have driven civilization so far, still represents a phenomenon and a kind of mystery. Science has not yet deciphered where it originates or how it is activated; it simply eludes all methods of rationalization. Nevertheless, until now, we have used it without asking many questions. On the other hand, new scientific knowledge and insights are emerging that artificial intelligence is already capable of demonstrating today. Unlike human giftedness, whose origin and development we understand, artificial intelligence demonstrates increasing superiority in certain aspects of human creativity and intelligence. Yet it is precisely this “artificial giftedness” that is increasingly making many human abilities redundant. Computer designers have been using artificial intelligence in their work for years. More recently, programmers have also begun to do so, often at the request of their employers, which greatly increases their work efficiency but at the same time reduces the scope of work and makes programmers increasingly less necessary. The development and encouragement of human excellence and giftedness once represented a value that produced results and was appreciated in the labour market. Today, however, the demand for these abilities is steadily decreasing. The concept of singularity, which for decades has been mentioned as the moment when artificial intelligence will equal human intelligence, long seemed like a distant possibility. Yet this process is unfolding almost imperceptibly, without major upheavals or visible drama, but this does not mean that major changes are absent. Artificial intelligence represents enormous assistance to people who program, because they no longer have to be top

experts in algorithms; a large part of the work is now performed almost routinely and with significantly less intellectual effort. In practical terms, artificial intelligence makes the job easier, but at the same time it also takes it over, because its potential is constantly increasing, while human potential is stagnating. It has even been observed that, over the past few decades, the average human IQ has declined globally by several percentage points, which is explained by the increasing tendency towards the mechanical acquisition of information and the decreasing tendency towards intuitive and in-depth reflection on content. New generations are undoubtedly reading significantly less, while essential artistic experiences, which stimulate and develop human thought, are becoming less and less interesting to them. Artistic talents as well — painting, writing poetry, acting, and screenwriting — that is, everything that shapes the subjective experience of the human being and objectively represents great value for society, are gradually disappearing. Instead of developing our potential and giftedness through will, effort, and self-control, we are increasingly turning to ready-made solutions and tools available online. While we accept such patterns, the owners of most businesses increasingly recognize human labour as less competitive and less necessary. People are losing jobs, the purchasing power of the population is decreasing, and consequently production is also declining. Thus, the global trend of a kind of “ice age” of the world economy is slowly knocking on the door of consumer civilization. Of course, such processes could be regulated by artificial intelligence, but it is someone’s property — a commodity managed by the owners of capital, who are often neither empathetic nor sufficiently ethical. This opens up a deep gap between the human right to work and existence and the right of ownership that controls most of the goods of the contemporary world. The question arises: how will human giftedness improve its excellence in order to be able to compete with artificial giftedness?

Keywords: giftedness, artificial intelligence, competition, human creativity, technological singularity, labor market.

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PRIMENA IKT ALATA ZA PODSTICANJE SAMOREGULACIJE U NASTAVI STRANIH JEZIKA KOD DAROVITIH UĀENIKA

Integracija novih tehnologija u obrazovni proces dovela je do znaĳajnih promena. Danas je teųko zamisliti savremenu nastavu bez uvoĳdenja IKT alata, koji sluųe da angaųuju, motiviųu i inspiriųu studente/uĀenike za uĀenje i usvajanje stranog jezika. U razvijanju i negovanju samoregulacije u uĀenju stranih jezika, sposobnost nastavnika i njihovo usavrųavanje u koriųćenju multimedijalnih metoda nastave

postalo je veoma značajno. Upotreba interneta i IKT alata je neophodna za sticanje i razmenu novih znanja i veština, posebno među darovitim učenicima. Na osnovu iskustva nastavnika stranih jezika, ovaj rad razmatra IKT alate koji se koriste za unapređenje samoregulacije u nastavi stranih jezika kod darovitih učenika.

Кljučне речи: nastava stranih jezika, IKT alati, internet učionica, samoregulacija, onlajn okruženje, daroviti učenici, multimedijalna nastava.

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APPLICATION OF ICT TOOLS TO ENCOURAGE SELF-REGULATION IN TEACHING FOREIGN LANGUAGES IN GIFTED STUDENTS

The integration of new technologies into the educational process has led to significant changes. Nowadays, it is difficult to envision contemporary language teaching without the incorporation of ICT tools, which serve to engage, motivate, and inspire students to seek new knowledge. In developing and fostering self-regulation in the learning of foreign languages, the teacher's abilities and their growth in utilizing multimedia teaching methods have become paramount. The use of the internet and ICT tools is essential for the acquisition and teaching of new knowledge and skills, especially among gifted students. Drawing from the experiences of practicing teachers, this paper discusses the ICT tools that are employed to enhance self-regulation in the teaching of foreign languages.

Keywords: foreign language teaching, ICT tools, internet classroom, self-regulation, online environment, gifted students, multimedia teaching.

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ВЕШТАЧКА ИНТЕЛИГЕНЦИЈА КАО ПОДРШКА РАЗВОЈУ ДАРОВИТОСТИ

Даровитост представља сложен и динамичан потенцијал који се испољава у различитим областима дечјег развоја, док савремено дигитално доба доноси нове могућности за њено препознавање и подстицање. Развој информационо-комуникационих технологија и све шира примена вештачке интелигенције у образовању мењају начин на који деца уче, истражују и унапређују своје способности. Посебно даровита деца показују висок степен прилагодљивости технолошким окружењима, користећи дигиталне алате не само у сврху забаве,

већ и као средство учења, истраживања и креативног изражавања. Примена вештачке интелигенције и ИКТ алата омогућава индивидуализацију учења, подстицање самосталности и развој саморегулације учења, као и подстицање истраживачког и креативног приступа раду. Даровита деца често испољавају изузетне способности у областима као што су језици, музика, ликовно изражавање и логичко мишљење, при чему дигитално окружење постаје простор за испољавање и унапређивање њихових потенцијала. Савремени образовни приступи указују на потребу да се технолошки ресурси користе као подршка развоју даровитости, а не искључиво као средство преношења знања. Иако примена савремених технологија и система вештачке интелигенције доноси одређене изазове у образовању и васпитању, она истовремено отвара могућности за стварање подстицајног окружења у коме даровита деца могу развијати своје способности у складу са сопственим интересовањима, потребама и потенцијалима. Циљ рада је сагледавање могућности примене вештачке интелигенције у подршци развоју даровитости код деце, као и разматрање значаја ИКТ алата у подстицању саморегулације учења и креативности.

Кључне речи: даровитост, вештачка интелигенција, ИКТ алати, саморегулација учења, креативност.

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ARTIFICIAL INTELLIGENCE AS SUPPORT FOR THE DEVELOPMENT OF GIFTEDNESS

Giftedness represents a complex and dynamic potential that is manifested in different areas of children's development, and the contemporary digital age brings new opportunities for its recognition and encouragement. The development of information and communication technologies and the increasingly widespread application of artificial intelligence in education are changing the ways in which children learn, explore, and improve their abilities. Gifted children, in particular, demonstrate a high degree of adaptability to technological environments, using digital tools not only for entertainment, but also as a means of learning, exploration, and creative expression. The application of artificial intelligence and ICT tools enables the individualization of learning, the encouragement of independence and the development of self-regulated learning, as well as the promotion of an inquiry-based and creative approach to work. Gifted children often demonstrate exceptional abilities in areas such as languages, music, artistic expression, and logical thinking, with the digital environment becoming a space for expressing and enhancing their potential. Contemporary educational approaches point to the need for technological resources to be used as support for the development of giftedness, rather than solely as a means of transmitting knowledge. Although the application of contemporary technologies and artificial intelligence systems brings certain challenges to

education and upbringing, it simultaneously opens up opportunities for creating a stimulating environment in which gifted children can develop their abilities in accordance with their own interests, needs, and potential. The aim of the paper is to examine the possibilities of applying artificial intelligence in supporting the development of giftedness in children, as well as to consider the importance of ICT tools in encouraging self-regulated learning and creativity.

Keywords: giftedness, artificial intelligence, ICT tools, self-regulated learning, creativity.

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ДИГИТАЛНЕ КОМПЕТЕНЦИЈЕ НАСТАВНИКА СА ЦИЉЕМ ОСНАЖИВАЊА САМОРЕГУЛАЦИЈЕ УЧЕНИКА

Давно је прошло време када је наставник, уз уџбеник, био једини извор информација на часу и знања преносио ученицима у готовом облику. Још је Џон Дјуи оштро критиковао вербализам старе школе и њену потпуну одвојеност од практичног живота. Нове генерације ученика очекују да и школа прати промене које се одвијају у свету и то веома брзо. Да би настава била прилагођена потребама ученика, мора да прихвати и усвоји одређене иновације. Наставни планови и програми се изузетно споро мењају. Зато је потребно мењати начин рада и користити доступне алате. Један од начина је и примена вештачке интелигенције. Због динамичних промена које доноси вештачка интелигенција у свим аспектима развоја привреде и друштва, на иницијативу Министарства науке, технолошког развоја и иновација, Влада Републике Србије је усвојила Стратегију развоја вештачке интелигенције у Републици Србији за период 2025–2030. године. Изузетно важну улогу у свему има Центар за роботiku и вештачку интелигенцију у образовању, који је отворен на Факултету за образовање учитеља и васпитача 2020. године. Визија Центра за роботiku и вештачку интелигенцију у образовању је да буде носилац и покретач дигиталне трансформације образовања у Србији и региону, кроз систематску интеграцију вештачке интелигенције и других напредних образовних технологија у наставне и истраживачке процесе. Центар тежи да, кроз међународну сарадњу, развој дигиталних компетенција наставника, као и унапређење образовних политика заснованих на подацима, допринесе изградњи иновативног, одрживог и квалитетног система образовања у складу са принципима европског образовног простора. Посебан нагласак ставља се на оснаживање дигиталних компетенција наставника кроз акредитоване програме стручног усавршавања, унапређење квалитета наставног процеса и јачање сарадње између академског, технолошког и образовног сектора, у складу са

националним и европским стандардима. Центар за роботiku и вештачку интелигенцију у образовању је једини који пружа снажну помоћ и подршку наставнику. Развијањем дигиталних компетенција наставника развијају се и јачају дигиталне способности и знања ученика што је и циљ савремене наставе. На тај начин ћемо ученике боље припремити за саморегулацију и за будућност. Саморегулација се дефинише као процес који појединцу омогућава да управља својим активностима, усмереним циљевима које сам одређује током времена и у контекстима који су променљиви. Сходно томе, да би ученик, а посебно даровит ученик, био самосталан и самостално управљао својим учењем, неопходно је да буде активан учесник процеса учења, треба га мотивисати да активно учествује у овом процесу и да има о томе развијену свест.

Кључне речи: вештачка интелигенција, саморегулација, дигиталне компетенције.

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DIGITAL COMPETENCES OF TEACHERS TO EMPOWER STUDENT SELF- REGULATION

Long gone are the days when the teacher, along with the textbook, was the only source of information in class and conveyed knowledge to students in a ready-made form. John Dewey was already sharply critical of the verbalism of the old school and its complete separation from practical life. New generations of students expect schools to keep up with the changes taking place in the world, and to do so very quickly. In order for teaching to be adapted to the needs of students, it must accept and adopt certain innovations. Curricula and programs change extremely slowly. That is why it is necessary to change the way of working and use available tools. One of the ways is the application of artificial intelligence. Due to the dynamic changes brought by artificial intelligence in all aspects of economic and social development, at the initiative of the Ministry of Science, Technological Development and Innovation, the Government of the Republic of Serbia adopted the Strategy for the Development of Artificial Intelligence in the Republic of Serbia for the period 2025–2030. An extremely important role in all of this is played by the Center for Robotics and Artificial Intelligence in Education, which was opened at the Faculty of Teacher Education in 2020. The vision of the Center for Robotics and Artificial Intelligence in Education is to be the carrier and initiator of the digital transformation of education in Serbia and the region, through the systematic integration of artificial intelligence and other advanced educational technologies into teaching and research processes. The Center aims to contribute, through international cooperation, to the development of digital competences of teachers, as well as the improvement of data-based education policies, to the construction of an innovative, sustainable and high-quality education system in accordance with the

principles of the European Education Area. Special emphasis is placed on strengthening the digital competences of teachers through accredited professional development programs, improving the quality of the teaching process and strengthening cooperation between the academic, technological and educational sectors, in accordance with national and European standards. The Center for Robotics and Artificial Intelligence in Education is the only one that provides strong help and support to teachers. By developing teachers' digital competencies, students' digital skills and knowledge are developed and strengthened, which is the goal of modern teaching. In this way, we will better prepare students for self-regulation and for the future. Self-regulation is defined as a process that allows an individual to manage their activities, directed towards goals that they set themselves over time and in contexts that are changeable. Consequently, in order for a student, and especially a gifted student, to be independent and independently manage their learning, it is necessary for them to be an active participant in the learning process, they should be motivated to actively participate in this process and have a developed awareness of it.

Keywords: artificial intelligence, self-regulation, digital competencies.

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ETIKA, ODGOVORNA RABA IN PEDAGOŠKA VREDNOST UI PRI POUKU DRUŽBOSLOVJA

Umetna inteligenca pri pouku zgodovine in sociologije za nadarjene dijake predstavlja pomembno didaktično priložnost, hkrati pa zahteva etično in odgovorno rabo. UI lahko učitelju in dijakom služi kot orodje za obogatitev pouka, za raziskovanje zgodovinskih virov, primerjavo različnih interpretacij, analizo družbenih pojavov, simulacijo zgodovinskih in socioloških scenarijev ter za podporo samoreguliranemu in raziskovalnemu učenju. Pri nadarjenih dijakih UI omogoča diferenciacijo in personalizacijo učnih nalog ter razvoj višjih miselnih procesov, kot so kritično mišljenje, argumentacija in refleksija. Pedagoška vrednost UI se pokaže predvsem v vlogi intelektualnega spodbujevalca, ne nadomestka mišljenja, pri čemer ima ključno vlogo mentorstvo učitelja. Posebna pozornost mora biti namenjena etičnim vidikom, preverjanju zanesljivosti informacij, preprečevanju nekritičnega sprejemanja vsebin, varovanju podatkov ter razumevanju omejitev algoritmov. Odgovorna raba UI tako prispeva k razvoju avtonomnih, kritičnih in družbeno odgovornih nadarjenih dijakov.

Ključne besede: umetna inteligenca, etika in odgovorna raba, samoregulirano učenje, pouk zgodovine in sociologije.

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ETHICS, RESPONSIBLE USE, AND THE PEDAGOGICAL VALUE OF AI IN SOCIAL SCIENCE EDUCATION

Artificial intelligence in the teaching of history and sociology for gifted students represents an important didactic opportunity, while at the same time requiring ethical and responsible use. AI can serve teachers and students as a tool for enriching instruction: for exploring historical sources, comparing different interpretations, analyzing social phenomena, simulating historical and sociological scenarios, and supporting self-regulated and inquiry-based learning. For gifted students, AI enables differentiation and personalization of learning tasks, as well as the development of higher-order cognitive processes such as critical thinking, argumentation, and reflection. The pedagogical value of AI is primarily reflected in its role as an intellectual stimulus rather than a substitute for thinking, with teacher mentorship playing a key role. Particular attention must be devoted to ethical aspects: verifying the reliability of information, preventing uncritical acceptance of content, protecting data privacy, and understanding the limitations of algorithms. Responsible use of AI thus contributes to the development of autonomous, critical, and socially responsible gifted students.

Keywords: artificial intelligence, ethics and responsible use, self-regulated learning history and sociology education.

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Висока струковна васпитачка и медицинска школа у Вршцу, Србија

ВЕШТАЧКА ИНТЕЛИГЕНЦИЈА И НОВИ ПРАВЦИ У НАСТАВИ МАТЕРЊЕГ ЈЕЗИКА У МУЛТИКУЛТУРАЛНИМ КОНТЕКСТИМА

Рад анализира улогу вештачке интелигенције у настави румунског језика, као и књижевности на румунском језику, у мултикултуралном контексту у Србији, истичући њен допринос развоју језичких компетенција и јачању културног идентитета. Разматрају се начини на које алати засновани на вештачкој интелигенцији персонализују процес учења, олакшавају приступ различитим ресурсима и подстичу интеркултуралну интеракцију. Студија наглашава предности употребе ових технологија, као што су прилагођавање потребама ученика и повећање мотивације за учење, али и изазове који се односе на њихову критичку и уравнотежену употребу. У закључку, вештачка интелигенција се обликује као иновативан фактор у језичком образовању, способан да подржи вредновање матерњег језика као суштинског елемента идентитета у вишејезичним и мултикултуралним друштвима.

Кључне речи: вештачка интелигенција, матерњи језик, идентитет, мултикултуралност.

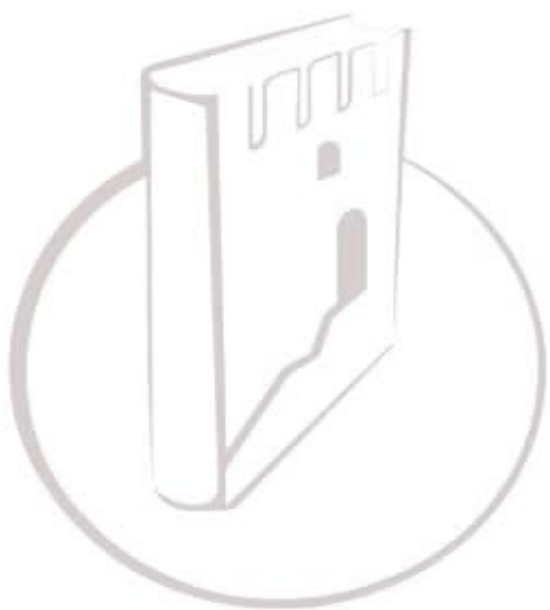
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ARTIFICIAL INTELLIGENCE AND NEW DIRECTIONS IN MOTHER TONGUE TEACHING IN MULTICULTURAL CONTEXTS

The paper analyzes the role of artificial intelligence in teaching the Romanian language, as well as Romanian literature, within the multicultural context of Serbia, highlighting its contribution to the development of linguistic competences and the strengthening of cultural identity. The study examines the ways in which artificial intelligence-based tools personalize the learning process, facilitate access to diverse resources, and encourage intercultural interaction. It emphasizes the advantages of using these technologies, such as adapting to students' needs and increasing motivation for learning, as well as the challenges related to their critical and balanced use. In conclusion, artificial intelligence is emerging as an innovative factor in language education, capable of supporting the promotion of the mother tongue as an essential element of identity in plurilingual and multicultural societies.

Keywords: artificial intelligence, mother tongue, identity, multiculturalism.



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