Characteristics of the submitted research/ artistic/other output

Name and surname	prof. PaedDr. Katarína Žilková, PhD.
Document type:	Characteristics of the submitted research/ artistic/other output
The name of the university	Comenius University Bratislava
The seat of the university	Šafárikovo námestie 6, 818 06 Bratislava

Surname awarded to the assessed person	Žilková
Name awarded to the assessed person	Katarína
Degrees awarded to the assessed person	prof., doc., PaedDr., Mgr., PhD.
Hyperlink to the entry of the person in the Register of university staff	https://www.portalvs.sk/regzam/detail/4985
Area of assessment	Pre-school and Elemenatry School Education
Category of the research/ artistic/other output	scientific output
Year of publication of the research/artistic/other output	2018
ID of the record in the Central Registry of Publication Activity (CRPA) or the Central Registry of Artistic Activity (CRAA)	ID = 75052
Hyperlink to the record in CRPA or CRAA	https://app.crepc.sk/?fn=detailBiblioFormChildU9Q62&sid=47BC0C86295DC33D8A643569&seo=CREP%C4%8C-detail-kniha
Hyperlink to the webpage where the output is available (full text, other documentation, etc.)	https://www.researchgate.net/publication/331114419_Young_children%27s_concepts_of_geometri
List of maximum 5 most significant citations corresponding to the output	o[1] (SCOPUS:2-s2.0-85082381296) 438325: Students' concepts of the trapezoid at the end of lower secondary level education / Halas, Zdeněk [Autor] ; Robová, Jarmila [Autor] ; Moravcová, Vlasta [Autor] ; Hromadová, Jana [Autor]. – DOI 10.1515/edu-2019-0013. – SCO In: Open Education Studies [elektronický dokument] . – Varšava (Poľsko) : De Gruyter. – ISSN 2544-7831. – Roč. 1, č. 1 (2019), 184-197 [online] o[1] (Web of Science Core Collection:WOS:000816277400001; SCOPUS:2-s2.0-85132292678; Current Content Connect:CCC:000816277400001) 486935: Concept mapping in teaching mathematics in Slovakia : pedagogical experiment results / Záhorec, Ján [Autor, 35%] ; Hašková, Alena [Autor, 35%] ; Hrmo, Roman [Autor, 30%]. – [recenzované]. – DOI 10.3390/math10121965. – WOS CC ; SCO ; CCC In: Mathematics [elektronický dokument] . – Bazilej (Švajčiarsko) : Multidisciplinary Digital Publishing Institute. – ISSN (online) 2227-7390. – Roč. 10, č. 12 (2022), art. no. 1965, s. [1-28] [online] o[1] (Web of Science Core Collection:WOS:001025477200011; Emerging Sources Citation Index:WOS:001025477200011; European Reference Index for the Humanities and Social Sciences:1160215402) 1064339: Quality of textbooks from the knowledge management perspective = Calidad de los libros desde la perspectiva de la gestión del conocimiento / Hvorecký, Jozef [Autor, 50%] ; Koreňová, Lilla [Autor, 50%]. – [recenzované]. – DOI 10.17163/alt.v18n2.2023.10. – ESCI ; WOS CC In: Alteridad [textový dokument (print)] [elektronický dokument] : revista de educación. – Quito (Ekvádor) : Salesian Polytechnic University. – ISSN 1390-325X. – ISSN (online) 1390-8642. – Roč. 18, č. 2 (2023), s. 273-284 [tlačená forma] [online] o[1] (SCOPUS:2-s2.0-85191962921) 1165242: Impediments to kindergarten children identifying geometric shapes / Vorkapić, Marija [Autor, 33.334%] ; Milinković, Jasmina [Autor, 33.333%] ; Milošević, Mila [Autor, 33.333%]. – DOI 10.18690/rei.2503. – SCO In: Revija za elementarno izobraževanje [textový dokument (print)] [elektronický dokument] . – Maribor (Slovinsko) : Univerza v Mariboru. – ISSN 1855-4431. – ISSN (online) 2350-4803. – Roč. 17, č. 1 (2024), s. 105-122 [tlačená forma] [online] o[2] 1117724: Aktivnosti koje mogu pogodovati razvoju prostornog zora i geometrijskog mišljenja učenika osnovne škole = Activities that can favor the development of spatial sense and geometric thinking of elementary school students / Pjanić-Lipovača, Karmelita [Autor, 100%] ; Prozor u svijet obrazovanja, nauke i mladih, 3 [19.05.2023-20.05.2023, Sarajevo, Bosna a Hercegovina]In: Prozor u svijet obrazovanja, nauke i mladih [elektronický dokument] . – Sarajevo (Bosna a Hercegovina) : Univerzitet u Sarajevu. – ISSN 2831-1558. – Roč. 1, č. 1 (2023), s. 347-355 [online]
Characteristics of the output's impact on socio-economic practice	The publication brings original results of research organized within the Slovak Republic to verify the relevance of existing theoretical approaches to the development of geometric thinking of students. The findings are in line with van Hiele's theory and, in addition, bring other results that enrich the existing knowledge in the field of preschool and elementary pedagogy in the development of the cognitive process of preschool and early school children. Knowing how children and students think and develop mathematical concepts is crucial from the point of view of society-wide pedagogical practice. Due to the requirements of the Employers' Union, it is necessary to pay increased attention to STEM education and prepare graduates for current job positions. In this sense, it is necessary to know thoroughly the process of creating mathematical ideas of students, what is the focus of this output of creative activity.
Characteristics of the output and related activities' impact on the educational process	The concept of output allows to use the results in the educational process of future teachers for pre-primary and primary education and at the same time implement research results directly into the concepts of mathematics textbooks, so that the construction of school mathematics supports the development of correct mathematical ideas.
Area of assessment	Pre-school and Elemenatry School Education
Category of the research/ artistic/other output	scientific output
Year of publication of the research/artistic/other output	2019
ID of the record in the Central Registry of Publication Activity (CRPA) or the Central Registry of Artistic Activity (CRAA)	ID: 122197
Hyperlink to the record in CRPA or CRAA	https://app.crepc.sk/?fn=detailBiblioFormChildM9VAQ&sid=72C84F3CCF0D479C04856D4DA1&seo=CREP%C4%8C-detail-%C4%8Cl%C3%A1nok
Hyperlink to the webpage where the output is available (full text, other documentation, etc.)	https://www.researchgate.net/publication/332548753_Visualisation_as_a_Method_for_the_Develop

List of maximum 5 most significant citations corresponding to the output	O[1]. Current Content Connect:CCC:001143137200009; Web of Science Core Collection:WOS:000994100700001) 1159641: Characterizing external visualization in mathematics education research : a scoping review / Schoenherr, Johanna [Autor, 50%] ; Schukajlow, Stanislaw [Autor, 50%]. – DOI 10.1007/s11858-023-01494-3. – WOS CC ; CCC In: ZDM [textový dokument (print)] [elektronický dokument] : the international journal on mathematics education. – Heidelberg (Nemecko) : Springer Nature. – ISSN 1863-9690. – ISSN (online) 1863-9704. – Roč. 56, č. 1 (2024), s. 73-85 [tlačená forma] [online] O[1]. (Web of Science Core Collection:WOS:000816277400001; SCOPUS:2-s2.0-85132292678; Current Content Connect:CCC:000816277400001) 486935: Concept mapping in teaching mathematics in Slovakia : pedagogical experiment results / Záhorec, Ján [Autor, 35%] ; Hašková, Alena [Autor, 35%] ; Hrmo, Roman [Autor, 30%]. – [recenzované]. – DOI 10.3390/math10121965. – WOS CC ; SCO ; CCC In: Mathematics [elektronický dokument] . – Bazilej (Švajčiarsko) : Multidisciplinary Digital Publishing Institute. – ISSN (online) 2227-7390. – Roč. 10, č. 12 (2022), art. no. 1965, s. [1-28] [online] O[1]. (Current Content Connect:CCC:000755342000001; SCOPUS:2-s2.0-85123591367; Web of Science Core Collection:WOS:000755342000001) 461986: Synthesis of modeling, visualization, and programming in GeoGebra as an effective approach for teaching and learning STEM topics / Ziatdinov, Rushan [Autor, 50%] ; Valles, James R. [Autor, 50%]. – DOI 10.3390/math10030398. – WOS CC ; SCO ; CCC In: Mathematics [elektronický dokument] . – Bazilej (Švajčiarsko) : Multidisciplinary Digital Publishing Institute. – ISSN (online) 2227-7390. – Roč. 10, č. 3 (2022), art. no. 398, s. [1-16] [online] O[2]. 1204111: Exploring the roles of visual tools in primary mathematics to achieve learning outcomes / Johnny, Jacinta [Autor, 100%]. – [recenzované]. – DOI 10.37134/ejsmt.vol11.2.7.2024 In: EDUCATUM Journal of Science, Mathematics and Technology [textový dokument (print)] [elektronický dokument] . – Tanjong Malim (Malajzia) : UPSI Press. – ISSN 2289-7070. – ISSN (online) 2462-2451. – Roč. 11, č. 2 (2024), s. 64-71 [tlačená forma] [online] O[2]. 1207121: The effects of augmented reality geometry learning applications on spatial visualization ability for lower primary school pupils / Nadzeri, Mohamad B. [Autor, 25%] ; Musa, Muzirah [Autor, 25%] ; Chew, Cheng Meng [Autor, 25%] ; Irwan Mahazir, Ismail [Autor, 25%]. – [recenzované]. – DOI 10.3991/ijim.v18i16.47079 In: International Journal of Interactive Mobile Technologies [elektronický dokument] . – Viedeň (Rakúsko) : International Association of Online Engineering. – ISSN 1865-7923. – Roč. 18, č. 16 (2024), s. 104-118 [online]
Characteristics of the output's impact on socio-economic practice	The identification of erroneous geometric ideas and educational interventions aimed at their elimination and the development of correct geometric ideas in school-age children is of great importance in terms of further mathematical education of students. It provides opportunities to increase students' autonomy and motivation, which may result in increased interest in STEM unions.
Characteristics of the output and related activities' impact on the educational process	The study examined visualization as a key factor in the development of geometric concepts for students in primary and lower secondary education. The result of the study is the identification of misconceptions of Slovak students about rectangles. The study recommends proposals for educational interventions based on static and dynamic visualization models.
Area of assessment	Pre-school and Elemenatry School Education
Category of the research/ artistic/other output	scientific output
Year of publication of the research/artistic/other output	2023
ID of the record in the Central Registry of Publication Activity (CRPA) or the Central Registry of Artistic Activity (CRAA)	ID = 442205
Hyperlink to the record in CRPA or CRAA	https://app.crepc.sk/?fn=detailBiblioFormChildAA947&sid=449A78BFE483A8EAFDF249C553&seo=CREP%C4%8C-detail-kapitola-/-pr%C3%ADspevok
List of maximum 5 most significant citations corresponding to the output	O[1]. (SCOPUS:2-s2.0-85161509284) 1048175: Online Learning in Teaching Initial Math Education / Pokorný, Milan [Autor, 100%] ; International Conference on Recent Innovations in Computing, 5 [13.05.2022-14.05.2022, Jammu, India]. – [recenzované]. – DOI 10.1007/978-981-19-9876-8_50. – SCO In: Proceedings of International Conference on Recent Innovations in Computing (Volume 1) [textový dokument (print)] [elektronický dokument] : ICRIC 2022 / Singh, Yashwant [Zostavovateľ, editor] ; Singh, Pradeep Kumar [Zostavovateľ, editor] ; Kolekar, Maheshkumar H. [Zostavovateľ, editor] ; Kar, Arpan Kumar [Zostavovateľ, editor] ; Gonçalves, Paulo J. Sequeira [Zostavovateľ, editor]. – 1. vyd. – Singapure (Singapur) : Springer Nature, 2023. – (Lecture Notes in Electrical Engineering, ISSN 1876-1100, ISSN 1876-1119 ; Volume 1001). – ISBN 978-981-19-9875-1. – ISBN (elektronické) 978-981-19-9876-8, s. 657-667 [tlačená forma] [online] O[1]. (Norwegian Register for Scientific Journals, Series and Publishers:Nordic List Level 1; SCOPUS:2-s2.0-85148241157) 1016841: Experience with Online Learning of Mathematics in Primary Education / Pokorný, Milan [Autor, 100%]. – [recenzované]. – DOI 10.3991/ijet.v18i02.35401. – SCO. In: International Journal of Emerging Technologies in Learning [textový dokument (print)] [elektronický dokument] . – Viedeň (Rakúsko) : International Association of Online Engineering. – ISSN 1863-0383. – ISSN (online) 1868-8799. – Roč. 18, č. 2 (2023), s. 203-213 [0,75 AH] [tlačená forma] [online]
Characteristics of the output's impact on socio-economic practice	The potential of online learning: The results of the study suggest that online learning can be an effective tool for teaching and assessing students, even in challenging subjects such as geometry. This has significant implications for the future of education, especially in the context of potential crises or the need for flexible education. Optimization of teaching methods: The study can contribute to the optimization of teaching methods and testing. The findings can be used in the creation of curricula and the development of new educational tools. Informative decisions: The results of the study can be useful for decision-making processes at the level of universities and educational institutions. They can help make decisions about investments in IT infrastructure and the development of online learning programs. The future of education: The study can contribute to the debate about the future of education and how new technologies can improve the quality and accessibility of education.

Characteristics of the output and related activities' impact on the educational process	Equivalence of online and face-to-face learning: The study confirmed that online learning can be equivalent to traditional face-to-face learning, at least in terms of students' knowledge level. This opens up new possibilities for more flexible and individualized education. Adaptability of the education system: The COVID-19 pandemic has shown that the education system is able to quickly adapt to changed conditions and use new technologies. Development of digital competences: The transition to online teaching required both students and teachers to develop digital competences, which can have a positive impact on their future employment on the labor market. New evaluation options: E-testing offers new options for evaluating students' knowledge, which can be more objective and effective.
Area of assessment	Pre-school and Elemenatry School Education
Category of the research/ artistic/other output	scientific output
Year of publication of the research/artistic/other output	2021
ID of the record in the Central Registry of Publication Activity (CRPA) or the Central Registry of Artistic Activity (CRAA)	ID = 512121
Hyperlink to the record in CRPA or CRAA	https://app.crepc.sk/?fn=detailBiblioFormChildOABTR&sid=94F575F835BC0A0EB6BD90D1B3&seo=CREP%C4%8C-detail-kapitola-/-pr%C3%ADspevok
List of maximum 5 most significant citations corresponding to the output	[o1]. (SCOPUS:2-s2.0-85161509284) 1048175: Online Learning in Teaching Initial Math Education / Pokorný, Milan [Autor, 100%] ; International Conference on Recent Innovations in Computing, 5 [13.05.2022-14.05.2022, Jammu, India]. – [recenzované]. – DOI 10.1007/978-981-19-9876-8_50. – SCO In: Proceedings of International Conference on Recent Innovations in Computing (Volume 1) [textový dokument (print)] [elektronický dokument] : ICRIC 2022 / Singh, Yashwant [Zostavovateľ, editor] ; Singh, Pradeep Kumar [Zostavovateľ, editor] ; Kolekar, Maheshkumar H. [Zostavovateľ, editor] ; Kar, Arpan Kumar [Zostavovateľ, editor] ; Gonçalves, Paulo J. Sequeira [Zostavovateľ, editor]. – 1. vyd. – Singapure (Singapur) : Springer Nature, 2023. – (Lecture Notes in Electrical Engineering, ISSN 1876-1100, ISSN 1876-1119 ; Volume 1001). – ISBN 978-981-19-9875-1. – ISBN (elektronické) 978-981-19-9876-8, s. 657-667 [tlačená forma] [online] o[1]. (Norwegian Register for Scientific Journals, Series and Publishers:Nordic List Level 1; SCOPUS:2-s2.0-85148241157) 1016841: Experience with Online Learning of Mathematics in Primary Education / Pokorný, Milan [Autor, 100%]. – [recenzované]. – DOI 10.3991/ijet.v18i02.35401. – SCO In: International Journal of Emerging Technologies in Learning [textový dokument (print)] [elektronický dokument] . – Viedeň (Rakúsko) : International Association of Online Engineering. – ISSN 1863-0383. – ISSN (online) 1868-8799. – Roč. 18, č. 2 (2023), s. 203-213 [0,75 AH] [tlačená forma] [online]
Characteristics of the output's impact on socio-economic practice	The study deals with erroneous geometric ideas of students of teachers for pre-primary and primary education. From the point of view of their professional training, it is important to identify erroneous geometric ideas and eliminate them so that they are not transferred to children of preschool and younger school age. Misconceptions form natural barriers in mathematics education, which make it impossible to move within other cognitive levels. This aspect is one of the potential causes of lack of interest in STEM unions, which has a negative impact on socio-economic practices. / Informative decisions for educational institutions: The results of the study provide educational institutions with valuable information about the perception of e-testing by future teachers. This information can help in deciding on the introduction and use of e-testing in the learning process. Optimization of educational processes: The study can contribute to the optimization of educational processes by identifying areas where e-testing needs to be improved. For example, if students perceive an e-test as too difficult or unfair, steps can be taken to modify it. Promotion of quality education: The study can contribute to the promotion of quality education by identifying factors that influence student stress during e-testing. These factors can be addressed to improve the overall learning experience. The future of education: The study can contribute to the debate about the future of education and how new technologies such as e-testing can improve the quality and accessibility of education.
Characteristics of the output and related activities' impact on the educational process	Quality of assessment: The findings of the study can contribute to improving the quality of student assessment. Identified problems, such as unclear assignments or technical problems, can be addressed and eliminated, increasing the reliability and validity of e-tests. Student motivation: Students' perception of e-testing can affect their motivation to learn. If students perceive e-tests as unfair or too demanding, this can lead to a decrease in their motivation. Therefore, it is important that e-tests are designed in such a way that they are understandable and fair for students. Teacher-student relationship: The study suggests that the relationship between students and teachers can influence the stress students experience during e-testing. A strong relationship with a teacher can give students more support and reduce their anxiety. Adaptability of the educational system: The study emphasizes the need for continuous adaptation of the educational system to new technologies and the needs of students. E-testing can be an effective tool.
Area of assessment	Pre-school and Elemenatry School Education
Category of the research/ artistic/other output	scientific output
Year of publication of the research/artistic/other output	2018
ID of the record in the Central Registry of Publication Activity (CRPA) or the Central Registry of Artistic Activity (CRAA)	ID: 99143
Hyperlink to the record in CRPA or CRAA	https://app.crepc.sk/?fn=detailBiblioFormChildCAJ8A&sid=D5FF8BEF93D1A741BC78894E&seo=CREP%C4%8C-detail-kapitola-/-pr%C3%ADspevok

List of maximum 5 most significant citations corresponding to the output	[o1] 2019 - Benyak, Jozef - Kopáčová, Janka : Pattern applets - working with applets promoting pattern recognition. - In: SEMT 19 . - Praha : Univerzita Karlova, 2019 ; S. 72-80 ; CPCI-S [o3] 2020 - Stoffová, Veronika - Némethová, Silvia : Dištančné vyučovanie predmetov informatiky a programovania. - In: Proceedings of 33. DidMatTEech 2020 Conference . - Budapešť : Eötvös Loránd Tudományegyetem, 2020 ; S. 40-52 [o3] 2020 - Stoffová, Veronika - Zboran, Martin : Prezi na tvorbu didaktických aplikácií. - In: Proceedings of 33. DidMatTEech 2020 Conference . - Budapešť : Eötvös Loránd Tudományegyetem, 2020 ; S. 53-65 [o1] 2020 - Czakóová, Krisztina - Stoffová, Veronika : Training teachers of computer science for teaching algorithmization and programming. - In: IMSCI 2020 . - Winter Garden : International Institute of Informatics and Systemics, 2020 ; S. 231-235 ; SCOPUS
Characteristics of the output's impact on socio-economic practice	The aim of the study was to describe the process of creating (conception, design and implementation) a set of author's educational applets on the topic of "Repeating Linear Patterns" for preschool and early school children. DBR research was applied to the development and implementation of interactive applets. The result was a set of applets focused on a) pattern identification and the ability to continue the pattern (in different positions), b) finding a pattern error and the ability to correct (in different ways), c) supplementing the missing sequence in the pattern (choice of options). Applets have been designed and verified to be mathematically correct, age-appropriate, easy to use and meet the different educational needs, abilities and interests of children. The set of applets is freely available on the website www.delmat.info (www.delmat.org) and, from the point of view of society as a whole, they received high attendance, especially during the pandemic period, in support of distance and autonomous education.
Characteristics of the output and related activities' impact on the educational process	A set of interactive applets developing the functional thinking of preschool and early school children is directly usable in the educational process at the relevant educational level. At the same time, it serves as a methodological aid in the preparation of future teachers for pre-primary and primary education as a concrete example for the design of gradual educational activities taking into account the interests and preferences of children. From a professional point of view, it is also an example of how to carry out action research or research through development in practice.