

Brief information about the project

Name of the project	AP19678207 «Research and development of software - methodological support for course "Digital Literacy" in elementary school of inclusive education using augmented reality»
Relevance	Nowadays, in inclusive education in Kazakhstan, with equal access to any type of education, an urgent problem is the creation of necessary conditions for achieving education adaptation by all children, regardless their individual, mental and physical capabilities, mother tongue. It is necessary to support the educational process with modern program and methodological materials to create these conditions, in particular when teaching the course “Digital Literacy” in elementary school, considering individual typological characteristics of children with special needs. The main idea: to research, develop educational and methodological materials and a mobile application with elements of augmented reality (AR) for teaching the course "Digital Literacy" in the elementary school of inclusive education and their implementation in the state and Russian languages. This will increase the interest of children with special needs in learning and activity in mastering the material on an equal basis with other children.
Purpose	Purpose of the project is research and develop a system of methodological tools, mobile application for smartphones and tablets with augmented reality (AR) elements for teaching the Digital Literacy course for children with special needs in the elementary school in the state and Russian languages.
Objectives	<ul style="list-style-type: none">- Conduct an analysis of existing teaching approaches and existing software to identify current problems, using psychological and pedagogical literature, available software, results of questionnaire, survey, conversations, videoconferences with teachers, school students and parents of children with special needs, consider all possible risks;- Develop special educational and methodological materials for the course “Digital Literacy”, considering AR capabilities, develop children potential of the relevant categories (hearing impaired, intellectually impaired, musculoskeletal disorders, speech disorders), considering their individual typological characteristics, controlling workbooks with tasks (interactive exercises, tests) for student independent work;- Develop an application for smartphones and tablets with AR elements on the course "Digital Literacy" for children with special needs based on the developed educational and methodological materials, involving announcers, sign language interpreters, psychologists, adapted to various operating systems;

	<p>- Conducting experimental work in schools of Kazakhstan within the Project along with exhibitions, round table discussions to test the research results and disseminate them among teachers and pupils of secondary schools.</p>
<p>Expected and achieved results</p>	<p>Expected results: existing teaching approaches and existing software will be analyzed, the list and classification of mobile application elements are determined, all possible risks are considered. - special educational and methodological materials will be developed for the course “Digital Literacy”, considering AR capabilities, developing children potential of the relevant categories (hearing impaired, intellectually impaired, musculoskeletal disorders, speech disorders), considering their individual typological characteristics, controlling workbooks with tasks for student independent work. - mobile application with AR elements will be developed on the course “Digital Literacy” for children with special needs of elementary school based on special educational and methodological materials, involving announcers, sign language interpreters, psychologists and adapted to various operating systems, digital product will be created on the basis of Unity-3d and the Vuforia library for demonstrating models on mobile phones, tablets; - experimental work will be carried out in schools within the Project along with exhibitions, round table discussions, will be articles published in at least two Kazakhstan’s journals recommended by CQASES MES RK; in at least one foreign journal indexed in Social Science Citation Index, Arts and Humanities Citation Index and/or the Web of Science database and/or with at least 35 Cite Score percentile in Scopus database to test the research results and disseminate them among researchers, teachers and pupils of secondary schools in Kazakhstan. Achieved results: Special educational and methodological materials have been developed for the course “Digital Literacy” for inclusive education, taking into account the possibilities of augmented reality (AR) and the individual typological characteristics of children of the corresponding categories (with hearing impairments, with mental retardation, with musculoskeletal disorders, with severe speech impairment).</p>
<p>Research team members with their identifiers (Scopus Author ID, Researcher ID, ORCID, if available) and links to relevant profiles</p>	<p>1. Project leader: candidate of pedagogical sciences, associate professor Rakhimzhanova L.B. Scopus Author ID: 57210843451, ORCID: https://orcid.org/0000-0003-1136-3811, ResearcherID: O-1177-2014 2. Kultan Jaroslav, PhD, assoc. Professor, Ing., PhD & PhD., Honorazrz prof. Dr.h.c., University of Economics in Bratislava, Slovakia Scopus author ID 57132936100, ORCID https://orcid.org/0000-0001-6068-9784</p>

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List of publications with links to them	<p>1. Rakhimzhanova L.B., Baimuldina N.S., Isabaeva D.N., Kultan J., Cherikbaeva L., Omirbekova I.S. “Current problems of teaching the course “Digital Literacy” to junior schoolchildren in inclusive education.” Global Science and Innovation 2023: Central Asia”, Series “Pedagogical Sciences”, No. 2(20). With. 32-37</p> <p>2. Rakhimzhanova L.B., Isabaeva D.N., Kultan Ya. Identification and selection of digital content elements for the “Digital Literacy” course for a mobile application. Bulletin of KazNPU. Physics and mathematics series, No. 3 (83), p. 216-226 https://bulletin-phmath.kaznpu.kz/index.php/ped/article/view/1660 DOI 10.51889/2959-5894.2023.83.3.024</p> <p>3. Lyazzat Rakhimzhanova, Darazha Issabayeva, Lyailya Cherikbayeva, Jaroslav Kultan, Nazira Baimuldina. Modern challenges in teaching Digital literacy to primary schoolchildren in the context of inclusive education. International Journal of Advances in Electronics and Computer Science-IJAECS. Volume-10, Issue-11 (Nov, 2023) https://iraj.doionline.org/dx/IJAECS-IRAJ-DOIONLINE-20323</p> <p>4. Methodological recommendations for the course “Digital Literacy” for teachers of primary schools of inclusive education: textbook / L.B. Rakhimzhanova, D.N. Isabaeva, J. Kultan. - Almaty: Kazakh University, 2023. – 106 p. ISBN 978-601-269-444-4</p> <p>5. Lyazzat Rakhimzhanova, Darazha Issabayeva, Nazira Baimuldina and Jaroslav Kultan. Model of inclusive training in the “Digital Literacy” course using a mobile application with elements of augmented reality. Trends and Innovations in E-business, Education and Security 2023 (TIEES 2023). November 22, 2023 https://tiees.webconf.online/index.php/tiees-2023/program</p>
Patents	-