

METHODOLOGY FOR DEVELOPING THE EDUCATIONAL ACTIVITIES OF FUTURE GEOGRAPHY TEACHERS IN A DIGITAL LEARNING ENVIRONMENT

Sukhrob Sharob ogli Khujakulov

Uzbekistan-Finland Pedagogical Institute

Lecturer, Department of Geography

suhrobxujaqulov2311@gmail.com

Pirnazarova Shahlo Boynazar kizi

Uzbekistan-Finland Pedagogical Institute

Department of Pedagogy, Lecturer

sboynazarovna@gmail.com

Khamrayeva Dilfuza Alisher kizi

Primary school teacher at Secondary School No. 2,

Dustlik District, Jizzakh Region.

Abstract: This article analyzes methodological approaches to developing the skills of future geography teachers in designing educational and professional activities within a digital learning environment. Pedagogical design methods based on digital resources specific to geography, geoinformation technologies, and modern lesson design are presented. These approaches provide practical justification for developing digital competencies in future educators, designing innovative lessons, and applying interactive methods.

Keywords: Geography education, digital environment, Google Earth satellite imagery, ArcGIS, GIS (Geographic Information System), interactive methods, future teacher, methodology.

The modern education system is closely linked with the development of digital technologies. This is especially important for geography, a subject that demands visual and spatial thinking. One of the primary current tasks in training future teachers is developing their project-based skills in digital environments. This article examines the methodological approaches used to form such skills.

The digital transformation occurring in today's educational system is fundamentally changing the content, form, and methods of pedagogical processes. In particular, the rapid development of the digital learning environment demands that teachers not only know modern information and communication technologies (ICT) but also be able to use them effectively in educational and professional activities.

From this perspective, the development of digital competencies in future teachers studying in pedagogical fields-particularly their preparedness to design, organize, and assess educational processes-is of vital importance.

The relevance of this topic lies in its dual purpose: preparing future educators for the digital environment, and enhancing their capabilities in independent learning, information search and analysis, and the development of innovative teaching methods.

Google Earth in Geography Education Google Earth is a free software that displays the Earth in 3D using satellite imagery. It allows users to explore any location in the world.

Main Features: Viewing the Earth using satellite imagery, Displaying 3D cities and natural objects, Comparing historical imagery to observe landscape changes, Measuring distance and area, Pinpointing locations and drawing routes, Available in web, mobile, and desktop versions.

Applications: In education and teaching processes, In exploration and tourism, In the analysis of historical and ecological changes, In urban planning for general users.

Cartography and GIS in Teaching Topics Covered: Determining location and measurement, Map reading and coordinates, Scale calculations.

Google Earth enables hands-on application through tools that measure real coordinates, distances, and elevations.

It can be used across all natural geography subjects such as: General Earth science, Continents and oceans, Central Asia and Uzbekistan's physical geography

Topics: Earth's structure (mountains, valleys, volcanoes, tectonic plates), Geological processes (earthquakes, erosion, river formation), Climate zones (types and distribution), Water sources (rivers, lakes, oceans).

Economic Geography Topics: Industrial centers and their locations, Transport and communication systems, Agricultural regions, Tourism geography.

Students can analyze the economic significance of industrial and transportation infrastructure using maps.

Population Geography Topics: Population distribution and density, Urban geography, Migration and urbanization processes

Google Earth can be used to analyze the growth of major cities, migration patterns, and population density.

ArcGIS in Geography Education

ArcGIS, developed by Esri, is a geographic information system (GIS) software used to collect, analyze, and visualize spatial data.

Key Features: Creating accurate and professional maps, Geographic analysis (e.g., water flow, population density, land use), Working with data layers, Generating location-based reports, Both online (ArcGIS Online) and offline (ArcGIS Pro) versions available,

Applications: Urban and regional planning, Environmental monitoring and research, Population statistics and analysis, Transport and infrastructure projects Emergency management.

ArcGIS enables deep analytical approaches to studying geography. Students can not only create maps but also analyze specific geographic phenomena, make decisions, and design projects based on statistical data.

Topic-Specific Applications of ArcGIS Visual analysis of climate change factors, Mapping air and water pollution zones, Creating relief maps using SRTM (elevation data) for 3D models, Identifying river basins through watershed analysis, Spatial analysis (distance, routing, area measurements), Studying desertification and deforestation, Interpolation (e.g., regional differences in precipitation), Mapping industrial and agricultural zones, Creating population density maps (choropleth maps), Analyzing urbanization.

What is a Quiz?

A quiz is an engaging, interactive question-and-answer task used to assess students' knowledge levels.

Purpose: To reinforce learning and generate interest.

Example Question: "Which continent has the most countries?"

A) Africa

B) Europe

C) Asia

D) South America

What is a Test?

A test is a structured task designed to assess students' understanding of a subject. Questions usually have one or multiple correct answers.

Purpose: To evaluate comprehension of the taught material.

Example Question: "What are artificial satellites used for?"

- A) Water purification
- B) Internet access
- C) Climate control
- D) Geographic observation

Correct answers: B and D

What is a Map Task?

A map task is an activity that develops students' skills in reading, interpreting, and analyzing maps. Tasks may include identifying locations, marking points, comparing features, and measuring distances.

Purpose: To build practical geographic skills.

Example Tasks: Mark three mountain ranges on a map, Highlight the countries with the highest population density, Using Google Earth or ArcGIS, mark major rivers in your region.

Developing the ability to design digital lessons is a crucial element in the professional preparation of future geography teachers. With the use of modern tools like Google Earth, interactive platforms, and ArcGIS, the quality of education can be significantly enhanced. These methodological approaches can nurture independent, creative, and innovative teachers in the digital learning environment.

References:

1. UNESCO. (2018). ICT Competency Framework for Teachers
2. Mishra, P., & Koehler, M. J. (2006). Technological Pedagogical Content Knowledge (TPACK)
3. Qurbanov, A. (2022). Digital Pedagogy: Theoretical and Practical Foundations. Tashkent: TDPU
4. Khayrullayeva, N. (2021). Foundations of Digital Education Technologies. Samarkand: SamDU
5. Esanov, D. (2023). "Preparing Future Geography Teachers Using GIS Tools." *Pedagogy and Psychology*, No. 2(45), pp. 33–38
6. Anderson, L., & Krathwohl, D. (2001). A Taxonomy for Learning, Teaching, and Assessing
7. www.geogebra.org
8. www.arcgis.com
9. www.nationalgeographic.org/education