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13.00.00 Pedagogika fanlari
13.00.01 Pedagogika nazariyasi. Pedagogik ta'limotlar tarixi
13.00.02 Ta'lim va tarbiya nazariyasi va metodikasi (sohalar bo'yicha)
13.00.03 Maxsus pedagogika
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09.00.00 Falsafa fanlari
10.00.00 Filologiya fanlari
11.00.00 Geografiya fanlari

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Pedagogika, psixologiya fanlariga ixtisoslashgan ilmiy jurnal

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THE USE OF VISUALIZATION TECHNOLOGY AS A NEW TREND IN TEACHING THE ENGLISH LANGUAGE

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Abstract: Various modern approaches to teaching the English language are actively being implemented in contemporary methodology. This article examines current trends in visualization that are gaining increasing popularity in language teaching methodology. It explores the original meaning of the concept of visualization within educational and pedagogical methodology and analyzes its role in the education system of Uzbekistan as well as in global educational practice. Furthermore, the study highlights the importance of using visualization in language teaching, its effectiveness in other academic disciplines, and provides an overview of scientific research conducted at both national and international levels in this field.

Key words: visualization as a concept, modern methodology, language learners, visual techniques, interactive teaching, visual images, graphic organizers, optic nerves, auditory nerves, visual learning.

Annotatsiya: Hozirgi zamon ingliz tilini o'qitish metodikasida turli innovatsion yondashuvlar amaliyotga keng joriy etilmoqda. Ushbu maqolada metodika sohasida tobora ommalashib borayotgan vizualizatsiya tendensiyalari, mazkur atamaning ta'lim va pedagogik metodologiyadagi ilmiy mazmuni hamda uning O'zbekiston va jahon ta'lim tizimidagi o'rni yoritib beriladi. Shuningdek, til o'qitish jarayonida vizualizatsiyadan foydalanishning ahamiyati, ushbu metodning boshqa fan sohalaridagi samaradorligi hamda mazkur yo'nalishda milliy va xalqaro miqyosda olib borilgan ilmiy-tadqiqot ishlari tahlil qilinadi.

Kalit so'zlar: vizualizatsiya atamasi, zamonaviy metodika, til o'rganuvchilar, vizual texnikalar, interaktiv ta'lim, vizual obrazlar, grafik tashkil etuvchilar, ko'rish nervlari, eshitish nervlari, vizual o'rganish.

Аннотация: В современной методике преподавания английского языка на практике широко применяются различные инновационные подходы. В данной статье рассматриваются тенденции использования визуализации, которые приобретают всё большую популярность в мировой методике обучения. Раскрывается исходное содержание понятия "визуализация" в образовательной и педагогической методологии, а также анализируется её место в системе образования Узбекистана и в мировой образовательной практике. Кроме того, освещается значение применения визуализации в обучении иностранным языкам, её роль в преподавании других учебных дисциплин и представлен анализ научно-исследовательских работ, проведённых в данной области на национальном и международном уровнях.

Ключевые слова: визуализация как термин, современная методика, изучающие язык, визуальные техники, интерактивное обучение, визуальные образы, графические организаторы, зрительные нервы, слуховые нервы, визуальное обучение.

INTRODUCTION

Since the elevation of the English language to the status of an international language of communication, numerous research studies have been conducted in various countries, including Uzbekistan, aimed at developing effective and accessible methods for teaching this language. A significant number of these studies focus on a wide range of approaches related to visualization techniques.

Actuality of the topic: Although research on visualization techniques has been carried out on a large scale in the field of education in many countries around the world, this issue remains insufficiently represented in the methodology of teaching English in Uzbekistan. For this reason, research on visualization methodology is considered a relevant and timely topic. The aim of the research is to systematically analyze visualization as one of the most useful and effective methods in the methodology of teaching English in higher education. The objectives of the research include identifying the most appropriate visualization techniques in teaching and determining their applicability within the higher education system.

One of the analyzed scientific sources provides the following etymological perspective on the term visualization: the term is derived from the Latin word[1] visual and refers to the ability to imagine or represent something without a specific physical form. Furthermore, the Oxford English Dictionary provides two distinct definitions of this term:

- **Definition 1 (1883–1894):** the term was used to describe the representation of something that does not have a definite form in real life, or the ability or process of imagining or representing something clearly.
- **Definition 2 (1926–1982):** the meaning of the term was directly associated with the process of transforming something into a visual form.

When considering the term visualization from a general perspective, it is appropriate to refer to the threefold definition provided by the Merriam-Webster Online Dictionary:

1. The formation of mental visual images;
2. The act or process of interpreting something in visual form or shape;
3. The process of visualizing internal organs or their parts through X-rays.[2]

The first definition of visualization from a psychological perspective describes the process of forming an abstract concept in the mind and shaping it into a graphic form through imagination and visual thinking. The third definition relates to a specific medical context. The second definition is directly associated with the educational interpretation of the term. Although the first definition may also be linked to the educational process, as the terminology appears similar, their core meanings differ significantly.

I. Krotova, T. Kamoza, and N. Donchenko examine visualization from a psychological perspective as an effective heuristic teaching method based on logical operations[3], whereas K. Shatri and K. Buza view it as a means of developing students' critical thinking from a general pedagogical standpoint[4].

In addition, O. S. Bulgakova and S. A. Burkova conduct pedagogical experiments in control and experimental groups, using schemes and other visual images in lectures as tools for fostering critical thinking. These approaches are also described in the collaborative research conducted by Liudmyla Naumenko and Vitaliia Muntian.

LITERATURE REVIEW

In the analysis of literature within the scope of the subject, a number of national and international studies were reviewed, and statistical analysis methods were applied to obtain the results. As noted earlier, research on the use of visual learning in the methodology of language teaching in Uzbekistan remains limited. The reviewed literature highlights several teaching methodologies, including cluster-based teaching methodology[5], integrative teaching[6], and teaching within the CEFR framework[7], among others.

Among the national studies conducted to date, F. Sh. Alimov's dissertation on the development of writing competence refers to the use of visualization elements. The methods employed in the study to develop writing skills through visualization techniques included visual methods and their constituent components, namely graphic organizers. In the dissertation, techniques such as cluster, brainstorming, and see, hear, and write were applied to structure the object of the study. During the experimental phase, a total of 272 students from three different universities participated, and the error rate in students' writing competence was significantly reduced: from 14 % to 3 % in the lack of coherence, from 31 % to 12 % in the inability to organize texts using transitional words, from 24 % to 11 % in the inability to construct texts with connective words, and from 29 % to 10 % in the inability to continue a line of thought logically[8]. The study concluded with positive results. In conclusion, it was noted that while considerable attention has been paid to developing writing skills, a focus on language aspects rather than competencies in foreign language learning distinguishes the present research.

1 https://chelseyg.github.io/Visualization/
2 "Visualization." Merriam-Webster.com Dictionary, Merriam-Webster, https://www.merriam-webster.com/dictionary/visualization. Accessed 26 Mar. 2024.
3 Liudmyla NAUMENKO, Vitaliia MUNTIAN. The novel visualization techniques of teaching Ukrainian literature in the secondary school. EUROPEJSKIE STUDIA HUMANISTYCZNE: Państwoi Społeczeństwo Issue 1, 2020, p84.
4 The same resource, p84
5 N.X Kushiyeva, Ingliz tilini o'rgatishda klasterli yondashuv: Ped.f.f.d (Phd),...dis. -Toshkent.:2020. 13-80 betlar.
6 M.X Gulyamova, "Ingliz tilini o'qitishda talabalarning kommunikativ kompitensiyasini rivojlantirishga integrativ yondashuv: Ped.f.f.d (Phd),...dis. -Toshkent.:2019. 83-118 betlar
7 B.G Qulmatov, Ingliz tilini innovatsion texnologiyalar yordamida o'qitishda CEFR mezonlaridan foydalanishning nazariy asoslarini takomillashtirish: Ped.f.f.d (Phd),...dis. . -Toshkent.:2018. 28-31 betlar.
8 F.Sh Alimov, Ingliz tilida yozuv kompitensiyasini shakllantirish: Ped.f.f.d (Phd),...dis. -Toshkent.:2018.-131.

In global practice, numerous countries, including Ukraine, Indonesia, several Arab countries, and various states in the USA, have conducted scientific research on the use of visualization techniques. However, much of this research has focused on enhancing language aspects and, in many cases, aimed at developing competencies in other subject areas within the framework of English language teaching. The following section reviews scientific research conducted in the global context.

In the state of Minnesota, USA, Jessica Will conducted a study on the development of reading comprehension and critical thinking skills through the use of visualization strategies. The strategies applied included the visual imagery strategy, Picture-It, Rainbow Dots, and Story Mapping, among others. The purpose of the study was to help students comprehend texts, imagine events, and visualize them conceptually. However, unlike the present research, this study approached visualization from a strategic perspective, meaning that visual strategies were applied meta-psychologically to facilitate understanding of reading texts through mental imagery[9].

In the state of Nebraska, Alexandra Espinoza conducted research aimed at enhancing students' writing competence through diagramming and graphic illustrations of textual content, with the objective of drawing accurate conclusions, expanding vocabulary, and structuring texts effectively. The experiment involved eighth-grade students. As the class included learners with varying proficiency levels, tasks of a single level of difficulty were assigned. Consequently, the same type and level of difficulty of graphic organizers were used for all students[10].

The study by EFL teachers Hamid Marashi and Samaneh Massoodi-Hematabadi focused on enhancing students' writing skills through the use of graphic organizers and drawn images created either by teachers or by students themselves. In the assessment process, written tasks were designed around four question types–process (chain of events), cause and effect, comparison and contrast, and description–and were administered throughout the term to both the control group and the experimental group. At the initial stage, both groups were introduced to the topic and asked to generate ideas on the whiteboard and brainstorming table in the form of an essay outline. Subsequently, the control group was instructed to write the essay directly, while the experimental group was required to create a graphic or drawn image related to the topic and then write based on personal experiences, without the necessity of incorporating all brainstorming ideas. Although the control group demonstrated higher overall performance in assessment results across the three-stage testing process, the rate of improvement in essay writing was significantly higher in the experimental group. The study emphasizes that the use of visual techniques aims to enhance cognitive thinking, facilitate the visualization of abstract concepts, and develop graphic writing skills across languages and subject areas, not limited solely to English writing competence. The relevance of this study to the present research lies in the essential role of visualization elements employed in the experimental process[11].

In addition to the studies mentioned above, further examples of research on visualization techniques include the dissertation Teachers' Reflections on Using Visualizations in English Language Arts Classrooms to Build Reading Comprehension and Critical Thinking Skills by Taiwana Walker (Massachusetts)[12], research on teaching English through films within the General Foundation Program at Mazun College in the UAE conducted by Praveen Alluri (Arab World English Journal – 2018)[13], and a study on improving students' descriptive writing skills through graphic organizers conducted by Maslichah and Siti Tarwiyah with eighth-grade students at Nurul Islam Juwangi schools in Indonesia[14]. Other studies employing graphic tools, tables, and diagrams based on visualization techniques, conducted by Laraib Rahat, Ghani Rahman, and Shahabullah, further demonstrate the effectiveness and potential of these methods across various research domains[15].

9 Will, Jessica, "Visualization Techniques To Support Students' Reading Comprehension" (2018). School of Education and Leadership Student Capstone Projects. 269. https://digitalcommons.hamline.edu/hse_cp/269.

10 Alexandra Espinoza, "Analyzing the Effectiveness of Graphic Organizers in an English Classroom" (2023). https://digitalcommons.unomaha.edu/.

11 Hamid Marashi & Samaneh Massoodi-Hematabadi, "Using Teacher- and Student-Developed Graphic Organizers as a Writing Tool". Journal of Language and Translation, Volume 2, Number 1 (pp. 79-88), 2011.

12 Taiwana Walker, "Teachers' Reflections on Using Visualizations in English Language Arts Classrooms to Build Reading Comprehension and Critical Thinking Skills", Doctoral Thesis, Graduate School of Education College of Professional Studies Northeastern University Boston, Massachusetts December 2023.

13 Praveen Alluri, "Enhancing English Language Teaching through Films in General Foundation Programs", Arab World English Journal (AWEJ) Proceedings of 1st MEC TESOL Conference 2018 Pp. 146-154 DOI: https://dx.doi.org/10.24093/awej/MEC1.11.

14 Maslichah & Siti Tarwiyah, "Enhancing Students' Ability in Writing Descriptive Text through Graphic Organizers", : JOURNAL FOR LANGUAGE AND FOREIGN LANGUAGE LEARNING, 2017 VOL.6, NO.2, 100-108 http://dx.doi.org/10.21580/vjv6i21792.

15 Laraib Rahat & Ghani Rahman & Shahabullah, "Impact of Graphic Organizers on Reading Comprehension of English Learners at Intermediate Level", Sir Syed Journal of Education & Social Research (SJESR) · October 2020 DOI: 10.36902/sjesr-vol3-iss3-2020(128-134).

RESEARCH METHODOLOGY

Visualization is a fundamental component of education in the process of acquiring and interpreting information and has a long history as a primary means and method of knowledge transmission. If we look back to the time of early human civilization, we can observe numerous examples of visual representation in the form of drawings and paintings on rocks and stones, which conveyed information that had not yet been expressed in written form. Such examples have been preserved to the present day by archaeologists and provide valuable insights into historical modes of communication.

Based on the sources analyzed, it has been established that visualization techniques and methods have been developed and widely applied in various branches of science, particularly in the natural sciences and specific disciplines such as biology, chemistry, geography, mathematics, informatics, as well as in medical and artistic fields. For instance, in Earth science education at the high school level, the use of graphic organizers as a form of visualization has been identified as an effective instructional approach[16]. In contrast, another study reported that the application of visualization in certain areas of natural sciences did not produce reliable results[17].

What Is Visual Teaching?

In order to approach the topic from a specific perspective, it is first necessary to clarify the concept of visual teaching or visual learning. Visual learning refers to the presentation of information in a visual form with the purpose of helping students internalize new concepts, establish connections between ideas, and facilitate critical thinking processes[18].

ANALYSIS AND RESULTS

As a result of the conducted research, it can be observed that the foreign segment of academic sources analyzed within the scope of visualization and its related techniques in Uzbekistan differs significantly. This distribution is illustrated in Table 1 below.

№	Names of countries	Names of scientists and year of publication	Total number of studies	Percentage (%)
1	**Uzbekistan**	F. Sh. Alimov (2018)	1	10 %
2	**Colombia**	Germinton González Gutiérrez (–)	1	10 %
3	**The USA**	Taiwana Walker (2020); Alexandra Espinoza (2023); Jessica Will (2018)	3	30 %
4	**Indonesia**	Maslichah & Siti Tarwiyah (2017); Kiki Juniarti & Dedi Sofyan Kasmainilar (2017); Dian Fadhilawati & Rina Sari (2018)	3	30 %
5	**Oman**	Praveen Alluri (2018)	1	10 %
6	**Pristina**	Kyvete Shatri & Kastriot Buza (2017)	1	10 %

From the table above, it is evident that the United States and Indonesia occupy leading positions in terms of academic research conducted on visualization. This tendency indicates the necessity for further research and the expansion of empirical studies in this field within Uzbekistan.

Modern statistical data demonstrate that while the number of auditory nerves in the human brain is approximately 50 thousand, the number of optic nerves reaches nearly 1 million. In addition, it has been established that about 80 % of learners comprehend information more effectively through visual means. These findings support the view that visual neural pathways are more numerous and dominant. Consequently, visual teaching methods are considered more effective than traditional instructional approaches. Learning through visual aids facilitates easier comprehension of new knowledge, regardless of learners' age, gender, or physical conditions.

16 Goss, Patricia, "The Influence of Graphic Organizers on Students' Ability to Summarize and Comprehend Science.Content Regarding the Earth's Changing Surface" (2009): dis. Electronic Theses and Dissertations. 4143. https://stars.library.ucf.edu/etd/4143.

17 Karen L Vavra, Vera Janjic-Watrich, Karen Loerke, Linda M Phillips, Stephen P Norris and John Macnab, Visualization in Science Education. ASEJ, Volume 41, Number 1, January 2011, pp 22-30.

18 Taiwana Walker (2023), A Picture is Worth A Thousand Words: Teachers' Reflections on Using Visualizations in English Language Arts Classrooms to Build Reading Comprehension and Critical Thinking Skills, doctoral thesis, P1.

CONCLUSION AND SUGGESTIONS

In conclusion, visual learning through the use of technologies such as multimedia tools not only accelerates the foreign language learning process for students but also contributes to the development of their critical thinking skills and the acquisition of essential knowledge in other subject areas. Although visual teaching methods have been introduced in educational institutions in Uzbekistan, particularly in English language classrooms, there remains a need for their broader and more systematic implementation across all levels of education, with special attention to the needs of young language learners.

The application of innovative visualization techniques in combination with modern methodological approaches is aimed at enhancing the overall quality of education in Uzbekistan, increasing the number of individuals with nationally and internationally recognized English language proficiency certifications, and further improving the effectiveness of the English language teaching system in the country.

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18. The same source, p. 84.
19. The same source, p. 84.

13.00.00 Pedagogika fanlari
13.00.01 Pedagogika nazariyasi. Pedagogik ta’limotlar tarixi
13.00.02 Ta’lim va tarbiya nazariyasi va metodikasi (sohalar bo‘yicha)
13.00.03 Maxsus pedagogika
13.00.04 Jismoniy tarbiya va sport mashg‘ulotlari nazariyasi va metodikasi
13.00.05 Kasb-hunar ta’limi nazariyasi va metodikasi
13.00.06 Elektron ta’lim nazariyasi va metodikasi (ta’lim sohalari va bosqichlari bo‘yicha)
13.00.07 Ta’limda menejment
13.00.08 Maktabgacha ta’lim va tarbiya nazariyasi va metodikasi
13.00.09 Ijtimoiy pedagogika
07.00.00 Tarix fanlari
19.00.00 Psixologiya fanlari
01.00.00 Fizika-matematika fanlari
02.00.00 Kimyo fanlari
03.00.00 Biologiya fanlari
09.00.00 Falsafa fanlari
10.00.00 Filologiya fanlari
11.00.00 Geografiya fanlari

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