

THE FORMATION OF FIGURATIVE THINKING IN DESIGN STUDENTS THROUGH MINIMALISM AND OP ART

B.D. AITKULOVA* , Y. TOLEPBAY 

(Almaty Technological University, Republic of Kazakhstan, 050012, Almaty, Tole bi Street, 100)

Corresponding author's e-mail: balnur.doszhankyzy@mail.ru*

The article examines the impact of minimalist and op-art artistic strategies on the formation of professional, figurative, and associative thinking in design students. The relevance of the study is determined by the necessity in design education to transition from reproductive nature-copying to a project-based way of thinking through the conscious interpretation of form and space. The research is based on the analysis of final educational compositions on the theme «Man and Space». The methodological framework of the work consists of a comprehensive approach, including formal-compositional, structural-semantic, and comparative analysis of student sketches, as well as participant observation of the design process. The author regards educational activity as a cognitive experiment where stylistic constraints serve as a pedagogical tool. As a result of the study, it was established that working within the aesthetics of minimalism trains students in form reduction and the identification of semantic dominance through the relationship between silhouette and «void». In turn, the use of op-art techniques (rhythmic repetitions, optical illusions, and color contrasts) transforms the perception of space from a neutral background into an active, dynamic environment. It was revealed that the combination of these directions contributes to a departure from linear perspective in favor of a subjective, deformed, and symbolic interpretation of the image. The human figure in such compositions ceases to be a realistic object and becomes a generalized sign. It is concluded that such practice develops non-linear, associative, and project-based thinking in future designers, allowing them to create complex visual metaphors. The practical significance of the work lies in the possibility of implementing these methods into the curricula of the artistic-design cycle to develop visual literacy and the creative potential of students.

Keywords: minimalism, op art, design education, figurative thinking, composition, visual perception, project thinking.

ФОРМИРОВАНИЕ ОБРАЗНОГО МЫШЛЕНИЯ СТУДЕНТОВ-ДИЗАЙНЕРОВ СРЕДСТВАМИ МИНИМАЛИЗМА И ОП-АРТА

Б.Д. АЙТКУЛОВА*, Е.Т. ТОЛЕПБАЙ

(Алматинский технологический университет, Республика Казахстан, 050012, г. Алматы, ул. Толе би, 100)

Электронная почта автора-корреспондента: balnur.doszhankyzy@mail.ru*

В статье исследуется влияние художественных стратегий минимализма и оп-арта на процесс формирования профессионального, образного и ассоциативного мышления студентов-дизайнеров. Актуальность работы обусловлена необходимостью перехода в дизайнерском образовании от репродуктивного копирования натуры к проектному способу мышления через осознанную интерпретацию формы и пространства. Исследование базируется на анализе итоговых учебных работ по композиции на тему «Человек и пространство». Методологическую основу работы составил комплексный подход, включающий формально-композиционный, структурно-семантический и сравнительный анализ студенческих эскизов, а также включенное наблюдение за процессом проектирования. Автор рассматривает учебную деятельность как когнитивный эксперимент, где стилистические ограничения выступают педагогическим инструментом. В результате исследования установлено, что работа в эстетике минимализма приучает студентов к редукции формы и выявлению смысловой доминанты через соотношение силуэта и «пустоты». В свою очередь, использование приемов оп-арта (ритмических повторов, оптических иллюзий и цветовых контрастов) трансформирует восприятие пространства из нейтрального фона в активную, динамическую среду. Выявлено, что сочетание этих направлений способствует отходу от прямолинейной перспективы в пользу субъективной, деформированной и символической трактовки образа. Фигура человека в таких композициях перестает быть реалистичным объектом и становится обобщенным знаком. Сделан вывод, что подобная практика развивает у будущих

дизайнеров нелинейное, ассоциативное и проектное мышление, позволяя им создавать сложные визуальные метафоры. Практическая значимость работы заключается в возможности внедрения данных методик в учебные программы художественно-проектного цикла для развития визуальной грамотности и творческого потенциала обучающихся.

Ключевые слова: минимализм, оп-арт, дизайн-образование, образное мышление, композиция, визуальное восприятие, проектное мышление.

МИНИМАЛИЗМ МЕН ОП-АРТ ҚҰРАЛДАРЫ АРҚЫЛЫ ДИЗАЙН МАМАНДЫҒЫ СТУДЕНТТЕРІНІҢ БЕЙНЕЛІК ОЙЛАУЫН ҚАЛЫПТАСТЫРУ

Б.Д. АЙТҚҰЛОВА, Е.Т. ТӨЛЕПБАЙ*

(Алматы технологиялық университеті, Қазақстан Республикасы,
050012, Алматы қ., Төле би көшесі, 100)

Автор-корреспонденттің электрондық поштасы: balnur.doszhanzy@mail.ru*

Мақалада минимализм және оп-арттың көркемдік стратегияларының дизайн мамандығы студенттерінің кәсіби, бейнелік және ассоциативтік ойлауын қалыптастыруға әсері зерттеледі. Жұмыстың өзектілігі дизайн-білім беруде натураны репродуктивті көшіруден форма мен кеңістікті саналы түрде интерпретациялау арқылы жобалық ойлау тәсіліне көшу қажеттілігімен негізделген. Зерттеу «Адам және кеңістік» тақырыбындағы қорытынды оқу композицияларын талдауға негізделген. Зерттеудің әдістемелік негізін студенттік эскиздерді формальды-композициялық, құрылымдық-семантикалық және салыстырмалы талдауды, сондай-ақ жобалау процесін бақылауды қамтитын кеңенді тәсіл құрады. Автор оқу іс-әрекетін стилистикалық шектеулер педагогикалық құрал ретінде қызмет ететін когнитивті эксперимент ретінде қарастырады. Зерттеу нәтижесінде минимализм эстетикасында жұмыс істеу студенттерді форманы редуциялауға және силуэт пен «бостық» арақатынасы арқылы мағыналық доминантаны анықтауға үйрететіні анықталды. Өз кезегінде, оп-арт әдістерін (ырғақты қайталаулар, оптикалық иллюзиялар және түстік контрастар) пайдалану кеңістікті бейтарап фоннан белсенді, динамикалық ортаға айналдырады. Осы бағыттардың ұштасуы бейнені субъективті, деформацияланған және символикалық тұрғыдан түсіндіру пайдасына тікелей перспективадан бас тартуға ықпал ететіні анықталды. Мұндай композициялардағы адам бейнесі шынайы объект болудан қалып, жалпыланған белгіге айналады. Мұндай тәжірибе болашақ дизайнерлерде сызықтық емес, ассоциативті және жобалық ойлауды дамытып, күрделі визуалды метафоралар жасауға мүмкіндік береді деген қорытынды жасалды. Жұмыстың практикалық маңыздылығы студенттердің визуалды сауаттылығы мен шығармашылық әлеуетін дамыту үшін осы әдістемелерді көркемдік-жобалау циклінің оқу бағдарламаларына енгізу мүмкіндігінде жатыр.

Негізгі сөздер: минимализм, оп-арт, дизайн білімі, бейнелі ойлау, композиция, визуалды қабылдау, жобалық ойлау.

Introduction

The formation of professional thinking in future designers is associated not only with the acquisition of graphic skills but also with the development of the ability to analyze visual information, identify structural relationships, and consciously construct artistic images. In educational practice, this process is reflected in the gradual transition of students from copying and producing “accurate representations” to a project-oriented mode of work - through the interpretation of form, generalization, and the creation of compositional logic [1].

An important stage of training is the systematic introduction of students to artistic movements and stylistic systems, their visual languages, and expressive

means. Analytical work with styles - observation, analysis of examples, and discussion of design solutions - helps students expand their visual experience and develop their own strategies of artistic thinking, which is particularly relevant in educational assignments focused on composition and spatial interpretation [2].

Minimalism, as an aesthetic of reduction and visual economy, may be considered a pedagogically productive framework. The limitation of expressive means (form, color, and the number of elements) enhances attention to compositional structure, scale relationships, and the role of “emptiness” as an active component of the image. Studies in graphic and contemporary design emphasize the applicability of

minimalism as a strategy for enhancing semantic clarity and reducing visual overload, which is especially important in an educational environment where students learn to identify essential elements [3].

Op art, by contrast, foregrounds the processes of perception. Rhythmic and contrasting structures generate optical illusions, creating effects of movement and spatial instability. In educational composition, this approach is valuable because students begin to think not in terms of objects themselves, but in terms of the visual field, attention management, and perceptual effects, where space functions as an active and influential environment [4].

This article examines educational compositions created after a stage of studying various artistic movements and completing a series of analytical and practical assignments. Final works on the theme “*Human and Space*,” executed in the aesthetics of minimalism and op art, are interpreted as manifestations of students’ developed visual experience and as indicators of the formation of figurative, associative, and non-linear thinking.

The aim of the study is to identify how the expressive means of minimalism and op art contribute to changes in students’ spatial thinking and visual interpretation in the context of design education [5].

Research materials and methods

The research material consisted of final compositional works created by design students after completing a stage of studying various artistic movements and carrying out a series of analytical and practical assignments. During the learning process, students consistently mastered the expressive means of different stylistic systems, analyzed examples of artworks, and experimented with visual structures. The final compositions on the theme “*Human and Space*” were considered as the result of the integration of theoretical knowledge and practical experience, which corresponds to contemporary concepts of the gradual formation of project-oriented thinking in design education.

The methodological basis of the study is grounded in approaches of art-pedagogical analysis, within which student works are interpreted as visual products reflecting the characteristics of learners’ thinking and perception. Such an approach is widely used in research on art pedagogy and design education, where the analysis of visual artifacts is emphasized as an effective means of identifying students’ cognitive and creative strategies [6].

The following research methods were applied:

- Formal-compositional analysis, aimed at identifying the principles of image organization (dominance, rhythm, contrast, balance, proportions, and scale relationships);

- structural-semantic analysis, which made it possible to interpret the human figure as the semantic center of the composition and to reveal the nature of interaction between figure and spatial environment;

- Comparative analysis of works created with reference to the principles of minimalism and op art;

- Observation of the design process, including the documentation of stages in the search for visual solutions and the transformation of initial concepts.

The use of formal-compositional analysis is determined by its widespread application in art-pedagogical research, where a work of art is considered as a system of interrelated elements. This method makes it possible to identify patterns in the organization of visual form and to interpret composition as a reflection of the author’s spatial thinking [8]. Its application allowed student works to be considered not only as aesthetic objects but also as visual models of thinking.

Structural-semantic analysis is based on the understanding of a visual image as a carrier of meanings and sign relations. Research in visual communication emphasizes that composition functions as a system of visual signs in which the human figure may acquire a symbolic character and act as the semantic center of spatial organization [9]. Within the framework of this study, the human figure was interpreted as a generalized sign structuring the spatial composition and guiding its interpretation.

The comparative analysis of works oriented toward minimalism and op art made it possible to identify differences in students’ strategies of spatial thinking. Minimalist solutions were considered as manifestations of tendencies toward form reduction and visual economy, whereas compositions influenced by op art were interpreted as experiments with visual perception and the illusory transformation of space. Such an approach corresponds to studies that emphasize the importance of stylistic constraints as a tool for developing students’ visual thinking and design skills [10].

Observation of the design process was used as an additional empirical method. Pedagogical research indicates that analyzing the stages of artistic activity - idea generation, selection of expressive means, and revision of the concept - makes it possible to identify the characteristics of students’ figurative and associative thinking [11]. This allowed the final compositions to be considered not as isolated products but as outcomes of a sequential educational and creative process.

Thus, the combination of formal-compositional, structural-semantic, and comparative analysis, together with observation of the design process, ensured the comprehensive nature of the

research methodology. This approach made it possible to interpret student works as visual representations of spatial thinking and as reflections of the influence of studied artistic movements on the development of figurative and associative thinking in the context of design education [12].

As empirical material, the study used final compositional works created by students within the course “*Design Basics*”. Examples of works illustrating the characteristics of students’ spatial and figurative thinking are presented in the section “*Results and Discussion*” (Figure 1).

This methodological framework made it possible to analyze student compositions not only as artistic works but also as indicators of the development of spatial and visual thinking. The results of this analysis are presented and discussed in the following section.

Results and discussion

The analysis of final student compositions on

the theme “*Human and Space*” demonstrated that the use of expressive means characteristic of minimalism and op art leads to changes in conventional strategies of spatial representation. In most works, space ceases to function as a neutral background and acquires the status of an active visual field influencing the perception of the human figure. Such a shift corresponds to contemporary interpretations of visual thinking as a process of constructing visual experience rather than merely reproducing objective reality [13].

Within the framework of the educational assignment, a comparative composition method was applied, in which students were asked to interpret the same theme within different stylistic systems. This approach makes it possible to consider the results not only as educational exercises but also as observations of the formation of students’ visual and spatial thinking. Examples of comparative student works are presented in Figure 1.

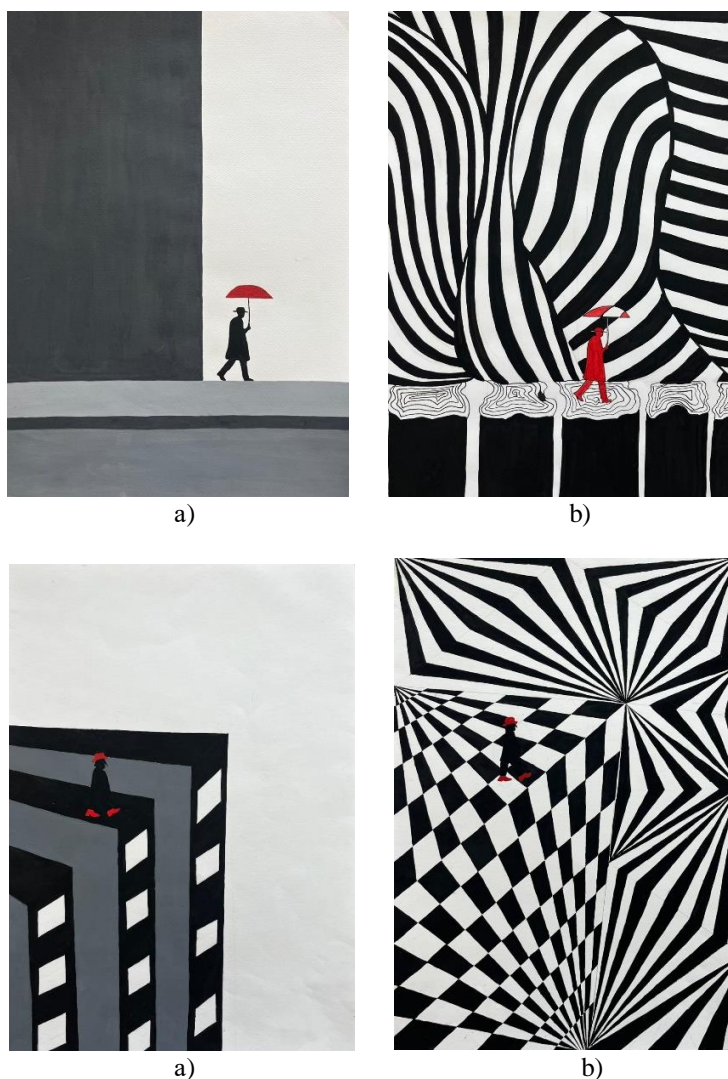


Figure 1. Compositions on the theme “*Human and Space*”: (a) work executed in the style of minimalism; (b) work executed in the style of op art (student works completed within the course “*Design Basics*”).

Minimalism: Reduction of Form and Symbolization of Space

In compositions oriented toward minimalism, a clear tendency can be observed toward reducing the number of pictorial elements and enlarging planar forms. Space is interpreted as a system of contrasting zones in which the human figure functions as a semantic marker. By abandoning a detailed environment, attention is concentrated on the relationships between scale, silhouette, and emptiness. Studies on minimalism emphasize that the reduction of form facilitates the identification of structural relationships and enhances the semantic load of the visual image [14].

The results obtained confirm this assumption: in minimalist compositions, the human figure is perceived not as a specific character but as a generalized sign of presence in space. This indicates the development of students' ability to abstract and to shift from representational depiction to the symbolic interpretation of the environment.

Op Art: Illusory Transformation of Space

Compositions created with reference to the principles of op art are characterized by the active use of rhythm, contrast, and geometric repetition. In such works, space acquires an illusory character: effects of movement, vibration, or depth emerge that are not related to traditional linear perspective. Studies devoted to op art note that such visual structures influence the mechanisms of visual perception and produce a sense of instability in the spatial environment [15].

The analysis of student works showed that the human figure, under conditions of optical deformation of space, acquires particular expressiveness: its static character contrasts with the dynamic background. This contrast produces a sense of tension between subject and environment, thereby intensifying both the emotional and semantic perception of the composition. Such effects correspond to experimental findings concerning the influence of contrasting and rhythmic structures on the perception of depth and movement.

Nonlinearity and Associativity of Visual Thinking

A common result observed in both groups of works is the rejection of linear perspective and the transition toward a subjective interpretation of space. This is manifested in the disruption of conventional scale relationships, the deformation of architectural forms, and the use of abstract graphic structures. Such techniques may be

interpreted as indicators of the development of nonlinear and associative thinking, in which space is understood not as a physical environment but as a visual construct.

Pedagogical research emphasizes that the development of associative thinking is closely connected with engaging students in artistic experimentation and in the analysis of expressive means characteristic of different stylistic systems. The results obtained confirm this position: mastering the principles of minimalism and op art contributes to expanding the range of visual solutions and to developing the ability to produce alternative interpretations of the same theme.

Pedagogical Interpretation of the Results

From the perspective of the educational process, the identified characteristics may be interpreted as indicators of a transition from reproductive to productive and project-oriented thinking. Students do not reproduce ready-made schemes of spatial representation but instead construct their own visual models of interaction between the human figure and the environment. This corresponds to contemporary approaches in design education, where emphasis is placed on the development of visual thinking and experimental skills [16].

Thus, minimalism and op art in educational composition function not only as stylistic references but also as instruments for transforming strategies of spatial thinking. Minimalism activates processes of generalization and semantic concentration, whereas op art stimulates the exploration of visual perception and illusory effects. Together, these artistic directions create conditions conducive to the development of figurative and associative thinking in design students.

Conclusion

The conducted study has shown that the use of the principles of minimalism and op art in educational compositions on the theme "*Human and Space*" contributes to the development of figurative and associative thinking in design students. Mastering these artistic movements leads students to move away from the literal reproduction of spatial environments toward their subjective, conventional, and symbolic interpretation, which corresponds to contemporary conceptions of visual thinking as an active process of image construction.

In educational practice, minimalism proves to be an effective tool for the reduction of form and the concentration of attention on structural relationships between compositional elements.

Working with a limited set of expressive means promotes the development of skills of selection and generalization, as well as the ability to identify the semantic dominant of an image. Pedagogical studies emphasize that such practices foster students' capacity to work with visual economy and increase the awareness of artistic decision-making.

Op art, in contrast, activates the exploratory aspect of students' artistic activity through the inclusion of optical illusions and unstable spatial structures. Experimentation with rhythm, contrast, and geometric modules shifts students' attention from representational depiction toward the analysis of visual perception and the effects of visual impact. This allows op art to be considered an effective means of developing sensitivity to visual processes and of forming an understanding of space as a dynamic and changeable system.

The obtained results confirm the pedagogical relevance of incorporating assignments oriented toward minimalism and op art into the structure of courses within the artistic and design curriculum. Such tasks facilitate the transition from reproductive forms of activity to productive and project-oriented strategies and support the development of nonlinear and associative thinking. In this context, artistic movements may be regarded not only as objects of study but also as methodological resources aimed at the formation of professional competencies in future designers.

The practical significance of the study lies in the possibility of applying the obtained findings in the development of educational assignments related to composition and visual thinking. The presented results may be taken into account in the design of educational programs aimed at developing abstract thinking, experimentation with visual structures, and the conscious interpretation of spatial environments. Further research may be directed toward expanding the empirical base and comparing different stylistic approaches in the context of the formation of students' visual and project-oriented thinking.

REFERENCES

1. Оразбаева, К.О. (2024). Формирование навыков дизайн-мышления в образовательном процессе. – URL: <https://bulletin-pedagogical.ablaidkhan.kz/index.php/j1/article/view/1536>
2. Киизбаева, Ж.Е. (2025). Дизайн-мышление: обзор потребностей в образовании. – URL: <https://vest-nik.kaztbu.edu.kz/index.php/kazutb/article/view/794/412>
3. Долматова, А.А. (2025). Минимализм и простота как парадигмы современного дизайна. – URL: <https://cyberleninka.ru/article/n/minimalizm-i-pros-tota-kak-paradigmy-sovremennogo-dizayna>
4. Калимова, Е.В. Оп-арт и оптические иллюзии в искусстве. – URL: <https://cyberleninka.ru/article/n/op-art-i-opticheskie-illyuzii-v-iskusstve/pdf>
5. Аманбайқызы, Р. (2025). Развитие креативного мышления как основа дизайн-мышления. – URL: <https://bulletin-pedagogic-sc.kaznu.kz/index.php/1-ped/article/view/2556>
6. Rolling, J.H., Jr. (2005). The arts and the creation of mind. *Journal of Curriculum Studies*. Available at: https://www.researchgate.net/publication/273045130_The_arts_and_the_creation_of_mind
7. Rose, G. (2016). *Visual Methodologies: An Introduction to Researching with Visual Materials*. London: SAGE. https://www.academia.edu/121774591/Gillian_Rose_Visual_methodologies_An_introduction_to_researching_with_visual_materials
8. Филимонюк, Л.А., Коновал, А.Р. (2023). Методы обучения композиции в формировании эстетической культуры студентов художественно-педагогических специальностей. *Russian Journal of Education and Psychology*. – URL: <https://cyberleninka.ru/article/n/metody-obucheniya-kompozitsii-v-formirovanii-esteticheskoy-kultury-studentov-hudozhestvenno-pedagogicheskikh-spetsialnostey>
9. Шевченко, В.Е. (2013). Теоретические основы визуальной коммуникации. *Научные ведомости Белгородского государственного университета*.
10. Hetland, L., Winner, E., Veenema, S., & Sheridan, K. (2007). *Studio Thinking: The Real Benefits of Visual Arts Education*. Teachers College Press. Available at: <https://www.researchgate.net/publication/285783060>
11. Загвязинский, В.И., Атаханов, Р. (2010). *Методология и методы психолого-педагогического исследования*. Москва: Академия. – URL: <https://www.elibrary.ru/item.asp?id=20147033>
12. Григорьев, А.Д. (2007). Формирование проектного мышления студентов-дизайнеров в процессе профессиональной подготовки как педагогическая проблема. *Сибирский педагогический журнал*. – URL: <https://cyberleninka.ru/article/n/formirovanie-proektnogo-myshleniya-studentov-dizaynerov-v-protsesse-professionalnoy-podgotovki-kak-pedagogicheskaya-problema>
13. Kosslyn, S.M. (1994). *Image and Brain: The Resolution of the Imagery Debate*. MIT Press. Available at: <https://mitpress.mit.edu/9780262610987/image-and-brain/>
14. Васильева, Е.В. (2022). Мода и минимализм: идеология, структура и форма. *Terra Artis. Искусство и дизайн*, (3), 12–27.
15. Di Cicco, F. (2022). The Legacy of Willem Beurs – Bridging the Gap between Art and Material Perception. *Art & Perception*. Available at: <https://www.academia.edu/79292294>

16. Bystryantseva, N.V. (2020). Development of visual thinking of students specialising in design. *Language and Education Journal*. Available at: <https://1-e-journal.com/upload/iblock/319/3195b06254c1caef81eb3b620f927e70.pdf>

REFERENCES

1. Orazbaeva, K.O. (2024). Formirovanie navykov dizain-myshleniya v obrazovatel'nom protsesse [Formation of design thinking skills in the educational process]. Available at: <https://bulletin-pedagogical.ablaikhan.kz/index.php/j1/article/view/1536>

2. Kiizbaeva, Zh.E. (2025). Dizain-myshlenie: obzor potrebnosti v obrazovanii [Design thinking: A review of educational needs]. Available at: <https://vestnik.kaztbu.edu.kz/index.php/kazutb/article/view/794/412>

3. Dolmatova, A.A. (2025). Minimalizm i prostota kak paradigmy sovremennogo dizaina [Minimalism and simplicity as paradigms of contemporary design]. Available at: <https://cyberleninka.ru/article/n/minimalizm-i-prostota-kak-paradigmy-sovremennogo-dizayna>

4. Kalimova, E.V. Op-art i opticheskie illyuzii v iskusstve [Op art and optical illusions in art]. Available at: <https://cyberleninka.ru/article/n/op-art-i-opticheskie-illyuzii-v-iskusstve/pdf>

5. Amanbaikyzy, R. (2025). Razvitie kreativnogo myshleniya kak osnova dizain-myshleniya [The development of creative thinking as a basis of design thinking]. Available at: <https://bulletin-pedagogic-sc.kaznu.kz/index.php/1-ped/article/view/2556>

6. Rolling, J.H., Jr. (2005). The arts and the creation of mind. *Journal of Curriculum Studies*. Available at: https://www.researchgate.net/publication/273045130_The_arts_and_the_creation_of_mind

7. Rose, G. (2016). *Visual Methodologies: An Introduction to Researching with Visual Materials*. London: SAGE. Available at: https://www.academia.edu/121774591/Gillian_Rose_Visual_methodologies_An_introduction_to_researching_with_visual_materials

8. Filimonyuk, L.A., & Konoval, A.R. (2023). Metody obucheniya kompozitsii v formirovanii esteticheskoi kultury studentov khudozhestvenno-pedagogicheskikh spetsialnostei [Methods of teaching composition in the formation of aesthetic culture of students of art and pedagogical specialties]. *Russian*

Journal of Education and Psychology. Available at: <https://cyberleninka.ru/article/n/metody-obucheniya-kom-pozitsii-v-formirovanii-esteticheskoy-kultury-studentov-hudozhestvenno-pedagogicheskikh-spetsialnostey>

9. Shevchenko, V.E. (2013). Teoreticheskie osnovy vizualnoi kommunikatsii [Theoretical foundations of visual communication]. *Nauchnye vedomosti Belgorod-skogo gosudarstvennogo universiteta*.

10. Hetland, L., Winner, E., Veenema, S., & Sheridan, K. (2007). *Studio Thinking: The Real Benefits of Visual Arts Education*. Teachers College Press. Available at: <https://www.researchgate.net/publication/285783060>

11. Zagvyazinskii, V.I., & Atakhanov, R. (2010). Metodologiya i metody psikhologo-pedagogicheskogo issledovaniya [Methodology and methods of psychological and pedagogical research]. Moscow: Akademiya. Available at: <https://www.elibrary.ru/item.asp?id=20147033>

12. Grigoriev, A.D. (2007). Formirovanie proektnogo myshleniya studentov-dizainerov v protsesse professionalnoi podgotovki kak pedagogicheskaya problema [Formation of project thinking of design students in professional training as a pedagogical problem]. *Sibirskii pedagogicheskii zhurnal*. Available at: <https://cyberleninka.ru/article/n/formirovanie-proektnogo-myshleniya-studentov-dizainerov-v-protsesse-professionalnoy-podgotovki-kak-pedagogicheskaya-problema>

13. Kosslyn, S.M. (1994). *Image and Brain: The Resolution of the Imagery Debate*. MIT Press. Available at: <https://mitpress.mit.edu/9780262610987/image-and-brain/>

14. Vasileva, E.V. (2022). Moda i minimalizm: ideologiya, struktura i forma [Fashion and minimalism: ideology, structure, and form]. *Terra Artis. Iskustvo i dizain*, (3), 12–27.

15. Di Cicco, F. (2022). The Legacy of Willem Beurs – Bridging the Gap between Art and Material Perception. *Art & Perception*. Available at: <https://www.academia.edu/79292294>

16. Bystryantseva, N.V. (2020). Development of visual thinking of students specialising in design. *Language and Education Journal*. Available at: <https://1-e-journal.com/upload/iblock/319/3195b06254c1caef81eb3b620f927e70.pdf>