

**THE CAPACITY OF WORKING MEMORY AND LEARNING SECOND LANGUAGE STRUCTURES IN AN IMPLICIT AND EXPLICIT ENVIRONMENT**

***A CAPACIDADE DE MEMÓRIA DE TRABALHO E APRENDIZAGEM DE ESTRUTURAS DE SEGUNDA LÍNGUA EM UM AMBIENTE IMPLÍCITO E EXPLÍCITO***

***LA CAPACIDAD DE LA MEMORIA DE TRABAJO Y EL APRENDIZAJE DE ESTRUCTURAS DE UNA SEGUNDA LENGUA EN UN ENTORNO IMPLÍCITO Y EXPLÍCITO.***

Rustem Faritovich MIRKHASANOV<sup>1</sup>  
Elvira Rstamovna YUSUPOVA<sup>2</sup>  
Elena Evgenevna IVANOVA<sup>3</sup>  
Zanfira Yagsupovna MISKICHEKOVA<sup>4</sup>

**ABSTRACT:** This study aims to determine the relationship between working memory capacity and learning second language structures in an implicit and explicit learning environment and the role of complex or straightforward language structure in this relationship. Hence, two English language structures with different degrees of complexity were selected. Fifty-nine English-speaking Persian learners were selected through a test and randomly assigned to one of two explicit or implicit groups and received the necessary training. Their level of knowledge of these two language features was assessed once before the training and twice after the training, with the test of "timed grammatical judgment" and "summoned oral imitation". A composite memory capacity test was used to measure working memory capacity. The results showed that the effect of training on learning the desired structures was significant in both groups. Correlation results showed no meaningful relationship between working memory capacity and learning in an implicit environment.

**Keywords:** Memory capacity. Second language. Learning environment. Implicit environment.

**RESUMO:** *Este estudo tem como objetivo determinar a relação entre a capacidade de memória de trabalho e as estruturas de aprendizagem de uma segunda língua em um ambiente de aprendizagem implícito e explícito e o papel da estrutura de linguagem complexa ou direta nessa relação. Assim, foram selecionadas duas estruturas da língua inglesa com diferentes graus de complexidade. Cinquenta e nove aprendizes persa falantes de inglês foram selecionados por meio de um teste e atribuídos aleatoriamente a um dos dois grupos explícitos ou implícitos e receberam o treinamento necessário. O nível de conhecimento dessas duas características da linguagem foi avaliado uma vez antes do treinamento e duas vezes após o*

---

<sup>1</sup> without a degree, Senior Lecturer, Department of Design and National Arts, Institute of Philology and Intercultural Communication, Kazan Federal University [.rystem69@mail.ru](mailto:rystem69@mail.ru), ORCID <https://orcid.org/0000-0003-2028-8892>

<sup>2</sup> without a degree, Assistant Professor at the Department of Design and National Arts, Institute of Philology and Intercultural Communication, [yusupovy.12@yandex.ru](mailto:yusupovy.12@yandex.ru), ORCID <https://orcid.org/0000-0002-5450-7793>

<sup>3</sup> without a degree, Senior Lecturer, Department of Design and National Arts, Institute of Philology and Intercultural Communication, [elenai63@inbox.ru](mailto:elenai63@inbox.ru), id Scopus 56539338900, ORCID <https://orcid.org/0000-0001-7206-9507>

<sup>4</sup> without a degree, Acting Associate Professor of the Department of World Literature of the Faculty of Russian Philology, Osh State University, [super.zanfira59@mail.ru](mailto:super.zanfira59@mail.ru), r.996550649456, ORCID <https://orcid.org/0000-0001-7369-03>

*treinamento, com as provas de "julgamento gramatical cronometrado" e "imitação oral convocada". Um teste de capacidade de memória composta foi usado para medir a capacidade de memória de trabalho. Os resultados mostraram que o efeito do treinamento no aprendizado das estruturas desejadas foi significativo em ambos os grupos. Os resultados da correlação não mostraram nenhuma relação significativa entre a capacidade de memória de trabalho e a aprendizagem em um ambiente implícito.*

**Palavras-chave:** *Capacidade de memória. Segunda língua. Ambiente de aprendizagem. Ambiente implícito.*

**RESUMEN:** *Este estudio tiene como objetivo determinar la relación entre la capacidad de la memoria de trabajo y el aprendizaje de estructuras de un segundo idioma en un entorno de aprendizaje implícito y explícito y el papel de la estructura del lenguaje complejo o sencillo en esta relación. Por lo tanto, se seleccionaron dos estructuras del idioma inglés con diferentes grados de complejidad. Cincuenta y nueve estudiantes de persa de habla inglesa fueron seleccionados a través de una prueba y asignados al azar a uno de dos grupos explícitos o implícitos y recibieron la capacitación necesaria. Su nivel de conocimiento de estas dos características del lenguaje se evaluó una vez antes de la capacitación y dos veces después de la capacitación, con la prueba de "juicio gramatical cronometrado" e "imitación oral convocada". Se utilizó una prueba de capacidad de memoria compuesta para medir la capacidad de la memoria de trabajo. Los resultados mostraron que el efecto del entrenamiento en el aprendizaje de las estructuras deseadas fue significativo en ambos grupos. Los resultados de correlación no mostraron una relación significativa entre la capacidad de la memoria de trabajo y el aprendizaje en un entorno implícito.*

**Palabras clave:** *Capacidad de memoria. Segundo idioma. Entorno de aprendizaje. Entorno implícito.*

## **Introduction**

It is not surprising that overwhelmingly professional architects work in industrial design. People who built buildings created beautiful interiors, household appliances, and furniture. The architectonics of the armchairs of Alvar Aalto and Corbusier is a separate topic for serious research (Klein, 2008, p. 61-62).





Marcel Breuer. Armchair "Wassily". 1925. Marcel Breuer. Table, model of XIX cent. 1928. Brooklyn Museum





Marcel Breuer. Chair. Marcel Breuer. Long chair, about 1935 - 36. Brooklyn Museum

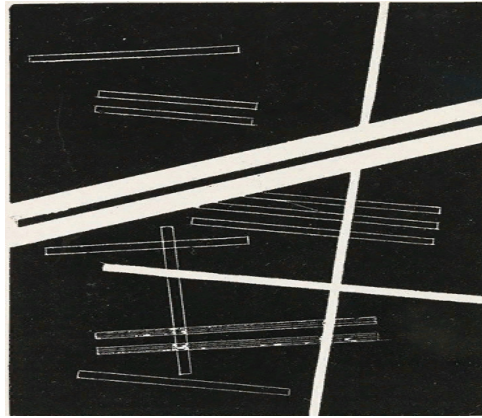
There is no doubt that the design of a vehicle, for example, a bicycle, influenced the architectonics of the famous Breuer chair, which he dedicated to Kandinsky. The simplicity and limitations of the “palette” of materials (canvas and steel tubes) made it possible to focus on the construction – the architectonics of the creative product (Boucher, 1999, p. 189).

However, architectonics is also characteristic of great painters’ works, associated with not only monumental painting, exteriors and interiors of buildings. This is the quality of creative products characteristic of a special type of Masters, who can be called intellectuals in art (“Breuer Marcel Lajoche”. 2004, p. 450 – 451).

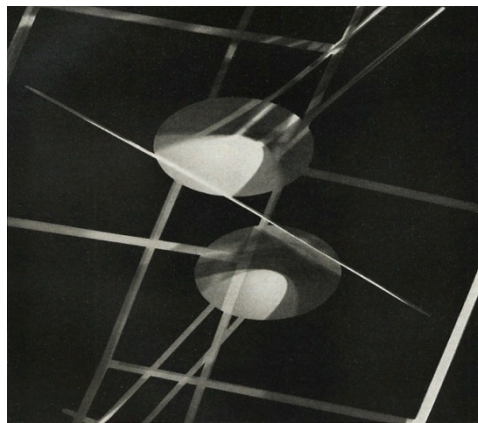
In connection with the foregoing, we can cite the works of Jan Van Dahl, Nicolas Poussin, Paul Cezanne, Leger and others as an example. There is no doubt that the architectonics of building works is also characteristic of major masters – composers, writers and poets who build their works from harmony of words and sounds .( Henrickson, 2013).

## **Methods**

Today, applicants own a set of computer programs and use them to perform practical tasks. Nevertheless, this work sometimes is not supported by a serious basis of compositional thinking. Teachers should return students to the mainstream of architectonics – compositional construction, take into account the excessive self-confidence of students working in computer programs, and their belief in their own creativity. Images created in computer programs often have an external, surface effect. Such products do not come from design, but from imitation of materials and illusory chiaroscuro; such pictures, not supported by the laws of composition, are often glamorous, kitsch in nature. This is typical for website design, and in the design of industrial products, and in the design of interiors as well.



In this regard, we would like to draw attention to the works of Marcel Breuer, which are distinguished by asceticism, avarice of the “decorating” part of the composition: materials, color characteristics and a simultaneous emphasis on architectonics, structure of design product.



Laszlo Moholy-Nagy. Photo. 1928.

Laszlo Moholy-Nagy. Composition.

Architectonics is characteristic of both flat and three-dimensional spatial constructions. The frame, stitching through the entire surface of the format, holds together all the elements of a rhythmically, modularly and plastically organized structure in Master Laszlo Moholy-Nagy’s planar composition (Kulakov. 1992, p. 36 - 38; 6.7).



Laszlo Moholy-Nagy. Composition. tempera. Laszlo Moholy-Nagy. Photo.  
76 x 48,5 cm. 1921.

For example, painters-practitioners of the older generation have always noted such a negative example as “aniline”, “tint” of the color palette of computer programs.

Raised on the classical visual arts, the eye and compositional thinking will highly appreciate the taste and mastery of the architectonics of color spots balance in planar work by the tempera and photo portrait of design classic Laszlo Moholy-Nagy (“Laszlo Moholy Nagy and the Russian avant-garde” 2006).

## Results and Discussion

The teacher should prepare practical tasks that provide basic knowledge of the future competent graduate.

Moreover, this concerns precisely the tasks, the implementation of which helps students to get knowledge in the field of the formal (compositional) sphere. The formal field of theoretical knowledge and practical skills relates to the creative part of professional competencies.

Based on the knowledge and skills obtained on the basis of a compositional analysis of the Masters’ of Design and Fine Arts works, a student can more freely and variably work with a copyright educational and creative product.

Our experience of pedagogical activity in various educational institutions has led to the conclusion that in creative departments where the basics of design are taught, there is often a tendency to change the emphasis in work from following formal (a scientific term meaning analytical, close to exact sciences compositional laws and means) laws to formal (the term

literary, meaning shallow and superficial, “through the sleeves” work) combinations of various visual means in computer programs with which images are created in the project.

To a certain extent, the discipline “Propaedeutics” is leveled out in student work and replaced by an instrumental arsenal, the illusory nature of black and white, and spatial facts in pictures created by computer programs have lost orientation (Galeeva, et al. 2019). The following negative phenomena are gaining ground when creating a design product in educational and creative works:

1. in the design activity, students ignore the compositional field of the artificially created form (color balance, plastics and rhythm of verticals, horizontal lines and diagonals of linear harmony, beauty and rhythm of spot shape, proportionality of the projected object parts, and harmony of the modular design), which is predominant;

2. students involve into educational and creative work with detailing, plot and the so-called “decorating” part of the compositional form.

We believe that there is reason to argue about the spread of the trend and, as a consequence, the formation of the “pattern of mutual inconsistency” between the theoretical knowledge of the laws and means of composition and the active creative searches of students.

Carried away by the implementation of practical tasks with the help of computer programs, students do not learn the fundamental knowledge necessary in the future to create original author’s works. The conditions are practically created when a “risk zone” is formed in creative departments for the quality of training, for teachers, when there are no clear standards and requirements within the composition of the discipline “Propedeutics”.

Today we are witnessing the emerging gap between the “creative hobbies of students” by computer programs in the field of design practice from the foundations of professional formal work. This situation forms a negative relationship, where “a student without knowledge of the formal approach” becomes “a teacher without deep theoretical knowledge associated with serious compositional practice based on the study of the classical heritage of the present and the past in painting, drawing, and design.”

This problem is not only pedagogical, because terminological confusion and discrepancies lead to irreparable errors when artists who are the pride of Soviet fine art were branded and persecuted as “formalists”. This happened to academician Nikonov P.F. and his teacher, the legendary Soviet monumental artist Deineka A.A. as well.

University professors, art critics should clearly and unequivocally decipher the term “formal” in the mainstream of fine art as “compositional activity”, then the incorrect term “formal composition” will not arise, since these concepts are practically the same.

The construction of the student's own educational and creative work should be based on the laws and means of composition. Educational full-time work, unfortunately, does not provide such knowledge. To obtain this knowledge, it is necessary to carry out free copying and a schematic analysis of classical, textbook examples of world design and fine art.

For a better understanding of the scientific and pedagogical problem, we offer the formula:  $[Nom = C / 0 - Pbkp / pp]$ , where:

Ном – негативная образовательная методика;

Nome – a negative educational methodology;

$C / 0$  – a student with a zero understanding of the “formal approach” principles based on the study of the experience of the classics (painting, graphics, design) of the present and past eras in relation to any pictorial complex in manual or computer execution;

$Pbkp / pp$  – a teacher without qualification and practical training on the “basics of formalism” in educational practice with design students.

## Summary

In the process of our research, a “regularity of mutual inconsistency” between the existing theoretical laws of using compositional means and the active search for “creativity” by students who do not have deep theoretical and practical knowledge about the existing norm of the “formal sphere of activity” in creativity was revealed. We believe that the revealed pattern requires a review of the programs and the training of special groups of pedagogical theorists on propaedeutics.

It should be noted that even with universal understanding and approval by specialists of the formal sphere importance in the visual arts, this area is the least developed both theoretically and practically (Галеева, 2018, p.65; 10, p.5119-5122).

The level of students' knowledge of the external (compositional) part of the art form, which is a universal, basic means of professional construction of fine art work, in our opinion, requires review and decision.

The lack of practical experience in the study of the compositional structure of the works of design and fine art classics of the present and past eras leads to negative phenomena in pedagogical practice. This is a manifestation of imaginary novelty and professionalism in papers and dissertations terms.

Thesis 1. The numerous elements of computer visualization level the compositional part of the created artificial form in the design product, which leads to the formation of amateurism



and the weakening of compositional thinking development among students of creative departments.

Thesis 2. Dilettantism and kitsch are formed among students based on:

surface, mechanical imitation by computer programs when creating an image of the illusory nature of the world;

– the prevalence of the mechanical creation of illusory and materiality in computer graphics over the artistic, figuratively-composite creation of the image;

– the spread of the worst manifestations of salon, commercial art, the absence of a negative attitude to eclecticism, “kitsch”.

Thesis 3. The formation of kitsch occurs in conditions when there is no scientific and methodological control of the balance between the classical foundations of basic education and the modern search for students in the process of completing a practical task using hand-made graphics and computer programs.

Relying on formal laws, on the “architectonics” of constructing a planar and three-dimensional design product, it is possible to level the above negative trends, improve quality and speed up the process of design work.

The theoretical matrix of architectonics in design creates the conditions for methodically competent, phased compositional work in creating voluminous products of industrial design, unique (manual) graphics, computer graphics, and multimedia design. Educational tasks for the study of the fine art formal sphere must be built in stages, from simple tasks to complex compositional solutions.

## **Conclusions**

The negative regular tendency of “incoherence” between the important classical compositional basis for architectonics and educational, creative searches of creative departments’ students using manual and modern computer tools has been revealed. This poses the task of strengthening regulatory requirements in the process of studying architectonics, a “formal approach” based on the work of masters – classics of design in the system of teaching composition in design.

## **Acknowledgements**

The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

## References

- “Breuer Marcel Lajoche”. (2004). *Great Russian Encyclopedia*, Vol.4, 189 p
- “Laszlo Mohoy Nagy and the Russian avant-garde”(2006)., *Three squares*, 296 p.,
- Boucher, W. (1999). *Spinoza In English, A Bibliography*. A&C Black.
- Galeeva, Z.N., Yao, M.K., Emanova, J.G., & Rauzeev, I.Z. (2019). SPECIFICITY OF NATIONAL VISION IN COSTUME. *Revista TURISMO: Estudos e Práticas*, 1.
- Henrickson, C.N. (2013). *The Archaeology of Cueva Santa Rita: A Late Holocene Rockshelter in the Sierra de la Giganta of Baja California Sur, Mexico*. University of California, Berkeley.
- Kadyrova, L. H., Akhmetshina, E. G., Zaripova, L. R., & Peremislov, I. A. (2019). Professional development of bachelor designers by means of information and communication technologies. *International Journal of Innovative Technology and Exploring Engineering*, 9(1), 5119-5122.
- Klein, J. T. (2008). The rhetoric of interdisciplinarity. *The Sage handbook of rhetorical studies*, 265-284.
- Kulakov, G. (1992). “Mohoy Nagy and “the Bauhaus”. *Photography*, № 3 - 4, pp. 36 – 38.
- Kulakov, G. (2016). “Photographer Mohoy Nagy and “the Bauhaus”. *Painting. Photography. Design*, 23.09. URL: <http://artageless.com/photographer-laszlo-moholy-nagy-and-bauhaus>
- Галеева, З. Н. (2018). Investigation of The Influence of Valuable-Sensitive Indicators of Future Designers On Their Preparation for Professional Activity.