SAT-2.205-1-PP-05

INTERDISCIPLINARY PERSPECTIVES ON MONTAGE IN EDUCATION: A RESPONSE TO THE FRAGMENTED DIGITAL REALITY [27]

Valeria Ivanova – PhD Student
Department of Natural Sciences and Education,
University of Ruse "Angel Kanchev"
Tel.: +359 886 933 535
E-mail: vtsankova@uni-ruse.bg

Abstract: The article explores the montage principle as a pedagogical strategy aligned with the cognitive environment of the digital generation. It argues that the fragmentary and nonlinear perception of knowledge, shaped by accelerated information flows and the rise of artificial intelligence, renders traditional linear learning models increasingly inadequate. Drawing a historical parallel with the avant-garde and G. Milev's concept of the "fragment," montage emerges as a mode of meaning-making through the integration of heterogeneous elements. Pedagogically, this requires a shift of roles: the teacher as facilitator and "curator" of content, and the student as active "montager" and co-author of knowledge. Practical applications are illustrated through intermedia learning environments, collaborative collages, and project-based multimedia practices. The integration of montage is shown to foster critical thinking, creativity, and interdisciplinary synthesis, transforming the fragment into a resource rather than a deficit.

Keywords: montage principle, fragment, digital culture, education, artificial intelligence, critical thinking, creativity, collage

INTRODUCTION

The integration of artificial intelligence into everyday life and education transforms not only the modes of accessing information but also the very cognitive environment in which the modern student is formed. We observe a new type of cognitive activity reflecting the fragmentary and nonlinear character of hyper-digitalization, where communication is structured through short texts, voice messages, second-long videos, emojis, memes, and entirely new linguistic codes. In such a context, pedagogy faces the necessity of recognizing interdisciplinary strategies that not only tolerate this fragmentariness but transform it into a learning resource. The aim of the present text is to problematize how montage thinking-a principle historically associated with avant-garde art-can be reinterpreted and affirmed as a key pedagogical perspective in the era of fragmented digital culture.

EXPOSITION

The montage principle, which originally emerged in a technical context, represents an aesthetic and structural approach-disassembling the whole into parts and reassembling them into a new semantic and emotional composition. Known primarily in film and photography, the method of montage can also be transferred into the pedagogical sphere. As such, it implies the fragmentary presentation of content, the integration of various media (text, image, sound, gesture), and a nonlinear logic that corresponds to the way contemporary children perceive and process information. An important pedagogical emphasis lies in the potential of montage thinking to develop key competencies such as critical thinking, interpretative ability, comparative reasoning, and creativity. To understand the pedagogical relevance of the montage principle today, it must be considered through a historical parallel-from avant-garde art in the early twentieth century to the cognitive environment of digital and AI culture in the present day.

1. Historical Parallel – From the Avant-Garde to the AI Era

The avant-garde of the early twentieth century arose as an artistic response to the accelerated dynamics of modernity, shaped by industrialization, urbanization, and the traumas of the First World War.

Within this context, traditional aesthetic models proved limited in their capacity to express the new fragmented reality. Among the innovative artistic practices, montage became a leading strategy that enabled the synthesis of meaning through the juxtaposition of heterogeneous elements without reliance on linear logic.

The Bulgarian avant-gardist **Geo Milev** articulated this sensibility in one of the most significant aesthetic texts of Bulgarian modernism, *"The Fragment"*, where the fragment is conceptualized as an artistic category characterizing modern art. The principle manifests itself through minimalism of means, condensation of expression, and rejection of linear causality, with the structure leaving open space for associative perception. Milev emphasizes that it is precisely within the fragment that the meaning of things can be synthesized. Thus, the fragment ceases to be perceived as a deficiency and instead becomes a concentrate of meaning-generated through compression and associative connections-a phenomenon comparable to the specificity of today's accelerated reality.

In today's digital culture, shaped by artificial intelligence-which for students is no longer merely an external tool but an integral part of the cognitive environment-Generation Alpha grows up under conditions where algorithms structure content, determine the rhythm of communication, and create a sense of multilayered reality. In this environment, the perception of time and space is redefined in ways reminiscent of the socio-cultural effects of the industrial revolution and the technologies that transformed life: the telephone, the airplane, electrified cities, radio, and cinema. Today, analogously, space is experienced not only as a physical location but also as a digital stage where text, image, sound, and interactive elements intertwine within a dynamic structure.

This process carries profound pedagogical implications: while traditional models of education rely on the gradual and linear acquisition of knowledge, the cognitive environment of artificial intelligence demands complementary approaches attuned to its nonlinearity and fragmentariness. It is precisely here that montage emerges as both a principle of thought and an adaptive instrument for the new conditions. A telling analogy can be found in photomontage: as **G. Tabakova** notes, *"the process of compiling and assembling the elements of photomontage affirms the role of the artist as an engineer who constructs not merely the work of art but possesses the potential to construct a new reality"* (Tabakova, 2023). Within the framework of artificial intelligence, the student assumes precisely this role-that of the "engineer" and "editor" of knowledge, who integrates technologically generated content with personal interpretation and human experience. Thus, just as avant-garde art employed montage to make sense of the fragmented and accelerated reality of modernity, so too can education today apply the montage principle as a pedagogical strategy adapted to the cognitive environment of the digital generation. In both cases, the process represents an adaptation to a new cultural and cognitive reality-one actively constructed by the artist or the learner.

Table 1. Comparative Table: The Roles of the Teacher and the Student in the Context of the Montage Principle and the Digital Cognitive Environment

TEACHER Functions and Required Competencies	STUDENT Activities and Required Competencies
Core Role	**Core Role**
Facilitator, mediator, and "curator" of knowledge; not merely a source of information but an architect of the learning environment.	Active "editor" and "engineer" of knowledge; a participant who constructs meaning through the combination of diverse sources.
Work with Sources	**Work with Sources**
Selects, validates, and integrates diverse media and formats (text, images, sound, digital resources).	Acquires and combines content from multiple sources, including AI-generated materials; develops skills for selection and integration.
Attitude toward AI	**Attitude toward AI**
Encourages critical and ethical use of AI; does not prohibit but guides and models its appropriate application in the learning process.	Uses AI platforms confidently; demonstrates skills in prompt engineering, editing, and interpretation of generated content.
Cognitive Focus	**Cognitive Focus**

TEACHER Functions and Required Competencies	STUDENT Activities and Required Competencies
Develops students' critical thinking, interdisciplinary competence, and the ability to work under conditions of fragmentation and misinformation.	Develops montage thinking-skills for comparison, editing, synthesis, and meaning-making through fragments.
Creativity and Production	**Creativity and Production**
Supports creative processes through nonlinear and intermedial methods; creates conditions for experimentation.	Creates new content by combining personal experience, cultural codes, and AI-generated suggestions.
Ethics and Responsibility	**Ethics and Responsibility**
Responsible for establishing an ethical framework for working with new technologies and for fostering a culture of digital literacy.	Responsible for critically evaluating content-distinguishing false information (fact-checking) and differentiating between personal contribution and AI assistance.

A comparative analysis of the evolving functions of the teacher and the student reveals that the montage principle is not merely a theoretical metaphor but a concrete pedagogical strategy for adaptation to the cognitive environment of digital culture. It provides a framework in which the interaction between human and technological resources leads to more flexible, dynamic, and interactive learning – reflecting and shaping contemporary cognitive and social reality.

Not least, the teacher's role – as a facilitator and "curator" of knowledge, supported by AI technologies – enables the release of time for creative and personally oriented engagement with students. Moreover, the use of artificial intelligence reduces the risk of subjectivity in assessment and allows for more immediate feedback, reaffirming the teacher's position not as a controlling authority but as a mediator within the dynamic digital cognitive environment. According to some researchers, *"the integration of artificial intelligence allows for the resolution of numerous challenges such as teachers' limited time, the subjectivity of assessment, and the need for prompt feedback"* (Savytska et al., 2025). In this way, the integration of artificial intelligence becomes not merely a technological tool but a key factor in the redefinition of pedagogical roles and relationships.

3. Examples of Montage Thinking in the Learning Process and Reconsideration of Existing Practices

3.1. Textbooks and Learning Aids

Traditionally, textbooks have always contained elements reminiscent of the montage principle – alternating and combining text, illustrations, diagrams, tables, exercises, and other components. This can be described as compositional montage, in which different forms of knowledge are unified within a relatively static and predictable structure.

Today, however, the cultural transformation of perception demands a new interpretation: while the classical textbook offers stability and linearity, the contemporary digital environment requires a nonlinear, interactive, and dynamic approach to comprehension. This implies that textbooks and learning materials should be re-envisioned not merely as carriers of information but as environments for active knowledge construction. In this perspective, one may consider:

➢ **Nonlinearity of content**, allowing for individualized learning trajectories according to the learner's cognitive style;

➢ **Integration of QR codes and hyperlinks** leading to videos, podcasts, interactive simulations, and additional resources;

➢ **Implementation of adaptive platforms** that respond to the learner's pace and needs;

➢ **Multimodality**, in which text, image, and sound coexist within a unified semantic field;

➢ **Gamified elements** and scenarios that enhance engagement and stimulate critical thinking.

Such an approach moves the textbook beyond its traditional text-centered role, transforming it into a platform for interactive, montage-based, and intermedial learning aligned with the cognitive attitudes and cultural codes of the digital generation.

3.2. Collage and Visual Techniques

Artistic, conceptual, and digital collages enable students to construct new meanings through the combination of texts, images, and ideas. This practice cultivates associative thinking and creative structuring of information. Thus, collage techniques are not merely artistic exercises but function as a "laboratory of meaning," where students learn to become authors and editors of knowledge in the spirit of digital culture. According to **Apostolova**'s study, through collage *"students create a sustainable and lasting mode of learning, and by combining literacy with visual interpretation, they achieve complex awareness and attitude toward the subject matter"* (Apostolova, 2022).

There are numerous variations of collage, but particular attention should be given to collaborative collages, where a group of students constructs a shared semantic field. This approach transcends the dominant focus on individual work in schools and brings the educational process closer to social reality and authentic professional environments, where teamwork and interaction are essential. **Terlemezian** comprehensively summarizes this by stating that *"team-based completion of specific tasks enables more communication, creative expression, and enhanced social and cultural sensitivity among students, fostering both cooperation and competition, activating diverse learning styles, and ultimately ensuring psychological comfort and higher motivation levels"* (Terlemezian, 2015).

3.3. Presentation and Multimedia Methods

The most commonly used platforms include PowerPoint and Canva presentations, video lessons, and podcasts. Within these tools, text, image, sound, and animation are "montaged" to form an integrated message. The strength of multimedia methods lies in their ability to engage multiple sensory channels simultaneously, thereby amplifying learning effects and supporting memory retention. In this context, **Mayer and Moreno** (2003) emphasize that multimodal presentation of information – combining visual and verbal channels-significantly enhances cognitive efficiency, as *"when information is processed through two channels simultaneously, cognitive overload is reduced and the construction of an integrated mental representation is facilitated"* (Mayer & Moreno, 2003).

3.4. Interactive Methods

Project-based learning, student portfolios, and infographics are particularly relevant forms of cognitive montage, fostering active learning through inquiry, collaboration, and practical application of knowledge while preparing students to operate in environments where the ability to "montage" information from diverse sources is critical.

John W. Thomas, a researcher in the field of education, observes that project-based learning *"focuses on complex, realistic tasks that require students to explore, analyse, and synthesize information from various disciplinary fields in order to create a meaningful final product"* (Thomas, 2000). In this sense, interactive methods do not merely develop academic knowledge but shape the student as an active constructor of meaning, capable of integrating fragments from multiple contexts into a coherent cognitive framework.

3.5. Play-Based and Dramatic Techniques

Through the creation of a "living montage" of interactions, simulations, role-playing, and dramatizations combine different narrative lines, roles, and visual environments. These techniques engage not only students' intellect but also their emotions, imagination, and social skills. Professor **Radka Vassileva** adds that *"educational drama creates an illusory reality, distinct from real life but sufficiently stimulating to provoke genuine interaction and self-expression within a socially protected space."* This supports the thesis that play-based and dramatization techniques activate montage thinking – through the fragmentation and artistic reconstruction of learning content. They build a rich emotional and social environment where students can identify with roles, experiment, and express themselves actively within a safe and inspiring space.

3.6. Digital and Media Practices

Storytelling in social media, interactive maps, virtual tours, and educational games are contemporary forms of digital montage that combine text, emojis, images, sound, and hyperlinks within nonlinear

structures akin to the cognitive habits of the digital generation. This represents learning through tangible participation. In support of this, **Jenkins** notes that digital culture presupposes *"learning through participation, in which students engage in the collective creation and remixing of content"* (Jenkins, 2006).

CONCLUSION

The montage principle, originally conceived as an artistic response to the fragmented reality of modernity, today acquires renewed pedagogical significance in the age of artificial intelligence. It offers a conceptual framework through which education can adapt to the cognitive dispositions of the digital generation, transforming fragmentation from an obstacle into a resource for creativity, critical thinking, and interdisciplinary synthesis. Integrating montage into the educational process ensures that the student is not a passive recipient but an active co-author and architect of knowledge – a role fully aligned with the cultural and cognitive dynamics of the digital era.

REFERENCES

Апостолова, В. (2022). Колажни визуализации по литературен текст. Dare-Zine, блог. https://bg.dare-zine.com

Василева, Р. (2020). Арт-анимация в образованието – учители и ученици в драматично взаимодействие. София: Университетско издателство „Св. Климент Охридски“.

Гео Милев. (1919-1920). Фрагментът. Везни, 1(4).

Петров, П. (2004). Груповото обучение в началните класове. Русе: Издателство „Ангел Кънчев“.

Попов, Ч. (2019). История и авангард. Култура - месечник за изкуство, култура и публицистика, 6(2959). https://kultura.bg/article/242-istoriya-i-avangard

Табакова, Г. (2023). Развитие на монтажния принцип като метод в изкуството на руския авангард. Проблеми на изкуството, 4, 26-37.

Терлемезян, Х. Н. (2015). Груповата работа в урока по английски език като основа за подкрепяща среда на деца с обучителни трудности и на деца с изявени езикови способности. В Предизвикателството „Приобщаващо образование“: Сборник научни доклади (сс. 97-104). Пловдив: Университет „Паисий Хилендарски“.

Jenkins, H. (2006). Convergence culture: Where old and new media collide. New York University Press.

Mayer, R. E., & Moreno, R. (2003). Nine ways to reduce cognitive load in multimedia learning. Educational Psychologist, 38(1), 43-52.

Savytska, I. (2025). Application of artificial intelligence to automatically verify student calculations in higher education institutions. ETR, 283-288.

Thomas, J. W. (2000). A review of research on project-based learning. Autodesk Foundation.

Valcke, J. (2009). Static films and moving pictures: Montage in avant-garde photography and film (Doctoral dissertation). University of Edinburgh.