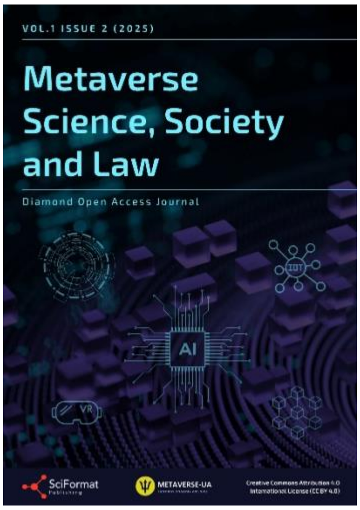

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NEUROANCHORING OF THINKING: A NEW METACOGNITIVE MODEL OF THINKING AND CONTENT LABELING AS A CATALYST FOR THE RAPID TRANSFORMATION OF EDUCATION SYSTEM FROM LEVEL 2.0 TO LEVEL 5.0

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ABSTRACT

This article introduces the neuroanchoring model of thinking – an innovative metacognitive tool that labels the educational content and type of thinking within learning activities. The model is applied in digital WOW-lessons, enhancing perception, attention, motivation, automation, and increasing the technology of the education system to level 5.0.

KEYWORDS

Neuroanchoring, Cognitive Labeling, Types and Algorithms of Thinking, Brain Neural Networks, Meta-Cognition, WOW-Lessons (Wonders of Wisdom), Hersonalized Learning, Artificial Intelligence in Education, Digital Educational Cases, Neuroprofiling, Educational Neuropsychology, Thinking Skills, AI-Powered Educational Platforms, Virtual Meta-Learning, Cognitive Strategies and Attention, Cognitive Routing, Anchoring Effect in Learning, Adaptive Learning, Education Model 5.0, Prospects of Neuroanchoring Models

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1. Introduction

With the rise of artificial intelligence (AI), it has become clear that the core problems of the education system do not lie in school subjects, teachers, or lack of funding. Rather, they stem from the absence of pedagogical technologies that answer two fundamental questions: *"How can we learn to learn?"* and *"How can we learn to think?"* Addressing these challenges requires not vague or subjective theories, but precise algorithms – something now made possible through the integration of AI.

This article presents an innovative concept: **neuroanchoring of thinking** – a process in which educational content is accompanied by an explicit label of the required thinking type (e.g., logical, creative, critical, entrepreneurial, etc., Fig.1). These markers enable the brain to effectively activate the corresponding neural networks, thereby enhancing perception, information processing, long-term memory, and the development of intelligence.

The model is based on a synthesis of findings from neuropsychology, cognitive linguistics, learning theory, and practical applications in personalized education across real schools, many of which have already begun implementing and scaling this approach.

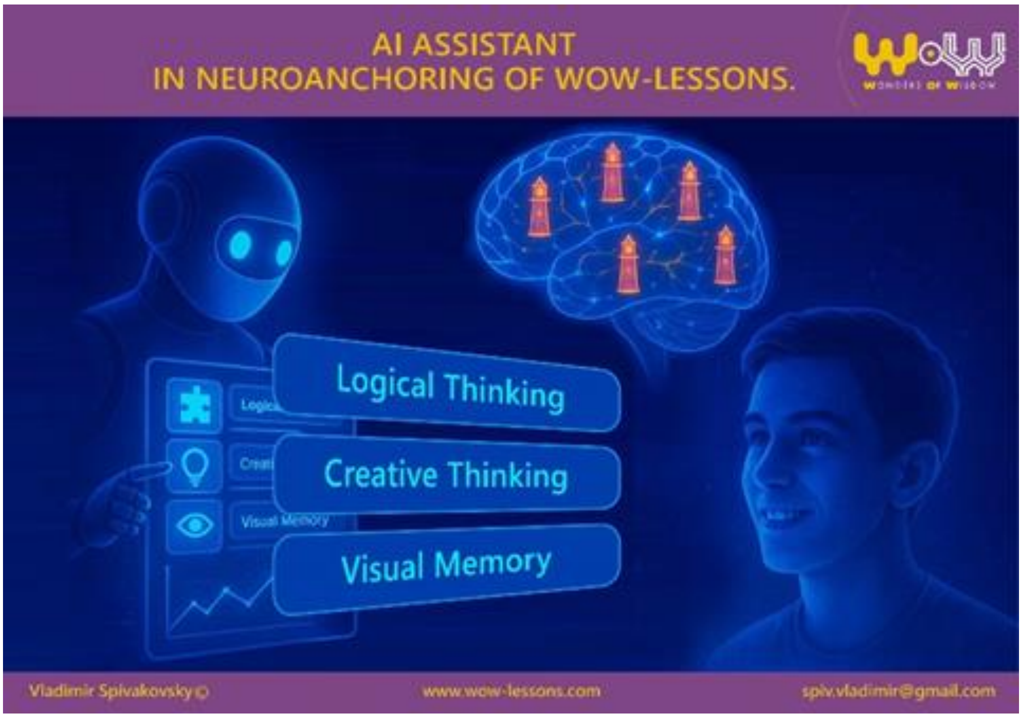

Fig. 1. *Ai Assistant in Neuroanchoring Of WOW-lessons*

At the core of the **neuroanchoring** model is the principle of **cognitive routing**: once a learner receives a cognitive marker, their brain directs attention and neural activity toward the region responsible for that specific type of thinking. This enables precise tuning of perception and significantly boosts cognitive efficiency.

To enable this process, educational content must be **restructured at the knowledge design stage** – repackaged and embedded with special markers, or neuroanchors. This transformation makes learning remarkably efficient, as the brain's neural networks operate more easily, quickly, deeply, and accurately.

Special attention is given to the application of this model through **WOW-lessons** (Wonders of Wisdom) and its integration with **AI-powered digital education platforms**.

The proposed concept and real-world implementations open new perspectives for advancing neuroeducation, including the automatic creation of individual cognitive maps, formation of a learner's **metaprofile**, and design of adaptive learning trajectories focused on sustainable cognitive development in a rapidly changing world.

Moreover, the WOW model is influential in revising the algorithms of the AI itself, and moving it from a statistical-probabilistic model to a marker model, which is many times more efficient.

The model has already been successfully piloted in dozens of schools. WOW-lessons based on this approach have been developed for all grade levels and subjects across the K–12 curriculum, resulting in a library of 115 textbooks and 10,000 lessons, hosted on a dedicated platform. The process of producing and updating textbooks is now exponentially faster – and scalable across multiple languages.

2. Purpose and Novelty

The modern education system, built largely on reproductive learning models, is increasingly showing signs of crisis: students are overwhelmed with information, yet lack the tools to engage with it consciously and meaningfully.

The core issue lies in the absence of a clear cognitive orientation: the learner's brain often lacks an internal guide for how to interpret incoming data, which neural zones to activate, and what type of thinking to apply. This results in disorganized neural activity and reduces the effectiveness of perception, understanding, and knowledge retention.

In the context of rapidly advancing digital technologies, artificial intelligence, and virtual learning environments, there is a growing demand for a **new metacognitive framework** that can adapt to these shifts.

The purpose of this article is to introduce an innovative model of **neuroanchoring of thinking** – a process in which the type of thinking required is explicitly labeled prior to engaging in a learning activity. This cognitive pre-labeling primes the learner's brain, activating the appropriate neural circuits and establishing readiness for effective assimilation.

The **novelty** of this approach lies in the integration of neuroscience, pedagogy, and AI into a unified system, applied in the context of **WOW-lessons** – next-generation digital learning scenarios. This fusion enables a leap from Education 2.0 to **Education 5.0**, where learning becomes more personalized, neural-efficient, and cognitively dynamic.

Furthermore, knowledge acquisition does not follow a single-stage model (only studying information), but a two-stage model (first focusing attention, and only then acquiring knowledge with open attention gates, Fig.2.).

Fig. 2. *Two-stage Assimilation of Information: "1-Attention - 2-Information":*

3. Theoretical Justification

Neuropsychology confirms that cognitive functions are not monolithic but are distributed across distinct regions of the brain. The visual areas of the occipital lobe process visual stimuli; the parietal lobes handle spatial reasoning and analytical operations; the hippocampus plays a central role in memory consolidation; and the prefrontal cortex – often referred to as the brain's conductor – governs planning, cognitive control, and abstract thinking. Understanding this functional differentiation is crucial for designing learning models capable of targeting the right neural networks at the right time.

In an age of digital overload and fragmented attention, the phenomenon of **neurocognitive labeling** is gaining relevance. Research shows that the presence of a clear cognitive marker – an instruction indicating *how* to think — reduces mental load, increases engagement, and activates mechanisms of **metamemory**.

Metacognition – the ability to reflect on one's own thinking – thus becomes not an optional skill, but a foundational tool for effective learning. The process of acquiring knowledge is more effective when knowledge, types of thinking, logic, intellect, and competencies are not scattered throughout the information space, but are packaged in advance to match the structures of neural networks. (Fig.3.).

This allows fragments of knowledge to be placed in neural networks in an optimal way. Then, using appropriate algorithms and neural markers, they can be retrieved more quickly and accurately in response to external requests.

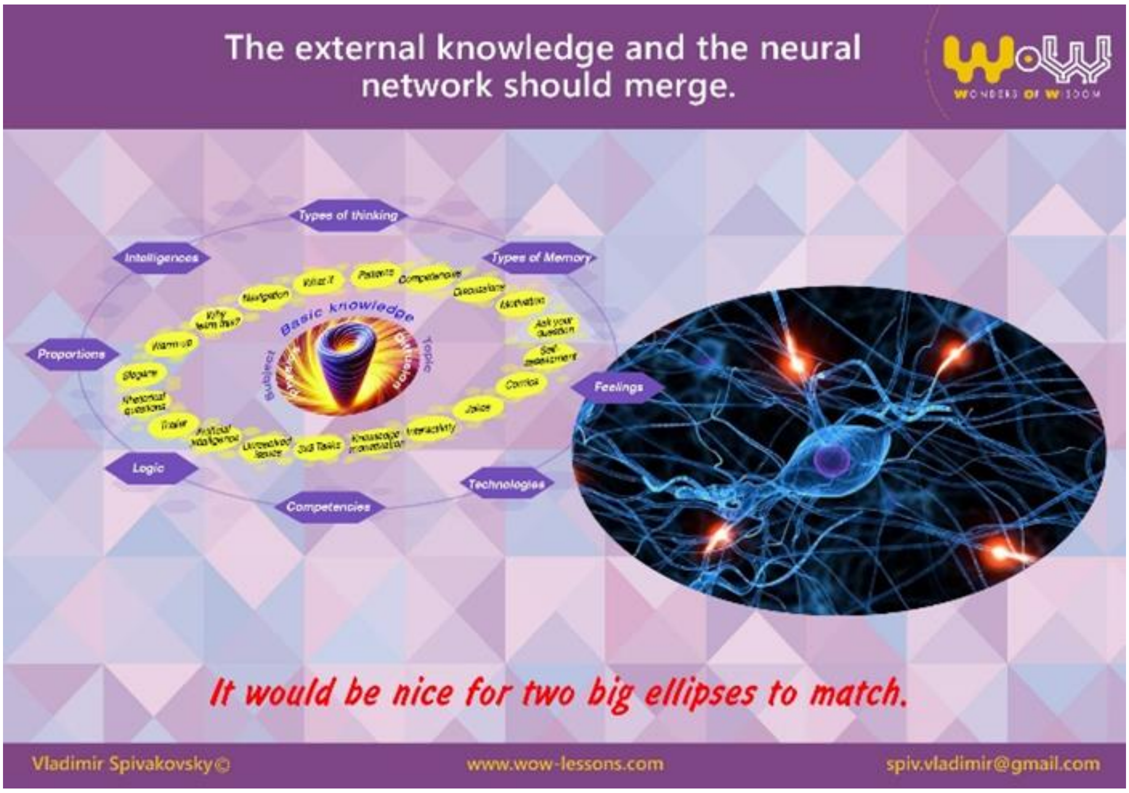

Fig. 3. *Aligning External Knowledge With the Internal Neural Network.*

However, most traditional assignments lack a **thinking anchor**: students are not informed whether they should engage logically, intuitive, spatial, or analytical modes of thinking. This leads to internal uncertainty and inhibits the initiation of cognitive pathways.

The proposed solution is the **implementation of neuroanchors of thinking**: specific cognitive labels that predefine the required type of thinking, memory, logic, intelligence, or competency. This system serves not only as an educational orientation tool but also as a neural trigger – activating the relevant brain regions, increasing the accuracy, speed, and overall efficiency of cognitive processing within digital learning environments.

4. Description of the Neuroanchoring Model of Thinking

Classic cognitive frameworks – such as the mind map – have long been recognized as effective tools for visual thinking. However, they lack a critical component: a mechanism for triggering the **appropriate type of thinking at the right moment**. The neuroanchoring model of thinking fills this gap by enhancing traditional approaches with a fundamentally new level of depth and cognitive control.

The model is based on a **step-by-step routing of thinking processes**, from task labeling to the formation of an individual cognitive profile. It consists of five interrelated stages:

1. **Labeling the task.** Every assignment or question is accompanied by a marker indicating the required type of thinking: logical, associative, strategic, creative, systemic, or other **Thinking Skills** (including types of logic, intelligence, memory, competencies, components, etc.). These markers serve as **cognitive anchors**, enabling learners to select the appropriate mental processing mode in advance. (Fig.4).

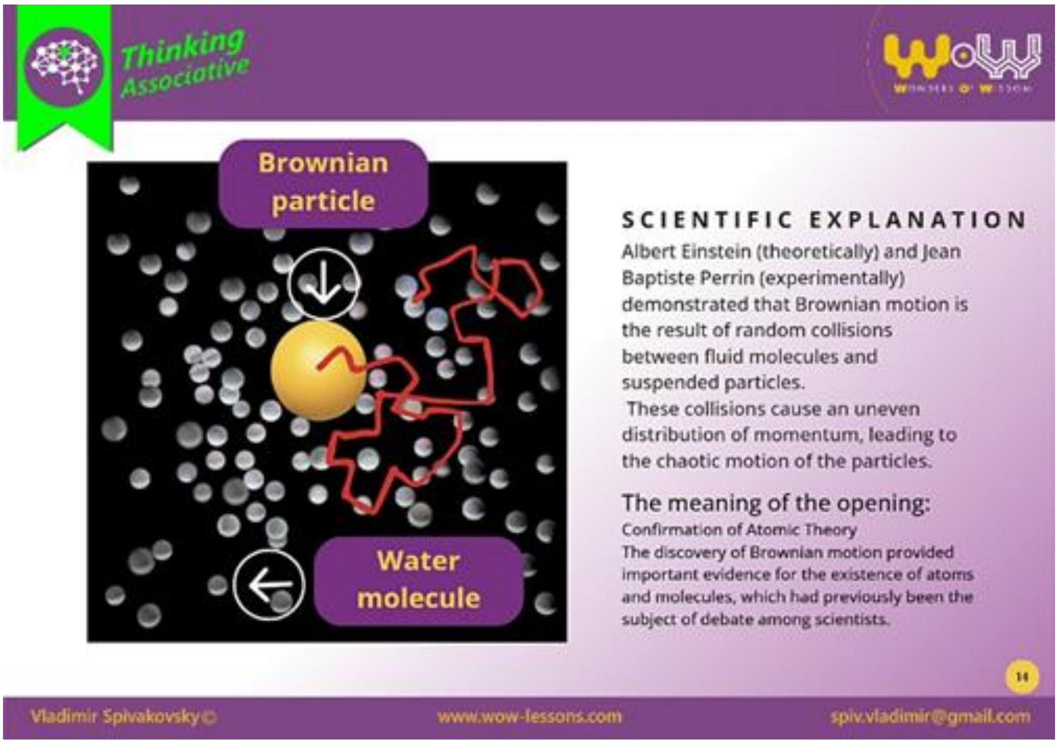

Fig. 4. *Neuro-anchoring of School Lesson Sections.*
In This Case, the Neuro-anchor "Associative Thinking."

2. **Cognitive awareness.** The learner's brain becomes consciously aware of the nature of the upcoming cognitive activity. This activates **cognitive readiness** – a form of metaunderstanding in which information is perceived within a clearly defined frame, rather than processed randomly.
3. **Neural activation.** The presence of a marker initiates the activation of specific neural circuits: logical tasks engage the prefrontal cortex, while visualization tasks stimulate parieto-occipital areas. A **coherent neural tuning** occurs, much like a precise route set in a cognitive GPS.
4. **Deep encoding.** Information is stored not superficially but deeply, as it passes through the neural network specifically designed for that type of processing. The **efficiency of comprehension and memory** increases dramatically.
5. **Cognitive profiling.** Repeated exposure to such markers across lessons leads to the development of a stable cognitive profile. Over time, this results not merely in skill acquisition, but in the formation of an **individualized thinking pattern** that can be easily activated in response to new challenges.

Thus, the neuroanchoring model transforms the mind map from a static visualization tool into a **dynamic neural system** capable of precision tuning through cognitive anchors. This is the core innovation and distinctive advantage of the proposed approach.

5. The new real Foundation of Education

Thanks to neural markers of thinking, a new understanding of the Foundation of knowledge is emerging. Previously, the foundation of knowledge was basic classical fundamental subjects (mathematics, physics, chemistry, geography, history, literature, etc.). (Fig.5.)

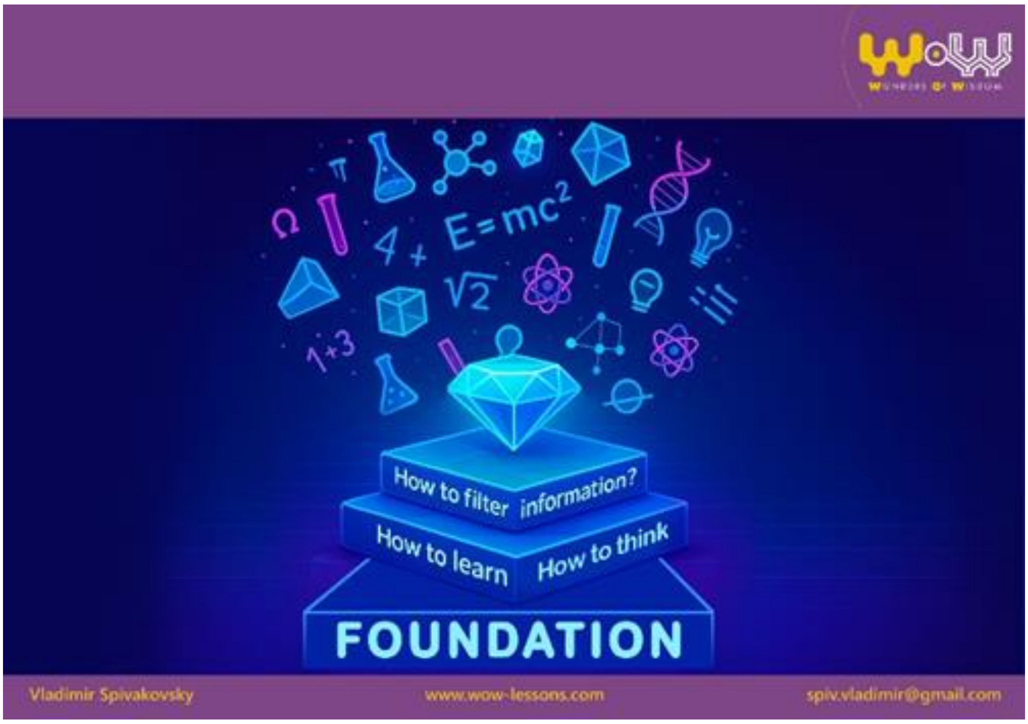

Fig. 5. *New Foundation of Education Knowledge: «How To Learn» and «How to Think»*

The results of the study showed that the Foundation of knowledge is completely different – it is not school subjects. Rather, it is the ability to think, the ability to learn, the ability to filter information, to think logically, to master different types of intelligence, and soft skills. Then, knowledge coming from outside does not randomly escape back into outer space and scatter across all the brain's neural networks but is structured into the corresponding parts of the brain so that it can be quickly retrieved when requested. Such neuroanchoring significantly increases the efficiency of the brain.

6. Application in Educational Practice (WOW Lessons)

The neuroanchoring model finds its practical implementation in the format of **WOW-lessons** – next-generation digital learning scenarios designed with principles of neuropsychology, metacognition, and the capabilities of artificial intelligence. In these lessons, **neuro-markers are embedded into the key stages of the learning process**, transforming it into a more conscious, targeted, and personalized experience.

Labeling begins even **before** the task is introduced. Students receive explicit cognitive cues such as: *“Now you will think like a strategist,”* or *“This is a task for entrepreneurial thinking,”* or *“Let’s activate intuitive logic.”* These prompts **instantly activate the desired thinking mode** and focus attention on the internal process rather than just the outcome. (Fig.6.)

During the **instructional phase**, markers help the teacher emphasize not only the content but also the *mode of processing*. For example, the phrase *“Notice that this requires systems thinking”* teaches students to identify and switch between different modes of cognition.

In the **feedback phase**, AI-powered platforms analyze which neuroanchors were used, how effectively they were applied, and how they influenced the learning outcome. The system tracks both behavioral and cognitive patterns, helping to build a **neuroprofile** of the learner – identifying which thinking types are well developed and which require further support.

Educational practice shows that the integration of neuroanchors **significantly increases motivation and engagement**. Students do not merely like completing assignments, but like they are participating in an intellectual game with purpose. Neuroanchoring reduces anxiety, strengthens attention, and leads to more **durable memory formation**, thanks to the activation of targeted neural networks.

Thus, WOW-lessons become more than just a technological shell – they represent a **new form of cognitive interaction**, in which the student engages with digital knowledge as an active agent within a neuro-scripted scenario, consciously navigating and managing their own thinking process.

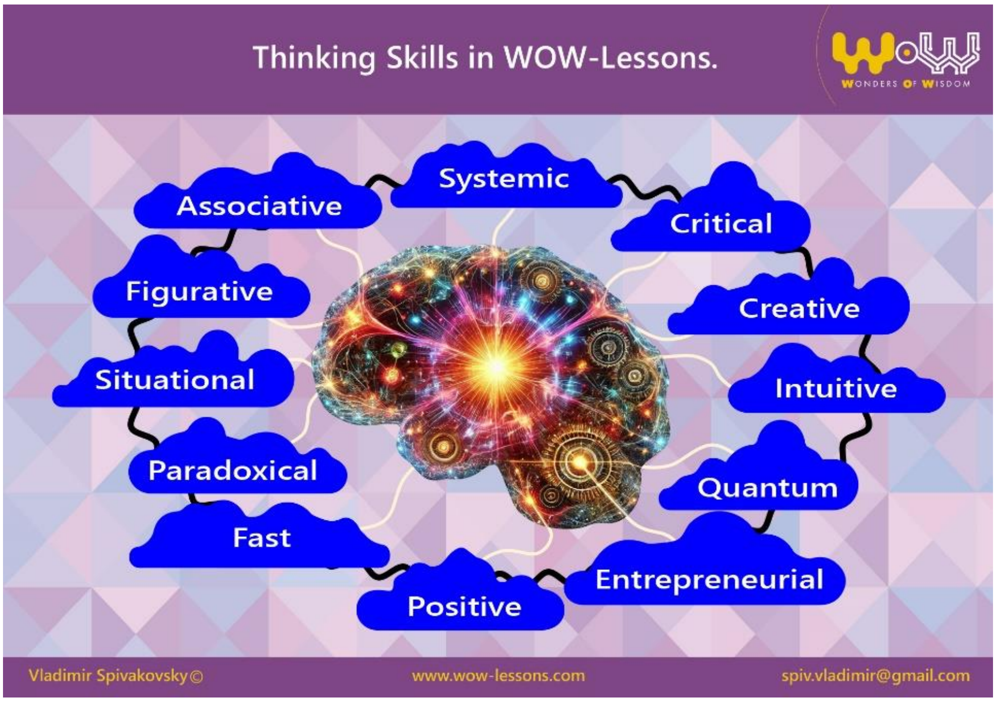

Fig. 6. *Training Types of Thinking In Neural Networks*

An additional benefit is **reduction of manual workload for teachers**: cognitive markers and anchors are not delivered live in the classroom but are **automatically embedded** during the pre-production and repackaging of textbooks – along with all necessary infrastructural components. This makes **neuroanchored learning scalable and indispensable** for both offline and online education formats.

7. Experiment and Observations

To assess the effectiveness of the neuroanchoring model, a comparative observation was conducted in two parallel classrooms with identical academic backgrounds. In the first group, lessons were delivered using neuro-markers at every stage of instruction. In the second, a traditional approach was used – without pre-labeling the types of thinking required.

Over the course of one-month, key parameters were monitored: **accuracy of task comprehension, speed of information assimilation, depth of argumentation in responses, retention over time**, and **level of concentration**. Control assessments were administered one day, one week, and one month after each learning topic was covered.

The results were compelling: the neuroanchoring group demonstrated an average performance level **45% higher** than the control group. Moreover, **long-term knowledge retention after one month** was significantly stronger – students not only answered correctly but also displayed deeper understanding. They also exhibited greater cognitive autonomy, frequently articulating their reasoning and spontaneously switching between different modes of thinking.

Qualitative feedback from students further confirmed their **heightened engagement**. Many described the markers as tools that *"helped them focus," "provided an entry point,"* or *"activated the right mental mode."*

Children particularly appreciated phrases such as *"Now think like a decision architect"* or *"Engage your logical scanner"* – these cues were perceived as **playful mental triggers**, fostering emotional ease while stimulating high-level intellectual activity.

Thus, even at the early stages of implementation, **neuroanchoring in classroom** practice demonstrated significant improvements in both cognitive and emotional-motivational outcomes. These findings validate the model's efficacy and support its potential for large-scale adoption. (Fig.7).

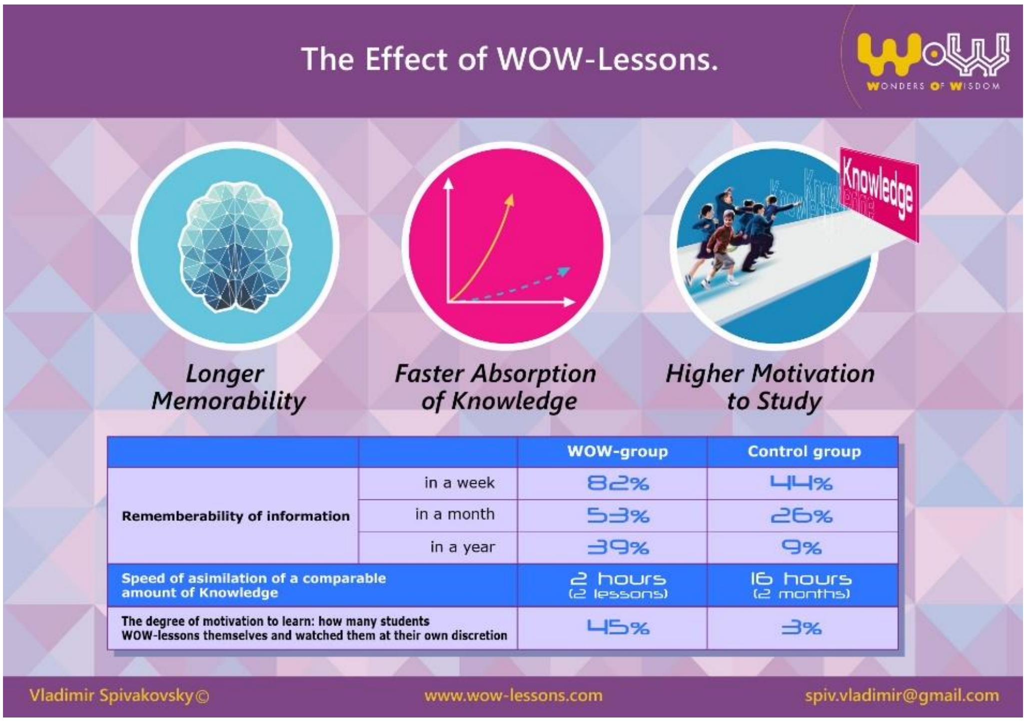

Fig. 7. *The Effect of WOW Lessons*

8. Conclusions

The **neuroanchoring model of thinking** marks a fundamentally new stage in the evolution of meaningful and accelerated knowledge acquisition.

It enables the structuring and repackaging of educational material into the format of **WOW-lessons**, where each content segment is equipped with a cognitive marker. This transforms a lesson into a guided neural scenario, capable of rapidly advancing the **education system from Level 2.0 to Level 5.0** – digital, personalized, and interactive.

This approach significantly increases the interest of both students and parents in the learning process, serving as a powerful motivational driver and a catalyst for **expanding the educational market**, especially in an era where flexibility, relevance, and quality are in high demand.

The neuroanchoring model is **highly scalable**. It integrates seamlessly into AI-based platforms, adapts to **VR/AR environments**, and contributes to the development of advanced AI algorithms and adaptive learning systems.

Most importantly, this model represents a long-overdue modernization of educational content – introducing a long-missing element: **conscious meaning**. In parallel, it delivers substantial **economic efficiency**, reducing systemic costs while enabling high-value capitalization of emerging businesses and next-generation digital learning services.

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