



Pedagogical Opportunities For Developing Associative Thinking Through Game-Based Technologies

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ABSTRACT

This thesis examines the pedagogical and psychological opportunities for developing associative thinking among primary school pupils through game-based activities. The content of methods such as associative chains, colors and symbols, associative memorization, and associative pantomime, as well as the mechanisms of their application in the learning process and their impact on pupils' imaginative thinking, memory, speech activity, and creative exploration, are analyzed. The study also demonstrates the potential of using storytelling-based games such as "Story Cubes" to establish meaningful connections between random images, express ideas coherently, and create independent associations. The integration of game-based tasks with specific learning objectives is substantiated as an important condition for developing associative thinking.

KEYWORDS: Associative thinking, association, primary education, game-based method, associative chain, symbolization, memory, pantomime, creative thinking, storytelling, Story Cubes, game-based learning.

INTRODUCTION

In primary education, the ability of pupils to connect new knowledge with their previous experience, establish relationships between different concepts, and generate new ideas based on a given image is an important cognitive skill. Associative thinking contributes to the rapid and meaningful formation of such connections. D. D. Karolinskaya explains the development of associative thinking among primary school pupils in terms of connecting new knowledge with existing knowledge and supporting productive activity [1]. Since play is a natural form of activity for children, it provides an opportunity to develop associative connections in a free, engaging, and active environment.

In game-based learning, a task should not remain merely entertaining; rather, it should be directed toward a clearly defined didactic objective. Materials developed by the LEGO Foundation also associate learning through play with children's opportunities to experiment, explore, and actively apply knowledge [5]. From this perspective, associative games encourage learners not simply to reproduce ready-made answers, but to identify connections between elements that may initially appear unrelated.

1. The "Associative Chains" Method. In the "Associative Chains" method, learners are given a specific topic, and each participant provides a new concept that has a meaningful connection with the previous word or image. For example, under the topic "Winter Holidays," a chain such as "New Year – Christmas tree – gift – snow – sledding – mountains" can be constructed. Importantly, the learner should not merely provide a word but should attempt to understand



how it is connected to the previous concept. In this way, the associative and sequential components of thinking are activated simultaneously. The method can be applied across different subject areas. In mother-tongue language lessons, learners can identify synonyms, antonyms, or figurative associations related to a given word; in mathematics, terms such as “subtraction – minus – difference – decrease” can be systematized; in natural science, causal or figurative chains such as “water – rain – river – plant – life” can be constructed. In history and literature, connecting dates, events, characters,

2. The “Colors and Symbols” Method

The “Colors and Symbols” method is based on expressing abstract content through colors, shapes, signs, or drawings. For example, learners may be asked to represent the character of a literary work’s protagonist through a color, create a colored image corresponding to the mood evoked by listening to music, or select a symbol for the concepts of “Living and Non-living Nature.” In this process, it is natural for the same concept to generate different associations among different learners.

The main didactic value of this method lies in the fact that learners reorganize a concept not in the form of a ready-made definition, but through a personal image. Subsequently, the selected color or symbol can serve as a signal that recalls the content. The teacher transforms associative thinking into verbal explanation by asking questions such as: “Why did you choose this particular color?”, “Which characteristic does this symbol represent?”, and “Could it be expressed through another symbol?” This method is particularly suitable for visual arts, music, reading, natural science, and mother-tongue lessons. At the same time, greater importance should be given to the semantic justification of the symbol created by the learner than to its aesthetic qualities.

3. The “Associative Memorization” Method

Associative memorization is based on connecting complex or difficult-to-memorize material with a familiar image, color, symbol, or short storyline. When learners connect new information with their previous experience, an additional “key” is created for subsequent recall. S. A. Gorbanalinejadrudrsari relates game-based technologies to cognitive interests in primary education and demonstrates the potential of game-based tasks for active learning [2; 3]. For example, spelling rules can be associated with colored cards, symbols, or figurative situations. Creating a “memory tag” for difficult words, drawing a small illustration corresponding to a rule, or transforming the structure of a word into a visual model can help learners develop an individual associative support mechanism. However, in this method, the image should not replace the scientific content of the rule or word; rather, it should function as a means of recalling it. The presence of a game element strengthens learners’ active engagement with the material: instead of simply accepting a ready-made image, they select a symbol themselves, explain it, and use it in subsequent tasks. As a result, memory, speech, and associative thinking are integrated within a single learning activity.

4. “Associative Pantomime” and Movement-Based Games

The “Associative Pantomime” method involves representing a word or concept through movement, facial expressions, and body language. For example, the word “freezing” can be represented through a shivering movement, the concept of “flying” through flapping the arms like wings, and the word “heavy” through a particular body posture. At the next stage, learners observe the movement and identify the corresponding word or concept. In this way, verbal and

non-verbal experiences are interconnected. Pantomime can be particularly useful for expanding vocabulary, reinforcing adjectives and verbs, describing characters in texts, and conducting dramatization activities. The teacher gradually increases the complexity of the task: first, a single word is expressed through movement, then a word combination, followed by a sentence or a short event. During this process, learners practice observing, making predictions, creating images, and translating them into verbal forms.

5. "Story Cubes" and Connecting Random Images

In storytelling games based on story cubes, learners create a meaningful connection between randomly selected images and construct a single coherent story. In such tasks, the images do not appear in a predetermined logical sequence; instead, learners are required to connect them through a beginning, development, and conclusion. Activities involving story cubes provided by PBS KIDS also demonstrate how children can use random images to create stories and take turns continuing the narrative [6]. Materials developed around Rory's Story Cubes likewise recommend connecting images into a single story, organizing the narrative into a beginning-middle-end structure, and assigning meanings to images freely [7]. In primary education, teachers can integrate this activity with mother-tongue and reading-literacy instruction: three cubes can represent a character, setting, and object; five cubes can represent a sequence of events; and nine cubes can be used as a complete story model. An important feature of this method is that learners establish relationships between random elements. Therefore, in addition to associative thinking, the method develops coherence, causality, imagination, vocabulary, and oral communication skills. Materials from the BYU McKay School of Education include learning activities based

From a pedagogical perspective, an effective game-based activity should meet three conditions: first, it should have a clearly defined learning objective; second, it should provide learners with an opportunity to create independent associations; and third, it should encourage them to explain the connections they establish and apply them in speech. Game-based activities organized in this way not only contribute to the development of associative thinking but also support memory, imagination, speech, creativity, and communicative engagement.

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