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The use of building blocks in construction of squares and cubes representing the numbers – transition from the concrete world to the world of operational reasoning

Didactic classes in a pupil-friendly school require its transformation from a teaching environment to a learning environment, in which, apart from the implementation of new educational concepts oriented towards innovative thinking, as well as the development of talents and social competences, the creation of associations, deductive and inductive reasoning, it is important for the teaching "teacher-guide" to create a friendly learning environment and strengthen the motivation of pupils. The important elements of such an environment are: the sense of perpetration in pupils, and triggering a desire to cooperate and provoke reflection.

In this paper, two types of information were discussed, i.e. the contents and products which the pupils used during an algebra lesson (topic: squares and cubes of numbers) through:

- cognition, memorisation, appraisal, convergent and divergent thinking;
- selection between figurative, symbolic and/or semantic contents engaging them into their preferred style of learning;
- stimulation of creativity and reflexive thinking about their own learning.

To fortify the "external motivation" of pupils, the lesson was carried out by an application of the exercise method, using building blocks for this purpose, and mobilizing the pupils' cognitive processes to assimilate the discussed mathematical problems through play. The pupils' motivation for creative activity and the willingness to take up effort of reasoning via analogy has been presented. On the other hand, the role of the teacher-guide following the pupil's cognitive processes through asking open-ended questions was discussed.

Particular strengthening of information coding in pupils' memory tracks due to information imaging and association of reasoning mobilization with readiness to repeat the exercise (play) has been indicated in the paper. Weight of independent acquisition of knowledge by action and finding sense in such action, consequently, independent reasoning, has been underlined.

During work presentation pieces of the lesson recorded on an electronic medium will be displayed.

Keywords: convergent and divergent thinking, stimulation of creativity, the exercise method