CLASSIFICATION AS A TOOL FOR BUILDING STRUCTURE[1]

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Classification as a person's mental potency is an important characteristic of human thinking. The ability of primary teachers in this respect is very varied. The contribution is based on an experiment which was carried out during two two-day seminars with 60 primary teachers. The teachers were given the following two tasks:

Task 1. Twelve names are given: Alice, Audrey, Anthony, Boris, Brenda, Bernard, Cindy, Cedric, Clement, Dolly, Daniel, Deborah. Find three criteria so that the names are divided into: a) 4 classes of 3 names, according to the first criterion, b) 3 classes of 4 names, according to the second one, c) 6 classes of 2 names, according to the third one.

Task 2. Create a group of six objects (pictures, things) for your 6-7 year-old pupils and provide two classificatory criteria: a) the first one divides the set into 2 groups of 3 objects, b) the second one divides the set into 3 groups of 2 objects.

More than half of the solvers of Task 1b chose the following criterion: Each class consists of one name beginning with A, one with B, one with C and one with D. Some participants realized that this was distribution rather than classification. However, despite quite a long discussion there was a considerable number of teachers who could not see the difference between classification and distribution. Probably the most effective tool to address this problem is the following formulation of the classificatory criterion: Let us imagine classes as baskets with labels which uniquely determine if a randomly chosen object belongs to the basket or not.

About a third of solvers of Task 2 confused classification with association, e.g. a five-member group of teachers created the following six objects: ant, butterfly, flower, grass, squirrel, and tree. The classification into two classes "plants versus animals" is correct, however, linkages "squirrel – tree", "ant – grass", "butterfly – flower" do not have classificatory, but associative character. Some solvers could not see their mistake in this case either. One of the solvers suggested putting a label "nest" on the basket, as she understood it as a linkage between the animal and the plant on which it lives.

In the ongoing research, some other mental functions which play an important role in structuring mathematical knowledge are analysed: hierarchization, schematization, the usage of isomorphism, chaining, the creation and usage of generic models in concept creation processes. The contribution will address them, too.