

# TACTILE MANIPULATION & COMMUNICATION

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The authors have researched pupils' tactile perception of three-dimensional solids over a period of time. (Jirotková, 2001, Jirotková & Littler, 2002, 2003). We have done this by designing a series of tasks that the pupils undertake in pairs and during which they are unable to see the shapes they are handling. We were able to video their tactile manipulation during the tasks and to record their communication between the pairs as they progressed through each task.

In 2003 three tasks, in particular, led to interesting links being established between the pupils' tactile manipulation and their communicative skills. These results also linked to the Van Hiele/Pegg's levels of insight into 3-D geometry. (Van Hiele, 1986, Pegg, 1997). Each pupil had a set of 14 different solids, which were hidden behind screens. In the first task pupil A was given a solid by the researcher and by only tactile manipulation, had to describe it to pupil B. Pupil B then had to find the described solid in his/her set of solids by tactile perception only. They were allowed to give and ask for as much information as they needed. The second task only differed from the first in that pupil A chose a solid for him/herself from amongst his/her 14 solids and pupil B could only ask for more information without being specific. The final task involved pupil A choosing a solid tactilely with pupil B determining the chosen solid tactilely by asking questions to which pupil A could only answer 'Yes' or 'No'.

The analysis of this research led to the defining of three types of tactile manipulation for the primary pupils with whom we worked. These levels matched closely to the first three Van Hiele levels which relate to the same age group of pupils. Similarly the level of communication skills which each pupil possessed linked closely with the type of tactile manipulation they used. This link enables the teacher to identify weaknesses both in tactile manipulation and communicative skills, especially the meaning of the words the pupil uses. Clearly being able to observe the manipulation gave insights into the strategies the pupil used to solve the tasks.

The poster will give the types of tactile manipulation and give examples of pupils working through the tasks, their communication and pictures of their manipulation. The link between the types of manipulation and Van Hiele's levels will be illustrated.

## Bibliography

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