

# EQUIPMENT FOR THE PERCEPTION OF OBJECT WITH FLEXIBLE SHAPE BY VISUALLY IMPAIRED PERSONS

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## **Introduction**

There is a special type of objects for blind and visually impaired people. These are objects with a soft surface (skin, ball, bread, umbrella). If the shape of object is hard and constant, to understand its physical properties simply touching is enough. But when it comes to observe objects with soft surface or objects with variable shape, there also need to observe it visually in addition to the touch experience. In this case, the subject must perform strong perception actions on the object by hand. Object changes its shape. Subjects observes this changes, its amplitude and direction (J. Piaget, J. Gibson, V. Zapparocj). At this point, visually impaired people struggle with difficulties of perception.

## **Our research**

We studied this process in people with visual impairments, and came to the following conclusion:

a) there is special analyzer perception of the soft object. It has no special receptors, but it has special process and algorithm: 1) the subject must perform decisive actions of perception on the object manually; 2) the object changes its shape (fig. 1); 3) the subject observes these changes, its amplitude and direction (fig. 2). This analyzer has special cerebral chapter in the brain (E. Sokolov, G. Losik).

b) second conclusion is that not only *touch* but *vision* plays crucial role in perception of an object with flexible surface.

## **Practical part**

There is need to find other ways to provide visually impaired and blind people ability to percept objects with dynamic shape. In particular, blind people have difficulty recognizing the degrees of freedom of the human body, animal body, fish, bird, insect (Klause). The same problem appears when visually impaired people want to experience play in theatre or active children playing.

## **Results**

We found the other way of solving this problem for the visually impaired persons only. To demonstrate low vision person an object that changes its shape under the pressure of hand we used magnifying glass. These magnifying glasses are widely used by persons with poor eyesight for

reading text and viewing fine arts. Instead of a text, we put object with variable shape under the glass. The participant applies pressure on the studied object and watches changing its shape, the result of his actions.

### **Theoretical pursue of proposal**

We discovered and the mechanism and proven that:

a) the theory why the participant but not teacher need to apply forces on object with his hand in order to achieve the experience of its shape. Demonstration of a video record of an experiment can not translate this experience (B. Tversky).

b) touching of a soft object must be done in one direction at once, but not doing complex end multiply touches simultaneously.

c) when touching the object, there should not be any other forces that can change the form of observing object.

d) two pictures must be used for analyzing object: one done before applying any forces and the other one, done after the participant applied force to it.



Figure 1 - Variable shape object



figure 2 - Object inspection on the device