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STRUCTURING VISUAL GNOSIS AS A COMPONENT
OF GRAPHOMOTOR COMPETENCE IN CHILDREN OF 6—7 YEARS
OF AGE WITH LEVEL III GENERAL SPEECH UNDERDEVELOPMENT

Abstract. The article deals with structural characteristics of the visual gnosis represented as a macro-component of the graphomotor competence of children with speech disorders of 6-7 years of age. The authors distinguish five micro-components of optic gnosis, in particular, recognition of images of real objects, recognition of contours of objects, perception of shapes of objects, perception of the size of an object, perception of the volume of an object. The differences in the assessment of the quality and level of development of each micro-component are revealed. This differentiation of visual gnosis would allow developing the most appropriate technologies of formation of each micro-component in order to create an integrated technology of its formation as a whole.
Key words: graphomotor skills, competences, macro-components, micro-components, visual gnosis.

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According to medical statistics, the number of preschool and junior school children with dysarthritic disorders is growing. In the process of rehabilitation of such speech disorders, special urgency is given, alongside with other means and methods, to the necessity of combined development of visual gnosis and fine motor skills which would allow more adequate organizing rehabilitation work to overcome the existing disorders [3; 1; 12; 10].

It is known that fine motor skills and visual gnosis constitute the foundation for the formation of the child's graphomotor skill; and its state, in its turn, tells on the quality of the child's written speech; consequently, its impairment or underdevelopment would lead to various problems in teaching the child to write.

The graphomotor skill is a multi-component phenomenon; and the high level of its development demands considerable effort in the formation of both speech and non-speech psychic processes. Such processes include the degree of development of visual-motor coordination, optico-spatial orientation, visual gnosis, fine differentiated motor skills of wrists and fingers and inter-hemispheric interaction.

Based on the modern educational paradigm – the competence approach (V. A. Bolotov, V. V. Serikov, 2003; M. A. Choshanov, 2006; I. A. Filatova, 2012; A. A. Dmitriev, 2013, 2014, N. Yu. Kiseleva, 2013; T. V. Markova, 2015, etc.), – we considered the problem of visual gnosis investigation from the point of view of its interpretation as one of the macro-components of the graphomotor competence with its further differentiation into structural elements.

While studying literature on the problems of formation of visual gnosis in the paradigm of the competence approach we have not come across works devoted to its state and structure and the formation of visual gnosis as a component of the graphomotor competence; and this fact defined our choice of the object of research which consists in revealing the structure of the graphomotor skill and then working out the optimal technology of its development. We understand the graphomotor competence to be the result of multi-aspect activity towards its formation and the level of its formation in its practical realization.

In the course of our research we put forward an assumption that structuring the components of the graphomotor competence and, in particular, singling out visual gnosis as one of its macro-components would make it possible to more adequately select the means and methods of rehabilitative influence which would finally facilitate its development on the whole.

The aim of our research is to single out the structural components of the graphomotor competence, to define visual gnosis in children of 6-7 years of age with level 3 GSU and to structure it by revealing separate micro-components. Our study is based on the works of A. A. Dmitriev [4; 5].

With the purpose of revealing the level of formation of visual gnosis we carried out a summative experiment for further solution of applied tasks aimed at the formation of the given quality as a macro-component in those tested.

The study of the level of formation of visual gnosis was carried out in three stages. First, we studied the speech development histories of the children with the purpose of assessing the level and structure of speech disorders, graphomotor skill in particular; second, we selected diagnostic procedures of a complex observation of visual gnosis. The third stage was directly devoted to the study of the level of formation of visual gnosis as a macro-component and its micro-components in the tested children with level 3 GSU; a special scoring system was worked out with this end in view.

The level of formation of visual gnosis and its micro-components were studied with the help of research methodology worked out by R. I. Lalaeva and O. B. Inshakova [8; 6]. The sample included 12 children of 6-7 years of age with level 3 GSU.

1. Recognizing pictures of real objects (O. B. Inshakova). The tested person was asked to look at outline images of real objects on a separate sheet of paper with a short instruction: "Look at the picture attentively! What is drawn in it?" The child looked at the picture and gave the answer.

2. Perception of the form of an object (O. B. Inshakova). The children were asked to look at objects of different forms (e.g. pears) and were given the instruction: "Put the pears in order from the widest to the narrowest one. Define the form of each object. Compare them with the pear drawn above".

3. Perception of the size of an object (O. B. Inshakova). Carrots of different length were presented in a picture. The instruction: "Look at the picture. Place the carrots in order from the longest to the shortest one. Which carrot differs from the rest?"

4. Perception of the quantity of an object (O. B. Inshakova). The instruction: "Point at the objects in order from the widest to the narrowest one".

5. Recognizing the contours of objects (R. I. Lalaeva). The instruction: "Look at the pictures. What is drawn in them? Trace the contours of the image with your finger in superimposed pictures".

We worked out a score system of evaluating the pupils' performance based on the following scale:

4 points – all tasks were performed correctly;

3 points – made one mistake;

2 points – completed the task with help of the experimentator;

1 point – made two mistakes;

0 points – failed to complete the task.

The child could get the maximum score of 20 points in five procedures which demonstrated a high level of development of graphomotor skills. We believe that such number of points could be scored by a typically developing child.

Evaluation of the level of formation of visual gnosis in the children under observation was differentiated according to the following scale:

14—20 points – high level of formation of visual gnosis;

7—13 points – medium level of formation of visual gnosis;

0—6 points – low level of formation of visual gnosis.

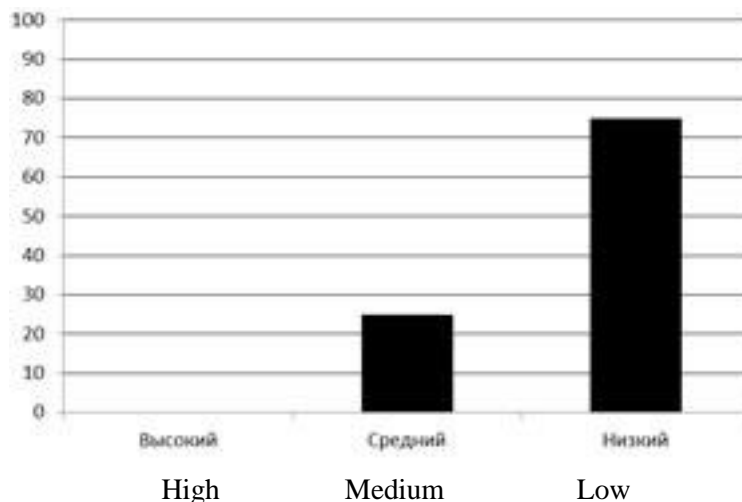High   Medium   Low

Figure 1. Levels of formation of visual gnosis in children of 6-7 years of age with level 3 general speech underdevelopment (%)

The analysis of the experiment results (Fig. 1) showed that 25% of the tested children had a medium level of formation of visual gnosis, and 75% of children demonstrated a low level of formation of visual gnosis.

The children with the medium level of formation of visual gnosis had difficulties in understanding the task. They made many mistakes even after two-three presentations of the instruction.

The children with the low level of formation of visual gnosis had serious difficulties in completing the tasks. They could cope with task only with help of the experimentator. They could hardly recognize outlined objects, superimposed images, and had problems with defining "the biggest" and "the smallest" objects. Differentiation of the notions "narrow" – "wide", "thick" – "thin", "long" – "short" had not been formed. Such pupils did not only make mistakes, they could not cope with some of the tasks altogether.

The subsequent analysis of visual gnosis was undertaken on the basis of the indicators demonstrated by those tested according to each testing procedure (Fig. 2). The diagrams present the sums total of points scored by the tested children in different testing procedures. The maximum number of points for all tasks could be 48.
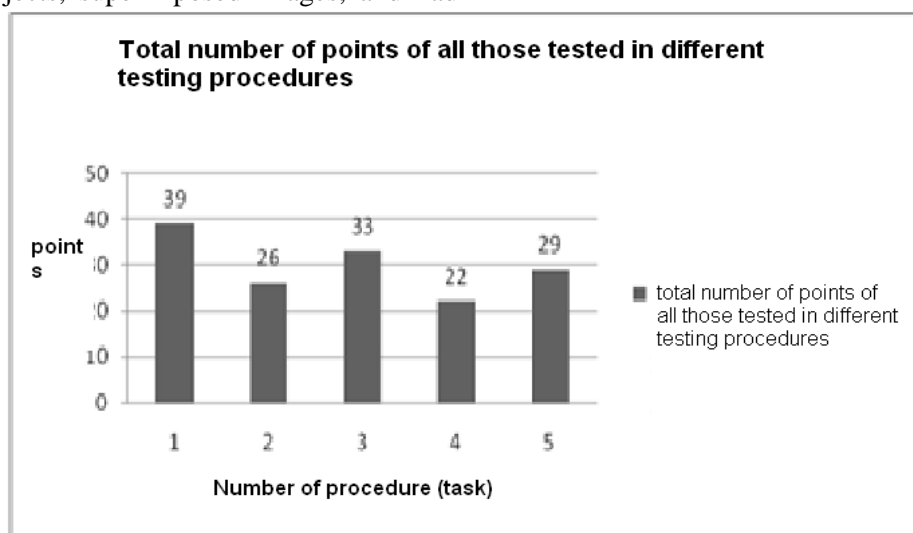

Total number of points of all those tested in different testing procedures

Figure 2. The sum total of points scored by those tested in visual gnosis testing procedures (1 — recognizing images of real objects; 2 — perception of the size of an object; 3 — perception of the quantity of an object; 4 — recognizing the contours of objects; 5 — perception of the form of an object)

The analysis of the diagrams showed that all tasks caused considerable difficulties with the children under observation but questions about the size and contours of objects, i.e. elementary abstract thinking tasks were the most difficult ones.

When the observation was com-

plete we assumed that the indicators of children in each procedure might serve as structural components of visual gnosis and, proceeding from the methodological approach to designing the competence model (A. A. Dmitriev, 2013), we believe that these components can be presented as micro-components of visual gnosis as a macro-component of the graphomotor competence (Fig. 3).

Mega-component "Graphomotor Competence"

Macro-components "Visual Gnosis" (1), "Orientation in Space" (2), "Fine Motor Skills" (3), "Gross Motor Skills" (4)

Micro-components "Recognizing Real Objects" (1.1); "Recognizing Contours of Objects" (1.2); "Perception of Form" (1.3); "Perception of Size" (1.4); "Perception of Quantity" (1.5)
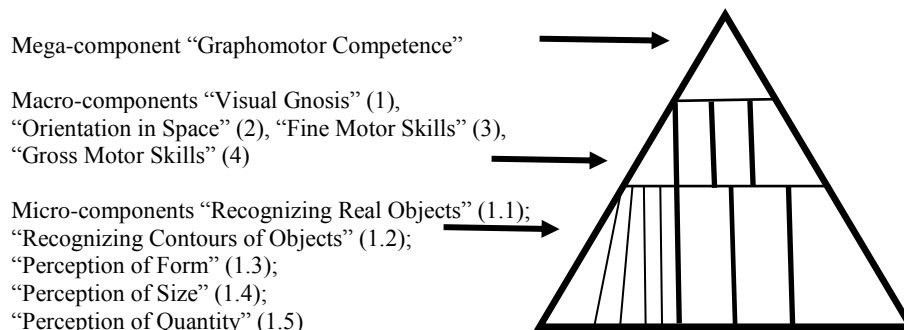
Figure 3. The structure of the graphomotor competence

Then we made a supposition that the graphomotor skill could be represented as a competence (mega-component) under which we mean the possibility to be used in various kinds of activity, and as one of the results of rehabilitative work. The following parameters can be regarded to be its macro-components: orientation in space, visual gnosis, fine motor skills, gross motor skills, etc. Each macro-component, in its turn, will be formed of constituent micro-components; we regard micro- and macro-components as graphomotor competence constituent parts of different volume. We believe that the smaller the component of a competence, the more adequately it can be formed with the help of a specially designed technology.

In our research, we chose visual gnosis as a macro-component to be investigated because of its importance for the formation of the graphomotor skill – it is due to this skill that man distinguishes, compares and correlates objects with one another. As a result of our research, visual gnosis is presented as a graphomotor competence macro-component which, in its turn, consists of a number of micro-components on the analogy with the research procedures used for the study of its parts:

• recognizing pictures of real objects,

• recognizing contours of objects,

• perception of the form of an object,

• perception of the size of an object,

• perception of the quantity of an object.

Having thus divided visual gnosis as a macro-component into micro-components we saw the differences in the level of their development which would help in the future to define the directions and technologies of rehabilitation work with the aim of formation of

each micro-component of visual gnosis.

Conclusions

1. The graphomotor skill can be presented as a competence, as a united complex mega-component, consisting of a number of macro-components (Fig. 3) where visual gnosis (one of the macro-components) was studied by us in more detail.

2. The analysis of the distinguished levels allows us to make a conclusion that visual gnosis as one of the macro-components of the graphomotor competence of children of 6-7 years of age with GSU is usually at the low level (in 75% of children) which needs adequate rehabilitation aimed at its formation.

3. On the basis of the undertaken research it may be assumed that rehabilitation work with the purpose of formation of visual gnosis should begin with designing technologies of development of its micro-components.

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