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PERCEPTIONS AND LEARNING IN PRIMARY SCHOOL

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ABSTRACT

With we intend to make the survey what methodically opportunities exist for using the cognitive experience on the little pupil in use of the instructional message. An entity is education in primary school, a thing - opportunities, at the exploratory work for using the force of the percepts for more precisely spatially orienting the pupils in the technological education. Solve the under mentioned problems in the probe:

1. Submit the message on the skill on spatially reorienting.
2. Investigation and choice of procedure for noting the skill for spatially reorienting.
3. Showing as well exploratory results analysis of context of goals and tasks of procedure on technology education in primary school.

Key words: Spatially orienting, technological education, primary school.

The purpose of the present study is to optimize the process of formation of skills for spatial orienting of students from the primary school age in the technologies training process.

The object of the present research work is technologies training process in the primary school and the subject is the very process of formation of skills for spatial orientation of the students.

In the process of the research work, we are guided by the following hypothesis: we assume that the process of process of formation of skills for spatial orientation of the students in the primary school age in the training of technologies can be optimized, if the power of perception is used for more precise spatial orientating during the realization of the work tasks, in order to achieve the purpose of the present research work, we solve the following tasks:

1. Clarification of the nature of the skills for spatial orientation.
2. Study and choice of the methodology of research of the skill for spatial orientation.
3. Presentation and analysis of the research results in the context of the purposes and tasks of the methodology of technological training at primary school.

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1. Nature of the skill for spatial orientation. Relying Upon The Rule "Habits Within Skills", Zl Sharkova Proposes That Under orientation skills in the space one should understand: automation of the comprising actions for determining of the location and direction of the subject/s and the object /s (parts of object/s), as well as between the subject/s ion 2D and 3D space (real or imaginary), in accordance with the internal and external orientation points. The automation makes it possible for the organization of the consequence of the comprising actions in an "Entire Mono Block" that is the actions, related to the points of irrevocability (1).

Studding the said problem, Jean Piage comes to the conclusion, that the perceptive spatial is built in the following consequence: form topological (individual relations unto combined (connected) metrical projection relations and after that, relations, united only by the links between themselves (2). It is exactly because of that reason in the modern psychology the statement is accepted the, that the child up to 3 years, can make difference between the opened and closed figures, and in the following years of its development, it shall gradually master also the topological relations. The entire readiness and capacities for mastering of the *topological relations, the children reach at their 8 years age, which corresponds, unto the period of training in the primary school age.*

The psychological literature accepts the statement, that in the case of students from one and the same calendar age there are psychological difference with the perception of the space, which must be considered during the assimilation of the two- and three dimensional space. In connection with that, it is possible and appropriate, the education for formation of spatial thinking with three dimensional images to start at the age after 8 years, provided the first sensitive period is in the age of 10-11 years.
The skills for spatial orientation we determine as the coordinated consequence of actions which serve for achievement of any purpose or realization of any given task. (3).

2. Methodology of study of the skills for spatial orientation

For the study of the skills of students for spatial orientation in the age of primary school we use the modified variant of the methodology of Yu.V. Balichev for visual orientation perception of elements of technical drawings and schemes for students from the upper school level (1-36). In accordance with this methodology for the precision of the visual perception we judge from the skill of the *students for orientation in graphically represented information through types of lines and their combinations.*

The entire process of research of the skill of the students for orientation in the graphically represented information is divided into four stages:
The first stage includes study of the precision of the visual perceptions with the presence of concrete practical support.
The second stage covers the establishment of the level of the skills of students for spatial orientation in the information, represented in graphics with presence of stage by stage represented visual support points (correctness of the spatial imaginations in the graphically represented information).
The third stage covers establishment of the student's skill for determination of the location of the elements of the technical site in mental plan (with visual support).
The fourth stage covers the study of precision of visual perception and correctness of spatially representations through:
- orientation in the graphical image comprised by certain type of lines and their combinations which make similar but not equal figures. The student does not dispose with the real technical object – ***lack of visual supports***.

For the realization of the study during the first stage, we use the following types of tasks:
A) tasks for tracking of the interlaced lines;
B) tasks for finding of the graphically represented part from an entire technical object;
C) tasks for orientation in graphically represented volume bodies;
The tasks are represented to little students under the form of a game.

The possible solutions of the first type of tasks and the record of results:
-*low degree of* precision of the visual perceptions: the child cannot follow the correct direction of the movement of interlaced lines;
- *average degree* of precision of the visual perceptions: the child follows the correct direction of the movement of only one line;
- *high degree of precision* of the visual perceptions: the child follows the correct direction of the movement of two interlaced lines

The possible solutions of the second type of tasks and the record of results:
-*low degree*- the child can not discover the represented part as a whole technical object;
-*high degree*- the child discovers the represented part from a whole technical object

The possible solutions of the third type of tasks and the record of results:
-*low degree*- the child does not distinguish the figures represented;
-*high degree*- the child distinguishes the figures represented;

For the realization of the second stage of the study we use the adapted variant of the "method for visual perception of elements of technical drawings, schemes" (4);

The student is given a task for following the changes within the technical object, indicated through series of technical drawings. Together with that the latter is given corresponding to the starting image model (rectangular sheet of paper). When assimilating the starting information, the student can operate with the model and that way to establish the location of the elements in space under the principle of "trial- mistake".

The possible results at the second stage of the study are as follows:
-the student orientates in the location of elements;
-the students orientates in the location of the elements, but looks for analogy between the graphic images shown for changes in the technical object and makes the actions necessary with the starting format for achievement of the said modification on the principle of "trial - mistake" or orientates in mental plan and works out the products without the presence of "trial-mistake" .

During the third stage of the study, the student is given information in graphical order (technical drawing) and model , corresponding to the model in the graphic image and all the necessary materials and instruments (in that case, rectangular sheet of paper, glue, adhesive tape and scissors). He is required during the watching of the starting format (the model) and the presence of the final result – the ready product, to determine mentally the location of the elements of the article in space. The correctness of the performed technological operations shall not be taken in consideration that is the quality of technical performance is not subject of estimation.

Possible results on the third stage of the study are:
-the student does not orientate in the location of elements;
-the student is orientated mentally and makes the product without availability of "trial-mistake".
During the fourth stage of the study the students is consequently represented three technical pictures, which though equal but different in size lines, are pictured on the spot where, there must be stuck certain element of the article.
The possible results from the fourth stage of the study are two:
-the student orientates in the graphical images for a certain period of time- 1 minute;
-The student does not orientate himself in the graphical images;
The recording of the results from the study done on four stages shall be realized separately. This manner it becomes possible to determine more precisely the levels of skills of the students to orientate upon types of lines, their combinations and the images from them, as well as the precision of the visual perception.

3. Presentation and analysis of the research results

As a consequence of the research during the various stages of the research work, the following results are being received:

Table 1*: Following of the direction of movement of interlaced lines and finding of the graphically represented part from a whole technical object:*

Studied groups	*following of the direction of movement of interlaced lines*						*Discovers the graphically represented part of the whole technical object*				***Total***
	Can not follow correctly the movement of the interlaced lines		Follows correctly the movement direction of only one line		Follows correctly the movement direction of two lines		Does not discover graphically represented part from a whole technical object		Discover graphically represented part from a whole technical object		
	nos	*%*	***nos***	*%*	***nos***	*%*	***nos***	*%*	***nos***	*%*	
Control groups	16	4,49	40	1123	301	84,55	54	15,16	302	74,83	**356**
Experiment groups	6	1,63	60	16,3	332	90,2	25	6,79	343	93,2	**368**

Table 2. *Orientation in the graphically represented volume bodies and correct orientation in the graphically represented information with visual and subject-active supports*

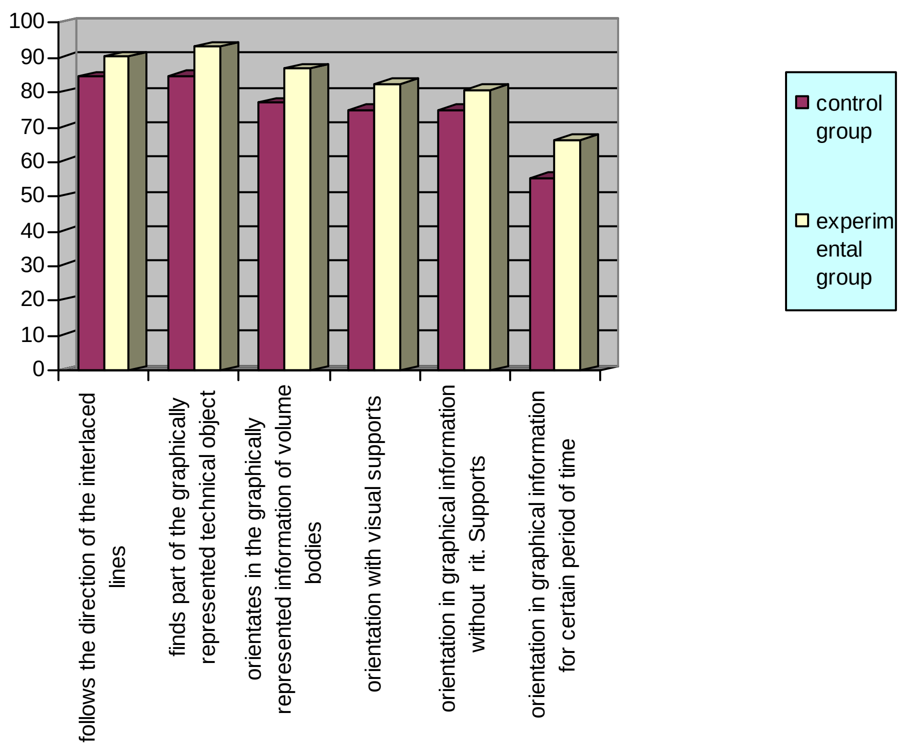
Studied groups	*Orientation in graphically represented*						*Correct orientation in the graphically represented information with visual and subject-active supports*				***Total***
	Can not follow correctly the movement of the interlaced lines		Follows correctly the movement direction of only one line		Follows correctly the movement direction of two lines		Does not discover graphically represented part from a whole technical object		Discover graphically represented part from a whole technical object		
	nos	***%***	***nos***	***%***	***nos***	***%***	***nos***	***%***	***nos***	***%***	
Control groups	11	3,08	70	19,66	275	77,3	89	25	267	75	**356**
Experiment groups	8	17,4	40	10,86	320	87	64	17,4	304	82,6	**368**

Table 3. *Mental orientation in the graphically represented information, (without using visual and subject – active supports) and orientation in the graphically represented information for certain period of time*

Studied groups	*Mental orientation in the graphically represented information, (without using visual and subject – active supports)*						*orientation in the graphically represented information for certain period of time*				***Total***
	Does not orientate in the location of the elements		Orientates in the location of the elements searching for analogy with the shown graphic images for alterations in the technical object		Orientates mentally, and elaborates the article without presence of "trial-mistake"		Does nor orientate in the graphic image for the determined period of time – necessary more than 2min		orientate in the graphic image for the determined period of time – necessary 2min		
	nos	***%***	***nos***	***%***	***nos***	***%***	***nos***	***%***	***nos***	***%***	
Control groups	10	2,8	79	22,2	267	75	158	44,4	198	55,6	**356**
Experiment groups	10	2,7	60	16,4	298	80,9	123	33,4	245	66,6	**368**

Table 4. *Precision and correctness of the following of the direction of movement of interlaced lines, finding of the graphically represented part of the entire technical object, orientation in graphically represented volume bodies, orientation in graphically represented information with visual and subject acting supports, orienting mentally in graphically represented information, without use of visual and subject active supports*

Studied groups u	Precise and correct following of the direction of movement of the interlaced lines		Correct finding of the graphically represented part from the whole technical object (graphically represented through technical drawing)		Correct orientation in graphically represented volume		Correct orientation in graphically represented information with use of visual and subject active supports		Correct orientation mentally in graphically represented information without use of visual and subject active supports		Correct orientation mentally in graphically represented information for certain period of time		**Total**
	nos	***%***	***nos***	***%***	***nos***	***%***	***nos***	***nos***	***nos***	***%***	***nos***	***%***	
Control groups	301	84,5	302	84,8	275	77,2	267	75	267	75	198	55,6	**356**
Experiment groups	332	90,2	343	93,2	320	86,9	304	82,6	298	80,9	245	66,5	**368**



The processing of the date from the study of the control and experimental groups is done with the help of the statistical package SPSS. The significance of the differences between the parameters is done with the t-criteria of Student-Fisher with trustful probability of differences D =1,96 (D= $\bar{x} + \frac{SU_{\alpha}}{\sqrt{N}}$ with error possibility of 5% , α = 0,05).

For that criteria and under the said trustful probability of the differences, the following dependence is characteristic:

- at (p > 0,05) – no statistical truthfulness found;
- at (0,01<p <0,05) – presence of statistically trustful difference;
- at (p < 0,01) – presence of very big differences.

If the values received t – criteria are smaller than (p<0,05), we accept that between the measurement values there exists statistically considerable difference , that is the extracts pertain to two general accumulations. Or otherwise expressed, with differences of the two cases, are statistically trustworthy.(5)

The values received of the t-criteria of Student-Fisher at trustful probability of the differences of 1.96 is 0.002. this gives the grounds of the conclusion that both extracts pertain to difference general accumulations, that is *between the results from the control and from the experimental classes there exists statistically significant difference.*

The pedagogical interpretation of the said fact is that the better expressed results from the study of the experimental classes is consequence of the realized education wherein attention is paid on the perceptive experience of the students and on the bases thereof, shall be sought possibilities for assimilation of the new school material. The utilization of the strong sides of the perception of the children at this age stage is an important factor for the exacter spatial orientation thereof during the fulfillment of the work tasks in technologies teaching classes. The proof for that is the established skill of the students from the experimental class to ***orientate themselves better in the graphically represented information and the presence of more precise perceptions and more correct spatial orientation than their fellow classmates from the control class groups***.

CONCLUSIONS

As a consequence of the result analysis from the research, we do consider that:

1. The precision of the visual perception is taught (wide sense) and is a result from, both general progress of students, as well as the specificity of training.
2. The work for achievement of bigger precision of the visual perceptions leads unto more precise visual impressions and more precise spatial orientation.
3. The process of formation of the skills for spatial orientation of the students from the primary school age in training of technologies can be optimized if the power of perception is used for more precise spatial orientation during the performance of work tasks assigned.

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