PSYCHOLOGICAL PECULIARITIES OF LEVELS OF STRATEGIES REALIZATION

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Abstract

In the paper analysis of levels of strategy realization of constructive - technical tasks solution by students is presented.

Keywords: task, constructive - technical task, tasks solution.

Studying technical activity, scientists note its efficiency, distinguish age features and individual distinctions of manifestations, noting thus that level at which design activity is realized can be various.

Investigating design activity both at professional level and subprofessional and nonprofessional, V.O. Molyako allocates four main levels of designing [2]:

1. simple;
2. reproductive;
3. productive;
4. creative.

Simple level of design thinking is characterized by limitation of designing only in detail presented elements and simple structures of elements, such designing consists in direct connection of the parts given to the subject. Such constructive activity is characteristic to the preschool child when he builds something of cubes, rings or any other simple elements. Such constructive activity is characteristic even to the designer when he from simple details assembles the simple mechanism.

Depending on complexity of created object the scientist divides simple level of designing into subtotals:

1) elementary construction (when from two - three details very simple design is created);

2) block designing (when from several elements the knot, separate block is created);

3) construction from elements and blocks of whole, system (for example, a lodge, car, simple model of the transistor, etc.).

Reproductive level of designing is connected with designing with models and drawings. It is duplicating, reproducing designing when ready principle or a design without changes is used. At children's age, it is designing drawing from cubes given by drawing. Inherently of reproductive designing is using of a concrete product, as a rule, without change or with simple changes, which don't attract change of the main functions of the general, structural composition, etc. It is the simplest realization of strategy of search of analogy [2].

Productive level of designing is a creation of new details, knots, devices on the basis of already existing, but with introduction considerable changes. Productive designing is connected with structural and functional combination. It is also characteristic for different age levels, but in its basis is is not copying, instead of transfer already ready, and it is use of what a person has seen, concrete use of the known principle in a new situation or use of new structure instead of old, etc. Inherently of productive designing is search of further analogy, combination and reconstruction.

Creative level characterizes inventive activity - creation of a new design due to imagination. It is the highest form of productive designing [2].

According to T.M. Tretyak of the solution of a constructive task, it can be carried out (depending on novelty of a task for this purpose who search its decision) at levels:

1) restructuring available information, proceeding from structurally - the functional analysis of elements of designing;

2) designing (partial reorganization) to existing information structure of the new information block (found, constructed) according to the given conditions;

3) full reorganization (creation) of an initial design on the basis of deep structurally - the functional analysis of available information, requirements of a task, required, intermediate, hypothetical designs for the purpose of finding of optimum version of the decision [3].

In the process of research of design activity of preschool children, having taken as a basis classification of levels of the constructive thinking, the carried-out

V.O. Molyako, I.M. Bila, estimating performance of creative tasks for designing allocated four levels design creativity of preschool children: simple, reproductive, productive, creative.

At simple level actions of casual substitutions, manipulations, chaotic and spontaneous search of close analogy are shown mainly, the main designs the main are schematically, without details.

Reproductive level is characterized by use of actions of imitation, analogy search, close and stereotypic analogy, this level is characterized by the origin beginning at children of creative tendencies of designing.

Productive is characterized by advantage of the remote analogy and combinatory tendencies (structural combinations).

Creative level is combinatory (the images created by the principle structural, functional and structurally - functional combination) and reconstructive [1].

The results received from the analysis of process of the solution of constructive - technical tasks students give to us the grounds to speak about level of formation of creative technical activity of students, developments of the constructive actions directed on understanding of a task, formation of a plan and its realization.

According to the specifics of experimental tasks offered by us and estimating success of the solution students of three series of tasks on rotation of shafts based on strategy organization of creative activity by V.A. Molyako, analysing process of the solution of tasks we develop the main levels of realization of strategy of the solution of constructive - technical tasks by students, low, average and high were developed, for each of which prevalence of these or those cogitative strategies.

In the process of the analysis of the solution of constructive - technical tasks by students we allocated three levels of realization of strategy of the solution of constructive - technical tasks: the first (low) reproductive; the second (average) productive; the third (high) creative.

The first level, low level of realization of strategy of the solution of a

constructive task consists in reproducing designing when it is used the principle or a design without changes, that it is created the mechanism on the basis of other mechanism. Based on low level of realization of strategy any device as a rule without change, or with the elementary changes, which do not influence the main functions in structural composition. As a rule, it is realization of strategy of search of analogy.

The second level, the average level of realization of strategy of the solution constructive tasks consists in design creation on the basis of already known, but with introduction of certain changes. Connected with structural and functionalities a recombination, reorientation. In its basis it is not copying, it is not use of already ready (known) device, and it is use of the known principle of action in new structure or uses of new structure for realization of this function.

The average level of designing is connected with creation of a new design on the basis of already known, however with entering of certain changes into the structure taken as a basis of a design.

For example for reproduction of necessary function of the device, it is necessary to construct according to the statements of the problem, investigated uses a design known to it (from the car) having reoriented (having changed) thus certain elements, for obtaining the effective decision the average level of realization of strategy is generally characterized by search of rather more or less remote analogy of structures and functions, their combination or a combination, for creation of a required design.

Any design which has part of a small amount of elements, it is already a combination elements therefore a combination of structures and their functions is peculiar to the activity of designing, process of the solution constructive - technical tasks.

The third level, high level of realization of strategy of the solution of constructive - technical tasks meets quite seldom and it is characterized by creation of a certain invention that it is inherent in inventive activity. This level assumes creation of a new design, the device only due to imagination.

Certainly, the imagination is realized on the basis of known structures and functions of objects, but all this is structured in imagination that results creation of an original, earlier unknown design.

It is possible to carry to this level of designing and fantastic (unreal) inventions.

High level of realization of strategy is characterized by difficult combination theory and reconstructive actions. In the course of the analysis of the decision it is constructive - technical tasks students us allocated three levels of realization of strategy of the decision.

So, defining level of realization of strategy of the solution of constructive - technical tasks, we analysed process of creative design activity since acquaintance of a statement of the problem and finishing the final decision and defined prevalence in them cogitative strategy of analogy, combination or reconstruction. We will analyse manifestations of levels of realization of strategy of the decision by students three structurally - technical tasks and we will consider the received results.

In the process of the solution of constructive - technical tasks students showed the average level of realization of strategy based on the realization of strategy of search of more - less remote analogy and combinatory actions. At the solution of tasks the majority of the students tried to create a design which is analogy from past experience, with introduction of minor changes. This level was considerably shown in the process of the solution of all of three constructive - technical tasks: task № 1 (64%), task № 2 (77%) and task № 3 (77%). This level is characterized by various shifts, substitutions, increase or with reduction of certain structural elements, use in the process of the solution of three tasks and creation of this or that design of elements or knots from the previous design.

Students in simple realization of strategy of search of analogy showed low level of realization of strategy of the solution of constructive - technical. Before this level is mainly connected with use of close analogy: familiar structures, details, blocks, mechanisms. The indicator of manifestation of low level of

realization of strategy of the solution (28%) in the process of the solution of a task № 1 appeared the highest. It is connected with that the ready principle or a design without the changes which aren't influencing changes of the main functions of the general structural composition. As a whole low level of realization of strategy of the solution of constructive - technical task № 2 is 9%, and task № 3 is 7%.

High level of realization of strategy of the solution has realization of strategy of combination and reconstruction. This level is generally noted by difficult combination theory and reconstructive actions due to opposition and on the basis of considerable reorganizations (in compared structures, in the given conditions their components on opposite, contrast change). The indicator of manifestation of high level of realization of strategy of the solution (12%) in the process of the solution of constructive - technical task № 3 appeared the highest level. Though, high level of realization of strategy of the solution of constructive - technical tasks was noted at the solution of a task № 1 (5%) and task № 2 (9%).

Analysing results of researches of levels of realization of strategy of the solution of constructive - technical tasks, it should be noted that some students completely refused the solution of this or that task and this refusal we designated it as such which didn't find any levels of realization of strategy in the process of work on a task.

Thus, in the process of the solution by students of three series of kinematic tasks the average level of realization of strategy of the solution of constructive - technical tasks prevails where search more - less remote analogy of future designs and a combination of various actual ratios takes place, using thus combination strategy.

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