

THEORETICAL BASIS OF THE TECHNOLOGY OF PEDAGOGICAL DESIGNING

ABSTRACT: The article reveals the author's vision of design technology and presents the basic requirements and components of project activities to ensure changes in the educational environment in achieving effective development results of a school child.

KEYWORDS: technology of pedagogical design, design theory, teaching activities, design objects.



PROF.
T.A. CHELNOKOVA

*Kazan Institute
of Economics, Management
and Law, Russia*

The specific character of the present stage of the world progress makes the design activity popular for kinds of professional activity of the experts occupied in any area of material and non-material production. The educational sphere is not an exception. Dynamics of innovation processes in education has defined the necessity of wide introduction of design technology into the process of activity of educational institutions.

Effective realization of the named necessity and promotion of design practice among pedagogical workers assume analytical judgment of design theory and allocation of the main provisions making scientific bases of technology of pedagogical design.

Consideration of design as specific activity of teachers is built with a pillar on modern theories of design and the design activity, presented in the tractates of V.P. Bespalko, A.N. Dahina, V.V. Davidov, E.C. Zaire-Beka, Z.I. Lavrenteva, S.M. Mihajlova, G.B. Kornetova, V.E. Rodionova, etc.

The structural elements of the theory are the conceptual tools opening essence and meaning of those or other terms, used for a designation of design and its elements; common factors and principles of design; its typological characteristics as type of social activity.

Application of methods of theoretical research in work with scientific sources is directed on realization of object — to state theoretical bases of technology of pedagogical design.

The term *design* (from the Latin *projectus* — *thrown forward*) has the certain autonomy, typologically separable from other types of intellectual and socio-cultural activity. V.P. Bespalko who has initiated research of pedagogical design, considers it as «creation of pedagogical object in a material type (the drawing, the description, the calculation), allowing actual experimenting with object and optimization of

its structure, a content, functioning with a pillar on criterion-based conclusions» [1, p. 28–29].

The lead analysis of the definitions opening essence of concept «pedagogical design», allows to pick out following characteristics of design as type of pedagogical activity:

- Belongs to intellectual and socio-cultural activity, has the typological features determined both own specific character, and a specific character of object on which it is directed;
- Goal-based on the solving problems of transformation, perfection (or improvement) of pedagogical objects taking into account common factors and principles of their development;
- It is built on the basis of the analysis of the present condition of pedagogical object (phenomenon) and the forecast of desirable results;
- Efficiency is expressed in development of new shape of system, the description and process of which stage-by-stage construction are given in the project;
- Includes as a unit procedure project development, its realization, diagnostics and monitoring of the achieved results.

Consideration of design as type of pedagogical activity provides the analysis of the researches turned to pedagogical activity (to N.V. Kuzmin, L.M. Mitin, N.N. Nikitin, V.A. Slastenin, A.I. Scherbak, etc.). The given analysis allows to see that pedagogical design as any other activity of the teacher, assumes mandatory availability of «the teacher and the one who he teaches, brings up, develops» [2]. Results of design somehow transform interaction between the teacher and pupils, and a primary objective of pedagogical design just as training and bringing up activity of the teacher is a

accomplishment of main objective of education — (from a position of requirements of Federal state standards — subject, meta-subject, personal progress).

The difference between pedagogical design and other types of pedagogical activity consists means, ways of its realization, and functional destination of design activity.

Pedagogical design represents difficultly structured system of activity including following elements:

- Subjects of design (their plurality as feature of pedagogical design mark S.I. Dvoretzky, E.I. Murasova, I.V. Feodorov) [3, p. 129];
- Objects (a pedagogical system, a pedagogical process, a pedagogical situation);
- Objective (an ideal concept of expected result), principles, means and methods of design;
- Design strategies (J. Johns allocates lineal, iterative and adaptive strategy depending on which there is a sequence of actions) [4];
- Criteria indicators to identify progress.

Result of design is the pedagogical project which acts as original pedagogical interpretation of the realized needs and the social control. Creating the project is carried out with observance of the technology of design.

Emphasizing the concept «the technology of pedagogical design» as a key concept of article pre-determines a necessity to define a content of the term *technology* correlatively to a content of design in education (or formation) area.

The conducted analysis allows considering technology of pedagogical design as set of methods and means, step-by-step procedure of technological operations, the technological instructions used for transformation of pedagogical objects (phenomena).

The following act as the valid requirement in technology of design: procedure of design should be built with a pillar on scientific knowledge, in view of pluralism of opinions, an admissibility of pedagogical eclecticism; the structure of means and methods of design reflects a rational parity of the theory and practice, scientific (deductive, inductive) and unscientific (intuitive) methods of knowledge. In technology of pedagogical design a combination of the formalized and non formalized approaches of the research, according to V.A. Ganzen's opinion, is one of their procedural requirements [5, p. 5].

Requirements of unity of time, continuity, integrality, consistency (or systemacity) of converting actions should be included in a content of technological instructions to design. The essence of a principle of unity of time consists in a necessity of rethinking of experience of the past and a possibility of its dialectic

progress in the project, proceeding from demands of tomorrow, normative acts which are in a stage of consideration.

In the implementation of step procedures of design it is important to observe the continuity and criticality concerning the past and planned future facility. Integrity, consistency of transformative actions mean that the developing project in the field of designers' attention is not only the system as a whole, not just each element of the system that generates its integrity, but also the elements of the environment, influence and impact that can play both positive and negative (deterrent plans) role in the implementation of the project purpose.

Technology of the pedagogical design involves defining the boundaries of the project situation. Extension of the boundaries (divergence) in the design means space extension of intended function of the project. Transformation within the borders through the recess of innovations built on the basis of selected solutions to target goals represents another strategy for project activities (convergence).

Submitted (or represented) design strategies emphasize its procession in the sequence of states of the object being transformed, the allocation of new tasks and a new action plan to address them. Design technology becomes a bridge (or link) between theory and practice of project activities. The task of pedagogical technology is to answer the question "how?".

Design technology as a set of prescribed incremental actions is directly related to the design factors. Design factors are situational and form four groups: the external environment (everything that surrounds the educational institution); technology work in an educational institution ; strategic choice leadership of the organization in relation to its goals, the behavior of teachers. It's possible to consider each group of factors separately concerning the design procedure on own experience. Project *Optant* aimed at creating conditions for professional self and personal development of pupils, was developing taking into account features of the environment in conducting career guidance, offers of the educational services market and staffing needs of the labor market.

In developing the content of the draft not only the proximal external environment, but also among the entire region, which in 2004 was included in the experiment for testing the Concept profile training in high school were taken into account.

The factor of work technology in an educational institution in the development of the content of the project *Optant* envisaged the creation of new growths based on educational technologies, which is built on the basis of educational interaction.

As part of testing the idea of the profile approach to the training organization of high school in the project activities *Optant* were included methodical seminars to improve career guidance teacher competence; amended the content of mathematics education, taking into account the profile of the class (for example, economic profile class was developed a course "Fundamentals of Mathematical Statistics"), developed and tested the updated system of diagnostics and monitoring the professional development of the individual optant (Latin *optans (optantis)* — *wishing*, a person having the right to choose).

Communication of a factor of teachers' behavior with a planned project description involves the incorporation in step procedure of action measures to improve the readiness of teachers for innovation activity. Standards of readiness are reflected in the structure of personality, its orientation, competence, personal qualities. Each of the selected components in the personality structure of teachers should be considered as a matter of design, with the definition of relevant tools and methods that can ensure its development.

It can be a methodical seminar on the development of innovation culture of the teacher; management meetings in order to increase the number of active participants in the project, the methods of moral and material incentives (or encouragement) of teachers who are actively involved in the development and implementation of the project, etc.

Technology of pedagogical design includes risk identification and analysis of new growth in terms of causal relationships. The design procedure provides for the elaboration of measures aimed at warning risks or reducing their consequences. For example, among the new growths introduced into the education system of the Republic of Tatarstan is Singaporean education technology. The project approach to its implementation is not only phased program of actions taken on the scale of the republic, its settlements, some educational institutions, but also the identification of possible risks that may be connected with a change in attitudes towards the content and the technological scheme of educational interaction.

Scientific approach to design, based on the ideas of synergy suggests that in ongoing project activities should be allocated objects for a *provocation*, should be provided funds and resources in its organization. For example, for the *Optant* project as the object of provocations were selected professional interests of a schoolboy. The project involved activity aimed at increasing awareness of students about professions, with the aim of awakening their interest in forming their professional plans, starting with the choice of a profile training in high school.

Actualization of the ideas and principles of synergy in technology design allows teachers to give it a new direction. The object of the design is the development of personality, thereby opening the possibility of registration and objectification forms its development.

According to I. Frumin, B.D. Elkonin, design becomes a new form of mediation *between perfection and reality* [6]. For implementation of the project possibilities to manage the process of personality development (students, teachers) is necessary consistency of natural laws of human development with artificially generated pedagogical (management) model. In particular, in *Optant* program the building artificial models of professional development of the individual student is based on the features of personality development in the stages of amorphous option and option; requirements of the current situation of social progress, the idea of the profile of high school, etc.

Inclusion of the term *model* in the article content, facing the theoretical basis of technology pedagogical design, determines the relevance of not only disclosure of the term, but also a process by which the model is created.

Designing widely resorts to modeling, which as is specified by V. E. Radionov, acts as a means of *representation and transformation of object which is not yet a reality* [7, p. 37–38]. Development of models (simulation) is adopted in the methodology of science as a method of scientific research of various objects on their models – analogues of a particular piece of natural and social reality.

The inclusion of simulation in design procedure will allow creating a diagrammatic image of the desired reality, which is oriented towards achieving the project objectives. Since the structural elements in the model of the ideal optant person can be distinguished as follows: activity aimed at the development of practical and social spheres; consciousness, scrupulosity in relation to the business; curiosity focused on the external world and on in this world, the willingness to self-improvement, self-development.

The developed model of personality, modern lesson, creative teachers, etc. can become the basis of the next step of designing — developing criterion-measuring material that will allow estimating with more reliability completed transformation in terms of their purpose.

Implemented in the survey study of project activities undertaken in the educational establishments and its products (projects) allows to allocate design stages, their sequential passage which will ensure the quality of the project, and hence its performance. Work on the project includes: identification and justification of the project's relevance, the wording of its goals and objec-

tives; justification selected stages of transformations and their implementation mechanisms, the definition of the expected results and tools for measuring them.

The next stage of the design is revision of existing teaching resources, determination the sources and mechanisms of increasing these resources. An important stage of design is to create a plan of work, role distribution and functional purpose (a very important element of this phase is to develop technological instructions for project executives).

On the basis that any project, making changes, destroys the stereotypes, one of the design stages becomes an impact on public opinion, the popularization of ideas in the teaching environment and parent community. The effectiveness of reforms depends on the efficiency of these activities. Thus, the teacher who is *infected* with the idea becomes to participate more actively in its implementation, showing a creative approach to the injected new growths.

An important step is the formation of design scripts of transformative actions in realization the ideas of the project, the creation and training of a business team, carrying out planned activities, a monitoring tracking changes, updating of the project and plans for its implementation. The final stage of the project becomes the analysis and synthesis of the results of design and report on teaching community that will facilitate the dissemination (or spread) of project ideas on a large scale.

Mastering design technology by educators ensures that the conducted research to draw some presumptive conclusion: technology pedagogical design is a set of series-parallel connected and subordinate chains of actions, each of which can have its own object (thing), focusing on the task of developing the effectiveness of the implementation of the state's education policy creatively developing in the author's projects.

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Author

T.A. Chelnokova

doctor of pedagogic sciences, professor of chair of theoretical and inclusive pedagogies,
Kazan Institute of Economics, Management and Law,
420111, Russia, Kazan, st. Moskovskaya, 42
tel.: (8432) 31-92-91, nauka@zel.ieml.ru