Interaction in the Development of Special Abilities of Students in a Continuity Multi-Level Educational Complex

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Abstract— The problem of the ecology of the educational process currently stands as the problem of such an organization and such training of specialists that would 1) correspond to the substantive features and processes of human development as a person, partner and professional; 2) corresponded to the requirements of the profession and sociocultural standards of life of the subject of professional work; 3) corresponded to the salaries of modern business and production in various fields. The central problem of organizing and optimizing this process is the environmentally effective and productive interaction of educational organizations and their units, entities of different levels and types, in the formation and implementation of educational programs aimed at training professionals, identifying and developing their special abilities (technical, artistic, etc.). The article discusses the interaction of educational institutions, contributing to the development of visual abilities of students in the modernization and reform of modern Russian education. The aim of this study is investigation of the potential directions for multi-level educational complex development. The authors analyze the content of this interaction in order to optimize the concept of succession of secondary vocational and higher education developed by him, including in its structure the substantial components of general and additional education. The authors analyzes the content of this interaction in the training of future designers and teachers of technology and design in the structure of a multi-level educational complex.

Keywords: interaction, concept, model, educational activity, continuity, system, abilities, educational - cognitive activity, educational conditions

I. INTRODUCTION

The environmental aspects of modern education are a sphere of multiple problems and areas of scientific research and practical development. The problem of the ecology of the educational process currently stands as the problem of such an organization and such training of specialists that would 1) correspond to the substantive features and processes of human development as a person, partner and professional; 2) corresponded to the requirements of the profession and sociocultural standards of life of the subject of professional work; 3) corresponded to the salaries of modern business and production in various fields.

As a result, the training of professionals of various specialties is a complex multi-level process, in the modern world acquiring the properties of the lifelong learning. The central problem of organizing and optimizing this process is the environmentally effective and productive interaction of educational organizations and their units, entities of different levels and types, in the formation and implementation of educational programs aimed at training professionals, identifying and developing their special abilities (technical, artistic, etc.). A number of specialties, such as the designer's specialty, require highly diverse abilities, including fine ones.

One of the key problems of quality training in the system of secondary and higher professional education is the level of readiness of applicants to master training courses, especially related to the use of creative abilities. The identification of students' abilities and their proper development act as the most important pedagogical tasks requiring special attention, solutions, and a special and meaningful approach. This is especially relevant, in our opinion, in the process of building multi-level educational complexes based on continuity (continuity of pre-vocational and vocational education).

D.V. Legenchuk developed and implemented the Concept of Continuity of Secondary Professional and Higher Education, in the process of introducing which it became clear...
the need to involve not only higher, but also general educational institutions in a multi-level complex [1; 2]. The practical implementation of the key provisions of the concept required the expansion of the structure of institutions involved in the implementation of a multi-level educational complex. This moment was especially clearly manifested in the training of specialists in creative specialties.

Guided by this need, we have built a continuous successive trajectory of professional training of technology and design teachers and designers. According to this trajectory, the Kurgan Technological College and the Kurgan State University are now training specialists. They use integrated educational programs, which include institutions of primary and secondary education. In the process of implementing the concept, a serious problem also arose due to the low level of development of graphic abilities among applicants, which are the basis of the designer’s professional activity. Therefore, in the framework of the professional orientation of high school students, we have studied and fully adapted to the programs of the college and university the activities of the Young Artist class studio to develop the visual abilities of applicants. Our choice was dictated by the positive experience of preparing graduates by this studio, the participation of college and university teachers in their training, as well as the ability to quickly adapt the educational program to the programs of the university and college (in the specialties "Design" and "Teacher of Technology and Design").

We have identified a range of issues that affect this process.

II. RESEARCH OBJECTIVES

The aim of this study is investigation of the potential directions for multi-level educational complex development. The objective of the investigation also is inclusion of the art education in the structure of a multilevel complex of vocational education on the basis of continuity. Experimentally, we developed tasks whose solutions are necessary for the development of this group of abilities. In order for their decision to bring the desired results, we also decided to develop a program of interaction between the secondary school and organizations of additional education. On the basis of this interaction, the goal was set of their inclusion in the structure of a multilevel complex of vocational education on the basis of continuity.

The article discusses the interaction of educational institutions, contributing to the development of visual abilities of students in the modernization and reform of modern Russian education.

III. METHODS AND MATERIALS

By the interaction of general and additional education, we mean a scientifically based form of the relationship between types of education, which is the result of joint activities of the subjects of the educational process to update the pedagogical resources of the socio-cultural space in order to develop the child as an individual, partner and professional. An equal dialogue between general and additional education is necessary for the holistic and diverse development of the child, adolescent, young and even adult in the framework of the competency-based approach [4; 5].

In philosophical, methodological terms, general and additional education are considered by scientists as general and private types of education [4; 6; 7]. However, at the same time, general education acts as a systematizing education that encompasses the mass contingent, and additional education is varied and focused on the individual development of children. These two principles complement each other, provided it is necessary to ensure the integrity of the educational process for the development of the visual abilities of students. The need for appropriate and objective interaction of general and additional education is also associated with the dual human mission - to know and transform the world. These aspects of human destiny are reflected in the functions in mass schools, as well as in organizations of additional education, however, due to their specific features, the activity is aimed at cognitive knowledge to a greater extent when studying in general educational organizations, and at transformation - during training in organizations of additional education. In such conditions, as noted, for example, A.M. Ryabchenko, there is a positive impact of the integration of general and additional education on the harmonious development of the child’s personality [8].

The interaction of general and additional education is effective and productive if it is based on the unity of the educational process, the humanistic paradigm of personality-oriented education, and also takes into account the principles of synergetic, personality-activity, environmental and cultural approaches.

The school curriculum involves teaching not art as such, but only educational subjects on art, which combine the components of art itself, various sciences about it, as well as primary practical skills. The purpose of these academic disciplines is the comprehensive harmonious development and education of students. The subjects of the art cycle (namely, as subjects of study at school) are considered as collective, generalizing, integrative, complex, representing a complex unity of art itself, its theory and history, and skills of practical creativity. The goals, objectives, principles and content of teaching the subject "Visual Art" are indicated in the programs, textbooks and teaching aids of many authors, among which in Russia S.E. Ignatiev, B.C. Cousin, B.M. Nemenskii, S.P. Lomov et al.

Drawing plays an important role in the general education system of schoolchildren, since among its tasks include:
- develop an aesthetic perception of the world, foster an artistic taste;
- develop artistic and graphic skills;
- develop fantasies, creative thinking and imagination, spatial perception;
- develop precise hand movements and fine motor skills of fingers;
- develop some organizational skills in fine art;
- get information about domestic and world art culture;
- educate the audience culture;
- if possible, to reveal professional artistic and visual activities.
“Fine art” is a complex subject, since it combines the knowledge of works of art, elements of art history, the theory of fine art and the development of practical skills in pictorial art, visual literacy and creative expression. It should be noted that during the training, students become acquainted not only with painting, graphics and sculpture, which make up the group of fine arts, but also with architecture, decorative art, synthetic arts (cinema, theater).

The content of the subject “Visual Art” includes complex processes that are introduced simultaneously (perception and study of works of fine art, mastering of visual literacy, the development of a creative attitude to reality and children's visual creativity) and are formed only with the accumulation of personal experience and reflection. For example, penetration into the space of work is possible only if the student already has experience in creating and evaluating his own work or well-developed perception and fantasy. This often requires an initial acquaintance with the corresponding language of the visual arts, as a deep perception of artwork is closely linked to the analysis of the depicted.

IV. RESULTS

In the process of analyzing traditional and modern scientific research [9-20], we revealed that the interaction of educational institutions at all levels is a potential means of managing the educational path of a future specialist and provides pedagogically appropriate management of the influences of the educational environment on the development process of a school student - a future applicant. This is extremely important for building a vector of his professional development on the basis of continuity [21-30].

Many studies, within the framework of the activity-semantic approach, emphasize the role of education, focused on the characteristics of the student at each age, and thus, in one way or another, imply the continuous, ongoing nature of education (pre-professional or secondary, higher professional, post-professional and its various types and levels) [31-39].

Given the goals and objectives of our educational complex, the system of additional education for children should play a significant role in the implementation of new educational goals, since with its help it is possible to expand the content of general education through the study of those cultural areas that are not represented in the school curriculum or are extremely poorly represented. This will increase the creative activity of the future student, develop professionally significant artistic and other skills in him.

The implementation of the most active interaction of general education and additional education can be in those subject areas, the lack of which is clearly visible in the content of school education, including in the subject field “Art”. This shortcoming was later characterized by persistent gaps in the study of specialized disciplines at the university and college.

The interaction of general and additional education in the process of developing the visual abilities of students has a number of features, namely:

- compensatory (psychotherapeutic) opportunities for additional education (it is in this area that students have the opportunity to individually develop visual abilities);
- emotional richness (is a means of forming a holistic picture of the world of art; in order to develop the aesthetic feelings of the student);
- expansion of the cultural space of a comprehensive school;
- strengthening the role of general education and continuing education (the department of continuing education for children) in social adaptation and professional self-determination of students.

Based on the rich experience of Russian additional education for children, including its organizational and content basis, we were able to identify the following: in the creation of an integrated developing environment for general and additional education for the development of the visual abilities of schoolchildren, such a subspecies of interaction as the continuity relation plays an important role, which emphasizes initial community of ideas, goals, priorities of general and additional education.

In the education system, the definition of the term “continuity” is quite broad: as a continuous educational process with general and specific goals for each age period. In other words, this is a connection between different stages of development, which is aimed at preserving the elements of the whole or individual characteristics during the transition to a new state [40].

Continuity is a general pedagogical principle for which the following are important: continuous inextricable communication between individual parties, parts, stages and levels of education and within them; expanding and deepening the knowledge that was acquired at the previous stages of training and within them; progressive upward deployment of the entire educational process, taking into account the content, forms and methods of work.

For the purposes of this study, we understand continuity as a category that reflects patterns of changes in the structure of the content of educational material and a combination of teaching methods, as well as ways to implement these patterns depending on the goals of training.

In normative documents, continuity is considered as the consistency and prospects of all elements of the educational system: goals, objectives, content, methods, means, forms of organization of education and training aimed at the effective progressive development of the child.

In pedagogical science, scientists note that continuity acts as:

- the didactic principle (the main provision determining the content, organizational forms and methods of the educational process);
- conditions (circumstances surrounding the learning process);
- requirements that are necessary to fulfill in the process of training, development and education [41].

Continuity in training as a general didactic principle provides a link between individual parties and levels of learning; manifested in the content, methods, forms and methods of training [41].
The functioning of the mechanism for the implementation of continuity and its components occurs through certain forms and methods that are implemented in the process of specially organized activities of the administration, teachers of the department of additional education of children, teachers of the educational organization to create all the necessary conditions for the effective development of the visual skills of students. In pedagogy, there are several types of continuity of the educational process of general and additional education for the development of the pictorial abilities of schoolchildren, which are considered in table 1 [42].

The principle of continuity in the process of developing the visual abilities of students implies the presence of interaction between the content, forms, methods and teaching aids, when the new, replacing the previous one, retains its positive qualities and implements a vertical relationship between organizations of general and additional education, while maintaining horizontal interaction between the types of visual activities. This process has a dual character: the entire system of development of the visual abilities of students is accumulated, and on the other, its transformation takes place.

### TABLE I. TYPES OF CONTINUITY OF THE EDUCATIONAL PROCESS OF GENERAL AND ADDITIONAL EDUCATION FOR THE DEVELOPMENT OF THE VISUAL ABILITIES OF SCHOOLCHILDREN IN A MULTILEVEL EDUCATIONAL COMPLEX

<table>
<thead>
<tr>
<th>Name of type of continuity</th>
<th>The essence of the type of continuity</th>
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<tr>
<td>Target continuity</td>
<td>1. To coordinate the educational goals and objectives at school and the organization of additional education in the process of developing the visual abilities of students.</td>
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<tr>
<td>Meaningful continuity</td>
<td>1. To provide &quot;end-to-end&quot; lines in the content, repetition, propaedeutics, development and use of the integrated program of the &quot;Young Artist&quot; class-studio for the development of the visual skills of students; 2. To create a basis for studying educational material at a higher level through the interaction of general and additional education, deepening the subject in the department of additional education of children, providing &quot;through&quot; lines.</td>
</tr>
<tr>
<td>Psychologica l continuity</td>
<td>1. To improve the organization of the educational process for the development of visual abilities and teaching methods, taking into account the general age characteristics of students.</td>
</tr>
<tr>
<td>Administrative Continuity</td>
<td>1. Develop a sufficient regulatory framework: charters, local acts, regulations, a clear distribution of responsibilities between the administration, general funding, a database of students and staff, interaction agreement.</td>
</tr>
<tr>
<td>Technologica l continuity</td>
<td>1. To ensure the interaction of forms, tools, techniques and methods of education and training in the process of developing the visual abilities of students; 2. Create new methods, technologies and teaching aids; 3. To develop common approaches to the organization of the educational process for the development of visual abilities at school and the organization of further education; 4. To ensure the interaction of means, forms, methods of development of visual abilities used in the process of integration of educational institutions of all levels, characterizes the requirements for knowledge, skills and abilities of students at each stage of training.</td>
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Based on the foregoing and in order to optimize the activities of a multilevel educational complex on the basis of continuity, we have developed an integrated program for the development of the pictorial abilities of senior students, which is based on the principle of continuity of interaction between educational organizations at various levels and includes goals, objectives, methods, forms, tools, diagnostics and the result.

In this program, we have implemented both traditional and innovative approaches, and visual skills are formed purposefully, consistently and gradually from a low level to a higher one.

The implementation of the principle of continuity is possible only when the actions of all subjects involved in the development of visual abilities are interconnected, interdependent in time and space [43]. The process of implementing the successive interaction of the development of visual abilities contains several components:

- designing visual activities from school to college and university on a single artistic and aesthetic basis, with the involvement of resources of organizations of additional education;
- integrated planning of the system of development of the visual abilities of schoolchildren and students;
- integration of types and genres of art and visual activity during the classes;
- the implementation of principles such as freedom of choice, voluntariness, variability, unregulatedness, a democratic style of relations between subjects and objects of the pedagogical process.

We especially emphasize the orientation aspect of the system of continuous, ongoing, that is, multi-level education at different stages of its implementation:

1) features of the age development of a person as an organism, as well as a person, partner and professional, his willingness and ability to learn in general and to learn in particular (the existence and characteristics of "sensitive periods of development", as well as socio-psychological and psychophysiological conditions of development, the availability and ability to master and carry out the "leading" human development activities, especially the "zone of proximal development" among students of various ages in delays or advances development, with and without developmental damage);

2) the specifics of the formal-dynamic and substantive-structural aspects of the formation and development of special abilities of a person as a (future) professional at different stages of professional formation;

3) the specifics of each stage of human development at different stages of lifelong education as an education that lasts a lifetime and, thus, combines all human competences and skills (educational and vocational, creative, reproductive, etc.)

### V. CONCLUSION

The identification (diagnostics) of abilities and their proper development act as the most important pedagogical tasks requiring special attention, solutions, and approaches. In order to solve such problems more effectively, it is necessary to pay attention to the interaction of the parties in educational relations, which should be a systematic and systematic activity of all participants in this process. The environmental aspects of modern education are a sphere of multiple problems and areas of scientific research and practical development.
One of the most important conditions for the development of students' visual abilities is to transfer the interaction of organizations of general and additional education to the systemic level of organization of the development process of the students' visual abilities. Signs of such a process include: certainty and comparability of the goals of subjects of educational activity, differentiation of their powers, coordination of joint activities, resource support (legal, scientific, methodological, personnel, organizational, information and methodological, material, motivational).

Based on the study, we were able to formulate the following conclusions.

1. The theoretical foundations of the interaction of general and additional education in the process of developing the visual abilities of students are the concepts of the educational space, the integrity of the integrated developmental environment, the intrinsic value of general and additional education.

2. In the development of the visual abilities of students, continuity of interaction is an inextricable link of a single holistic system of activity of educational institutions. This system ensures the consistency of each component in the organization of visual activity (goals, objectives, content, methods, means, forms), which ensures the continuous progressive development of these abilities, and implements the principle aimed at taking into account the previous, present and future levels of development of visual abilities children.

3. The main program and methodological conditions for the continuous interaction in a multi-level educational complex, in the framework of the development of the visual abilities of schoolchildren, focused on continuing education at a college or university, include:

- the creation of an integrated development environment that facilitates the interaction of all components of the educational space: external (art museum, exhibition hall, workshops of members of the regional branch of the Union of Artists of the Russian Federation, off-site exhibitions and competitions of creative works), and internal (lessons, classes, open-air, exhibitions of creative works and etc.);
- an integrated program of a classroom studio for the development of visual abilities, which provides a meaningful basis for cooperation between teachers and teachers of the university, college and organizations of additional education;
- conducting joint methodological work of teachers and the teaching staff of the educational complex.

4. The effectiveness of the proposed conditions for the interaction of general and additional education of children in the development of visual abilities is provided:

- creation of an author’s concept of the development of the visual abilities of students, a model of the development process of their visual abilities in the integrated environment of the educational complex;
- expanding the scope of cooperation between teachers and teachers in order to improve the content and forms of work to develop the pictorial abilities of schoolchildren - future applicants.

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