

## Technological Platform for Realization of Students' Individual Educational Trajectories in a Vocational School

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### ABSTRACT

The relevance of the study stems from the spread of innovation - a new technological education platform, and from the necessity to track students who study in accordance with individual educational technologies in the framework of this platform. The aim of the article is to prove the possibility and necessity of psychological tracking of students' individual educational trajectories on the basis of the new technological education platform. The psychologies of the individual's personal development became a leading approach to the study of the problem; it allows to reveal adaptation, meaning-making and developing functions of variable educational activities of a person. The results of the research are the following: the structural and semantic model for realization of individual educational trajectories within the technological platform is elaborated, the technologies of their projection are established, the key professional and educational competences are identified. The article can be useful for professionalists, educators-technologists and professional counselors when predicting the professional development of the individual.

### KEYWORDS

Individual educational trajectories; minors;  
technological education platform

### ARTICLE HISTORY

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### Introduction

One of the urgent problems connected to the improvement of education in postindustrial society is the development of individual educational trajectories for the students. Nowadays the realization of this conceptual aim causes by the accelerating pace of socio-economic development of the information society, the expansion of the social and professional mobility, the dynamic development of the economy characterized by a high degree of uncertainty, the competitiveness and structural changes in employment of working population (Borisenkov, 2015).

At present, the scientific and educational community actively discusses the problem of creating a technological education platform as an integral base of innovation development. Such concepts as «High Ed» - «high education»,

«EdTech» - «educational technologies», «High Tech» - «high technologies» and «High Hume» - «high humanitarian technologies» are being realized in the education. New technologies naturally influence on the modern educational system. Information and computer technologies, remote forms and project methods of teaching, self-studying and mutual learning in social networks are becoming the basis for the continuous education of the future.

The key elements of a new technological education platform are: a massive open online course (MOOC); learning management systems (LMS); the ecosystem of support for a new education; a new education infrastructure (Konanchuk, 2013).

Two important functions will provide the realization of a new technological platform: firstly, the alignment of individual educational trajectories, their control and ensuring the continuity of the educational experience; secondly, the evaluation of education results according to a single coordinate system understandable for the representatives of various interest groups - teachers, employers, students themselves (Potocnik, 2005).

External condition for the realization of individual educational trajectories is a technological education platform that unites separate Ed Tech-projects into a single system. This system allows to move from the logic of selecting an educational program or institution to the logic of the “competences formation chain” management, and to make a significant step towards the change of the “institutional core” of education: to move from the institution management to individual trajectory management throughout the whole life (Konanchuk, 2013; Harre, 1983).

These innovative technologies cause the necessity of psychological tracking which is purposeful and continuous process of learning, development and correction of the subjects of professional and educational activities. Tracking includes organizational, diagnostic, teaching and developing activities focused on professional future of the student. In the domestic and foreign studies about future profession the greater significance is given to the psychological support and assistance to the students (Minyurova, 2008; Kochan & Kunkel, 1998).

## **Materials and Methods**

### ***Methods of research***

The following methods were used in the research: theoretical (the analysis of students' psychologies); diagnostic (locus of control, self-regulation of behavior, personality differentials and needs in achievements); empirical (foresight projects method, essays, narratives); experimental (formative experiment); methods of mathematical statistics and graphical representation of results.

### ***Experimental base of the research***

The experimental base of the research was situated in Nizhnetagilskij State College named after N.A. Demidov.

### ***Stages of research***

The study of the problem was conducted in four stages:

The first stage (informational and analytical stage): for methodological substantiation of projecting the individual educational trajectories, the analysis of students' psychologies was carried out;

The second stage (diagnostic stage): the individual psychological characteristics of the students were determined;

The third stage (projecting stage): the foresight projects of the individual educational trajectories were developed;

The fourth stage (formative stage): the formation of professional and educational competencies focused on predicting the professional future of the students was implemented.

## Results

### *Research Methodology*

One of the priorities of the modern (vocational) education is to increase attention to projecting of individual development and self-development of the individual in a changing society.

The importance of this projecting activity belongs to the psychologies of each person. Unlike psychology that studies facts, rules and mechanisms of the human psyche, psychologies studies individual forms of behavior and activity of the personality (Yurevich, 2008).

Psychology reflects objective stable psychological formations (objects and facts) regardless of specific subjects of research, on the opposite, psychologies reflects individual, unique, subjectively colored forms of life with different variable changeability of behavior and activities of the individual.

Psychologies performs the following functions:

- An adaptation function allows a person to adapt to changing, uncertain conditions of life through the development of individual activity style;
- A meaning-making function provides the discovery and production of alternative scenarios and educational programs, individual value orientations, meanings and settings;
- A developing function stimulates self-development and self-actualization that provides social and psychological mobility.

Psychologies is a methodological predictor (base) of the projecting individual educational trajectories.

Individual educational trajectories are professional and educational platforms that provide the student with the opportunity to project and implement educational standards with the support and assistance of the teacher (tutor).

During the realization of individual educational trajectories, the emphasis is put on psychological tracking that forms students' ability to project professional and the educational process in accordance with individual psychological peculiarities and professionally-oriented plans for the future (Zeer & Popova, 2015; Koldaev, 2013).

Projection of educational trajectories is influenced by external and internal factors.

External factors include the mission of educational organization, its institutional structure, socio-economic needs of the region, the qualification of teachers.

Internal factors include principal orientations of the students, reasons of educational level increase, cognitive activity, the need for self-development, self-attitude and orientation towards the future.

Individual educational trajectories are interdependent with the logics of personality formation - a continuous process of personality's change under the influence of social situation of development, leading and private activities focused on self-realization (Lomakina, 2013).

The realization of educational trajectories has a subjective meaning for the students, it follows the logic of their individual development, it is determined by the regularities of vocational educational process.

Psychological tracking was carried out in the framework of structural and functional model with such main elements as a purpose, object, subject, matter, principles, means, conditions and results of tracking.

The purpose of psychological tracking is to provide personal and professional development of the students based on their individual psychological characteristics, social and professional orientation.

Object of tracking – an individual educational trajectory of students.

Matter of tracking – a foresight project of personal and professional students' development in the process of projection and realization of individually-oriented educational route.

Subjects of tracking - people assisting students in projection, selection and realization of alternative educational activities: teachers, practical psychologists, tutors.

The principles of psychological tracking:

- The principle of self-organization;
- The principle of mutual assistance in education and profession;
- The principle of producing the socio-professional future by the student;
- The principle of choosing the strategy for realization of the personal and educational resources;
- The principle of reflection and self-development (Popova, 2014).

Individual educational trajectories are realized in the process of modern technologies learning. First of all, it's necessary to mention the usage of personal activity-related technologies for active learning (organizational activity games, case studies, discussions, etc.), the method of projects, the technologies of modular organization of educational process.

The following forms of educational process organization can be considered as the priority ones: laboratory and project works, different kinds of practice correlated with the types of future expert's activity, self-made projection (business projects, research projects), course and graduation work. In realization of project activities, it's necessary to pay attention to processual aspects of getting knowledge assisted by the use of evaluation and control system for knowledge and skills and provided by the navigation technology.

Minors - amplification technologies of human psychologies, extensions of student's social and professional competence, actualization of self-development and self-regulation activities, are considered as very promising innovations of technological platform realization.

The following minors can be a part of the technological platform of professional education:

1. Actualization of professional and personal potential that includes three modules:

- Developing psycho-diagnostics;
- Enrichment technologies of professional abilities;
- Prediction of the professional future.

2. Vocational and educational technologies that include four modules:

- The basics of vocational counseling;
- Psychology of professional development;
- Interactive teaching technologies;
- Navigation of career.

3. Self-determination of the individual in today's conflicting realities includes three modules:

- Networking structures of conflicting realities;
- Formation technologies of a "parallel reality";
- Overcoming the destructive influences of youth subcultures etc.

Minors can be offered to the students and vocational school teachers as extra-educational programs.

Let's examine the basic (personally developing) functions of projecting and realizing the psychological tracking of students' individual educational trajectories:

- An organizational and methodological function is a development of the project that predicts individually-oriented training modules and prepares the necessary teaching and methodical materials;

- Diagnostic function is a selection and development of diagnostic tools for pre-prognostic orientation of students' readiness for self-education and self-development in the present and in the future;

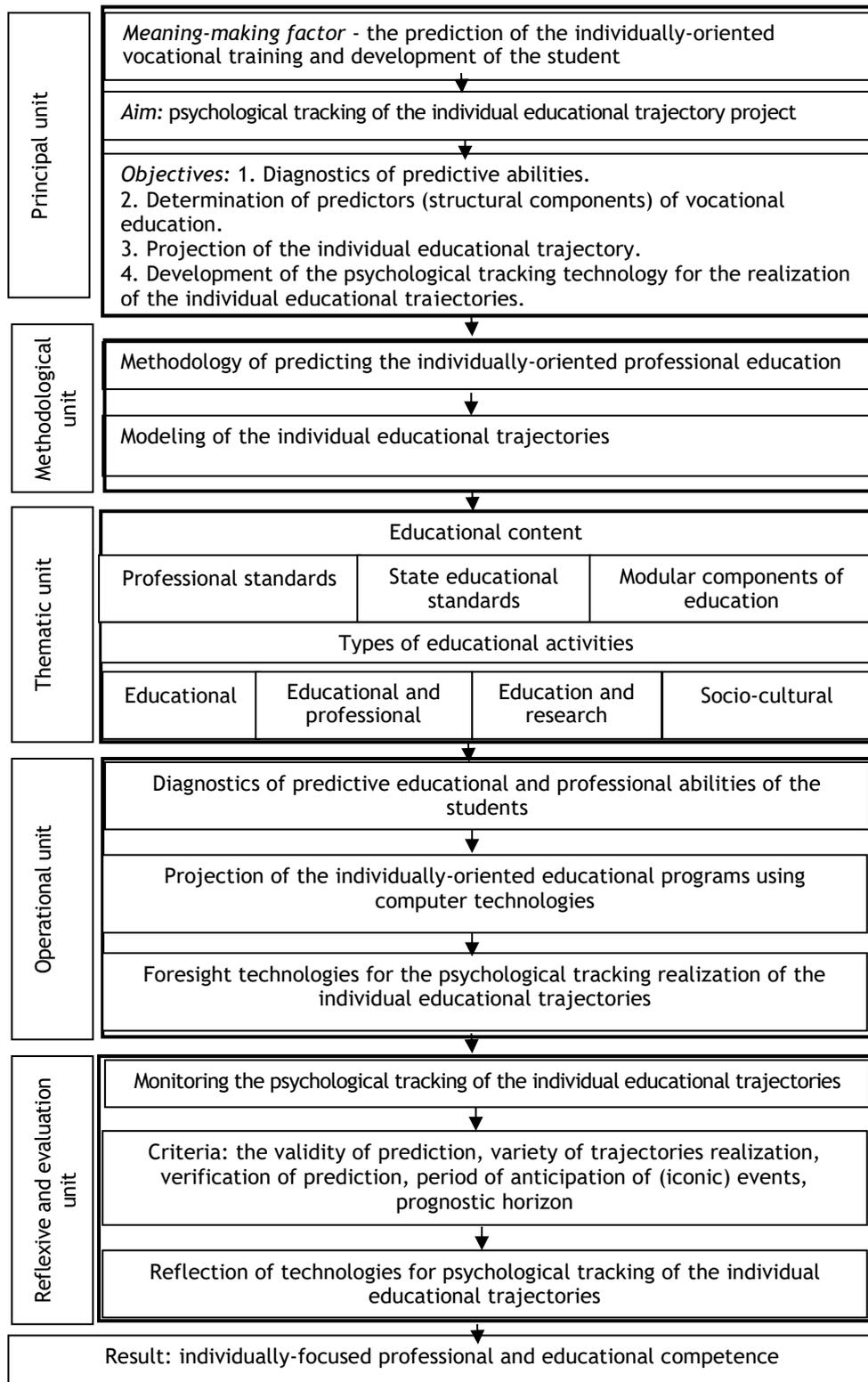
- Technological function is a psychological and vocational counseling education, development of the educational foresight projects, drafting of the vocational counseling essays, projection of the alternative scenarios of professional future;

- Predictive function is a projection of your professional and educational future and a choice of the most appropriate option based on individual capabilities and social and economic conditions;

- Reflective and evaluative function is an analysis of the educational and professional achievements, evaluation of the urgency of the foresight project "My professional future", correction of the individual educational trajectories, development of the professional self-development strategy.

### ***Structural and semantic model***

The generalized analysis of the psychological tracking logic of students' individual trajectory is represented in the structural and semantic model of the technological education platform (Figure 1).



**Figure 1.** Structural and semantic model of technological platform for the realization of the individual educational trajectories

Structural and semantic model of the students' psychological tracking in the process of vocational education has its own specifics and performs as a prerequisite for the realization of the technological platform development for the future specialists. Differential and typological bases for psychological tracking are the orientation and subjective activities of the individual, and the interests of the dominant value orientation, individual and psychological characteristics of students' personality.

Structural and semantic model became a basis for the projection of the technological platform and realization of the individual educational trajectory.

### *Stages of research*

There were four interrelated phases identified in the project: informational and analytical, diagnostic, projective, controlling and evaluating.

The model realization requires a flexible approach for the use of diagnostic methods, therefore, we have arranged the pilot study of personal students' development in the vocational education institutions for a deeper research of the individual features demonstration.

At the first stage – informational and analytical – the main aim is to motivate students to realize the importance of choosing the individual educational trajectories that will be the most suitable for their needs and abilities in self-studies, self-development, assistance in the initial planning. Here the regulatory and organizational function of the tutor prevails.

This function was carried out by all the teachers through the realization of professional orientation disciplines and educational and professional practices as well. The principal aspect of this unit is indirectly reflected in the provided educational standards in the form of common cultural and professional competencies. The result of this informational and analytical unit was generalized by the students in the essay "Self-regulation of the vocational training".

Principal orientation of the diagnostic phase is a determination of students' individual and psychological characteristics that cause productivity (successfulness) of projecting the individual educational trajectories. For realization of this principal arrangement we used: "Research methodology for the locus of control" to study the peculiarities of the personality control and attributions of responsibility for the events happening to it, the questionnaire "The self-regulation of behavior style" to study the peculiarities of planning and achieving life goals, activity and personality traits of self-organizational evaluation, the methodology "Personal differential" to study conception of individuals about themselves, their level of claims, a strong-willed self-regulation, communicative skills in interpersonal relations, methodology of studying the need in achievements for learning the peculiarities of personal activity demonstration in work and behavior.

The diagnostic phase is carried out with the practical psychologist. The most important in cooperation between tutor, psychologist and student is to outline the prediction of the development and contours of individual educational trajectory.

The generalization of stated diagnostic results allowed to establish the prognostic ability of the students:

- Readiness to project their professional future;
- Presence of subjective future project strategy;
- Evidence level of professionally-oriented goal;
- Validity of the plan for achieving the goal;
- Focus on their own educational and professional abilities and achievements;
- Awareness of the conditions for achieving a successful career through self-development and self-realization.

Projecting stage of psychological tracking became a reference basis for the foresight project of the individual educational program development that was carried out under the tutor's supervision. A familiarization with the curriculum of the main educational program allows to project an individual educational route from the number of variable modules and optional subjects taking into account the interests, dispositions, abilities and individual students' capabilities. The result of this formative stage is an individual educational program with over-subject character. The program realization technologies are the mini-projects "Social and professional navigation", "Predicting the professional development", the essay "The reflection of my past", the narrative "Key events in my biography" and others.

Formative stage. The realization aim of the project tasks is the formation of professional and educational competencies that will allow the college graduates to continue their professional education and predict their social and professional future. Among them there are willingness and capability to:

- understand the essence and social significance of their future profession;
- search vocational counseling information needed for projecting their educational route;
- be able to project their own route of personal and professional development and self-studies independently;
- have social and professional behavior skills in social and labor collectives;
- be prepared for the social and professional mobility in a changing society.

The leading function of the tutor on this stage is a consultative and coordinating one, focused on developing poly-technological education values in students.

In the end the effectiveness of the model for psychological tracking of the individual educational routes is reflected and evaluated. The evaluation of individually-oriented professional and educational process was carried out according to the following criteria:

- Completeness of components of the prognostic activity;
- Monitoring of completeness of the generalized professional and educational competencies;
- Evaluation of interaction between subjects of individual educational routes during realization of psychological tracking.

The most important at this stage is to determine the extent of justification of the foresight project and the possibility of its realization. Verification of the prediction - a correspondence of individually-oriented future education - has a probabilistic character but the main trend of the project is to focus on the search

for the optimal professional future for the student. Realization of the individual educational technologies ensures the formation of social and professional mobility of professionals.

### **Networking**

Realization of individual educational trajectories involves the choice of forms for continuing education in various educational institutions. The organization of network interaction and ensuring the conditions for projecting these trajectories is justified in accordance to the assisting aims of such choice:

- The student's awareness of how important it is to build an individual educational trajectory as one of the ways to overcome the professional self-determination situations in conflict;
- The development of the project competence for building the individual trajectories for self-development and self-studies;
- The implementation of psycho-pedagogical tracking of professional development and information support of the individual route realization;
- A reflection of the educational route and its correction.

When using the individual educational trajectories, the system of networking education becomes flexible, variable, dynamic and it meets the needs of post-industrial society.

### **Discussions**

The problem of projecting the individual educational trajectories has been actively investigated in the last decade because of realization of the multilevel vocational training system. Theoretically-applied aspects of the individualization in conditions of a new contextually competent paradigm of education are represented in the works of G.A. Berulava & M.N. Berulava (2013), G.A. Bordovskiy (2001), T.Y. Lomakina (2013). Individual educational technologies are considered as a form of personal potential realization of each student. With all this the student acts as a subject of choice, projection and realization of his educational route with teacher's support and tracking. It is emphasized that the use of individual educational trajectories of the vocational education system becomes flexible variable, very responsive to the change of socio-economic conditions in the post-industrial society.

The peculiarity of our study of the problem lies in the conceptual position of projecting the individual educational trajectories in psychology of students' professional development, the tool of our analysis was a new technological education platform. This approach shows the scientific novelty of this research.

### **Conclusion**

The drastic changes in the socio-cultural and technological environment of modern people induce us to seek fundamentally new methodology for vocational education based on the networking education methodology focusing on the projecting the human of the future. New technological platform should ensure the establishment of the new format specialist who has a professional multi-dimensionality. In order to realize himself in the networking system of science, education and industry, the specialist must be able to perform the various social

and professional functions at a high level. The specialist's professional multidimensionality is being formed spontaneously during the mastering of various types of professional activity in the process of career development. Principal formation of such specialist is possible during the realization of networking education, the estimated foundation of his preparation is the multidimensional competencies, so-called key meta-professional dignities (Yalalov, 2013).

They include: the socio-professional and virtual mobility; communicativeness; practical intelligence; responsibility; collectivism; capacity for work; corporatism, innovativeness etc. In the post-industrial society the personality becomes a qualified characterization.

### Recommendations

Development of separate meta-professional competences is foreseen in the educational standards of bachelor and master degrees; others are included in the certification qualification programs. Huge opportunities in the development of the professional multidimensionality are placed in the newly introduced, enlarged areas and specialties assuming the full implementation of the networking professional education.

Realization of individual educational trajectories will become a guiding line of students' educational and professional achievements, and the introduction of minors in educational practice will significantly extend the abilities of their professional and psychological capacity realization.

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### Disclosure statement

No potential conflict of interest was reported by the authors.

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