

Diagnosis of the Motivational Potential of the Educational Environment through the Qualimetric Model

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Abstract— *The article presents the diagnostics method of assessing the level of motivational potential of the educational environment in supplementary education institutions. The authors created a qualimetric model of a motivation-oriented educational environment. For each component of this model, indicators of motivational potential were selected. The presence and intensity of them can be identified and measured on a given scale by expert assessment. The findings obtained as a result of the experiment indicate that the proposed method permits adequate determination of the level of motivational potential and determines its weak components. This method has allowed for the maximum specification of the tasks for the effective implementation of the qualimetric model for an educational environment.*

Keywords— *Motivational potential, educational environment, supplementary education, qualimetric model, diagnostic assessment.*

I. INTRODUCTION

The strategic goal of education is to increase the availability of quality education that meets the requirements of an innovative development of the economy, the needs of contemporary society and every citizen. The modern educational process should contribute to the self-determination of the individual, the formation of young people's spirituality, initiative, independence, and civic responsibility. All this is possible only if there is a high motivation of students for education. Thus, strengthening the motivational orientation of the educational process is an urgent task, not only in theory, but also in practice.

A theoretical analysis of the functioning of a motivationally-oriented educational environment suggests that the study of the motivational potential of education can become an important element in intensifying the educational process and increasing its effectiveness (Aleksandrova, 1978; Heckhausen, 1986).

The success of pedagogical research largely depends on the availability of research procedures that can be used to obtain reliable data. The process of broadening pedagogical research calls for the following procedures: 1) improving methods depending on the content and purpose of scientific research; 2) periodic generalisation of research experience that has emerged over a certain period in the development of pedagogical science; 3) revealing new possibilities of known methods (Calfee, 2006).

There are criteria for choosing research methods: 1) adequacy to the object, subject, general tasks of the research, accumulated material; 2) compliance with modern principles of scientific research; 3) scientific prospects, that is, a reasonable

assumption that the chosen method will give new and reliable results; 4) compliance with the logical structure of the study; 5) focus on the comprehensive and harmonious development of the personality of each student; 6) harmonic relationship with other methods in a common methodological system (Johnson & Onwuegbuzie, 2004).

We considered the methodology of diagnostic investigation as an intermediate link between the theoretical provisions and the hypothesis put forward in our work and pedagogical practice, which shows that the conditions necessary for the effective formation of educational motivation can be created in the Center for Supplementary Education for Children. In our study, we were trying to propose ways to resolve two contradictions:

- between the objective necessity of motivation for learning throughout a person's life, ensuring his reorientation in the face of changing socio-economic conditions, and the lack of detailed ideas about the pedagogical conditions of the activity of an institution of supplementary education for children and the adequacy of its environment to contribute to the development of motivation for continuous education;

- between the potential of the Center and the lack of an effective model for the educational environment of these types of supplementary institutions.

The noted contradictions made it possible to identify the general problem of the study: what are the pedagogical conditions and mechanisms that indicate the motivational potential of the Center? A particular problem is the defining of a diagnostic tool for assessing the level of such motivation.

The motivational potential of the educational environment of the Center for Supplementary Education for Children was developed using the following procedures:

- motivational characteristics of all components of the educational environment were identified

- the nature of the educational technologies used corresponded to the characteristics and level of development of the motivational sphere of the students

- conditions were created for the implementation of a creative search by the students on the basis of activity to the maximum extent possible in this center

- adequate diagnostic tools for assessing the motivational potential of the educational environment were developed.

II. QUASIMETRIC MODEL OF THE FORMATION OF THE MOTIVATIONAL POTENTIAL

This model is considered as a multicomponent system that includes four main blocks: purpose-oriented; content - oriented, technological, evaluative figure 1.

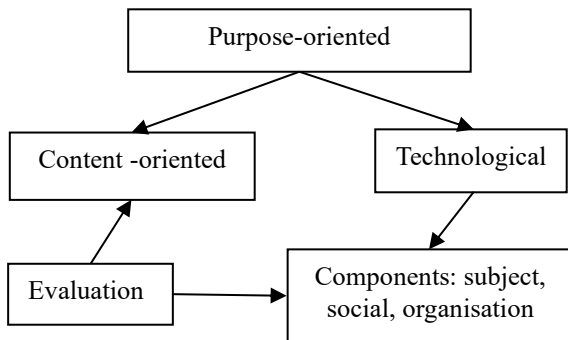


Fig. 1. Model of the formation of the motivational potential

The purpose-oriented block is the central element of the model and determines all the others. It includes a set of initial provisions/principles, which is based on a hierarchical set of needs of the subjects of the educational process: health considerations, subjectivity, adaptation and identification, orientation towards the protection and development of cognitive capabilities, individualisation, intellectual and personal tolerance, aesthetics, emotional richness.

The content-oriented block of the model refers to teaching information. It is determined by educational standards, curriculum, and teaching aids for disciplines. The content of teaching is completed considering social, historical, psychological requirements, the requirements of the individual and personal development of students. It is determined by the methodological principles of the formation of content, that is, the correlation of teaching material with the level of modern science, and the subject. Achieving the optimal level of difficulty of the teaching material and its connection with the content previously studied is one of the conditions for the development of positive motivation for students

The technological block of the model is associated with the direct formation of all components of the educational environment and has a motivational potential (Baeten, Kyndt, Struyven & Dochy, 2010). It includes subject, social, organisational and evaluation components. A subject component includes a diverse and structurally complex educational environment which provides the subjects of education with a set of various opportunities for independence and free activity. The flexibility and manageability of the educational environment creates unique didactic opportunities for educators that can encourage students to be active and make independent decisions. Symbolic saturation can help increase the level of positive motivation due to the presence in the environment of portraits of famous people who studied various sciences and made an invaluable contribution to their development, monuments of historical events, geographical maps, works of

art, visual aids, photographs of important events, elements of a museum exhibition etc.

The social component of the educational environment includes spatial and social density among the subjects of education and its impact on social behaviour, personal characteristics and student performance, changes in personal and interpersonal space depending on the conditions of a particular educational institution, distribution of statuses and roles, gender, age and national characteristics of students and teachers, etc. The social component bears the main burden of providing opportunities to meet and develop the needs of the students, giving a sense of security, maintaining and improving self-esteem, providing recognition from society, facilitating self-actualisation.

Based on the research of social psychologists, the main characteristics of the social component of the developing educational environment can be identified: 1) mutual understanding and satisfaction of all subjects of the teaching and learning processes with relationships; 2) the prevailing positive mood of all subjects; 3) the authority of leaders: directors and teachers or parents; 4) the degree of participation of all subjects in the management of the process; 5) cohesion and consciousness of all subjects; 6) the productivity of interactions in the learning component of the educational process.

When forming this component of the educational environment, it is worth paying attention to the following aspects: optimisation of the assessment activities of teachers, the prevailing positive mood of all subjects, a humanistic- oriented teacher, the teacher's orientation towards individual standards of student achievement, the use of various forms of collective activity of students in the classroom (Kulakow & Raufelder, 2020).

The organisational component is determined by the connections between the subject and social components. The content of the educational material is assimilated by students during learning activities. The result of training, its developing and educating role, depends on the structure of educational activity. The condition for the formation of positive motivation is the involvement of students in joint, constructive cognitive activity (Rodionov & Dedovets, 2018).

The evaluation block of the model establishes the criteria for determining the nature of the student's motivation in the educational environment.

To determine the nature of that motivation, we used the classification proposed by A.K. Markova to identify its features (Yakimanskaya, 2002).

1. Avoidance of trouble and punishment, negative attitude towards the teacher,

students' explanation of their failures by external causes, dissatisfaction with themselves and the teacher, self-doubt.

2. Neutral attitude to teaching, unstable interest in external learning outcomes, boredom, insecurity.

3. Positive, but amorphous, situational attitude to teaching, wide cognitive motive in the form of interest in the result of the teaching and in the mark given by the teacher, wide undifferentiated social motives of responsibility, instability of motives.

4. Positive attitude towards teaching, cognitive motives, interest in ways of obtaining knowledge.

5. Active, creative attitude to learning, motives of self-education and independence, awareness of the correlation of their motives and goals.

6. Personal, responsible, active attitude to learning, desire to improve the modes of cooperation in educational and cognitive activities, stable internal position, acceptance of responsibility for the results of joint activities.

Achieving high levels does not necessarily mean passing all the lower ones. With a certain organisation of educational activities, most students from the very beginning work with positive cognitive motivation, without going through the levels of negative motivation. But if a student has negative motivation, then the task of the teacher is to detect it and find ways to correct it.

All of these blocks are closely interconnected, which ensures the integrity of the entire system, expressed in the unity of the functions it implements. The leading component is the purpose-oriented component, which determines the general patterns of the functioning of the learning environment: theoretical representation; academic subject; teaching materials and real learning process. The goals and objectives of the educational process are specified in the content-oriented component. In turn, the features of the subject content to be mastered largely determine the nature of the teaching methods used, the forms of organisation of educational activities and the range of necessary teaching aids, that is, the organisational component.

In order to implement the developed model, it proved to be necessary to single out several levels in its structure, in accordance with which there was a phased formation of a motivationally oriented educational environment and, subsequently, an assessment of its quality.

The multi-level motivational potential of the educational environment implies the presence of a set of qualitatively diverse factors, which is based on the hierarchical needs of the subjects of the educational process, arising from Maslow's well-known triangle of needs: the need to meet physiological needs, the need for safety and security, the need for connection, the need to develop self-esteem and in cognition, the need for self-actualisation (Vilyunas, 1990). These needs are reflected onto the educational cluster in the form of relevant projections, targeting their satisfaction and the development of the personality of all subjects of the educational process.

As a result, we obtain the following hierarchy of projections on a motivationally oriented educational environment figure 2.

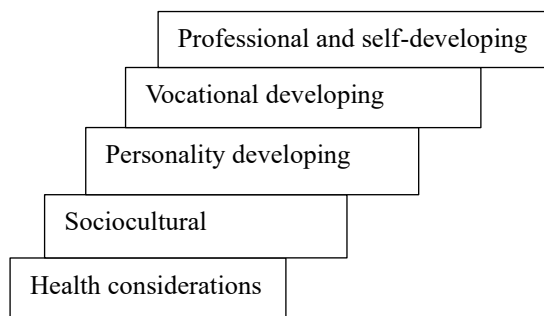


Fig. 2. Hierarchy of projections of needs

- The projection of health considerations includes a set of socio-pedagogical conditions, physiological elements that contribute to the implementation of the adaptive capabilities of students, and factors that affect the preservation and development of their health. This level is due to the need to realise the possibilities of satisfying physiological needs, the need for security.

- Sociocultural projection includes the purposeful formation of each student's moral experience and personality. The allocation of this level of a motivationally oriented environment is due to the necessity to meet the needs of the individual in the assimilation of group norms and ideals, as well as social needs (for love, respect, recognition, public approval).

- In accordance with the next stage of personality development, it is necessary to create an opportunity to provide for activities meaningful for the students and the full realisation of their abilities, the opportunity to meet and develop educational and cognitive needs in a special area (interests). All of the above underlies the personality-developing projection, which is considered as a set of external and internal pedagogical conditions in which choices are created that open up the possibility of self-examination, self-correction, self-determination, and, as a result, a change in ideas about oneself as a person.

- Vocational projection stems from the necessity to provide opportunities to meet the need to maintain and improve self-esteem, devise transformative activities in a particular area.

- The projection of professional and personal self-development is determined by the possibilities of satisfying and developing the need to acquire an ever-higher level of mastery in one's main activity (educational, teaching, administrative, etc.), satisfying and developing the need for self-actualisation in the personality of all subjects of the educational process.

Strengthening the motivational potential of this environment generally occurs from the bottom up. For example, no technological innovations can be introduced into the educational process without taking into account the health factor. It is impossible to teach content without providing the subject of the educational process with opportunities for personal growth, etc.

III. EXPERIMENT AND FINDINGS

In our study, an appropriate qualimetric model of a motivationally oriented educational environment was created. For each block of the educational environment, indicators of motivation potential were selected. The presence and intensity of these indicators were recorded and measured on a three-point scale (1 point for the presence of an indicator with its unstable manifestation, 2 points for the presence of an indicator with a fairly stable manifestation, 3 points for the presence of an indicator at its maximum actualisation).

During the experiment, it was necessary to establish the level of the motivational potential of the existing educational environment in accordance with the theoretically designed qualimetric model. Three expert groups were formed - teachers of the Center (30 teachers with more than three years of experience in the Center), members of the parental group (8 parents of students attending the Center for three or more years,

who show a high interest in the activities of the Center and are in close contact with teachers and parents of students) and older students studying at the Center for more than three years and actively participating in the work of student self-government bodies (6 students). For all participants, special briefing sessions were held on the research problem; explanations were given regarding the evaluation forms, which included markers of the motivational potential of each of the components of the educational environment, and individual consultations.

Each expert had to assess the motivational potential in each component of the educational environment using a three-point scale. The final score of each indicator was the arithmetic mean of the scores of all experts. The totality of the final grades for all indicators made it possible to determine the level of motivation of the educational environment of the Center for Supplementary Education for Children as a whole, as a percentage of the sum of the grades received to the maximum possible table 1.

The proposed diagnostic technique made it possible to obtain quantitatively expressed data on the level of development of the motivational potential of both the entire educational environment and its components separately. The indicators obtained are not absolute, but relative; they can only be used in the framework of the study of a comparable educational environment in different experimental conditions.

Thus, it transpired that the motivational potential of the educational environment of the Center was 66.4% of the maximum possible in our experiment. The results obtained indicate that the initial motivational potential of the educational environment was relatively low. The proposed diagnostic technique made it possible to identify the level of motivational potential of the educational environment and create a kind of "reference point" for further experimental work to transform this environment, using the means explored in this study. Our study also helped to determine in more detail the weakly activated components of the existing motivational potential.

Checking the consistency of the opinions of experts on the assessment of all the results presented in the tables was carried out using the χ^2 -Pearson test. The calculation of the empirical value of the criterion showed that the consistency of the opinions of experts was not random, and the results of the examination can be considered reliable.

VI. CONCLUSION

The proposed diagnostic technique constitutes a reference point for further experimental work to transform this environment in the context of the problem under study. The combination of the variable components of educational activities allows for a differentiated approach to their implementation, support for the development of students' individual abilities, and the Center's orientation towards achieving success in the activities of all educational disciplines.

TABLE I. The level of motivational potential of the educational environment of the Center for Additional Education of Children

Components of the educational environment	Indicators of motivational potential components	Evaluation of the indicator on a three-point scale in %
Subject component	Flexibility and manageability (the environment encourages students to be active, to make independent decisions)	1,84
	Connectivity (the environment allows the child multifunctional use of certain elements and includes them in various activities of the educational process)	1,89
	Individualisation	1,89
	Authenticity	1,98
	Heterogeneity and complexity (the environment consists of a variety of elements necessary to optimise all types of student activities, provides students with a variety of opportunities, inciting them to show independence and free activity)	2,05
	Additionality (he environment provides the subjects of the educational process with additional opportunities for cognitive, aesthetic, ethical development)	2,07
The level of motivational potential of the component		65,03%
Organisation in didactic context	Predominance of student -centered approach in educational process	1,66
	Providing the foundations for the formation of search activity, self-affirmation of the student	1,77
	Engaging pre-training, preliminary acquaintance with educational material	1,89
	Compliance with the principles of the educational process	1,91
	Encouraging students to use a wide range of information sources	1,95
	Creation by the teacher of a "motivational aspect" in each educational task	2,00
	Formation in students of an algorithm for moving towards success, stimulating intellectual, practical efforts, the need for reflection, comparison, self-assessment	2,02
	Compliance with the features of teaching material	2,05
	The performance by the teacher not only of the teaching role, but also of the role of the observer and assistant	2,16
	Compliance with the goals of additional education	2,25
The level of motivational potential of the component		65,53%
Social components	Satisfaction of all subjects of the educational process in terms of relationships	1,86
	Providing opportunities to meet and develop the needs of the subjects of the educational process in terms of security, in maintaining and improving self-esteem, in self-actualisation	2,00
	Positive mood of all subjects of the educational process	2,07
	Cohesion and consciousness of all subjects of the educational process	2,07
	The predominance of mutual positive evaluation in the pedagogical and student teams	2,09

	Use in the educational process of methods, forms and means that provide for the active interaction of students	2,14
	The authority of the leadership and teachers of the Center	2,23
The level of motivational potential of the component		68,83%
The level of motivational potential of the Centre		66,40%

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