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THE DEVELOPMENT OF MOTIVATIONAL ELEMENTS IN TECHNICAL COLLEGE STUDENTS DURING THE STUDY OF TECHNICAL DRAWING

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Annotation: The effectiveness of students' learning and development of professional skills at vocational educational institutions significantly relies on the quality of foundational training in their specialized subjects. In technical fields, this discipline is referred to as "Technical Drawing." However, it presents contemporary adolescents with several obstacles in her research. In this context, the initiation of motivational mechanisms is crucial for generating activity and guiding the direction, content, and conduct of the student in their educational and cognitive endeavors. The author elucidates the methodological aspects of cultivating and enhancing motivation for learning technical drawing, considering the psychological traits of adolescence and the individual features of students.

Keywords: professional competence, technical drawing , motivation.

Introduction.

The training of students in professional youth is forced to solve the questions of new, destructive organizations coincides with the unknown stage of their lives: what to do - adulthood. In this difficult period, should education be conducted in general education schools

to establish or enter a vocational training, which specialty or profession to choose, at which enterprise or in which organization to work.[1]

When they enter a professional educational organization of technical character, they have to adapt to a new, dynamic and enriched system of training, one of which is the study of disciplines of the professional cycle. Technical drawing (engineering graphics) is one of the few disciplines that form the basis of professional education, forming basic knowledge necessary for studying special disciplines and acquiring professional competencies in technical specialties.

The analysis of the first scientific sources on pedagogy and psychology has shown that the majority of adolescents are indifferent to the assimilation of labour, social and domestic skills, as well as to the assimilation of various subjects, and this is not their sole goal. They perceive them through their personal success in mastering a new skill or discipline, as well as through the personality of the person conveying the information and work methods. Research has shown that currently about 80% of students enrolled in vocational educational institutions, unfortunately, have not studied drawing in school, have poor knowledge of geometry, and have a weak motor skills in their childhood.

The small motor of the hands interacts with such higher properties of the mind of the adolescent as attention, thinking, optical-spatial perception (coordination), imagination, observation, visual and motor memory, speech. The development of fine motor skills is of paramount importance in the study of technical drawing, in connection with the fact that all further student activity in the subject requires the use of precise, coordinated movements of the hands and fingers, which are necessary for mastering the skills of drawing lines and writing a font, of perceiving a plane or volumetric image.

From the perspective of psychology, the student's personal-motivational aspect plays a significant role in studying the discipline "Technical Drawing," acting as one of the key factors aimed at their

strict and accurate mastery of the USDD (Unified System of Design Documents) standards and effective research and design activities.

Every experienced drawing-technical instructor knows that the most difficult thing to do is to teach the subject. However, it is equally important to plan and introduce into the process of the lesson the motive mechanism that causes activity and determines the direction, content and behavior of the student in his educational and cognitive activity. Establishing the boundaries of the motive and considering the stages of its formation allow us to identify the psychological components that can be included in the structure of the motive. It is formed on the basis of historical conditions, social and social experience, previously acquired knowledge and acquired skills in academic activity, aesthetic development, which are important for the student in life or professional activity. The study established that strong students are characterized by internal motivation - to master a profession at a high level and to be oriented towards acquiring strong knowledge (abbreviation formed from the first letters of the pedagogical concepts "knowledge," "skill," "skills"), while weak students are characterized by external motivation - the ability to avoid condemnation and punishment for bad study.

Methodology.

This research aimed to investigate the role of student motivation and the development of fine motor skills in vocational training, particularly in the context of technical drawing (engineering graphics) in professional educational institutions. The study followed a mixed-methods approach, combining qualitative and quantitative research methods to assess student motivation, performance, and adaptation to the technical drawing discipline.

1. Research Design

The research utilised a mixed-method approach, focusing on:

- **Quantitative data** from student performance assessments, including their mastery of drawing and geometric skills.
- **Qualitative insights** gained from student surveys, interviews with instructors, and observational studies in classrooms and workshops.

2. Population and Sampling

The target population for the study included students enrolled in technical and vocational educational institutions, specifically those studying technical drawing. The sample consisted of:

- A random selection of 150 students from three vocational institutions.
- 10 instructors specialising in technical drawing and engineering graphics were also interviewed.

Students were chosen to reflect a range of abilities, including both those with prior exposure to drawing and those without such experience. This allowed for a comparison of motivation levels and skill development across different student backgrounds.

3. Data Collection Techniques

To gather comprehensive data, the following methods were employed:

1. **Surveys and Questionnaires**: A set of structured questionnaires was administered to students to assess:

Their previous exposure to technical drawing.

Their self-reported motivation levels.

Their perceived difficulty in mastering the subject.

The questionnaires included both closed-ended and open-ended questions to allow for detailed responses.

2. **Interviews**: In-depth interviews were conducted with technical drawing instructors to gather insights into teaching methods, student challenges, and motivational techniques employed during instruction.

3. **Classroom Observations**: Observations were carried out in technical drawing classes to evaluate student engagement, instructor-student interactions, and the role of fine motor skills in mastering technical drawing.

4. **Assessment of Student Performance**: Student performance was measured through practical assignments, semester exams, and participation in drawing Olympiads. These assessments were used to gauge the development of technical skills and the influence of motivation on academic achievement.

5. **Analysis of Prior Knowledge**: The research also considered students' prior knowledge in geometry and drawing, gathered from their school certificates and preliminary testing at the beginning of the technical course.

4. Data Analysis

Data collected from various sources were analysed as follows:

1. **Quantitative Analysis**: Student performance data were analysed using statistical methods to identify trends in their learning outcomes. This included:

Correlating motivation levels with performance scores.

Analysing differences in skill acquisition between students with and without prior drawing experience.

Tracking improvement over time through repeated assessments and participation in technical drawing competitions.

2. **Qualitative Analysis**: Thematic analysis was used to process interview transcripts and open-ended survey responses. Common themes, such as motivation factors, challenges in learning technical drawing, and the impact of instructional methods, were identified.

5. Ethical Considerations

The study ensured that all ethical guidelines were followed. Consent was obtained from both students and instructors before participation. Anonymity was guaranteed, and data were handled confidentially, adhering to the ethical standards set by the participating institutions.

6. Limitations

The study faced some limitations, including:

- The limited scope of sampling, as it was confined to a specific region and technical schools.
- Potential biases in self-reported motivation data, which might not fully reflect the students' true motivations or challenges.

Future research could expand the sample size and include students from a broader range of vocational institutions to ensure more generalisable results.

This methodology outlines the approach used in the study to assess student motivation and skill development in technical drawing, focusing on a variety of data collection and analysis techniques to provide a comprehensive understanding of the educational process in vocational settings.

Result and Discussion

It is known that for every motive possessing quantitative and qualitative characteristics there is a certain need.

The need for education is not only a means of personal development, but also a means of satisfying other needs. It arises and develops in a certain social context, manifesting itself in various kinds of activity, which allows us to call it the system-forming, the core in the structure of the needs of the individual, the individual social groups, for whom education is the leading value.

Necessity has a significant influence on the expansion of knowledge and the acquisition of high professional skills, leadership in the student collective, the formation of a positive image among the teachers of the technical school and the labour collective of the base enterprise, the acquisition of a profession that is especially in demand in production, a high salary after graduation from the educational institution, career advancement, etc.

Unfortunately, today there is a situation in which not all drawing teachers pay sufficient attention to the need to teach their students. This is not because they think it is unnecessary, but simply because they have long been accustomed to evaluating the need to learn "by the naked eye." In addition, not all teachers have the methods and instruments for performing such work effectively.

In order to determine the content and the most effective methods of instruction which will best contribute to the achievement of the aims of the technical drawing lesson, it is necessary to establish the students' qualitative and quantitative need for instruction. Teachers of technical drawing can successfully employ the following methods in their work, which determine the student's need for learning.

1. General assessment of student information. This information is available to each master of production training or the curator of the training group (the average score on the certificate, the level of mastering the basics of drawing in school, the type of character, motives for acquiring the chosen profession, etc.).

2. Student surveys. Student surveys are conducted by the teacher and are designed to assess their need to acquire new professional knowledge and develop skills in the academic discipline, allowing for a more precise determination of the need for learning for specific student categories. Surveys can cover the entire training group, course or department. If the circle of respondents is small, questionnaires, tests, interviews, and conversations can be used.

3. Monitoring the student's academic performance in the discipline "Technical Drawing." It is carried out by the teacher successively after each practical work, at the end of the semester, course (identification of systematicity, stability, development of strengths, elimination of shortcomings, self-education).

4. Analysis of the results of participation in drawing Olympiads. It is performed by the teacher based on the results of participation in the city, regional and all-Russian technical drawing Olympiads (depth of theoretical knowledge, quality of graphic work, stability in stressful situations, purposefulness).

5. Collection and analysis of the results of mastering the disciplines of the professional cycle. The teacher analyzes the report of the curators of the educational groups on the pedagogical council on the results of students' mastery of academic disciplines of the professional cycle. (The growth and decline in student performance, their effectiveness in the subject-based Olympic and Competitive Movement, their participation in conferences are analyzed.)

6. Observation of work in the training workshop and in the production. The following observations are made by the teacher during his visits to the educational workshops and the production facilities:

- the type of work performed by the student;
- the level of independence and the complexity of the work being done;
- the use of the terminology established by the standard;
- for the effectiveness of work with drawings and technological documentation.

One of the most important characteristics of a person is that his or her activity is motivated, i.e. it is not based on a single motive, but on a certain set of motives, a set of motives that are in a certain relationship with each other. In this regard, it can be said that motive is the main unit of motivation

analysis [8]. The concept of motivation is used to denote the influence of all motives on the student's actions.

Motivation is a system of external conditions that trigger a person's inner energy and activity to achieve a high result in their activity.

There are 4 main groups of motivation methods:

Emotional: encouragement, creating success situations, stimulating evaluation, free choice of tasks, etc.

- Cognitive: relying on life experience, taking into account cognitive interests, creating problematic situations, encouraging the search for alternative solutions, completing creative tasks.

- Voluntary: informing about the necessary results, forming a responsible attitude, identifying cognitive difficulties, self-esteem and correcting one's activity, forming the ability to carry out reflection, predicting future activity.

Social: the development of a desire to be useful, the creation of a situation of mutual assistance, sympathy, the search for contacts and cooperation, interest in the results of collective work, the organization of self-and mutual verification.

Analyzing the methods of motivation, it can be said with confidence that this is a reward for which the student is ready not only to implement an activity approach within the framework of their functional duties, but also to solve new additional tasks. A motivated student, as a rule, experiences genuine enjoyment from his activity in the educational process, the student figuratively says "his eyes are burning," he awaits every day with impatience the onset of a new school day and goes to school "like on a holiday," and the professional educational organization becomes his "second home." As practice shows, such a student works hard and effectively, achieves high results in learning, shows striving, inspiration in learning and self-education, and actively realizes himself in educational and research activities.

Choosing methods that determine a purposeful and reasonable influence on the student through understanding the motives of his activity and developing creative initiative, studying new material, conducting practical graphic work, controlling the results of student activity today is one of the most complex tasks in the methodology of organizing the teaching of the discipline "Technical Drawing."

Based on the research and many years of pedagogical observations, it can be concluded that motives function in the process of learning, and their dominance depends on many reasons. Among them is the character of the student's individual and personal characteristics. In the experiments conducted using the step-by-step method of forming mental and practical actions in mastering the discipline "Technical Drawing," it was found that students with a predominance of the figurative component of thinking over the verbal-logical component were much more successful in mastering the learning material if the motive itself was joined to the motive of the research plan.

Currently, we are dealing with the creation of an effective model of motivation, which contributes to the students' fulfillment of the Federal State Educational Standard and their full mastery of the competencies established by the curriculum, through the interest in learning new.

Interests, objectives, desires and intentions play an instrumental role in the motivational process, i.e. they are responsible for the student's style of behavior.

Interest is the eternal engine of motivation. It manifests itself in the student's emotional attitude towards the object of cognition [7].

According to L. S. Vygotsky, 'the general psychological rule of interest formation is as follows: in order for a subject to interest us, it must be connected with something that interests us, with something already familiar, and at the same time it must always contain certain new forms of activity, otherwise it will remain fruitless.' The completely new, as well as the completely old, cannot interest

the student, arouse his interest in any subject or phenomenon. Therefore, in order to begin studying the discipline "Technical Drawing," it is necessary to make its study a student's personal affair, connecting the subject being studied with strong interdisciplinary connections, then success in solving the problem related to the effectiveness of learning becomes real.

Therefore, the following main stages of developing students' interest in technical drawing can be identified:

1. Psychological preparation for the formation of interest in the development of logical thinking and spatial imagination of the student.

2. The formation and development of interest in studying technical drawing by increasing the clarity of the learning process, gradually complicating assignments taking into account the personal and volitional characteristics of students.

3. The formation of interest in solving non-standard creative tasks, analyzing the mistakes made, and rationally combining collective and individual methods of solving problems.

4. Development of extracurricular forms of work with students by creating circles, organizing competitions and Olympiads on technical drawing.

In pedagogical practice, we have developed methods and techniques for fostering interest in technical drawing:

• through the content of the educational material:

- inclusion by the teacher in the lesson material of information on the history of the development of the academic discipline, the technology of constructing and transferring a point or a section, the appearance of detachable and non-detachable connections, mechanisms for transmitting motion, etc.;

- informing students about the dynamics of the development of the studied discipline: manual and instrumental methods of drawing, mechanization of graphic work, use of computers in design;

demonstration of the interdisciplinary connection of the subject being studied with the educational material of the disciplines of the professional and general education cycles;

- solving various typical, logical and creative technical problems. The student's activity towards the subject under study is maintained during the lesson, which allows each student to develop, present, and defend the graphic work he has completed individually. For example, students, according to the instructor's instructions, calculate and create on the basis of typical details new drawings, kinematic, hydraulic and pneumatic schemes, etc.).

• through the organization of the student's cognitive activity:

- designating, setting and solving problematic tasks and questions. In the educational process, teaching aids with differentiated assignments are successfully used, which gives each student the opportunity to demonstrate their own knowledge, skills and abilities in solving problematic tasks, which will be evaluated by the teacher taking into account the individual characteristics of the student.

- explaining new material in the form of a learning dialogue, using interactive learning.

• through the use of various innovative forms of training based on individual and differentiated assignments (business games, project activities, technical drawing competitions, etc.).

Desires and intentions undoubtedly occupy an important place in the structure of the motivational sphere. A desire is an experience that reflects a need, a real idea of the possibility of satisfying this need, the possibility of knowing or being able, as well as possessing or accomplishing something. This fully applies to the acquisition of knowledge and the acquisition of practical skills necessary for the realization of the set goals.

Often the youngsters who entered the technical school, even on the basis of a competition, lost their desire to learn in school. The problem arises, and the teacher must find out in what the student's lack of desire to learn manifests itself and how to activate his learning activity.

A teenager doesn't want to study because they don't see any sense in it. As one of the directions, regular examples from practice, real life, organization of meetings with technical school graduates and demonstration of their success and career growth as a result of their acquisition of deep and solid knowledge, professional skills and abilities. Continuation of education in a higher educational institution.

2. A teenager has no desire to study because they are not interested. In the lesson, the methods of instruction are rationally alternated. The use of modern technical teaching tools. Individual project and collective project activity. Regular assessment of student performance, etc.

3. A teenager does not want to study because of conflicts in the study group or in the student collective of the technical school. To overcome this problem, it is necessary for the teacher to develop in the pupils' collective kind-heartedness, mutual assistance, respect for the individual, etc.

4. A teenager does not want to study in an institution where, in his opinion, the learning environment, material and technical base is worse than in school. This prejudice can be overcome by making a sight-seeing tour of the classrooms, laboratories, and workshops, including a thorough familiarization with the equipment, the organization of the students' seats in the drawing-technical classroom, as well as during classroom-subject instruction using modern teaching and laboratory equipment.

Intention is the next step in the development of the motivational sphere after desire and represents a conscious desire to complete the action in accordance with the intended program, aimed at achieving the expected result. At the same time, it is necessary that a person adequately evaluates his individual characteristics and has clear professional ideas, which largely determine the success of professional activity. In this case, one can fully agree that desire and intention are situatively arising and rapidly replacing subjective states that meet changing conditions for performing actions. The stability of professional intentions depends on students' awareness of the requirements of the discipline "Technical Drawing," a clear understanding of its difficulties, readiness to overcome them, and awareness of its importance in mastering the chosen profession.

The study of the process of selecting, creating, and executing intentions in students revealed specific difficulties. First of all, adolescents have a very pronounced tendency to choose arguments in favor of emotionally attractive behaviour through behaviour that is necessary and demanded. In other words, strong emotions in adolescents more often than in adults block a reasonable decision. For example, when a student has to make a choice between drawing out a graphic homework or wandering entertainingly on the Internet, he may begin to pick up arguments in favor of the latter without noticing it ("this information is much more important," "they may not ask for the graphic work tomorrow," "the loan for technical drawing can be handed over later" and so on).

A teenager constantly faces various difficulties in creating and executing an intention. A number of personal characteristics prevent them from successfully regulating their behavior. Then, when this situational emotion is weakened, the intention of the teenager to carry out the decision is weakened. For example, a student, under the influence of his parents or the teachers of a technical school, decides to cancel out arrears of graphic work in the next two weeks. However, as a result of the lack of consistent control over the student's work, this emotion is weakened, and the student, who is left to himself, has not fulfilled his intention. In the same way, the intention may not be fulfilled because a teenager does not know how to calculate his or her own strength. For example, a student sets themselves the task of completing a graphic work after an evening walk with friends. Returning late, tired, he did not understand how to quickly do it and achieve good grades, his intention weakens. Here too the role of the technical drawing teacher is great. He has a real opportunity of helping the teenager to plan, calculate and allocate his time correctly.

The task, as a structural element of motivation, acts as a special situational-motivational factor, arising when in the process of performing actions aimed at achieving a certain goal, difficulties or other obstacles arise, which must be overcome by setting and solving a specific task. For example, after studying the educational material related to the construction of a cut on the isometry of a part, students are asked to make the cut of the first quarter of the part independently. The teacher announces that the first three students who successfully complete the graphic work are assigned grades without homework. Leading students collectively identify the best work, and the student who has completed it draws out the assignment offered by the teacher on the classboard for the whole group. In this case, we clearly see that the success of solving the learning problem is strengthened by the motivational component. A learning task is a complex system of information about a learning object, a process, in which only a part of the information is clearly defined, and the rest is unknown. It is necessary to find it by using existing knowledge and solution algorithms in conjunction with intuition and the search for optimal solutions. As the learning task is completed, the student himself changes.

A person, by nature, constantly needs professional growth, the development of their professional competencies. Under these conditions, the student, in the process of executing graphic works on technical drawing, strives for public recognition of his knowledge, skills and achievements.

The student's academic activity, both individually and collectively, contributes to the improvement of his academic discipline, to his becoming meaningful and productive.

When the responsibility and autonomy are expanded, the student reacts with greater interest to creative tasks than to thoughtlessly rewrite text or duplicate illustrations from a textbook, a multimedia presentation. Control (self-control) and evaluation (self-esteem) occupy a significant place in the general structure of educational activity. This is due to the fact that any learning action becomes productive, regulated only if there is control and evaluation of the student's activity.

In our view, another aspect of learning motivation is directly related to activity - independence (an activity that a student carries out without the direct assistance of others). This type of activity is actively implemented during classroom and homework. In pedagogical science, there is a pattern that cognitive activity and independence are inseparable: active students are more independent, insufficient activity deprives the student of independence.

The management of student activity is traditionally called activation. Activation is the constant process of encouraging vigorous, purposeful learning, overcoming passive and stereotypical activity, decline and stagnation in mental work.

Conclusion.

Of course, it is difficult for a teacher to achieve pedagogical mastery in student motivation without knowledge of modern general theoretical approaches, concepts, practical methods and mechanisms for motivating the student's personality and the student collective. In our opinion, in order to increase the student's motivation level, the teacher must use it comprehensively, consistently, and creatively

the system of scientific-pedagogical, organizational, moral and material methods of organizing the educational process and encouraging students, approved for use by the legislation of the Republic of Uzbekistan and local acts of the professional educational organization.

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