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PROFESSIONALLY-ORIENTED INTERDISCIPLINARY TASKS AS A WAY OF INCREASING MOTIVATION IN HIGHER EDUCATION

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Abstract

The article analyzes the increase of motivation in higher education. The problem of intersubjective communications is recognized as relevant for the entire system of modern education, but in theoretical, and especially in practical aspects, intersubjective communications in higher professional education are much less studied than in systems of educational and secondary vocational schools. The effectiveness of professionally-oriented interdisciplinary tasks in the system of technological training of clothing industry's specialists has been proved. It has been established experimentally that the developed task-modular training program contributes to the development of positive dynamics of motivation and formation of professional and educational-cognitive motives of students. The basis in the development of tasks was the multi-level structure of professional activity of a specialist. The logical and substantive basis of the tasks is determined by the theory of interdisciplinary communications and the modern production and technological activity of an engineer in the clothing industry. The implementation of the system of tasks in the educational process is based on general pedagogical and specific principles of didactics. The dependence of the technological training of specialists in the clothing industry on the implementation of professionally-oriented interdisciplinary tasks is disclosed. The developed task-modular training program is included in the technological training system for specialists in the clothing industry; it is implemented as part of practical and laboratory work in accordance with work programs for special disciplines of the curriculum of the main educational program.

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1. Introduction

In the context of dynamic development of new technologies and continuous technical re-equipment of modern production, the requirements for production and technological activities of specialists are significantly increased. This necessitates the strengthening of technological training, as well as the expansion of knowledge of the communicative competence of students (Semenova & Gorodetskaia, 2017). The main target function of technological training is the professional orientation of specialist training for a specific area of the national economy. Consequently, a significant role in solving issues of improving the quality of technological training of specialists must be assigned to ensuring the professional orientation of the educational process in universities.

The analysis of the studies conducted, as well as the educational and methodological support for the training of specialists, shows that professionally directed interdisciplinary tasks in the system of technological training of specialists in the clothing industry are insufficiently developed and tested. The existing tasks are limited by the subject area; and they are used at individual stages of training in order to consolidate knowledge, control their assimilation, etc. The complexity of the technological training of specialists in sewing production, determined by the wide variety of technological processes used in production, the abundance of modern methods of influencing technological objects, and the change in the properties of the materials used, requires a specialist to be able to effectively solve the interconnected materials science, technological and design tasks of sewing production.

In the framework of our study, a contradiction is distinguished between the objective need to improve the quality of technological training of specialists in the conditions of modern demands of the technological functioning of sewing industries and the insufficient development of a system of professionally directed interdisciplinary tasks.

Based on the theory of intersubject communications, due to the interconnectedness of natural science, general professional and special disciplines of specialist training and the integrative content of the production tasks of the future professional activity of a specialist in sewing production, interdisciplinary professionally-oriented tasks have been developed for the course “Technology of clothing” for students studying in the direction “29.03.01 Technology of products of light industry.”

2. Problem Statement

One of the prerequisites for high-quality professional training in higher education is the conscious choice of a profession and its motives. Students must know what advantages he can provide with the knowledge and skills acquired by him, and always be in a state of actual motivation (Gabay, 2011). Many universities are often faced with the problem of unconscious choice of applicants for their future profession. According to numerous studies (Gaponova & Martynova, 2004; Sazonov, Kalugin, & Menshikov, 2009), from 30 to 50 % of applicants to polytechnic universities belong to this category. Of course, many factors affect the value-motivational level of applicants, including the image of the university, the status of an educational institution, the rating of a specialty in society, etc. However, it is precisely the interest in the profession and educational motivation that affects the further success of students studying at the university, ensures their determination in getting an education, activates search

activities in self-education and forms clearly expressed needs and value orientations of students in the learning process.

A questionnaire to identify the motives for choosing a university for freshmen of the faculty of light industry and fashion technologies of KNRTU showed that the leading motive for choosing a university is the desire to get higher education (51 %). A relatively high indicator of such a motive as interest in the profession (21 %), a less high idea of the profession (11 %). However, over 50 % of applicants did not have an adequate idea of the specifics of the future profession, of the nature and content of future practical activities. 8.3 % of the students participating in the experiment chose an educational institution, using the recommendations of relatives and friends. Due to the circumstances, 6.1 % of the freshmen chose this institute.

As experience shows, in the traditional forms of organizing the educational process in higher education, the value-motivational level of education does not increase, but practically remains unchanged (Diah Isnaini & Hendy, 2019; Mikhailova, 2015). This leads to a decrease in interest in obtaining professional knowledge.

Thus, the social immaturity of the choice of a profession requires the activation of teaching methods in higher education, which would contribute to the development of motivation for students' educational activities, a change in its content towards greater professionalization and the formation of a positive attitude towards the chosen profession.

3. Research Questions

The complexity of the technological training of specialists in the clothing industry is determined by the wide variety of technological processes used in the production of machinery and technologies, an abundance of modern methods of influencing technological objects, changing the properties of the materials used, and requires specialist skills to effectively solve interconnected materials science, technological and design problems. Given the specifics of training specialists in the clothing industry, the authors offer professionally-oriented interdisciplinary tasks as an effective means of increasing the educational motivation of students at technological universities.

An interdisciplinary cognitive task is understood as “a task that involves the pupil (student) in the activity of establishing and assimilating the links between the structural elements of educational material and activities in different academic subjects” (Maksimova, 2008, p. 49), it reflects specific informative relationships of an inter-scientific nature and directions of logical deployment these relations in the structure of the educational material of various scientific disciplines, while engineering tasks are complex tasks, the main Bathrooms on the synthesis of knowledge from different disciplines.

4. Purpose of the Study

To develop and justify a system of professionally-oriented interdisciplinary tasks as a means of improving the quality of technological training of engineers in the clothing industry.

5. Research Methods

The motivational side of students' activities in solving the developed interdisciplinary tasks and the motivation to master certain methods of activity were provided in several areas.

At first, using the actual “tasks” (as an active form of training) in the process of training specialists. It is known that a prerequisite for creating students' interest in learning activities is the ability to show mental independence and initiative in learning. The more active the teaching methods, the easier it is to interest students. Before the purposeful development of the task system for the course “Technology of clothing”, tasks in the discipline were mainly used situationally and did not have a systematic approach. Particular examples of the tasks developed were used, in most cases, to consolidate knowledge, or when checking the assimilation of knowledge.

Secondly, the main feature of the developed system of tasks is their interdisciplinarity and professional orientation, which determines, as we have already noted, students' awareness of the importance of the acquired knowledge and skills for the study of special disciplines in future professional activities, which positively affects the development of motivation for student learning.

Thirdly, a personality-oriented aspect of the task system at the course “Technology of Sewing Products”, which involves focusing on the individual and creating the appropriate conditions for successful problem solving.

In order to confirm the hypothesis, put forward on the use of professionally directed interdisciplinary tasks as a means of increasing the educational motivation of students, a pedagogical experiment was conducted. This experiment was aimed at identifying the dynamics of the development of motivation for students to study the discipline “Sewing Technology” in the first group, using a system of interdisciplinary tasks and in the second, where such task setting was not provided.

To determine the level of development of motivation (at the level of studying the discipline), the method of scaling Grebeniuk and Grebeniuk (2003), 4 levels of its development are considered:

- The first level (low) is characterized by a small number of positive motives for learning. The student is indifferent to almost all aspects of the content of education and the profession; in this regard, he does not feel the need and desire to acquire knowledge, prefers simple activities, and practically does not realize the importance of professional education.
- The second level includes a variety of motives associated with narrow personal plans. That is, while retaining awareness among students of the practical importance of knowledge and skills, the trend remains only on the productive side of the learning process, focused on studying only certain topics that are most interesting to students.
- The third level is characterized by the formation of all components of motivation, the development of such positive motives as awareness of the need to study the subject and cognitive interest in it.
- The fourth level of motivation is distinguished by sufficiently formed cognitive needs and determination in the study of educational disciplines.

6. Findings

The research on the development of educational motivation were conducted among students in the control and experimental groups immediately after studying the course “Technology of clothing”, at the end of the fourth and fifth semesters. To identify the hierarchy of motives for the educational activities of students, questionnaires were conducted at subsequent, senior courses in the study of special disciplines (the basics of the functioning of technological processes for the production of clothing, technical preparation of production, design of small enterprises in the industry). At the initial stage of the experiment, the initial level of development of the motivation for studying the discipline in the control and experimental groups was established, the distribution of students by the levels of formation of the motivation for learning is given in Table 01.

Table 01. Distribution of students in the control and experimental groups according to the initial level of formation of learning motivation

Learning Motivation Levels	Control group, %	Experimental group, %
1 Level	33	40
2 Level	59	51
3 Level	8	9
4 Level	-	-

Unfortunately, it was not possible to identify students with the fourth level of development of learning motivation neither in the control nor in the experimental groups. The number of students with the first level of motivation was 33 % in the control group and 40 % in the experimental group. The second level of learning motivation was 59 % in the control group and 51 % in the experimental group. The third level of learning motivation was 8 % in the control group and 9 % in the experimental group.

The results of scaling the learning motivation at the end of the experiment are presented in Table 02.

Table 02. Distribution of students in the control and experimental groups by the final level of formation of learning motivation

Learning Motivation Levels	Control group, %	Experimental group, %
1 Level	27	9
2 Level	63	73
3 Level	10	18
4 Level	–	–

The result of scaling the motivation of learning at the final stage of the experiment showed the following results: the number of students with the first level of learning motivation was 27 % in the control group and 9 % in the experimental group. The second level was 63 % in the control group and 73 % in the experimental group. The third level was 10 % in the control group and 18 % in the experimental group.

Thus, the experimental group clearly shows increased motivation for studying the discipline. It is especially important to reduce the number of students possessing the 1st level of development of

motivation (by 31 %), when the main motives for studying the discipline of materials science were only motives to avoid trouble, unstable motives for interest in external learning outcomes. However, despite the positive results of the experiment, students with a level 4 development motivation for studying the subject were neither in the control nor in the experimental groups. Perhaps this depends on the personal characteristics of students of these experimented groups, as well as on the need for purposeful formation of motivation for studying the subject in all forms of organization of the learning process.

Along with determining the levels of formation of learning motives, we carried out a qualitative analysis of the development of the following signs of motivation:

- 1 – hierarchy of motivation;
- 2 – awareness;
- 3 – generalization;
- 4 – subject orientation to the content of training;
- 5 – subject orientation to the content of labor;
- 6 – subject orientation to the methods of teaching and labor;
- 7 – substantive focus on methods of activity;
- 8 – the intensity of motivation;
- 9 – effectiveness;
- 10 – sustainability (Kagan, 2000).

The mentioned signs of motivation have four levels of severity each.

Graphically, the results of the analysis of the development of signs of motivation in students of the control and experimental groups are presented in Figure 01.

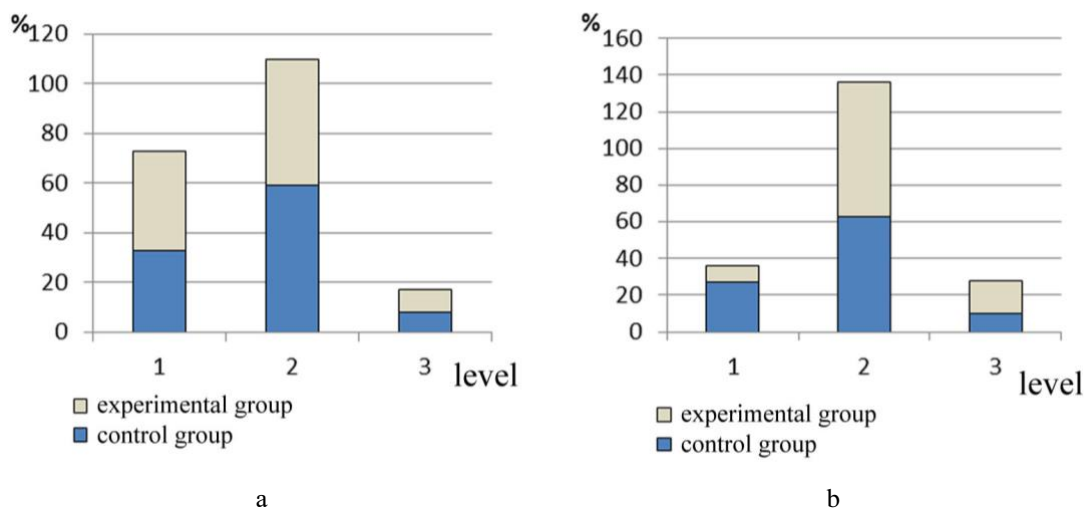


Figure 01. The results of the analysis of the development of signs of students' motivation: a – initial level, b – final level

Basically, the levels of formation of signs of motivation for teaching students in the control and experimental groups at the initial level coincided. Moreover, they observed a relatively high (third) level of development of such a sign of motivation (however, only one) as generalization. The focus on the content of labor and the methods of teaching and labor among students in the control and experimental groups was approximately the same, and had not the lowest level (second level). At the same time, the

control group showed a higher level of formation of the subject orientation to the content of training (second level), and the students of the experimental group had a higher level of formation of such a sign of motivation as effectiveness (also the second level).

A qualitative analysis of the results of the final measurement showed that the level of individual signs of motivation of students of the experimental group significantly increased. For example, a particularly important point, in our opinion, is the change in the ideological and moral orientation of the state of students' motivation. Such a sign as awareness among students of the experimental group increased from the first level to the third, while among students in the control group it increased only to the second level. Of no small importance is the fact that in the experimental group the level of six more signs of motivation increased: the hierarchy of motivation, subject orientation to the content of training, objective orientation to types of activity, sustainability (up to the second level); subject orientation to the content of labor, subject orientation to the methods of teaching and labor (to the third level). While in the control group, in addition to the symptom noted above, the change in the signs of motivation did not particularly appear.

The next stage of the experiment was to determine the hierarchy of motives for educational activity. Two large groups of motives are considered: internal and external. Internal motives are professional, scientific and cognitive motives of self-improvement. External motives are broad social, narrow social, utilitarian, motives for fear of failure in learning, motives for achieving success in learning (Koroleva, Khairullina, & Khisamieva, 2014).

Questioning was conducted among students of the control and experimental groups in subsequent courses of study, when studying special disciplines. The revealed hierarchy of motives for professional activity of students in the control and experimental groups is presented in Table 03 and 04.

Table 03. Hierarchies of motives for professional activity of students in the control group

#	Motives	Significance of the motive group	Place by value
	<i>External</i>		
1	Wide social	1,72	8
2	Narrow social	3,37	2
3	Utilitarian	4,16	1
4	Motives for fear of failure in study	3,02	3
5	Learning Success Motives	2,73	5
	<i>Internal</i>		
6	Professional	2,02	7
7	Scientific and educational	2,98	4
8	Self-improvement	2,21	6

Table 04. Hierarchies of motives of professional activity of students of the experimental group

#	Motives	Significance of the motive group	Place by value
	<i>External</i>		
1	Wide social	3,22	3
2	Narrow social	1,82	7
3	Utilitarian	2,11	6
4	Motives for fear of failure in study	1,67	8
5	Learning Success Motives	2,45	5

	<i>Internal</i>		
6	Professional	4,44	1
7	Scientific and educational	3,65	2
8	Self-improvement	2,91	4

According to the results of the experiment, despite the fact that the development of student learning motivation in subsequent courses is somewhat reduced. There is a difference in the structure of motives for the educational activities of students in the control and experimental groups. In terms of the use of professionally directed interdisciplinary tasks in training, in the experimental group according to the degree of significance, professional motives are among the first (the significance of the motive group is 4.44 points), educational and cognitive motives (3.65), as well as broad social motives (3.22). The control groups had utilitarian motives (4.02), narrow social motives (3.37), and motives for fear of failure (3, 02).

The dominant motives for the educational activities of students of the experimental group are professional, cognitive and broad cognitive motives, while students of the control group in the first place are utilitarian, narrow social motives, and motives for fear of failure.

7. Conclusion

A generalization and analysis of the results of the experimental work allows us to conclude that the use of professionally directed interdisciplinary tasks in the educational process as a means of increasing the level of motivation in the technological training of specialists in sewing production. The use of interdisciplinary tasks contributes to:

1. the manifestation of the dynamics of the development of motivation for student learning (directly in the study of the discipline “Technology of clothing”);
2. raising the level of individual signs of student motivation (awareness, hierarchy of motivation, subject orientation to the content of training, subject orientation to the types of activities, sustainability; subject orientation to the content of labor, subject orientation to the methods of learning and labor);
3. changing the hierarchy of motives for students’ educational activities: professional, scientific and educational, and the motives for achieving success in learning come first.

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