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STUDENTS' LEARNING MOTIVATION IN CLASSROOM AND DISTANCE-BASED FORMATS

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Abstract

The authors carried out a review of studies devoted to the problems of the forced transition to distance learning during the pandemic. They highlighted the main directions of analysis and described advantages and disadvantages of this learning format. Two directions of psychological and pedagogical research of distance learning are presented: the change in the objective characteristics of the educational environment and the learners' subjective perceptions and reflections. The types of ideas about the motivation to learning and quasi-professional activities are characterized. The authors made a conclusion about insufficient study of changes in students' learning motivation in the distance-based format. The paper presents a description of the study of the learning motives of the first year students in engineering training areas, which made it possible to assess the components of learning motivation in classroom and distance-based formats. The applied technique revealed the features of cognitive activity, achievement motivation, and the display of anxiety and anger. The students were grouped according to the level of learning motivation demonstrated in the classroom format. The study revealed the absence of students with an extremely negative attitude towards learning in the distance-based format. A significantly decreased intensity of the anxiety and anger cases was revealed. The empirical data generally showed the relative stability of the main motives of learning activity and the positive dynamics of emotions during the transition to distance learning in the sample group under survey. The authors made a conclusion that similar monitoring of students from other training areas is necessary.

Keywords: Distance learning, distance-based format, cognitive activity, achievement motivation, learning motivation

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1. Introduction

According to UNESCO (2020), about 1.5 billion people in the world have been deprived of the opportunity to study in the conventional classroom format. The global COVID-19 pandemic and the urgent need to quickly organize work and training in a distance-based format maximized theoretical discussions and practical study of distance learning features. The range of studies devoted to the problems of distance learning is quite wide, and includes consideration of methodological, legal, psychological, pedagogical, hygienic, economic and other issues. Various universities are trying to quickly assess the consequences of the forced introduction of distance learning. Research is carried out mainly through questionnaires and online surveys, in which students-volunteers take part (Mishra et al., 2020). In such conditions, it is difficult to assess the representativeness of the sample group of respondents and the compliance of the survey methods with methodological requirements. Analysis of domestic and foreign scientific publications concerning the forced transition of educational institutions to distance learning leads us to the following conclusions: first, the number of research projects on distance learning has increased significantly; secondly, before the widespread introduction of distance learning, this type of training was more often considered in terms of its advantages (“progressive”, “affordable”, “innovative”, “highly effective”, etc.), and as this process was spreading out, a sufficient number of applied and general questions and criticisms appeared. A comprehensive analysis of the advantages and disadvantages of distance learning showed that, as compared with the conventional classroom format, the distance-based one has such additional opportunities as: accessibility for a wide audience, the ability to analyze the material at a convenient time, online participation of leading scientists or the use of their video content, an individual approach to students, etc. (Sergeeva et al., 2019; Zanfirova, et al., 2020). But weak points are also obvious: increased labor intensity and time costs for the teachers and students, copyright issues, difficulties with the formation of students' communication skills and the ability to work in a group, leveling the educational component of the learning process, significantly increased visual load, hypodynamic risk factors for all participants involved and so on (Kucirkova et al., 2017). In general, we can theoretically distinguish two areas of psychological and pedagogical research of the distance learning features. Within the framework of one area, an analysis of the objective characteristics of the learning process is carried out: technical equipment, organization of interaction in distance learning, possession of remote work tools, skills of self-organization and rational planning of one's own time, factors of the distance learning effectiveness for different training areas and age groups of students, etc. (Kubrushko et al., 2020). The second area of research includes the analysis of the subjective emotional experience of participants in the learning process: satisfaction with the level of organization and the process of distance learning, psychological readiness, adaptation to new conditions of work and study. This area of research highlights works devoted to the problems of teachers and students.

Reflecting on the features of a teacher's work in the distance learning we can speak about significant changes in the nature of professional activity and, accordingly, the requirements for workforce. To a certain extent, this is due to the impossibility of using traditional teaching methods, the implementation of professional stereotypes of a teacher, which causes significant difficulties and negative emotional experience. This experience is often projected onto students and attributed a similar attitude towards

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changes in the learning process. The results of the surveys are interpreted in accordance with the initial negative attitude towards distance learning. At the same time, there are still relatively few objective studies of the psychological and pedagogical features of distance learning in our country.

2. Problem Statement

The content specificity and development level of students' learning motivation in distance-based format are the least studied issues (Afanasyeva, 2018). This problem is the key one in modern pedagogy and psychology, since motivation is considered the main factor in the successful implementation of any activity, including learning and quasi-professional ones. The concept of "motivation" has slightly different meanings in pedagogy. In some cases, motivation is understood as a system of methods and means that a teacher uses to stimulate students to achieve learning outcomes. In educational psychology this concept is more traditionally used to designate the internal sources of the student's cognitive activity, distinguishing between cognitive and social motives of learning activity (Albrecht & Karabenick, 2018; Bailey & Phillips, 2015; Kember et al., 2008; Markova et al., 1983; Milman, 1987).

Cognitive motives are associated with the content and techniques of learning activities, social ones are focused on establishing a certain type of relationship with people. Full-fledged internal motives of learning activity are: creative development, acting with others and for others, cognition of new and unknown concepts. Understanding the necessity of learning for life, the learning process as an opportunity for communication, the motive of praise from significant persons can no longer be fully attributed to the internal forms of learning motivation. Other external motives include study as a compulsory obligation, the learning process as a routine, studying for leadership and high social status, ostentation, striving to be in the spotlight. The least relevant are the motives of material reward and avoidance of failures (Milman, 1987).

Quasi-professional activity is polymotivated, while motives that have different motivating forces, in a specific situation, add up to a certain motivation, reflecting the peculiarities of the conditions for carrying out this activity. Not all motives are recognized by the learner; the accumulated emotions become a sign of the actualization or frustration of the motive. The intensity of the motivation for action in a particular situation will depend on the strength of the acting motives and on the opportunities provided by the situation. The educational environment creates conditions for meeting needs and realizing motives. The study of the satisfaction degree of basic, social and personal needs in the process of technical and vocational training showed that the least satisfied needs are personal ones, in particular, self-expression (Zanfirova & Kovalenok, 2020).

3. Research Questions

To optimize the conditions of learning activity, it is important to identify obstacles to the actualization of the motive, the object and the intensity of negative emotions. The influence of distance-based format on learning motivation is still poorly covered, which makes the study of changes in the characteristics of motivating students' learning activities relevant, important and practically valuable.

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4. Purpose of the Study

The purpose of the study is identification of changes in learning motivation associated with the transition to the distance-based format.

The object of the study was the peculiarities of the learning motivation of the first-year students, as the most vulnerable category of students experiencing difficulties while participating in learning and quasi-professional activities and requiring psychological and pedagogical support. The research focused on the differences in the motivational capacity of learning activity in classroom and distance-based formats.

5. Research Methods

To study changes in attitudes towards learning activities in the distance-based format, use was made of the method of Ch. D. Spielberger, modified by A.D. Andreeva and A.M. Prikhozhan (as cited in Dermanova, 2002). This method assesses the level of cognitive activity, achievement motivation, anxiety and anger as actual states and as personality features (State Trait Personality Inventory). Cognitive activity in this case is understood as a person's inherent curiosity, direct interest in the surrounding world stimulating the learner's cognitive activity. Anger and anxiety are basal emotions associated with the work of certain brain structures, they enhance the effect of emotiogenic stimuli, reflect difficulties in the learner's adaptation to vital situations. A.M. Prikhozhan added a scale of achievement motivation to the methodology. The questionnaire consists of 40 statements, 10 for each scale, and provides for quick data collecting. To assess the state, a 4-point scale is used: 1 is "Almost never", 2 – "Sometimes", 3 – "Often", 4 – "Almost always". The minimum score on each scale is 10 points, the maximum is 40. Learning motivation is determined by calculating the sum of points on the scales of cognitive activity and achievement motivation. Points are subtracted from this sum on the scales of anxiety and anger. The total score on the questionnaire is the indicator of learning motivation. It can be in the range from -60 to +60. Five levels of learning motivation are distinguished: productive motivation with a clear predominance of cognitive motivation for learning and a positive emotional attitude (45-60 points), a positive attitude towards learning, compliance with social standards (29–44), intermediate level with slightly reduced cognitive motivation (13–28), reduced motivation, boredom, a negative emotional attitude towards learning (-2 –12), an extremely negative attitude towards learning ((-3) - (-60)). For each individual scale of the questionnaire, based on data from the sample group of high school students, there are three levels of indicators: high, medium, low, there are standard data on scales for high school students (15-16 years old).

In the version of the technique used in the study, the instructions were changed. Students were asked to assess their normal state in face-to-face classes at the university, and their state during distance learning. The study involved the first-year students of the Institute of Mechanical and Power Engineering named after V. P. Goryachkin RSAU – Moscow Timiryazev Agricultural Academy, (56 students in total, 90% are male). This sample group was formed from students of various engineering training areas. The survey was anonymously conducted in the classroom before seminars.

The results obtained were statistically processed. On the basis of descriptive statistical indicators, high, medium and low indicators were determined on the scales of the questionnaire for this sample group. The significant differences in attitudes towards learning and motivation in classroom and distance-based

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formats were determined by Wilcoxon rank sum test. Structural features of learning motivation were identified in the course of correlation analysis using R. Spearman's rank correlation coefficient.

Table 1 shows the results of quantitative data processing on the scales of the questionnaire obtained in the sample group under survey.

Table 1. The results of diagnosing attitudes and learning motivation in classroom (C) and distance-based (D) formats

Indicators	Cognitive Activity		Achievement Motivation		Anxiety		Anger		Learning Motivation	
	C	D	C	D	C	D	C	D	C	D
Average	28.6	28.3	29	29	19	16.8	13.8	12.6	24.8	27.7
Mode	24	27	27	27	15	14	10	10	24	24
Median	29	28.5	29	29	17.5	16	12	11	28	29.5
Variance	31.3	37.1	22.8	23.4	43.2	31.7	29	12.2	332	219.3
Index of variability	5.6	6.1	4.8	4.8	6.6	5.6	5.4	3.5	18.2	14.8

The average indicators for almost all scales of the questionnaire turned out to be higher than the normative ones revealed in the sample group of senior pupils. Those with a clear predominance of cognitive activity and achievement motivation, more anxious and less angry were later enrolled in the university. However, according to these psychological characteristics, the sample group is heterogeneous, as evidenced by the significant variance of the results.

When analyzing the total result of the questionnaire, as an indicator of learning motivation, the criteria for identifying the types of attitudes towards learning indicated in the technique were used. Figure 1 shows the results of the distribution of students according to the total indicator of the questionnaire, interpreted accordingly.

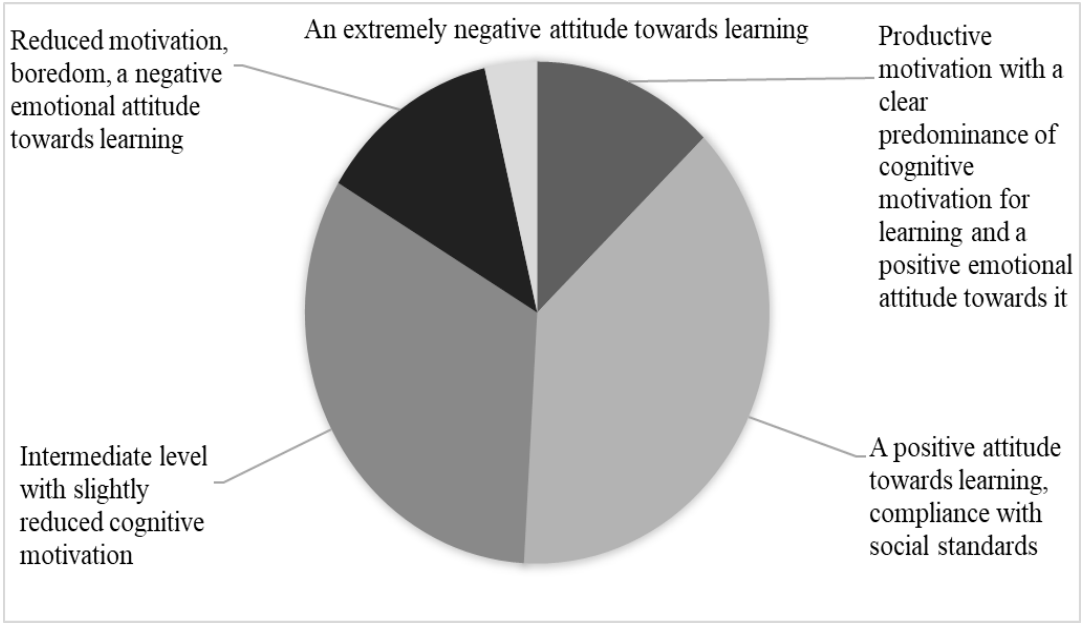

Figure 1. Distribution of students according to the level of learning motivation in the classroom format

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It turned out that the majority of students are characterized by a positive attitude to the learning process in the classroom format, with varying degrees of cognitive motivation and achievement motivation. Only 16% of students are characterized by low learning motivation and the display of unfavourable emotions in the learning process, of which 3% demonstrated an extremely negative attitude towards learning. In the distance-based format, the distribution of students by types of attitudes towards learning has changed insignificantly; the category of students with an extremely negative attitude towards learning has disappeared. Obviously, they have moved into the category of uninterested participants with reduced motivation (from 13% to 16%). The number of students with a positive attitude to learning slightly increased (38–40%).

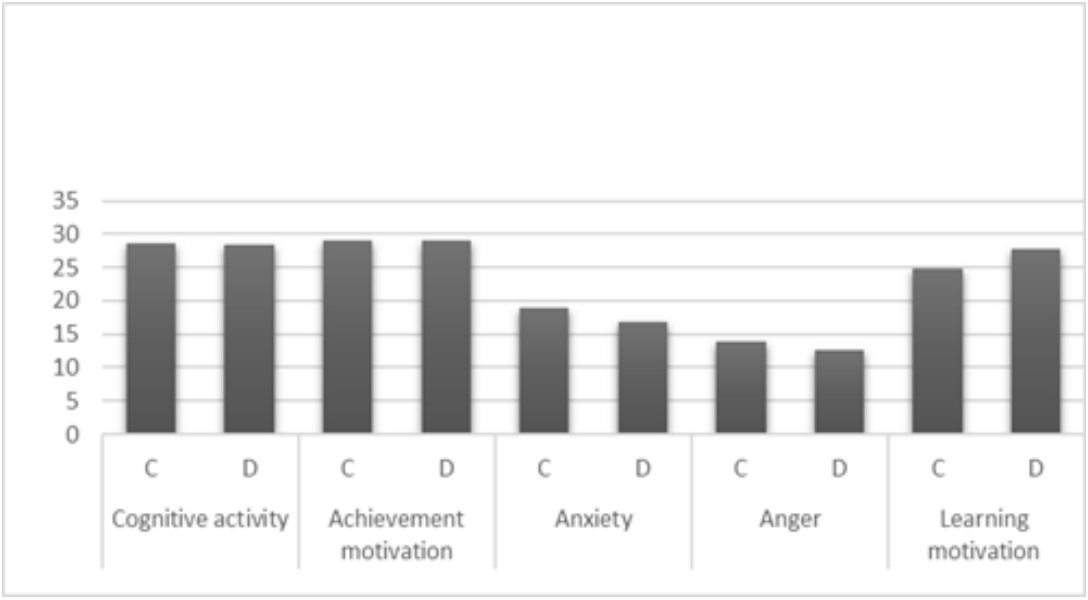

Figure 2. Dynamics of indicators of motivation and attitude towards learning in classroom (C) and distance-based (D) formats

Figure 2 clearly shows the changes in the indicators of the components of learning motivation in classroom and distance-based formats, the decrease in the indicators of anxiety and anger in distance learning is more obvious. To assess the significant differences in indicators on the scales of the questionnaire, the authors tested the hypothesis that the intensity of typical shifts exceeds that of atypical shifts and the tendency to keep them at the same level. The critical values Wilcoxon rank sum test for the sample group were 397 (0.01) and 466 (0.05). The analysis showed that distance learning led to a decrease in indicators on individual scales of the questionnaire (Tables 1 and 2) and an increase in the total indicator of learning motivation, however, only a decrease in anxiety and aggressiveness is significant according to the statistical criterion (Table 2).

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Table 2. Results of calculating Wilcoxon rank sum test for comparing indicators in classroom and distance-based formats

Questionnaire Scales	Direction of Change	Rank Sum	Significance of Change
Cognitive activity	decrease	457	in the zone of uncertainty
Achievement motivation	decrease	236.5	in the zone of insignificance
Anxiety	decrease	323	significantly
Anger	decrease	338	significantly
Learning Motivation	increase	512.5	in the zone of insignificance

The structural features of learning motivation in classroom and distance-based formats were determined by a correlation analysis of the relationship between the scales. Spearman's rank correlation coefficient was used. The data are presented in Table 3. It was found that the higher the level of students' cognitive activity, the higher the achievement motivation and the lower the indicators of anxiety and anger in the classroom format. In the distance-based format, the relationship between indicators of motives and negative emotional states weakens or disappears.

Table 3. Empirical values of correlation analysis in classroom (C) and distance-based (D) formats

	Achievement Motivation		Anxiety		Anger	
	C	D	C	D	C	D
Cognitive activity	0.73***	0.663***	-0.468***	-0.288*	-0.344*	-0.243
Achievement motivation			-0.381**	-0.165	-0.242	-0.13
Anxiety					0.335*	0.209

Note: * - $p<0.05$; ** - $p<0.01$; *** - $p<0.001$.

6. Findings

Thus, the study has shown that in general in the sample group there is a fairly high level of learning motivation, most of the students have a positive attitude to learning and quasi-professional activities, half have rather strong motives that stimulate and regulate learning activity, which do not significantly change in the distance-based format.

High and almost identical indicators of cognitive activity and achievement motivation among recent schoolchildren (current first-year students) who were finishing school and actively preparing for the successful passing of the uniform state exams already in the distance-based format, perhaps, are a consequence of the feeling of a certain prolongation of this process, which, as a result, was very successful for them (entering a university). In other words, the same emotions are experienced as those formed in similar conditions. Surveys of students show that they have a predominantly positive experience in completing any type of distance learning assignment. In particular, A Student's Electronic Porfolio enables to see students' work in a more complete form at the expense of the use of the text, image, audio and video files; to store, edit and display the students' work. The contents of the folder also are beneficial to the teacher when it comes to overall course grading (Alipichev et al., 2017).

The level of anxiety experienced by the first-year students in the classroom format turned out to be higher as compared with the indicators of senior pupils; it is noteworthy that it significantly decreases in distance learning, as well as the level of anger. It can be assumed that the display of these basic negative

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emotions is associated with the frustration of essentials needs. This display may be caused by a radical change in living conditions and social circle (many first-year students came from other cities and live in a hostel). Similar results were obtained when studying the characteristics of the subjective well-being of the first-year students in other universities. Students who reported better adaptation in their first six months of university perceived life as more meaningful, experienced fewer psychotic symptoms, and achieved higher grades (Bailey & Phillips, 2015). However, it is obvious that this problem requires a more thorough analysis of the conditions of learning activity, revealing of stress factors, and some affords to eliminate them. It can be one of the aspects of work on the prevention of behavioural deviations, pathological conditions and personality anomalies.

A more favourable emotional state of the first-year students in the conditions of a distance learning format is possibly due to the fact that learning is quite easy to them, since in the first year there are still no complex narrow-profile engineering disciplines, and the studied material is still generally based on school knowledge. It makes the learning process relatively easy, maintaining students' achievement motivation at a consistently high level and allowing them to highly evaluate their cognitive activity, contributing to the feeling of emotional comfort. The compared features of the correlation between the components of learning motivation indicate a significant contribution of emotional components. The comfort of the educational environment, which also depends on conflict-free communication, is considered an important determinant of learning motivation and determines the desire to study in general (Kember et al., 2008). The correlation between the emotional background and the internal motives of learning becomes especially close in the classroom format.

In distance learning, the number of direct social contacts, including those undesirable for the student, is sharply reduced. The remaining ones, on the one hand, are clearly regulated by the distance-based format, and on the other, their number is so minimal that they do not have a significant effect on general emotional background of the student. In addition, the familiar home environment also gives the student the opportunity to feel protected and comfortable, which is especially important for non-resident students. In such conditions, learning motivation begins to be determined mainly by general cognitive activity, prompted by curiosity and interests, as well as by the motives for achievement, the desire to prove oneself and to show the best results. Studies of the psychological constitutions of students who prefer the distance-based format indicate that their learning motivation is guide by the external motives: receiving a degree and mastering a profession. It is noted that the distance-based format complicates the development of learning motivation, in particular, the correlation of competition motives and competitive environment. Comfortable conditions of distance learning reduce the overall level of emotional tension, and hence the activity aimed at reducing this tension. Only students with a developed system of self-regulation can be successful in such an educational environment (Afanasyeva, 2018). To increase the effectiveness of training, it is necessary to analyze the individual characteristics and needs of students, to pay attention to the analysis of the characteristics of teaching process and teachers, and to form a relevant educational environment (Kember et al., 2008; Mohanty et al., 2019).

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7. Conclusion

Thus, a review of studies devoted to the problems of the forced transition to distance learning showed the importance of analysing the specific conditions for the implementation of such a transition, its technical, methodological, organizational and other security. The study has identified a number of problems. Their solution requires psychological and pedagogical studies of the changed content of teachers' activities, the characteristics of students' learning activities and the educational environment, etc. The changed conditions revealed the lack of research on the specifics of the motivation of learning and especially quasi-professional activities.

The present study has identified and described the peculiarities of learning motivation of the first-year students in engineering training area (primarily males) and showed that during the transition to distance learning, there are no significant changes in the demonstration and correlation of the main motives of learning activity – cognitive and achievement motives. At the same time, the results demonstrate that an insignificant share of the first-year students in the classroom format experiences an extremely negative attitude towards learning, which changes into a positive one during the transition to distance learning. This phenomenon requires more thorough and detailed study.

Significant differences were found in the indicators of basal emotions, reflecting the degree of adaptation to environmental influences. With the transition to distance learning, the intensity of the anxiety and anger cases significantly decreases, which indicates a higher level of adaptation and comfort and is interpreted as a change characteristic only for the first-year students. Although, a possible reason may be anxiety associated with fears for their health during the pandemic. The correlation between the degree of actualization of the motives for learning and the experienced emotions decreases or disappears. The influence of this fact on the effectiveness of learning activities requires further research. On the one hand, a favourable emotional environment is considered a condition for effective learning, on the other hand, it is accompanied by a decrease in overall activity.

When summarizing the results of the present study, it is important to take into account the gender characteristics of the sample group and the typical personality traits of representatives of technical professions. The next steps in researching this problem should be the study of the characteristics of students' motivation in other training areas.

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