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El método del proyecto creativo como medio para mejorar la motivación de aprendizaje de los estudiantes

The creative project method as a means of enhancing students' learning motivation

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Resumen
El objetivo del artículo es evaluar la efectividad del impacto del método de proyecto creativo en los motivos de aprendizaje de los estudiantes. Se utilizaron los siguientes procedimientos: métodos teóricos generales, pruebas, experimentos formativos y métodos de procesamiento de datos. Se establece que el desarrollo de los motivos de aprendizaje de los estudiantes en el proceso educativo es desigual. Se encontró que la relevancia del motivo para obtener un diploma aumenta gradualmente durante el estudio, y la importancia de la motivación cognitiva y profesional está disminuyendo. Ademas, los indicadores promedio de motivación para el éxito aumentan en el curso de la educación. Se concluye que el uso de proyectos creativos en el proceso educativo es efectivo para mejorar la motivación de aprendizaje de los estudiantes de primer y tercer año. Las perspectivas de mayor investigación implican mejorar el uso del método del proyecto como un medio para mejorar la motivación de aprendizaje, especialmente para los estudiantes de maestría.

Palabras clave: Motivos cognitivos, motivos profesionales, motivos formales, motivos de éxito, método de proyecto, proyectos creativos.

Abstract
The aim of the article is to evaluate the effectiveness of the impact of creative project method on the students' learning motives. The following methods were used: general theoretical methods, testing, formative experiment, and data processing methods. It is established that the development of students' learning motives in the educational process is uneven. It was found

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that the relevance of the motive for obtaining a diploma is gradually increasing during the study, and the importance of cognitive and professional motivation is declining. The average indicators of motivation for success increase in the course of education. It is concluded that the use of creative projects in the educational process is effective for enhancing the learning motivation of first- and third-year students. The prospects for further research involve improving the use of the project method as a means of enhancing learning motivation, especially for master's students.

Keywords: cognitive motives, professional motives, formal motives, motives of success, project method, creative projects.

Introduction

The problem of motivation is one of the key to understanding the nature of activity and development of an individual (Heckhausen & Heckhausen, 2008). In pedagogical science, the study of learning motivation is the background of effective educational process management. These studies are especially relevant in the context of higher education, where they are represented by a wide range of theoretical approaches (Nukpe, 2012). The most popular areas of research of this problem include: 1) identifying the features of the motivational component of learning in the context of distance education (Ferrer et al., 2020; Meşe & Sevilen, 2021) studying the specifics of realizing learning motives in different areas of professional training of students — pedagogical (Chagovets et al., 2020), engineering (López-Fernándezet al., 2015), medical (Pelaccia & Viau, 2017). A special place in the study of students' learning motivation belongs to the study of means to enhance it.

The project method is quite effective in the higher education system (Chen & Yang, 2019). The number of researches on this issue is growing in view of the growing use of projects in the educational process. The most popular areas of research are the effect that the project method has on students' academic performance, professional growth and personal development. There are also studies aimed at exploring the possibilities of using projects to enhance the learning motivation of tertiary students (Belagra & Draoui, 2018; Shin, 2018). This scientific field requires the deepening and expansion of relevant research, in particular studying the specifics of the use of creative projects. The practical significance of the research problem is obvious, as the creation of effective methods of influencing learning motivation opens up opportunities to correct students' performance in general.

The problem of forming motivation through the organization of activities is quite relevant, given the structural and functional relationship of these phenomena (Lompscher, 1999). Motive as a component of activity determines it and, at the same time, is formed in the

process of implementing specific actions. In the educational process, the problem of planning and implementation of activities that would stimulate the learning motivation of students is relevant. So, the research topicality is determined by the following positions: the general importance of using the method in the higher education system; the need to find effective methods of enhancing students' learning motivation;insufficient coverage of the problem in scientific literature; the need to clarify the socio-cultural features of the use of creative projects to optimize the students' motivation; the practical significance of the research topic to increase the efficiency of the educational process in higher educational institutions.

In light of this panorama, the research objectives are: 1) review previous studies on the problems of students' learning motivation and realization of a method of projects in higher education; 2) empirically determine the indicators of students' learning motivation at different years of study; 3) determine the effectiveness of the use of creative projects to improve the students' learning motivation. Also, the aim of the article is to evaluate the effectiveness of the creative project method on students' learning motives.

Literature review

The definition of motive as a motivation to act is the most common. The opinion that motives are semantic classes of purposes of action expressed in the form of stable and relatively constant value dispositions is valuable (Heckhausen & Heckhausen, 2008). A clear connection is established between the motive and the purpose of the action in this way. In different social spheres motives are characterized by specific features that apply to the educational activities of tertiary students (Nukpe, 2012).

A sharp decline in the motivation of first-year students in the UK to learn German was found (Busse & Walter, 2013). The importance of creating a safe, friendly learning environment to enhance the motivation to learn English as a foreign language was proved (Dinçer & Yeşilyurt, 2017). The need to form motivation of professional development in the educational process of students majoring in Pedagogy is determined (Chagovets et al., 2020). The possibility of independent enhancement of students' self-motivation is substantiated on the example of students majoring in Engineering (López-Fernández et al. 2015). Self-fulfilment motivation and the desire to obtain a good job prevail in management students (Kucharcikova et al., 2019).

It was also found that internal motivation is more important for students' intentions than external influences to continue or complete the educational process (Rump et al., 2017). The following features of positive learning motivation of students are recorded: 1) prevailing

positive internal motivation over external; 2) the lack of contradiction between self-assessment and group assessment of a student's actions; 3) internal locus of control; 4) meaningful attitude to life; 5) high rates of social maturity; 6) optimal emotional state (Kozova, 2019). So, the students' learning motivation is closely related to the individual peculiarities of the psyche and the specifics of social influences.

The urgency of the problem of motivating students in distance learning is growing in the context of modern realities. It was found, in particular, that the features of the external design of online courses enhance cognitive motivation of students, but there is no such impact on the motivation to success (Ferrer et al., 2020). Researchers point to a decreasing students' motivation in the course of distance learning. The factors that determine this trend include dissatisfaction with the content and materials of the course, lack of adequate self-discipline, lack of communication between teachers and students (Meşe & Sevilen, 2021). The level of motivation of applicants is one of the most important and problematic aspects of distance education (Fidalgo et al., 2020; Martin, 2020).

For the other hand, the major conditions for the effectiveness of the project method are the relevance of the subject matter, focus on a specific educational goal, compliance of the stated project topics with the curriculum, organization of joint student activities, planning, summarizing, presenting results (Krajcik & Shin, 2014). A promising direction for optimizing the project method is the interdisciplinary nature of its implementation (Braßler, 2016). Emphasis is placed on the importance of dynamism and flexibility of the teacher in the implementation of the project method, which can increase the effectiveness of education (Potvin et al., 2021).

It should be noted that there are studies that confirm the positive impact of the project method on increasing student motivation (Assaf, 2018; Belagra & Draoui, 2018; Shin, 2018; Sohmen, 2020). In these scientific researches the efficiency of the specified method for stimulation of educational motivation of students is experimentally proved. The connection between learning success, the main motives of education and the implementation of the project method is also recorded.

The review of theoretical literature showed that the problem of students' learning motivation and the use of the project method in higher education is adequately covered in pedagogical science. At the same time, the study of the impact of projects on learning motives is incomplete. Besides, the age aspect of such influence, as well as its socio-cultural specifics in Ukraine have not been adequately studied.

Methods and materials

Design

The research objectives involved the following stages: 1. Theoretical stage (December 2020), scientific literature review, identification of insufficiently studied parts of the problem; 2. Organizational stage (January 2021), research planning, selection of valid and reliable methods, sampling, obtaining student consent to participate in the study; 3. Primary diagnostics (February 2021), collection and analysis of empirical data on indicators of learning motivation of students of different years of study; 4. Experimental stage (February - May 2021), involved a formative impact on students through the creative projects. It should be noted that the creative projects were implemented both in the course of direct interaction and remotely, which is caused by the quarantine restrictions; 5. Repeated diagnostics (June 2021), re-collection and analysis of empirical material on indicators of subjects' learning motives; 6. Analytical and interpretive stage (July - August 2021), summarizing the results, as well as drawing conclusions about the effectiveness of experimental impact.

The main methodological vector of the study was a formative experiment with one independent variable. The independent variable is two-level, which implies the presence and absence of the impact of creative projects. Manifestations of the dependent variable are presented in the ordinal scale, which is measured using test methods. The use of data processing methods aims to clarify the qualitative changes in the process of formative influence.

Participants

The sampling procedure involved students of Sumy State University, Lviv Polytechnic National University, Kyiv National Linguistic University. Three sample consisted of the first- and third-year students, as well as master's students, 50 people each, to collect empirical information and conduct a formative experiment. So, we aimed to find out the dynamics of learning motivation of students of different ages and educational experience. Involving representatives of different majors can increase the representativeness of the research. So, the total amount of the research participants was 150 persons. There is similar work, where 79 persons were involved, separated in groups (Shin, 2018).

Instruments

Research procedures were conducted by the authors of the article. The study involved the following methods: 1) general theoretical methods: analysis, synthesis, generalization, systematization of material; 2) testing to determine the indicators of learning motivation; 3)

formative experiment; 4) data processing methods. We describe each of them.

Testing provided for the such diagnostic tools as The Motivation to Study at University Questionnaire by T. I. Ilina and T. Ehlers Motivation for Success. So, qualitative and quantitative indicators of students' learning motivation, as well as their desire to obtain a significant result were determined. In particular, T. I. Ilina's questionnaire allowed us to determine which learning motivations prevail: professional, cognitive and formal. The Ehlers Test measures the individuals focus on the result of the individual in his/her activities. In our opinion, this approach helps to comprehensively assess the dynamics of learning motivation in the studied samples.

The conformity of the selected diagnostic tools to the psychometric requirements was previously determined. A group of 30 people who did not participate in the study was formed to verify the validity and reliability. The results were compared with the opinion of teachers taken as experts. In 90% of cases, the correspondence of test results and expert opinions was found, which indicates the validity and reliability of the methods. Psychometric requirements of the tests used were also tested in other studies (Zaitseva, 2020).

Data collection

The formative experiment is the main method of this research. A creative project method is an independent research variable. The dependent variable is students' learning motivation, which was manifested in the following motives: 1) cognitive: the focus on acquiring knowledge, meeting cognitive needs and interests; 2) professional: focus on acquiring key professional competencies, interest in the chosen major; 3) obtaining a diploma: an external, formal motive that does not involve deep internal incentives; 4) motivation for success: focus on maximum results, the ability to activate willpower while overcoming obstacles.

Each of the samples was divided into subgroups: 5 people each. This approach allowed for optimal working groups that could implement creative projects most effectively. The topics of the assignments were selected in accordance with the content of educational and professional programmes and curricula (Computer Science, Philology, Engineering). Creativity was the main feature of a particular form of work, that is it was necessary to create a new product The average duration of the project was one month, that is the participants implemented three creative projects during the experiment. The students had recurrent consultations with the teacher in the course of implementation of creative projects. The supervising teacher didn't change, which was a factor that ensured the purity of the experiment.

Analysis of data

Data processing methods involved analysis of percentages, Student's t-test for dependent samples, Pearson's correlation coefficient. These methods allowed us to identify the distribution of indicators of students' motivation and determine the effectiveness of the experimental impact. The calculation of Student's t-test for dependent samples involves comparing the results of primary and repeated diagnostics to determine the significance of the identified differences. Correlation was calculated to determine the structure of the phenomenon being studied. Data were processed in SPSS.16.

Ethical criteria

Possible ethical issues were resolved through the prior consent of the participants in the experimental procedures and a detailed explanation of the purpose of the study. It should be noted that the content of diagnostic methods and features of the experimental effect do not degrade students' honor and dignity. It was also possible to refuse to participate in the study in case of doubt about its ethical validity.

Results

The main problems that have arisen during formative impact included: lack of adequate self-learning skills, which was especially for first-year students; low discipline and ability to self-regulation of some subjects; destructive behavior of some students, in particular arrogance, aggression, proneness to conflict; socio-psychological problems — lack of cohesion and mutual understanding of participants in working groups; compliance of individual peculiarities of students with the roles they played in the project.

These difficulties were carefully considered. and the relevant conclusions will be taken into account in further research of the problem, as well as in the practical implementation of the project approach. Qualitative analysis of the behavior of research participants allowed us to conclude that first-year students are more interested in working on the implementation of creative projects. The third-year students were the most prone to conflicts and disputes in the course of project implementation. The master's students were indifferent to the implementation of projects, they worked without any enthusiasm, and the interest of some students did not find support from other members of the working group. In that situation the experimenters had to further encourage master's students to work.

We can identify the following types of student behavior in the study upon observing the peculiarities of the creative projects implementation and the specifics of the interaction

between the participants in the experiment: generators of ideas; strategists; implementors; and, participants without an active position; unstable participants, who have alternating periods of initiative and irresponsibility in the project implementation; simulators of activity; and aggressors. Knowledge and identification of these types are important to ensure the effective implementation of the project method.

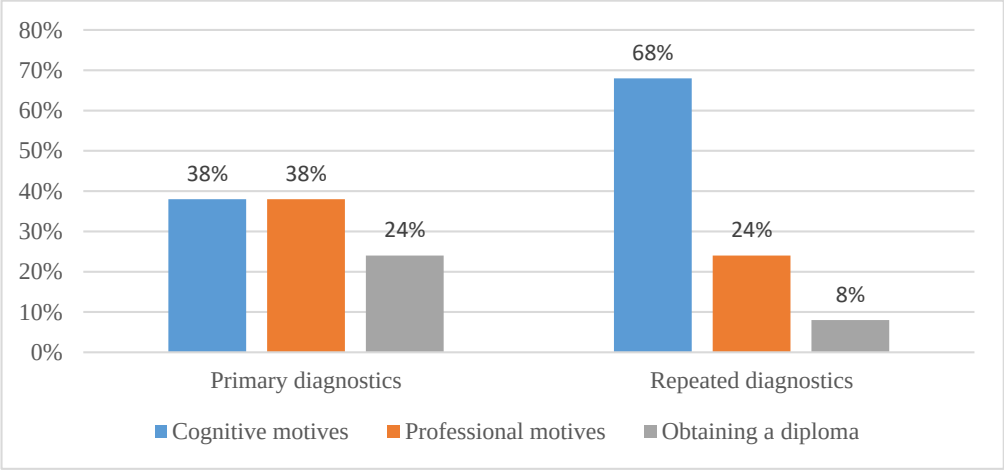

Figure 1. Dynamics of learning motives of first-year students during the formative experiment

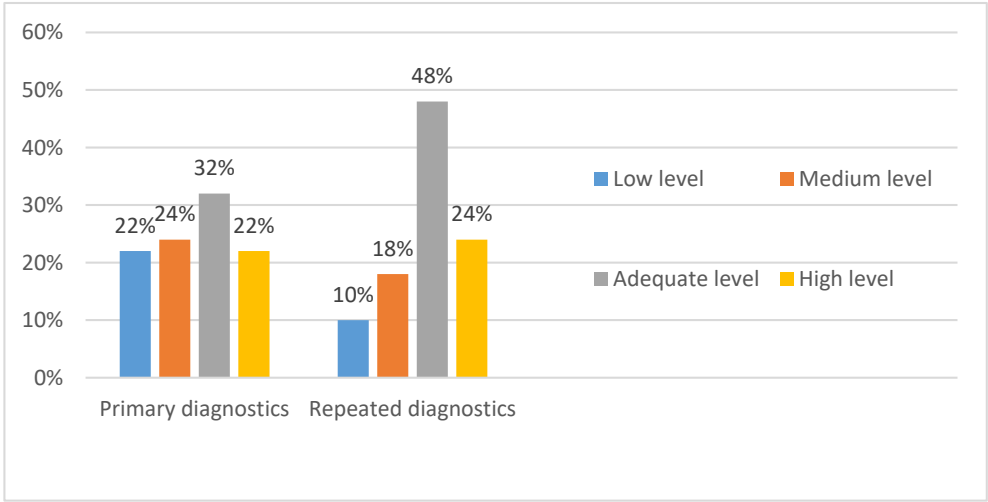

Figure 2. Dynamics of motivation for success of first-year students during the formative experiment

Cognitive and professional motives, which are evenly distributed, prevail in the fist-year students (Figure 1). The orientation towards obtaining a diploma as the leading learning motive was recorded in a quarter of the surveyed first-year students. After the formative impact, the formal motive for education has lost relevance for 16% of first-year students. The most pronounced after the experiment are cognitive motives, which increased in 30% of subjects. At

the same time, the importance of professional motives decreased in 12% of first-year students.

At the beginning of the study, an almost uniform distribution of quantitative levels of motivation for success was recorded in first-year students (Figure 2). A slight predominance of an adequate level of the studied motivational component was revealed. High indicators remained virtually unchanged after the formative impact, an adequate level of motivation for success increased in 16%. The percentage of people with low and medium levels of this component decreased.

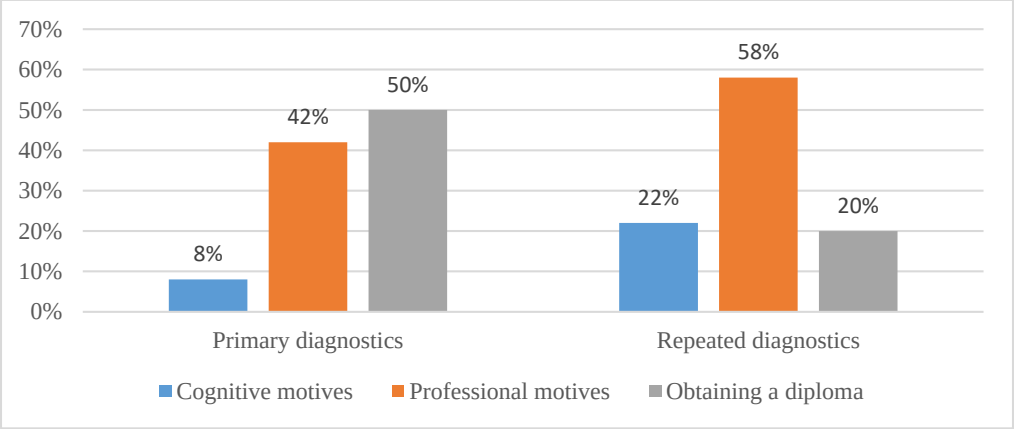

Figure 3. Dynamics of learning motives of third-year students during the formative experiment

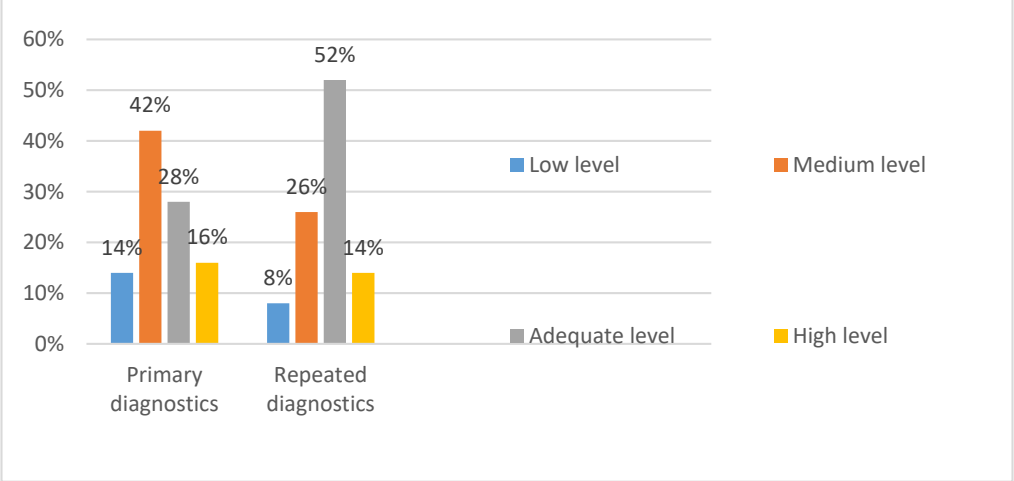

Figure 4. Dynamics of motivation for success of third-year students during the formative experiment

Obtaining a diploma becomes the dominant learning motive for the third-year students (Figure 3). The importance of professional motives did not change compared to the sample of the first-year students. Cognitive motives are important only for a few third-year students. Trends have changed after the preparation of creative projects. In particular, the importance of cognitive learning motives increased in 14% of respondents, while the importance of

professional motives — in 22%. The formal orientation of education decreased in 30% of the studied third-year students. In the third year, a medium level of motivation for success is dominant among students. Adequate indicators were recorded in a quarter of respondents. Low and high indicators distributed equally — they were found in less than 20% of respondents.

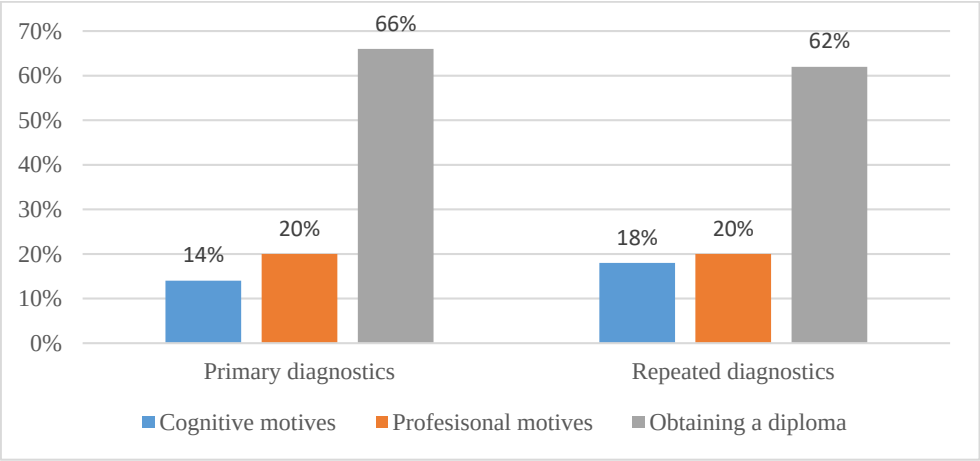

Figure 5. Dynamics of educational motives of the master's students during the formative experiment

The master's students continue to focus on obtaining a diploma in their studies (Figure 5). Cognitive and professional motives are not relevant to the members of this sample. The indicators of cognitive, professional and formal motivation have hardly changed after the formative impact. Medium level of motivation for success prevail in half of the subjects. The trends of low and high indicators of the studied component are similar. An adequate level of the studied component was diagnosed in a fifth of the master's students.

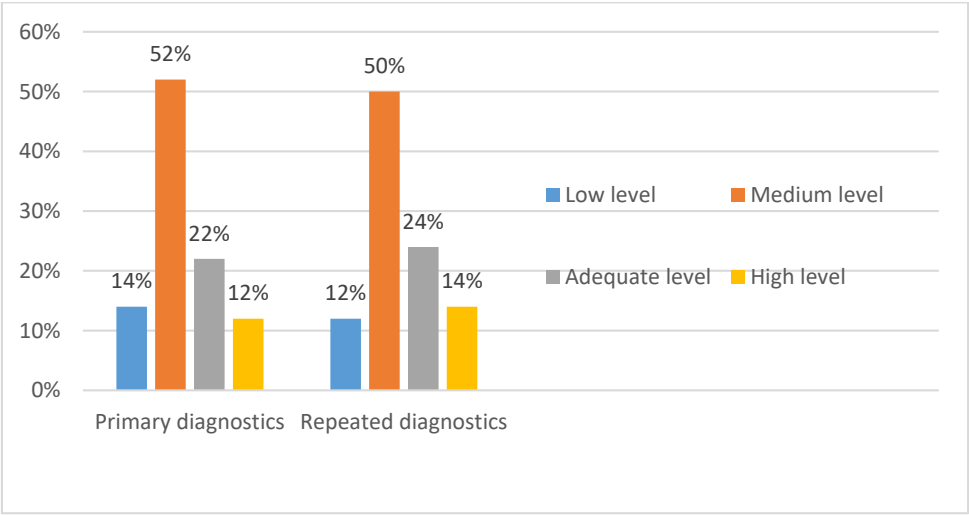

Figure 6. Dynamics of motivation for success of the master's students during the formative experiment

Table 1
Indicators of Student's t-test for the components of students' learning motivation

Learning motivation components	Student's t-test		
	First-year students	Third-year students	Master's students
Cognitive motives	2.43*	2.23*	1.01
Professional motives	2.37*	2.54*	1.13
Obtaining a diploma	2.22*	2.23*	1.82
Motivation for success	2.38*	2.13*	1.45

The Student's t-test for dependent samples was used to confirm the assumption about the effectiveness of the creative project method to enhance students' learning. This method allows determining the significance of the differences between the results of primary and secondary diagnostics. The results of the analysis are presented in Table 1. The coefficients marked with an asterisk reflect the significance of the differences at the level of p=0.05. We see that no significance indicators were recorded at the level of p=0.01 in the studied groups. The values of the first- and third-year students indicate significant differences at the level of p=0.05 for the trends of professional, cognitive, formal motives, as well as motives for success. No significant differences were found in the sample of master's students before and after the formative experiment for all studied components of motivation.

Pearson's correlation was calculated to determine the structural correlations between the components of learning motivation. The data of primary and repeated diagnostics were analyzed to determine changes in the structure of motivation after the formative experiment (Tables 2, 3). Coefficients with a significance of 0.05 are marked with an asterisk, and indicators with a significance of 0.01 are marked with two asterisks. The peculiarities of the correlation between achievement motivation and student learning motives were established. Let's analyze the results.

Table 2
Correlation matrix of motivation indicators of surveyed students (primary diagnostics)

Learning motivation components	Motivation for success		
	First-year students	Third-year students	Master's students
Cognitive motives	0.28*	0.29*	0.01
Professional motives	0.03	0.39**	0.02
Obtaining a diploma	0.08	0.17	0.28*

We can argue that the motivation for success of the first-year students has significant indicators of direct correlation only with the cognitive motivation (r=0.28). The third-year students have a significant correlation between the focus on success and professional, as well as cognitive motivations (r=0.29; r=0.39). Significant correlation of success with obtaining a diploma was found only in master's students (r=0.28), while no relevant correlation with other studied motives was observed. It is interesting that the most significant correlation (p=0.01) was found between the desire to succeed and professional motives.

Table 3
Correlation matrix of motivation indicators of surveyed students (repeated diagnostics)

Learning motivation components	Motivation for success		
	First-year students	Third-year students	Master's students
Cognitive motives	0.37**	0.41**	0.09
Professional motives	0.28*	0.43**	0.07
Obtaining a diploma	0.11	0.26*	0.31*

After the formative impact the indicators of the correlation between cognitive motives and the desire to succeed increased in the first-year students (r=0.37). The implementation of creative projects also influenced the correlation between the desire to succeed and professional motivation of students (r=0.28). The sample of the third-year students showed significant correlation between the motives for success and all the studied learning motives. At the same time, the correlation indicators with cognitive and professional motives increase to p=0.01. The significance of correlation coefficients did not change after the formative influence in the sample of master's students.

Discussion

Analysis of the research results indicates the uneven manifestations of students' learning motives at different stages of the educational process. It can be concluded that the importance of obtaining a diploma as a motive gradually increases in the course of education, while the relevance of cognitive and professional motivations decreases. This situation is associated with a rethinking of attitudes to learning, their future, the crisis of professional development, the lack of clear prospects for future life of the student. There was also a gradual increase in the average motivation for success during their studies at a higher educational institution. We explain this trend by students' despair in their own professional growth and the difficult socio-economic situation in Ukraine. We believe that the motivation for success decreases due to a more pragmatic and, usually, negative assessment of the financial opportunities that their profession may offer. The study of Chagovets et al. (2020), among other studies, confirms the assumption of a significant impact of economic factors, in particular, the possibility of further employment on student motivation.

In general, the use of creative projects is effective for enhancing the learning motivation of first- and third-year students. In particular, there is a positive impact of the project technique on cognitive and professional learning motives. In this context, it is important to organize positive communication between participants int he educational process (Dinçer & Yeşilyurt, 2017). At the same time, the project method proved to be ineffective in enhancing the learning motivation of master's students. We explain this situation by the crisis of professional development and the focus on obtaining a diploma only, which is confirmed by the results of correlation analysis. Note that it is effective to use appropriate training to enhance learning motivation (Kozova, 2019; López-Fernández et al., 2015), but this form of work was not provided for in the research task. We believe that a clearer consideration of the socio-psychological factor can provide opportunities for making group work more effective in order to enhance motivation (Dinçer & Yeşilyurt, 2017). In particular, the focus on psychological compatibility, common interests, reactions of sympathy or antipathy of the participants of the working groups are promising.

It is also noted that creative projects for first- and third-year students are also effective in increasing the correlation between learning motivation and thrive to success. The correlation of learning motives with motivation for success can also be explained by appropriate regulatory mechanisms of self-esteem (Edgar et al., 2019). Muenks et al. (2018) proved the relevance of volitional efforts in the structure of learning motivation. We emphasize that the students' motivation for success should be studied in more detail, as it is a complex construct consisting

of a number of elements — self-assessment of their own capabilities, awareness of the value and purpose of the assignment (Steinmayr et al., 2019).

It can be stated that distance learning and, in particular, distance implementation of the project method does not have a significant negative impact on the students' motivation. This conclusion contradicts the findings of other researchers (Meşe & Sevilen, 2021), who emphasize the difficulty of motivation in distance education. The results obtained are explained by the socio-cultural specifics of the study and the gradual adaptation of students to the study through information technology.

Existing studies confirm the positive impact of the project method on enhancing student learning motivation (Belagra & Draoui, 2018; Shin, 2018; Sohmen, 2020). At the same time, we found in our study that creative projects are ineffective for learning motives of master's students. Such results are primarily explained by a professional crisis of graduate students, which causes a loss of cognitive interest and a purely formal focus on education. We also do not rule out the impact of socio-economic factors, in particular, the crisis in the economy of Ukraine and problems in the labour market. Student motivation may also be related to personality traits, which at this age undergo significant transformations (Muenks et al., 2018; Edgar et al., 2019; Steinmayr et al., 2019).

The hypothesis of the difference in the students' learning motivation depending on the year of study has been fully confirmed. The hypothesis about the effectiveness of the use of creative projects to enhance the students' learning motives has been partially confirmed. In particular, the researched method proved to be ineffective when working with master's students. The obtained results have practical significance and can be used by teachers and psychologists to optimize the educational process. In particular, the research materials open up new opportunities to enhance students' learning motivation and optimize the use of the project method in higher education.

Limitations

The study did not involve the control sample, so the results require further verification. It is also advisable to expand the quantitative and age composition of the studied samples. Besides, the data obtained have a clear socio-cultural specific, as the study was conducted only in Ukrainian higher educational institutions. Future research can focus on improving the project method as a means of enhancing student learning motivation.

Conclusions

The research is topical because the project method is highly popular in higher education, as well as in view of the need to find effective methods of enhancing students' learning motivation, inadequate coverage of the problem in theoretical literature. The development of students' learning motives during the educational process is uneven. The use of creative projects in the educational process is effective for enhancing the learning motivation of the first- and third-year students. In particular, there is a positive impact of the implementation of project technology on cognitive and professional learning motives, as well as the focus on success.

The lack of positive changes in the educational motivation of master's students is explained by the crisis of professional choice and the unfavourable socio-economic situation in the country. The obtained results will help to enhance students' learning motivation and optimize the implementation of the project method in higher education. The prospects for further research include improving the use of the project method as a means of enhancing learning motivation, especially for master's students. The connection between students' learning motives and self-esteem, volitional and emotional spheres of an individual is worth noting.

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