Leadership Strategies for Enhancing Student Motivation and Engagement in Self-Directed Study Activities

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ABSTRACT

The study's relevance is to identify and analyse effective strategies aimed at increasing students' motivation for independent learning, especially in the context of higher education and blended and distance learning. The influence of various pedagogical methods that help stimulate independent activity among students is studied and evaluated, and the importance of socio-cultural and individual factors in forming motivation is established. The experimental study compared students' motivation in the control and experimental groups, which revealed the positive impact of new pedagogical approaches on motivation and the development of core competences, such as analytical thinking. The statistical analysis results confirmed the statistical significance of changes in motivation, which prompted the development of specialised modular programmes, each containing specific educational goals and objectives. The proposed strategies, which include interactive lectures, group projects, and digital tools, are focused on integrating key competences and promoting the development of self-control, communication skills, and teamwork. The practical value of the study lies in developing modular programmes that help increase students' motivation for independent learning, integrate digital tools, and improve pedagogical approaches to ensure better learning of academic knowledge.

Current practices and peculiarities of the formation of educational activities and educational reforms, which are also supported by the transition to a competence-based approach to learning and the accelerated digitalisation of educational processes, have created a problem of reducing the level of students' motivation to perform independent learning tasks. Independent learning approaches and efforts are the basis of the new globalised educational system, as it is aimed at developing critical thinking, improving students' operative ability to organise their learning activities and further, and increasing individual responsibility for their learning outcomes. However, the constant lack of motivation to establish independent work remains a significant problem that negatively impacts the quality of training of highly qualified specialists in higher education (Bozkurt, 2015). The significance of this issue is further enhanced by the current challenges in the educational sphere, particularly the widespread introduction of distance and blended learning, which is fundamentally driven by both social and significant technological changes. Moreover, on this basis, the lack of an adequate level of student motivation for independent learning creates risks and consequences that will further reduce their academic performance and increase the poor quality of preparation for further specific professional activities (Hosen et al., 2021).

An integral aspect of solving this problem is improving pedagogical approaches that can consider each student's unique characteristics, interests, and ability to use modern digital technologies.

Literature Review

As emphasised by modern researchers (Aripova, 2021; Kikas et al., 2024), motivation is a key factor in determining students' readiness to overcome difficulties, strive to achieve high results, and actively engage in the learning process. In general, motivation is considered by Zivitere et al. (2015) as an internal process that contributes to activating an individual's activity, encouraging them to perform actions to achieve specific goals.

The works of Luxton-Reilly (2009) and Susanti et al. (2023) consider applied issues of achievement motivation through the prism of understanding people's desire to achieve high results in their activities. Scientists define achievement motivation as a relentless pursuit of efficient and fast task completion, raising one's level of skill to the maximum.

Research conducted by Dufva (2018), Nicol and Macfarlane-Dick (2006), and Souflee and Schmitt (1974) has expanded our understanding of student motivation by identifying two key components: the aspiration for success and the desire to avoid failure. The distinction highlighted by these authors provides an opportunity for a more detailed analysis of the features of student motivation during the learning process. It facilitates the search for the most effective applied strategies to stimulate activity in developing and stabilising independent learning. The focus of such contemporary research lies in the differences between intrinsic and extrinsic motivation, where the former, rooted in the satisfaction derived from the learning process itself, is considered more stable and effective compared to the latter— extrinsic motivation, which depends on systems of rewards or punishments (Esposito et al., 2017; Gruenewald, 2003).

Socio-cultural factors also significantly shape learning motivation, as different social and cultural conditions influence motivational factors. In this context, the researcher Caprioară (2019) highlights the importance of interactions between students and teachers, peers, and the

support of family and friends as key components that systematise the motivational field of students. Similarly, research by Aristin et al. (2023) indicates that such educational and external conditions can adversely affect students' engagement and motivation for successful learning, both in classroom and distance formats. The modular programmes of learning organisation and passive motivation stand out as features, as they successfully create structured conditions for gradual mastery of educational material and provide opportunities for transparent assessment of achievements alongside the establishment of positive feedback (Gao et al., 2023; Simonson et al., 2003).

Active learning methods such as interactive lectures, group projects, and reflective journals have become an innovative foundation for broad student engagement, fostering and strengthening their motivation. According to research (Makedon et al., 2024a; Mykytyn et al., 2024; Odanga, 2018), these methods create a learning environment where students feel responsible for their educational progress, actively collaborate in teams, and receive constructive feedback that enhances their development and engagement in mastering their chosen specialisation.

The study aims to substantiate effective strategies for increasing students' motivation to independent learning activities, particularly in the context of blended and distance learning. It also aims to identify factors that influence motivation and evaluate the effectiveness of implementing pedagogical strategies.

Method

The analysis was the first stage of the research, during which the scientific literature and pedagogical practice on student motivation were studied. The analysis revealed numerous aspects of motivation, allowing us to determine which factors directly affect students' interest in learning. It is within the framework of this method that different types of motivation, as well as socio-cultural and individual factors that can modify the motivation for students' independent work, are investigated and existing approaches to the organisation of the educational process are identified, which allows to identify problems and areas that need further improvement.

The experiment was the second method of research, which included comparing the levels of students' motivation in the control and experimental groups. It also allowed for a direct assessment of the effectiveness of the proposed strategies to increase motivation; in addition, it allowed for the observation of changes in students' behaviour, their attitude to learning, and their activity in the process of independent work.

The experimental sample consisted of 5th-year full-time students majoring in Computer Mechanics (15 people) and 6th-year part-time students (14 people), based on the Faculty of Mechanics and Mathematics of Taras Shevchenko National University of Kyiv.

In the spring semester of the 2023-2024 academic year, students of the experimental groups participated in a structured curriculum that included 32 hours of lectures and 24 hours of practical classes by the curriculum. The experiment results showed that integrating innovative pedagogical approaches significantly increased students' motivation to learn independently and contributed to developing important competences such as self-regulation, analytical thinking and decision-making skills. Statistical analysis was one of the main methods used to evaluate the experiment's results. The method used was the Mann-Whitney

U-test to determine the statistical significance of the differences between the groups, providing an objective basis for assessing student motivation and engagement levels. Using the selected statistical tool allowed for a comparative analysis of the effectiveness of different pedagogical strategies. It confirmed the proposed approaches' success in increasing motivation for independent learning.

Results

Students' independent learning activities are expressed as a rather multifaceted and complex process, which usually includes not only completing the tasks provided for in the curriculum but also promotes the active development of such basic skills as the ability to effectively manage their own time, plan their actions and learning activities, set individual goals and objectively evaluate the academic results achieved. Despite the importance of this aspect of the educational process, the problem of students' lack of motivation to work independently remains one of the most challenging obstacles to achieving high academic results. In this regard, researchers pay special attention to the development of individual trajectories and strategies for increasing personal motivation, which will consider the psychological characteristics of each student and the proper socio-cultural context of the organisation of their learning activities.

The main criterion for the effectiveness of educational strategies aimed at increasing students' motivation for independent learning is their ability to acquire theoretical knowledge and apply it in practice to solve specific problems arising in their professional activities. The basis for creating effective methods of organising the learning process is the competence-based approach, which ensures the optimal selection of the content of academic disciplines focused on developing analytical thinking and the ability to make independent decisions in complex situations (Black & Wiliam, 1998).

Such curricula provide a clear definition of goals, objectives, and key competences to be acquired by students, as well as a system for assessing the effectiveness of learning. Each component of the learning process should combine cognitive and practical elements into a single methodological structure. The theoretical part should facilitate an understanding of basic concepts and principles. In contrast, the practical part aims to develop applied skills and abilities by applying the acquired knowledge in real or close to actual conditions. In the context of organising students' independent learning activities, we distinguish three main types of modules:

1) Cognitive modules focus on the acquisition of fundamental theoretical knowledge that is necessary to understand the basics of the discipline.

2) Practical modules focus on developing key skills and abilities necessary for completing professional tasks.

3) Mixed modules combine theoretical and practical components, providing a systematic approach to developing students' competences.

To increase motivation for independent work, each module has specific educational objectives implemented through structured and logically consistent learning materials. The main principles of developing such materials include:

— focusing the learning content on key concepts that are of the most significant practical importance to students;

−   ensuring a logical sequence of material presentation that allows students to gradually move from simple concepts to more complex concepts;

−   integration of theoretical and practical content into a single structure, which contributes to the formation of a holistic perception of the educational material;

−   use of accessible and modern forms of information presentation, such as interactive electronic resources, videos, and printed manuals for individual and group learning (Bovill, 2020; Makedon et al., 2024b).

The design of such modular programmes is based on students' individual characteristics, needs, and level of training, which ensures a high level of interest in learning. This helps increase students' motivation to work independently and develop the key competences necessary for successful professional implementation (Table 1).

Table 1
Modular Approaches to Increase Students' Motivation for Independent Learning

Principle	Content of the principle	Application features
Modularity	Provides personalised learning by adapting the material to the student's level of preparation	Promotes student independence by allowing students to complete assignments within individual modules
Structuredness	Dividing the learning material into logical blocks that have a clearly defined purpose.	For example, the Execution Analysis module includes the stages of analysing the results and clarifying technical aspects
Systematic approach	Ensures systematic teaching, alternating theory and practice, and regular assessment	Sequence of skills development and mandatory assessment at each stage
Efficiency	Create a feedback mechanism for timely monitoring of student progress	Interactive platforms allow teachers and students to track assignments together
Parity	Establishing partnerships between teachers and students to create an atmosphere of cooperation	The teacher acts as a mentor, maintaining trust and mutual respect
Feedback	The organisation of control and self-control of learning outcomes in the learning process	Each module contains self-assessment tools to help you track your progress

In general, when creating strategies to increase students' motivation for independent learning activities, several important stages were implemented, which ensured the formation of a holistic approach to the organisation of the educational process:

1)   identification of the overall educational goal, which focused on the key tasks related to the development of skills for independent processing of educational material;

2)   formation of integrated learning objectives and module content that met the objectives of developing independence, analytical thinking and skills in applying knowledge in practical situations;

3)   developing a general structure of the curriculum to ensure consistency and a systematic approach to the organisation of students' independent work;

4)   detailing specific learning tasks within each learning objective, taking into account the individual characteristics of students, their level of training and their needs;

5)   creating structural components of each module aimed at effective learning through interactive methods and self-monitoring tools (Cook-Sather, 2020; McMurtrie, 2021).

The effectiveness of programmes aimed at increasing student motivation is assessed by analysing the level of engagement in independent work, knowledge acquisition, formation of practical skills and development of key competences required to solve applied problems. The structure of each module includes:

1) clear learning objectives that create a consistent programme of action for students and make them aware of the importance of working through the material independently;

2) the material is divided into learning blocks, supported by methodological tools to facilitate its learning;

3) the list of competences that are formed in the process of completing independent tasks;

4) a description of control and self-monitoring methods that help students assess their progress and increase their responsibility for the learning process (Lo et al., 2024).

The first stage of developing programmes to stimulate independent learning was an analytical study of educational approaches. This allowed us to identify the main problems and prospects for organising students' independent work. At the next stage, the educational process's goals were determined by forming key and specialised competences that contribute to the practical mastery of the material and the achievement of high results (Table 2).

Table 2
Pedagogical Possibilities of Teaching Methods for Increasing Motivation and Developing Students' Competences in Independent Learning Activities

Competence	Possibilities of pedagogical methods	Application examples
Analytical competences	Development of skills in analysing educational material.	Analyse the task for a deeper understanding of its structure.
Organisational skills	Developing skills in planning independent work.	Create a schedule for completing learning tasks.
Theoretical knowledge	Mastering the basics of the theory required to complete tasks.	Analysis of theoretical aspects of the training material.
Information competences	Developing the ability to work with learning resources.	Search and systematise information for self-study.
Problem-solving skills	Finding solutions to complex problems in the educational process.	Work on improving complex technical aspects.
Decision and interpretation	Making informed decisions on how to complete tasks.	Choosing the most effective approach to solving problems.
Interpersonal skills	Development of constructive interaction skills.	Discuss the tasks in small groups or pairs.
Teamwork	Collaborative problem-solving in group projects.	Preparing a group project or collective task.
Adaptability	Ability to quickly adapt to new teaching methods.	Developing new approaches to solving problems.
Creative skills	Stimulating creative thinking to complete tasks.	Developing unique ways to complete a task.
Leadership skills	Developing the ability to coordinate the work of the group.	Organising teamwork during the project.

Source: Castle & McGuire (2010), Evens et al. (2014), Voznyuk et al. (2022)

The analysis focused on the results of efforts to identify the key factors that shape students' interest in learning, their involvement in acquiring new knowledge, their emotional attitude to the educational process, and their motivation to improve their skills and competences (Schwartz & Plass, 2020). The study is based on a comparative assessment of the levels of motivation of students in the control and experimental groups at the Faculty of Mechanics and Mathematics of Taras Shevchenko National University of Kyiv.

Initially, the experimental sample included 29 students: 15 full-time 5th-year students majoring in Computer Mechanics and 14 part-time 6th-year students. The participants were randomly assigned to the control and experimental groups using simple random sampling to ensure equal representation of full-time and part-time students in both groups. The control group (CG) comprised 14 students, and the experimental group (EG) comprised 15 participants. The defined method of distribution ensured that any changes in motivation and learning outcomes could be attributed to the impact of the pedagogical methods rather than differences in the quantitative or qualification composition of the groups.

At the initial stage of the study, the control group (CG) and the experimental group (EG) were compared to clarify the criteria and indicators of students' motivation for independent

work. Effective methods of assessing the formation level of these criteria were identified, and preliminary results were analysed, which became the basis for further improvement of approaches to developing independence. In particular, Table 3 shows the average scores of students on the ten main criteria: 1) resilience to lengthy training sessions, 2) ability to concentrate on tasks, 3) optimism in overcoming difficulties, 4) initiative in learning, 5) adaptability to learning conditions, 6) overcoming obstacles as a challenge, 7) stability in control situations, 8) comparability of learning outcomes, 9) endurance to complex tasks, 10) stability after breaks in training. The criteria were defined to analyse the level of motivation and the degree of their involvement in the learning process (Mohamed et al., 2021).

In the study, students completed a control task before the experiment, designed to assess their motivation and level of engagement in independent learning. The task consisted of several stages, each corresponding to a specific assessment criterion. Content of the test task:

1) solving a complex case: Students analysed a situation requiring the application of theoretical knowledge and decision-making. The students' endurance for long training sessions was assessed;

2) practical task with limited time: Students performed a test or short task that required high concentration.

Each criterion was assessed on a five-point scale depending on the task's success. A low score (1-2) was given for insufficient skill or motivation, and a high score (4-5) was given for maximum engagement, focus, and efficiency in completing the task (Table 3).

Table 3
Assessing the Level of Student Motivation and Engagement During the Learning Process

Criterion number	Number of points	
	Control group	Experimental group
1	3	4
2	4	5
3	4	5
4	2	4
5	5	5
6	1	3
7	3	4
8	2	4
9	5	5
10	3	4

The overall average score for the experimental group was 34 points, which demonstrates the generalised level of students' motivation for independent learning activities. Figure 1 presents a graphical visualisation of these data: grey reflects the results of the control group, and black reflects the results of the experimental group. This allows for a clear comparison of the effectiveness of the applied strategies to increase motivation, in particular, their impact on students' activity and interest in independent learning.

Figure 1
Visualised Results of Assessing the Level of Student Motivation During the Learning Process
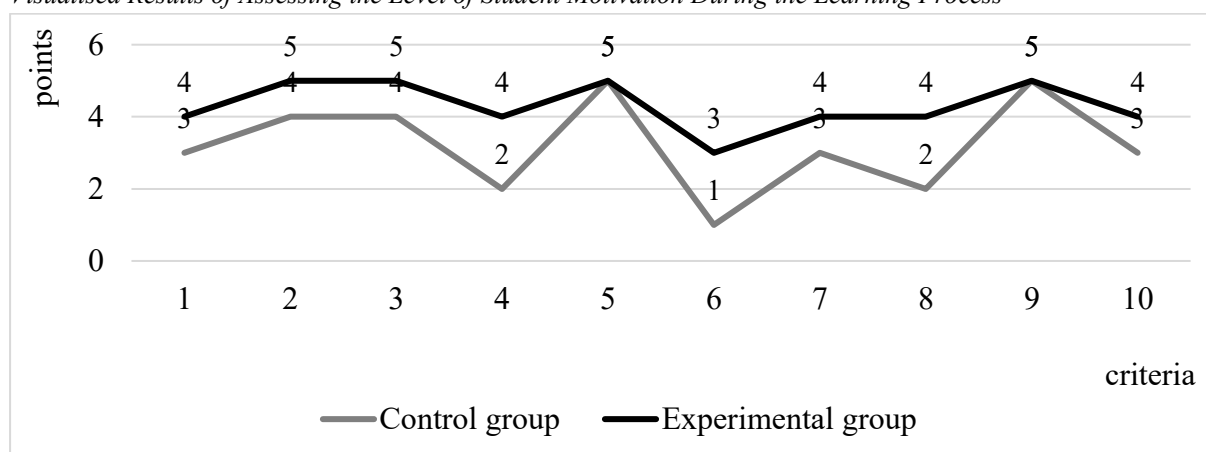
The experiment evaluated the effectiveness of implementing innovative pedagogical approaches designed to increase students' motivation for independent learning activities. Two groups were created within the study: a control group (CG) and an experimental group (EG). Students in the control group continued their studies using the usual traditional methods. In contrast, the participants in the experimental group worked on a specially designed modular programme that integrated cognitive, practical, and combined approaches aimed at forming and developing key competences and motivating them to learn.

The modular programme, designed to increase students' motivation for self-directed learning, uses a structured method that combines cognitive, practical and blended learning aspects. The programme includes six modules, each aimed at improving specific skills and competences: 1) the introductory module introduces students to the programme content and assesses their initial motivation; 2) the cognitive module is designed to lay down the basic theoretical knowledge; 3) the practical module aims to develop practical skills through case studies and projects; 4) the blended module combines theory with practice; 5) the reflective module helps students with self-assessment and self-control. Table 4 summarises the results obtained during the formative and experimental stages.

Table 4
Results of Diagnostics of Motivation to Learn According to the Selected Criteria of EG and CG at the Stage of the Formative Experiment and the Final Experiment

Motivation criteria	Assessment levels	Before the experiment		According to the results of the experiment	
		Experimental group (%)	Control group (%)	Experimental group (%)	Control group (%)
Motivation to learn and emotional attitude to learning	High	30.46	31.25	39.6	34.375
	Medium	49.08	50	63.8	55
	Low	16.92	18.75	22	20.625
Communication skills and abilities	High	42.31	43.75	55	48.125
	Medium	43.3	37.5	55	41.25
	Low	15.23	18.75	19.8	20.625
Intellectual skills and abilities	High	38.08	37.5	49.5	41.25
	Medium	46.54	37.5	60.5	41.25
	Low	16.92	25	22	27.5
Professional competence	High	4.23	0	5.5	0
	Medium	0	0	11	0
	Low	83.7	90.91	93.5	100
Subject-specific learning outcomes	High	33.85	34.4	44	37.84
	Medium	46.54	46.85	60.5	51.535
	Low	14.10	18.75	18.33	20.625

The criteria presented in Table 4 are integrated indicators that reflect the general state of motivation, communication and intellectual skills, and professional training and achievements in academic activities. The summary data are based on the scores for the criteria presented in Table 3 and allow us to classify students as high, medium or low in each area. The quantitative assessment results determined the levels based on a five-point scale. The high level corresponded to an average score of 4.5 to 5.0, the medium level covered scores in the range of 2.5-4.4, and the low level included results that were less than 2.5. This approach to ranking allowed for a structured assessment of students' motivation and competences in both the control and experimental groups.

The analysis of the study's ascertaining stage results on increasing students' motivation for independent learning activities showed that the distribution of students by levels of motivation and emotional attitude to learning in the control and experimental groups was approximately the same.

In both groups, approximately half of the students demonstrated a moderate level of motivation, which indicates the simultaneous presence of both opportunities for further development and potential risks of decreased interest in the learning process (Chao-Fernandez et al., 2017). It should be emphasised that during the initial stage of the experiment, the analysis of students' motivation for the experimental group (EG) revealed that a significant number of them had an increased level of anxiety, as well as reduced motivation to achieve success and results in establishing independent learning activities. In addition, significant differences were found in the component 'development of communication skills' between the experimental group (EG) and the control group (CG).

Students in the CG were better at expressing opinions, actively participating in discussions and collaborating in groups. The assessment of intellectual skills also revealed significant differences. In the control group, more students demonstrated a high level of analytical skills, while in the experimental group, students with an average level prevailed. The EG students were characterised by slower thinking, difficulties transitioning from standard tasks to creative ones, and problems with self-analysis. Both groups' professional training levels remained low, indicating insufficient integration of professional competences into the learning process. The analysis of motivational performance showed that students in the control group performed better on tasks of increased complexity, emphasising the effectiveness of traditional approaches in their education (How et al., 2024). The main criterion for the effectiveness of strategies to increase students' motivation for independent learning is their willingness and ability to apply the acquired knowledge to solve practical problems in the professional field.

Statistical analysis methods are necessary to ensure a qualitative assessment of the effectiveness of the competence-based approach in the educational process. From this perspective, the Mann-Whitney *U-test* is a tool for identifying differences between independent samples, which allows for an objective assessment of the impact of the proposed pedagogical strategies. The basic formula for calculating the U-test is as follows:

$$U = n_1 \times n_2 + \frac{n_1(n_1 + 1)}{2} - R_1$$

(1)

$$U = n_1 \times n_2 + \frac{n_2(n_2 + 1)}{2} - R_2$$

(2)

Where:

$n_{(1)}$ is the number of items in the first sample;

$n_{(2)}$ is the number of items in the second sample;

R_1 is the sum of the ranks of the elements of the first sample;

R_2 is the sum of the ranks of the elements of the second sample.

The final criterion U is defined as the smaller of the two calculated values U_1 and U_2:

$$U = min(U_1, U_2)$$

(3)

To assess changes in the level of academic achievement of students in the experimental and control groups, the following hypotheses were formulated in the study:

Y_0: The level of students' learning outcomes in terms of independent learning activities in the experimental and control groups is the same.

Y_1: The level of students' learning outcomes in terms of independent learning activities in the experimental and control groups differs.

The assumptions became the basis for analysing the effectiveness of the proposed strategies to increase motivation for independent work, considering different approaches to the organisation of the educational process. Table 5 presents the statistical processing of the results of the level of subject achievements using the Mann-Whitney *U-test*.

Table 5
Statistical Processing of the Experimental Data of the Level of Subject Results by the Mann-Whitney U Test

Level	High	Medium	Low	Σ
EG	10	17	7	33
CG	11	13	11	35
Σ	21	30	18	68

Calculation of U_1:

$$U_1 = 33 \times 35 + \frac{33(33+1)}{2} - R_1$$

$$U_1 = 1716 - R_1$$

Calculation of U_2:

$$U_2 = 33 \times 35 + \frac{33(35+1)}{2} - R_2$$

$$U_2 = 1785 - R_2$$

Let's assume that R_1 and R_2 are calculated after ranking the samples, and the value $U_e = 477.6$ is obtained based on these calculations. The obtained value of $U_e = 477.6$ is higher than the tabulated value of $U_k (0.05) = 398.2$ obtained in the study. Since $U_e > U_k$, the difference between the samples is not statistically significant at the 0.05 significance level. Thus, the hypothesis is confirmed that there are differences between the levels of academic achievement

and motivation to learn of students in the experimental and control groups (Metelenko et al., 2019; Plass & Pawar, 2020).

Data analysis related to students' motivation and engagement in independent learning emphasises the importance of creating specialised pedagogical strategies to increase motivation and develop key skills. This study's results clearly indicate that applying an integrated approach, including cognitive, practical and integrated methods, improves students' activity in the process of completing learning tasks and increases their ability to think analytically and plan. Based on the data obtained, strategies have been formulated, which are defined as ways to optimise the learning process and stimulate students' interest in independent work (Table 6).

Table 6
Strategies to Increase Students' Motivation for Independent Learning Activities

№	Strategy	Description	Expected result	Resources for implementation	Performance evaluation criteria
1	Interactive lectures	Use active learning methods to encourage participation	Increased interest in the topic	Presentations, videos	Number of students participating in the discussion
2	Group projects	Involvement in teamwork on a standard task	Development of cooperation skills	Internet access, group discussions	Quality of completed projects
3	Modular learning	Dividing the material into small logical modules	Facilitating the assimilation of information	Training materials in a modular format	Level of task completion in modules
4	Reflective journals	Students record their thoughts and progress	Awareness of your achievements	Templates for recording reflections	The content of reflective notes
5	Mentoring sessions	Individual meetings with teachers for support	Increase confidence in learning	Schedule of consultations	Number of students who benefited from the support
6	Use of digital tools	Using online platforms for tasks	Increase engagement through interactivity	Online platforms, educational applications	Level of completion of online tasks

The effectiveness of these strategies is due to their ability to combine cognitive, practical, and integrative teaching methods adapted to each student's unique needs and aimed at achieving specific educational goals. The data obtained during the experiment demonstrate that using these methods contributes to the development of self-regulation and a positive attitude to learning among students and prepares them to perform complex tasks. The integrated approach stimulates student motivation and contributes to developing the necessary competences for effective professional activity, making these strategies an integral element in modern educational practices.

Discussion

The pedagogical experiment confirmed the effectiveness of structured methods for increasing students' motivation for independent learning, as evidenced by the experimental group's better performance. In the experimental group, 39.6 per cent of students demonstrated a high level of motivation compared to 34.4 per cent in the control group. Communication skills reached a high level in 55% of students in the experimental group compared to 48.1% in the control group.

The demonstrated high level of intellectual skills reached 49.5% of the students in the experimental group, surpassing the 41.3% observed in the control group. Professional competence also showed an improvement, with a 5.5% increase in the number of students from the baseline level in the experimental group. The same indicator in the control group

remained at 0%. A high threshold of academic performance in several academic disciplines was achieved by 44% of students in the experimental group compared to 37.8% in the control group. These results confirm the projected future effectiveness of the proposed methodology, and the observed changes are statistically significant according to the Mann-Whitney criterion ($p < 0.05$).

The obtained data align with previous studies highlighting the leading role of motivation in achieving academic success within higher education systems (Black & Wiliam, 1998; Bovill, 2020). Furthermore, the study corroborates Bovill's (2020) findings, emphasising the prioritisation of active learning environments. The research confirms that implementing a modular approach to motivational processes will harmoniously combine cognitive and practical elements, significantly enhancing students' sustained high levels of engagement in learning.

The value of this study also lies in expanding the practice of using a comprehensive approach to designing modular educational programmes that address the multifaceted educational needs of students. Unlike previous studies, which primarily focused on cognitive or purely practical aspects, the proposed methodological approach integrates mixed modules to systematically develop key competences alongside time management practices and analytical thinking within the higher education framework (Schwartz & Plass, 2020). Finally, the research broadened the understanding of motivational processes in the educational environment, emphasising the significance and potential of individualised learning goals and feedback components (Ryan & Deci, 2000).

The positive effects of structured feedback and group interaction in our study are also consistent with the findings of Castle and McGuire (2010), who emphasise the importance of interaction and reflective practices in enhancing motivation.

At the same time, the findings question the conclusions of Mohamed et al. (2021), who believed that using digital tools alone is sufficient to maintain high levels of motivation in distance learning. Our findings suggest that the effectiveness of digital tools is significantly enhanced when combined with pedagogical strategies that emphasise interaction, modularity, and the development of self-assessment skills.

The experimental part of the study confirmed statistically significant differences in the levels of motivation between the control and experimental groups. The obtained results were further verified by statistical analysis using the Mann-Whitney U-test, which confirms the effectiveness of the proposed pedagogical strategies.

Conclusion

In the course of the study, several key factors have been identified that directly affect the formation of students' motivation for independent learning activities, among which the individual characteristics of students, socio-cultural aspects and pedagogical strategies used are of particular importance. The effectiveness of methods and strategies aimed at increasing students' motivation, based on the integration of modern information technologies, active teaching methods and a competence-based approach, which contributes to the formation of theoretical knowledge and practical skills necessary for future professional activities, is investigated.

The levels of students' motivation in the control and experimental groups were studied, which made it possible to assess the impact of the applied strategies on the learning process and identify changes in students' involvement in independent work, ability to self-assessment and self-control. The study assessed the impact of the developed modular programmes on the development of important competences such as analytical thinking, communication skills, adaptability, and the ability to make independent decisions in the learning process. The importance of feedback is substantiated, which has a positive effect on increasing students' self-confidence, which, in turn, stimulates them to achieve better results in learning and overcoming difficulties.

The results indicate that introducing modern strategies to increase students' motivation for independent learning activities is a necessary and appropriate step to ensure high learning efficiency. In addition, the proposed strategies are aimed at increasing students' motivation for independent study, forming a comprehensive solution to the problem of low learning motivation, focusing on personal development, communication activity, and professional training of students.

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