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The Use of Creative Projects for the Enhancement of Primary School Students' Learning Motivation

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ABSTRACT

This study aimed to investigate the impact of the creative projects method on the motivation of primary school students. The research employed a combination of semi-structured interviews and surveys, utilizing the Torrance Tests of Creative Thinking (TTCT) and the Motivated Strategies for Learning Questionnaire (MSLQ). Data analysis included mathematical techniques, Pearson's test, Cohen's kappa, and Cronbach's alpha coefficients. Results revealed that nearly half of the teachers surveyed did not employ the creative projects method in primary school, citing concerns about students' readiness. However, teachers utilizing this approach reported positive effects on students' cognitive engagement in the classroom. The study confirmed that the creative projects method led to increased levels of creativity and heightened learning motivation among primary school students. Notably, there was an average academic performance improvement of 6% observed among third-grade pupils over a six-month period. Consequently, the creative projects method significantly enhances student activity, fosters creativity, stimulates motivation, and improves academic success. Future research should expand on the influence of this method on motivation across all educational grade levels.

KEYWORDS: activity approach, interactive methods, innovative technologies, project-based learning, creativity, student achievements.

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El uso de proyectos creativos para mejorar la motivación del aprendizaje en los estudiantes de primaria

RESUMEN

Este estudio tuvo como objetivo investigar el impacto del método de proyectos creativos en la motivación de estudiantes de primaria. La investigación empleó una combinación de entrevistas y encuestas semiestructuradas, utilizando las Pruebas de Pensamiento Creativo de Torrance (TTCT) y el Cuestionario de Estrategias Motivadas para el Aprendizaje (MSLQ). El análisis de datos incluyó técnicas matemáticas, prueba de Pearson, kappa de Cohen y coeficientes alfa de Cronbach. Los resultados revelaron que casi la mitad de los profesores encuestados no empleaban el método de proyectos creativos en la escuela primaria, citando preocupaciones sobre la preparación de los estudiantes. Sin embargo, los profesores que utilizaron este enfoque informaron efectos positivos en la participación cognitiva de los estudiantes en el aula. El estudio confirmó que el método de proyectos creativos condujo a mayores niveles de creatividad y mayor motivación para el aprendizaje entre los estudiantes de primaria. En particular, se observó una mejora promedio en el rendimiento académico del 6% entre los alumnos de tercer grado durante un período de seis meses. En consecuencia, el método de proyectos creativos mejora significativamente la actividad de los estudiantes, fomenta la creatividad, estimula la motivación y mejora el éxito académico. Las investigaciones futuras deberían ampliar la influencia de este método en la motivación en todos los niveles educativos.

PALABRAS CLAVE: enfoque de actividad, métodos interactivos, tecnologías innovadoras, aprendizaje basado en proyectos, creatividad, logros de los estudiantes.

Introduction

The quality of education in early childhood significantly influences a child's future educational and cognitive development. The cognitive abilities developed during this period lay the foundation for further learning (Lamrani & Abdelwahed, 2020). The academic performance of Ukrainian primary school students, as of 2018, ranked in the lower half globally, underscoring the need for effective teaching methods to boost motivation and interest in learning (https://www.oecd.org/pisa/Combined_Executive_Summaries_PISA_2018.pdf).

The 21st century's educational landscape emphasizes the development of skills for lifelong learning, making teaching students how to learn a paramount goal (Lindner & Schwab, 2020; Voskamp et al., 2022). The rapid advancement of Information and

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Communication Technology (ICT) further necessitates adapting teaching styles to meet the evolving needs of digitally native students (Bui et al., 2020; Bhati & Song, 2019).

Motivation plays a critical role in student success, with internal motivation being particularly influential (Tokan & Imakulata, 2019). Engin (2020) and Wardani et al. (2020) define motivation as the driving force behind behavior and its continuity, serving as a determinant of goal achievement. Hence, motivating students to become active, curious, and attentive learners is essential (Lamrani & Abdelwahed, 2020).

Although literature explores various methods to enhance learning and motivation, there's limited information on using the creative project method to motivate primary school students. Therefore, this study examines the creative projects method's potential to enhance motivation among third-grade primary school students.

Aim and Objectives

The primary aim of this study is to investigate the creative projects method's impact on students' motivation in a primary school setting, using third-grade students as subjects. To achieve this aim, the study pursues the following objectives:

Determine teachers' attitudes towards the project method.

Implement the creative projects method in the experimental group.

Assess changes in students' motivation resulting from the use of creative projects in their learning.

1. Literature review

Numerous strategies, technologies, and methods aim to increase students' interest in learning, including independent or experimental work, thinking development pedagogy, interactive technologies, mobile applications, augmented reality, robotics, case methods, project methods, problem-based learning, and portfolios (Bagila et al., 2019; Rissanen et al., 2019; Iatsyshyn et al., 2020; Chiazzese et al., 2019; Shkabarina et al., 2020). Aligning theoretical knowledge with practical application is crucial (Adriyawati et al., 2020).

While these methods hold potential, many teachers hesitate to transition to independent student learning, which can be a powerful motivator (Voskamp et al., 2022). Teachers must provide clear instructions for independent learning, support students' information requests, and create optimal learning materials (Izatulloyevich, 2020). Teacher

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training should enhance pedagogical and methodological skills, utilizing innovative teaching technologies (Shkabarina et al., 2020; Ishchenko et al., 2022).

Gamification, including educational games and computer games, can motivate primary school students and promote creativity, innovation, attentiveness, and knowledge acquisition (Lamrani & Abdelwahed, 2020; Hallifax et al., 2020; Quintas-Hijós et al., 2020). Augmented reality technologies offer new educational opportunities (Fuchsova & Korenova, 2019), while gamification and project-based learning foster higher-order thinking skills (Eliyasni et al., 2019).

The project method is an innovative, person-oriented, interactive approach to learning, enhancing motivation and critical thinking (Anwer, 2019; Koban et al., 2019; Indrawan & Jalinus, 2019; Stark, 2019; Aliyyah et al., 2020). It cultivates key competencies, practical skills, and an entrepreneurial mindset (Iatsyshyn et al., 2020; Llorent García et al., 2022). The project method also promotes creativity and independent problem-solving (Koban et al., 2019; Adriyawati et al., 2020).

2. Methods

This study consisted of three stages. The first stage involved semi-structured interviews with primary school teachers to assess their attitudes towards the project method and explore their methods for implementing creative projects. A survey of pupils was also conducted using the methodology of Anwer (2019). The second stage introduced training with the creative projects method in the experimental group for one academic semester. The third stage assessed the final level of students' motivation and creative abilities.

The sample included 796 third-grade pupils: 401 in the experimental group and 395 in the control group. Additionally, 39 primary school teachers were included. The study utilized semi-structured interviews, the Torrance Tests of Creative Thinking, the Motivated Strategies for Learning Questionnaire, and a standard test for academic achievement. Data analysis involved statistical methods.

3. Results

Semi-structured interviews with primary school teachers revealed that 51% of teachers use the project method at least once per semester, while 49% consider it unsuitable for primary school due to students' developmental readiness (Figure 1).

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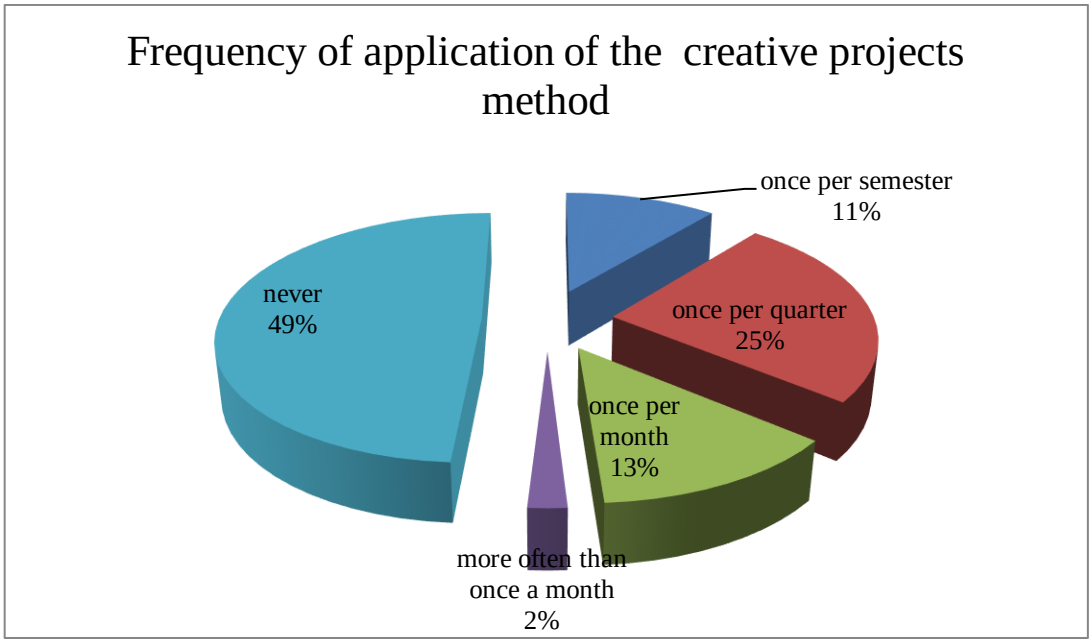

Figure 1. The frequency of the use of the creative projects method by primary school teachers

Among teachers who organized pupils' work on creative projects, a significant portion (74%) did so outside of regular school hours, either as homework in an extended day group or with parental supervision at home. The most commonly recommended forms of presentation for project results included posters (62%), products made from natural materials (23%), reports or written work (8%), and other formats (7%).

All teachers who implemented the project method in elementary school reported positive impacts, with 76% noting increased student interest in educational material, 25% observing enhanced confidence in expressing opinions, and 82% observing greater student activity in class.

A survey of primary school pupils revealed their favorite school subjects to be drawing, reading, music, and English. These subjects allowed students to actively engage and showcase their creativity while acquiring knowledge. The survey also highlighted that students preferred subjects that interested them the most (39% of respondents). The second most influential factor in students' subject preferences was the potential for earning high grades (31%). Energetic, active teachers influenced 16% of students' subject preferences. Most students enjoyed completing practical tasks independently or in small groups, and an engaging, free classroom atmosphere was the most motivating factor for learning (14%).

DOI: https://doi.org/10.46925//rdluz.41.49

In the experimental group, creative projects were implemented with specific requirements:

Freedom in selecting information sources and processing methods.

Adequate time for project work, considering individual student characteristics.

Utilization of a wide range of educational resources developed by the teacher.

Formulation of project topics to stimulate independent learning based on students' experiences.

A friendly atmosphere, cooperation, and respect, with no undue pressure on project performers, and flexibility in learning.

The possibility of involving external resources not directly associated with the educational institution, such as museums, research institutions, industries, etc.

Presentation of project results in the form of demonstrations and commentary on posters created by students or the display of finished products made from various materials. ICT tools were also allowed.

Testing conducted using the Torrance Tests of Creative Thinking demonstrated that the introduction of project methods into the educational process had a positive impact on students' creative abilities (Figures 2 and 3). The study found that the number of students with a normal creativity level increased by 8%, those with slightly above the norm by 6%, those above the norm by 2%, and those at the highest level by 1%. Conversely, the number of students with very low creativity levels decreased by 8%, and those with below-normal creativity decreased by 5%, and slightly below the norm decreased by 4%.

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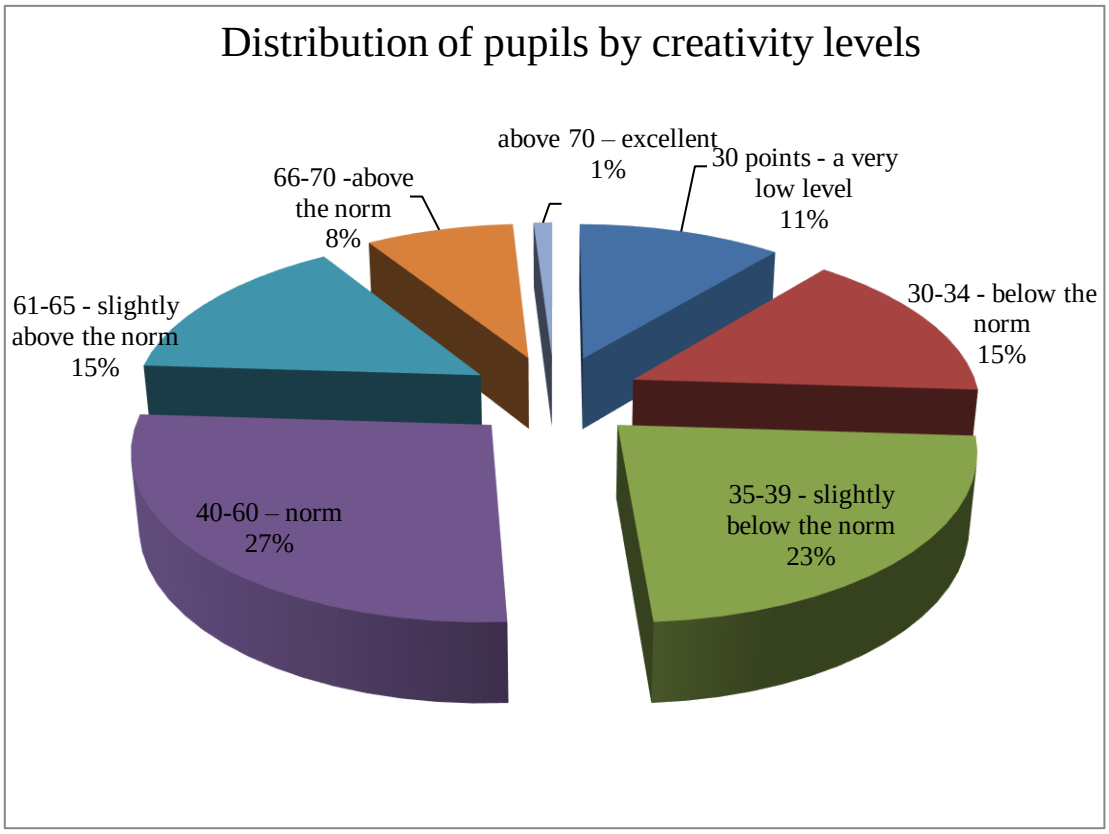

Figure 2. The results of the Torrance Tests of Creative Thinking in the experimental group before the introduction of the project method

As Table 1 shows, the teacher evaluated the results of the pupils' work with a lower score (the total score given by the teacher is 26.2 out of a possible 40 points) than the pupils. The score put down by pupils who were not part of the group was lower (28.2 out of 40) than those who did the work together (31.0 out of 40). The total score shows that, on average, pupils' creative projects were completed at a sufficient level.

Table 2 presents the results of the application of the Motivated Strategies for Learning Questionnaire (MSLQ) are presented (the questions are presented in Appendix A).

As shown in Table 2, the implementation of creative projects in primary school lessons has led to several positive outcomes for pupils. It has contributed to an increase in pupils' confidence in their knowledge, a greater desire to acquire further knowledge, and a willingness to put in more effort for this purpose. Additionally, pupils have shown a heightened interest in studying academic subjects.

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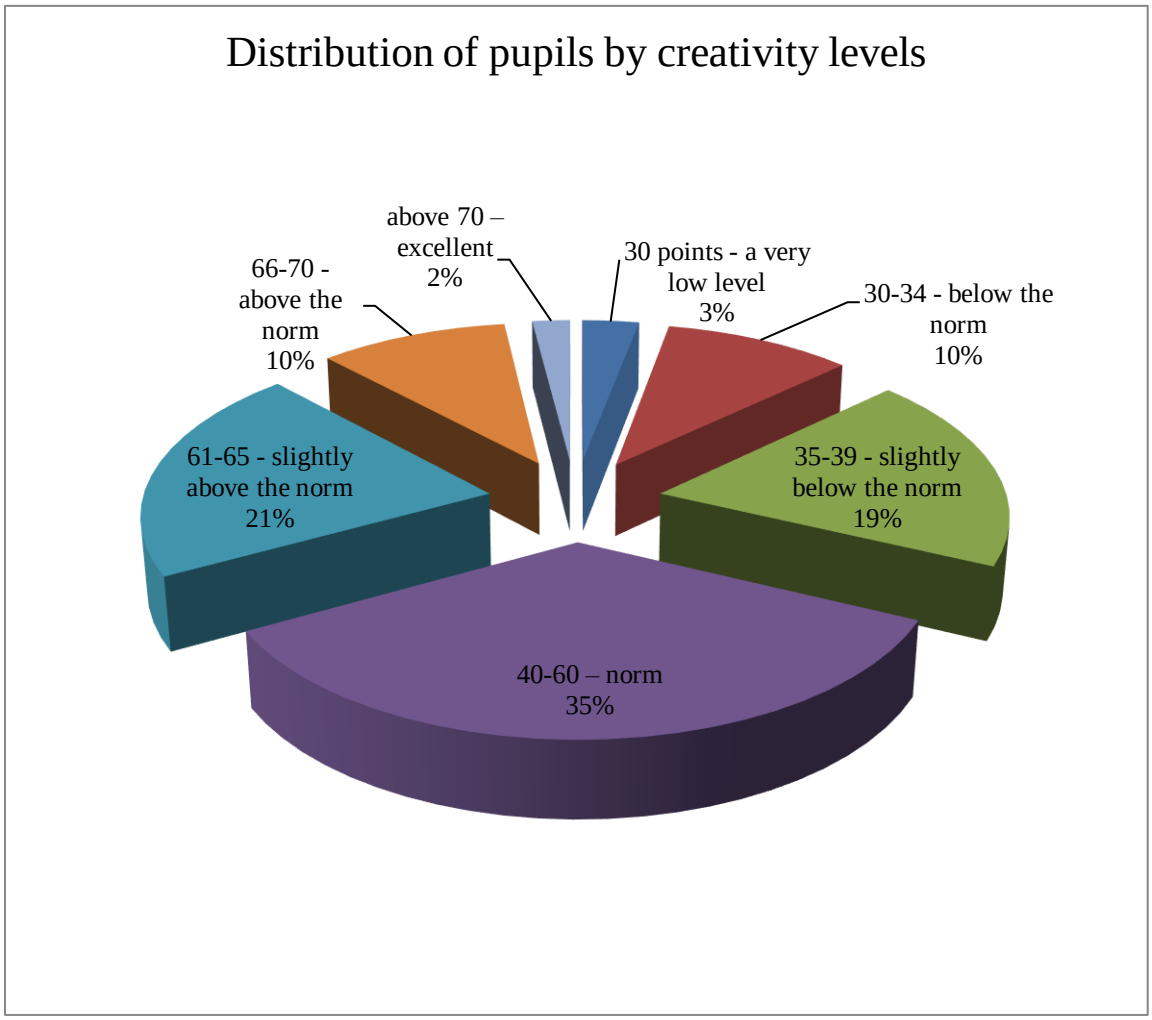

Figure 3. The results of the Torrance Tests of Creative Thinking in the experimental group after the introduction of the project method

Table 1 presents the results of the evaluation of the project-based learning, carried out with the use of the Clark form.

Table 1. Assessment for a creative project

	thinking		cooperation		communication		creativity		Points total
Grade	M	SD	M	SD	M	SD	M	SD	
Of teacher	6.7	0.29	6.8	0.45	6.5	0.53	6.2	0.59	26.2
Of pupils in the group	7.9	0.37	7.4	0.52	7.6	0.48	8.1	0.36	31.0
Of pupils out of the group	7.1	0.52	6.3	0.38	7.1	0.32	7.7	0.48	28.2
Total score	21.7		20.5		21.2		22.0		85.4
Maximum	30		30		30		30		120

DOI: https://doi.org/10.46925//rdluz.41.49

Table 2. Results of motivation evaluation according to MSLQ

Question No.	Control group				Experimental group			
	Before the experiment		After the experiment		Before the experiment		After the experiment	
	M	SD	M	SD	M	SD	M	SD
1.	4.48	1.01	4.72	0.99	4.47	1.02	5.49	0.96
2.	3.58	1.36	3.59	1.27	3.58	1.35	3.55	1.31
3.	3.48	0.89	3.29	0.94	3.47	0.91	2.30	0.87
4.	3.47	0.91	3.62	0.87	3.47	0.89	4.49	0.92
5.	4.15	0.77	4.27	0.83	4.16	0.81	5.87	0.83
6.	3.98	0.82	4.02	0.95	3.97	0.93	5.20	0.99
7.	4.94	0.83	5.02	0.76	4.92	0.87	5.38	0.85
8.	3.56	1.29	3.60	1.18	3.57	1.23	4.59	1.11
9.	3.47	0.86	3.54	0.89	3.48	0.92	3.26	1.02
10.	3.09	0.98	3.11	0.78	3.08	0.89	4.19	0.93
11	3.84	0.76	4.07	0.83	3.86	0.94	4.94	0.77
12.	3.98	0.92	4.15	0.87	3.99	0.83	2.15	0.91
13.	3.76	1.10	3.91	1.07	3.77	0.97	4.98	0.89
14.	4.11	0.73	4.29	0.85	4.10	0.89	4.79	0.84
15.	4.18	0.93	4.26	0.87	4.19	0.95	5.13	0.92
16.	3.97	0.86	3.99	0.92	3.96	0.90	3.50	0.79
17.	4.36	1.37	4.42	1.19	4.39	1.26	5.78	1.03
18.	4.95	1.16	5.07	1.12	4.94	1.19	5.83	1.08
19.	3.82	1.01	3.98	0.86	3.79	0.93	5.06	1.04
20.	3.51	0.93	3.49	0.97	3.52	0.99	2.15	0.89
21.	3.97	0.95	4.12	0.99	3.98	0.91	5.01	0.94
22.	3.46	1.17	3.38	1.12	3.49	0.95	2.37	0.86
23.	5.23	0.77	5.46	0.82	5.21	0.89	5.98	0.84
24.	4.12	1.01	4.27	1.05	4.15	1.12	4.63	1.16
25.	4.58	0.89	4.61	0.91	4.58	0.83	5.47	0.79
26.	5.34	0.94	5.28	0.99	5.35	0.86	4.21	0.93
27.	5.47	0.79	5.36	0.85	5.46	0.73	4.18	0.87
28.	3.81	0.89	4.23	0.83	3.84	0.85	5.48	0.84
29.	4.02	0.95	4.16	0.89	4.01	0.79	5.17	0.93
30.	4.73	1.03	4.98	1.20	4.72	1.08	5.09	1.09
31.	3.24	1.01	3.49	0.97	3.24	0.87	3.25	0.96
32.	3.07	0.83	3.26	0.89	3.07	0.92	3.96	0.78
33.	3.48	0.79	3.59	0.84	3.46	0.83	4.21	0.86
34.	4.38	0.81	4.63	0.83	4.38	0.87	5.17	0.93
35.	3.09	0.99	3.24	0.97	3.08	1.03	3.74	1.12
36.	3.13	0.94	3.29	0.89	3.14	0.85	4.03	0.83
37.	4.82	0.82	4.76	0.95	4.82	0.97	3.15	0.96
38.	4.96	0.80	4.93	0.91	4.96	0.92	3.08	0.85
39.	3.32	1.04	3.47	1.16	3.33	1.29	4.99	1.27
40.	3.87	1.18	3.99	1.09	3.86	1.02	4.71	1.06
41.	3.41	1.02	3.52	0.92	3.40	0.96	4.15	0.91
42.	2.99	0.89	3.01	0.90	2.99	0.95	3.02	0.83
43.	4.26	0.84	4.57	0.87	4.26	0.89	4.73	0.75
44.	3.77	0.96	3.85	0.91	3.76	1.02	4.66	1.07

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The study also revealed that pupils in the experimental group exhibited improved information handling skills. They were better equipped to independently search for information, extract relevant information from a large volume of data, process and interpret information, formulate questions to clarify information, comprehensively investigate problematic issues, generate ideas for solving complex tasks, express their opinions clearly on research topics, gracefully accept and correct mistakes, and formulate and defend their own opinions with well-founded arguments.

Table 3 presents the results of an assessment of pupils' academic performance in the sample.

Table 3. Results of checking pupils' academic performance

Control group				Experimental group			
Before the experiment		After the experiment		Before the experiment		After the experiment	
M	SD	M	SD	M	SD	M	SD
6.9	0.49	7.0	0.65	6.9	0.78	7.6	0.61

As depicted in Table 3, the utilization of creative projects within primary school settings contributes significantly to a 6% average increase in the academic performance of third-grade students. This outcome was established through rigorous mathematical analysis, which examined the weighted sum of squared deviations of group averages from the overall average. The heterogeneity of the sample was a key factor, considering the diverse pedagogical experiment settings across various classes, instructors, and educational institutions, each subject to distinct learning conditions.

Furthermore, it was observed that the root mean square deviations from the mean value for the same questionnaire questions differed across the sampled educational institutions. This disparity highlights the variability in intergroup and intragroup variances. Such discrepancies between these variances during the study underscore the rejection of the null hypothesis, indicating the presence of a meaningful relationship.

When Pearson's test was applied to the research findings, it was evident that the $\chi\_1\hat{}2$ values obtained for the experimental group exceeded the $\chi\_12\hat{}2$ values calculated for the control group. This compelling evidence suggests a strong connection between the

DOI: https://doi.org/10.46925//rdluz.41.49

implementation of creative projects in accordance with the specified requirements within the experimental group and the subsequent enhancement of primary school students' motivation to learn, leading to improved academic performance.

Additionally, Cohen's coefficient was computed for the experimental group, with values ranging from 0.8 to 1.0. This signifies a high level of effectiveness in using the creative projects method to boost students' motivation to learn. In contrast, the control group, which followed traditional teaching methods, yielded a Cohen's coefficient of 0.35, indicating a medium level of effect.

4. Discussion

In today's rapidly evolving world, it is essential for the education system to evolve in tandem with technological advancements and societal needs (Eliyasni et al., 2019). Therefore, it is imperative to shift from traditional educational approaches to more contemporary ones. Research conducted in the USA and UK (Lamrani & Abdelwahed, 2020) has demonstrated a correlation between the quality of educational institutions and their students' performance in language and mathematics. The efficacy of learning is heavily influenced by learning styles, approaches, and methodologies. Anwer (2019) conducted an experiment confirming that students' success increases by approximately 30% when employing an activity-based approach in education, where students actively participate in acquiring new knowledge through collaboration with classmates in the educational environment, as opposed to traditional lectures.

This study indicates that the success rate of elementary school students increased by 6% over six months of using the creative projects method, which can be attributed to the implementation of the activity-based approach. Furthermore, there is a clear connection between students' motivation and their success. The project-based method was found to improve academic performance in 90% of students (Indrawan & Jalinus, 2019), equipping 78% of school graduates with the necessary skills and competencies for future professional endeavors.

The introduction of STEM-based project methods yielded a high level of scientific literacy in 42% of students and an average level in 28%. However, a small fraction of students struggled to grasp fundamental concepts even after teacher explanations (Adriyawati et al., 2020).

DOI: https://doi.org/10.46925//rdluz.41.49

Research by Lamrani and Abdelwahed (2020), involving 30 children, showcased the positive impact of business games on student motivation, productivity, and knowledge acquisition. This approach allowed for a comprehensive understanding of educational content in a short timeframe. The study conducted by Voskamp et al. (2022) revealed that boys and girls employ different tools for motivation.

Iatsyshyn et al. (2020) found that project-based activities increase students' interest in learning and motivation, ultimately enhancing their academic performance and future competitiveness in the job market. This, in turn, contributes to the overall economic development of the country.

Aguilera and Ortiz-Revilla (2021) underscored the positive influence of STEM education and project-based learning on students' creativity, establishing a link between creativity, project-based learning, and the motivation of primary school students. This combination significantly impacted students' motivation and academic performance.

One significant outcome of using the project method is the development of students' responsibility, independence, and discipline (Bui et al., 2020). These qualities are nurtured when students assume roles such as researchers, problem solvers, or document providers. An example involving 156 primary school pupils revealed that the project method contributed to literacy growth, regardless of gender. Additionally, it enhanced social and emotional competence, including self-awareness, self-management, motivation, and social awareness, as well as empathy among girls (with no such effect observed in boys) (Llorent García et al., 2022). Project-based learning also boosted students' self-confidence.

However, as the survey by Hanif (2020) indicated, not all teachers have abandoned traditional lecture-style teaching. Reasons cited include a lack of time to develop innovative teaching materials. Some argue that combining traditional and innovative methods may be more effective in educational institutions (Tangirqulov, 2022).

Engin (2020) identified multiple factors influencing primary school students' motivation, including parental attitudes toward education and their level of education, teacher motivation, and self-efficacy. Cooperation between parents, teachers, school administration, and students is deemed essential to achieve educational goals.

Wardani et al. (2020) established that intrinsically motivated students outperformed extrinsically motivated students academically. Teachers can enhance student motivation by

DOI: https://doi.org/10.46925//rdluz.41.49

fostering personal exploration and meaningful connections to their work. Teacher-organized discipline should manifest as a form of care rather than contempt. To increase student motivation, teachers should value students' opinions, offer praise for correct actions, show respect, foster friendly relations among students, instill a sense of classmate camaraderie, and shield them from the fear of failure.

Conclusions

The ever-changing environment in which children grow necessitates continuous innovations in the education system. These innovations encompass novel approaches, strategies, and teaching methods. As demonstrated by this research, the creative projects method effectively develops students' creative abilities, cognitive interest, and motivation in primary school. The use of creative projects correlates with a notable 6% increase in students' performance on average.

The findings of this study hold both theoretical and practical significance. They contribute to the existing theoretical knowledge concerning innovative teaching methods in primary schools and underscore the practical importance of employing the creative projects method.

Future research opportunities exist in exploring the impact of the creative projects method on the motivation of students in various grade levels, from 1st to 2nd and 4th grades in primary school, secondary school, high school, and higher educational institutions. Additionally, further investigation into new and effective methods of stimulating students' motivation for learning is warranted.

Limitations

This research exclusively focused on the impact of the project method in third-grade primary school classrooms. Consequently, the effects of creative projects on the motivation of 1st-2nd and 4th-grade students remain unexamined.

Recommendations

The outcomes of this study can guide primary school teachers in their professional practices. The conclusions drawn from this research can serve as a valuable resource for educators and researchers seeking effective innovative teaching methods.

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Appendix A

MSLQ Motivated Learning Strategies Questionnaire List (Pintrich et al., 1990)*

Please rate the following items based on your behaviour in this class.
Your rating should be on a 7- point scale where 1= not at all true of me to 7=very true of me.

1. I prefer class work that is challenging so I can learn new things.
2. Compared with other students in this class I expect to do well
3. I am so nervous during a test that I cannot remember facts I have learned
4. It is important for me to learn what is being taught in this class
5. I like what I am learning in this class
6. I'm certain I can understand the ideas taught in this course
7. I think I will be able to use what I learn in this class in other classes
8. I expect to do very well in this class
9. Compared with others in this class, I think I'm a good student
10. I often choose paper topics I will learn something from even if they require more work
11. I am sure I can do an excellent job on the problems and tasks assigned for this class
12. I have an uneasy, upset feeling when I take a test
13. I think I will receive a good grade in this class
14. Even when I do poorly on a test I try to learn from my mistakes
15. I think that what I am learning in this class is useful for me to know
16. My study skills are excellent compared with others in this class
17. I think that what we are learning in this class is interesting
18. Compared with other students in this class I think I know a great deal about the subject
19. I know that I will be able to learn the material for this class
20. I worry a great deal about tests
21. Understanding this subject is important to me
22. When I take a test I think about how poorly I am doing
23. When I study for a test, I try to put together the information from class and from the book
24. When I do homework, I try to remember what the teacher said in class so I can answer the questions correctly
25. I ask myself questions to make sure I know the material I have been studying
26. It is hard for me to decide what the main ideas are in what I read
27. When work is hard I either give up or study only the easy parts
28. When I study I put important ideas into my own words
29. I always try to understand what the teacher is saying even if it doesn't make sense.
30. When I study for a test I try to remember as many facts as I can
31. When studying, I copy my notes over to help me remember material
32. I work on practice exercises and answer end of chapter questions even when I don't have to
33. Even when study materials are dull and uninteresting, I keep working until I finish
34. When I study for a test I practice saying the important facts over and over to myself
35. Before I begin studying I think about the things I will need to do to learn
36. I use what I have learned from old homework assignments and the textbook to do new assignments
37. I often find that I have been reading for class but don't know what it is all about.

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38. I find that when the teacher is talking I think of other things and don't really listen to what is being said
39. When I am studying a topic, I try to make everything fit together
40. When I'm reading I stop once in a while and go over what I have read
41. When I read materials for this class, I say the words over and over to myself to help me remember
42. I outline the chapters in my book to help me study
43. I work hard to get a good grade even when I don't like a class
44. When reading I try to connect the things I am reading about with what I already know.

*Pintrich, R. R., & DeGroot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance, *Journal of Educational Psychology*, 82, 33-40.