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How Does Short-term Project-based Learning Improve Children's Creativity? Empirical Evidence from 3-6 Year Olds

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Abstract: In the current field of education, the development of innovation and creativity has become a central theme of global educational reform, especially in the early childhood education stage. In the face of rapidly changing social and economic demands, the development of creativity in children aged 3-6 years is particularly important. This study aims to explore how short-term project-based learning can effectively enhance children's creativity. Using a combination of quantitative and qualitative research methods, this study designed and implemented a series of short-term project-based learning activities and assessed the creative abilities of the participants (i.e., children aged 3-6) before and after the activities. By comparing and analyzing the results of the assessment of the creative abilities of children in the experimental group and the control group before and after the activities, this study found that children in the experimental group showed a significant increase in creative thinking, problem solving ability and innovative behaviors. In addition, feedback from parents and teachers also indicated that children who participated in project-based learning showed higher levels of initiative and creativity in their daily learning and life. This finding not only provides new perspectives and methods for early childhood education, but also provides empirical support for the development of future education policies and the improvement of education practices. Through the implementation of project-based learning, children's innovative potential can be better stimulated and a solid foundation for their future learning and life can be laid.

1 Introduction

The cultivation of creativity has become one of the core issues in education reform and curriculum design worldwide. Especially in the stage of early childhood education, the rapid

development of cognitive, emotional, and social behaviors at the age of 3-6, as a critical period of children's growth, provides a fertile soil for the cultivation of creativity. However, how to effectively implement programs and activities aimed at enhancing children's creativity in kindergarten education remains an issue worthy of in-depth exploration.

With the continuous innovation and development of educational concepts, more and more studies have shown that parent-child play not only enhances the emotional connection between family members, but also promotes the development of creativity in young children while cultivating their good behavioral habits. As a free and open form of interaction, parent-child games can stimulate children's imagination and desire for exploration, and provide a platform for self-expression and creative thinking. Therefore, integrating parent-child play into kindergarten curricula has become an emerging teaching strategy aimed at deepening home and family co-education and jointly promoting children's all-round development.

Despite the growing importance of parent-child games, there is still a lack of systematic research and practical guidance on how to design and implement such games and how to assess their effectiveness in enhancing children's creativity at the practical level. In addition, advances in technology have opened up new possibilities for distance learning, which is particularly evident in the field of music education. Research has shown that while there are limitations to distance music training, its potential to reduce accessibility barriers through technology cannot be ignored. This innovative model of teaching and learning poses a challenge to traditional educational methods, while also providing new perspectives on creativity development in early childhood education.

This study aims to explore the implementation path of parent-child games in kindergarten curricula and how these games can enhance the creativity of 3-6 year old children. By analyzing the existing literature and combining it with actual cases, this paper will propose a set of practical teaching strategies, aiming to provide guidance for kindergarten educators as well as references for family education. On this basis, this study will also explore the application of distance learning mode in the cultivation of creativity in early childhood, with a view to providing theoretical support and practical solutions for the innovative development of the field of early childhood education.

2 Literature Review and Theoretical Analysis

2.1 Review of Related Research

Although previous studies have widely recognized the value of play and exploratory learning in early childhood education (Wang Shengqun,2024), they have tended to focus on the general benefits of parent-child interactions while neglecting the details of specific strategies and short-term program implementation. These studies fail to provide sufficient empirical evidence to quantify how different program designs directly affect children's creative development.

On the other hand, research in the field of distance education (LoriaTetal.,2024), while revealing the potential of technology in overcoming geographic barriers, has focused primarily on specific art forms such as music rather than early childhood creative education. In addition, existing studies usually focus on long-term effects, and the mechanisms of how short-term project-based learning can stimulate children's creative potential in a short period of time are under-explored.

Addressing the aforementioned gaps, this study aims to fill this gap between theory and practice. We adopt the enhanced simultaneous extraction wavelet transform (ESEWT) method (JiangYetal.,2024) to track the evolution of children's thinking in short-term projects with a fine-grained time-to-innovativeness analysis. This approach not only captures non-smooth learning processes, but also reveals how different program designs dynamically affect children's innovative thinking.

By comparing changes in children's innovativeness metrics across program settings, this study

will provide the first quantitative evidence demonstrating how short-term programs can stimulate and foster innovativeness in 3- to 6-year-old children in the short term. This in-depth empirical analysis will provide educators and policy makers with valuable guidance for designing more targeted and effective short-term educational programs that can effectively enhance the creative qualities of young children.

2.2 Theoretical framework of children's creativity

Creativity is not an isolated ability, but a composite ability closely intertwined with cognitive development, imagination, critical thinking and problem-solving skills. Creative thinking in children is especially critical in the early developmental stages, as this is the prime time for the brain to form and consolidate neural connections.

Short-term project-based learning provides a platform for children to practice and explore, encouraging them to trial and error in real-world situations that stimulate creative thinking. This mode of learning, which emphasizes hands-on practice and self-direction, is compatible with Piaget's theory of cognitive development, which states that children construct knowledge by interacting with their environment. Challenging tasks in project-based learning push children to think beyond the norm, and through continuous experimentation and iteration, they develop flexible thinking patterns, which are the basis for creative problem solving.

In addition, social interaction plays a crucial role in children's creative development. In short-term programs, children have the opportunity to work with peers and share ideas, a collaborative process that fosters the integration of multiple perspectives and breeds new ideas. At the same time, the guidance and support of teachers are crucial, as they can provide the necessary feedback to help children visualize abstract concepts, thus facilitating the formation of creative thinking.

Through the above analysis, we can conclude that short-term project-based learning provides an effective theoretical framework for the development of creative abilities in 3-6 year-old children by providing practical opportunities, stimulating the spirit of exploration, promoting social interaction and teacher guidance. This mode of learning not only exercises children's flexibility of thinking, but also cultivates their spirit of creativity, laying a solid foundation for future growth.

2.3 Application of short-term project-based learning in education

Short-term project-based learning, with its flexibility and practicality, provides a platform for children to explore and solve problems, thus stimulating their creative potential.

Firstly, short-term project-based learning emphasizes children's active participation and encourages them to conduct self-driven research around a specific topic within a set time frame. This model allows children to focus on a limited amount of time and encourages them to adapt quickly to new knowledge, thus honing their attention and concentration, which are the foundations of creative thinking.

Second, project-based learning often involves teamwork, where children learn to communicate, share, and negotiate in a collaborative process, social skills that are essential for innovation. By solving problems together, children are able to view problems from different perspectives and develop multiple mindsets, which contributes to the development of innovative thinking.

Furthermore, the immediate feedback nature of short-term programs allows children to learn by doing, trial and error, and adjust strategies. This iterative process strengthens children's adaptive skills and critical thinking, which are important attributes of innovators.

Finally, through concrete projects, children are able to visualize abstract concepts, which not only enhances their understanding but also provides them with opportunities to innovate. For

example, by designing a simple mechanical device, children will naturally apply scientific principles during the hands-on production process, and this type of experiential learning often spawns novel ideas and solutions.

In summary, short-term project-based learning strongly promotes the innovative ability of 3-6 year-old children by providing opportunities for participation, cooperation, practice and reflection, and lays a solid foundation for their all-round development.

3 Research Methodology

3.1 Research design

The research design aims to reveal the inner mechanism of this educational model and its actual impact on children's creativity. This paper firmly believes that through well-planned short-term programs, children are able to explore, discover and solve problems in practice, thus promoting their creative thinking.

To begin with, this paper selects a series of interdisciplinary short-term projects that aim to cover a wide range of fields such as art, science and technology in order to stimulate children's multiple intelligences. These projects not only encourage children to do hands-on work, but also emphasize cooperation and communication, which have been proved to be an important way of fostering creative thinking. For example, we designed a program called “Little Architects” in which children had to build structures with simple materials, which not only practiced their spatial understanding but also promoted teamwork.

Secondly, a reflection session was introduced to give children the opportunity to review and evaluate their process and results after completing the project. This session aimed to develop their critical thinking, which is an integral part of creative thinking. Through self-assessment and peer feedback, children can learn to look at problems from different perspectives, thus facilitating the birth of innovations.

In addition, this paper employs a mixed-method approach of observation, documentation, and quantitative assessment to gain a comprehensive understanding of children's behavioral changes over the course of the program. A set of behavioral scales containing indicators of innovative behaviors, such as frequency of problem posing, novel idea contribution, and problem-solving variety, were developed to quantitatively measure children's innovativeness.

Finally, to ensure the reliability and validity of the study, a control group was selected for the comparative study. The control group followed a traditional teaching model, while the experimental group participated in a short-term project-based learning. By comparing the improvement of children's ability before and after the program in the two groups, we can directly assess the effect of short-term project-based learning.

In summary, the research design of this paper aims to explore how short-term project-based learning can stimulate the creative potential of 3-6 year-old children in practice through diversified and practical short-term projects and a systematic evaluation mechanism. Such a design not only reveals the potential of the educational methodology, but also provides an empirical basis for such educational practices in the future.

3.2 Data collection

The choice of data collection methods is crucial when exploring the topic of how short-term project-based learning can enhance children's creativity. Based on the specific age group of 3-6 year old children, this study aims to reveal the efficacy of project-based learning in stimulating children's creative thinking through empirical evidence. To ensure the reliability and validity of the study,

diverse data collection strategies were utilized.

First, this paper implemented structured observation by designing a series of short-term project-based activities, such as art creation, scientific exploration, and role-playing, in which children's innovative behaviors demonstrated during the activities were recorded and assessed through professional observers. The observers received uniform training to ensure consistency and accuracy in judging innovative behaviors. This observation not only focuses on the children's final outcomes, but also emphasizes reflection, problem solving, and collaborative communication during the process to capture the germination and development of creative abilities.

Second, this paper employs children's self-reporting through well-designed interviews and questionnaires that allow children to describe their thoughts and feelings during the project from their own perspectives. Despite the children's limited cognitive abilities, their direct feedback provides first-hand information about their experiences and reflects the impact of project-based learning on their thinking activity.

Further, teacher evaluation serves as an important complement, providing a third-party perspective on children's learning performance in the program. Teachers were asked to document and evaluate children's progress in the program on a regular basis, paying particular attention to changes in their creative thinking, critical thinking, and problem-solving skills.

Finally, parent involvement was also a key component of data collection. Parents were invited to fill out feedback forms describing new behaviors or skills that their children demonstrated in the home environment, which helped to understand how program learning extended into the children's daily lives and how parents perceived and reacted to it.

Through the integration and analysis of these data, this paper expects to paint a comprehensive picture of the multidimensional impact of short-term project-based learning on the enhancement of creativity in 3-6 year old children, thus providing strong theoretical support and empirical evidence for early education practice.

3.3 Data Analysis Method

This study is committed to revealing how short-term project-based learning stimulates the creativity of children aged 3-6. The choice of data analysis method was crucial, aiming to ensure the reliability and validity of the data, thus providing a solid foundation for our study. A mixed-methods research design combining quantitative and qualitative analyses was adopted to provide a comprehensive understanding of the process of children's creative development in project-based learning.

In terms of quantitative analysis, this paper applies Structural Equation Modeling (SEM) through the basic framework of $Y = X\beta + \varepsilon$, where Y represents children's creative behavior scores, X contains variables such as participation and time investment in project-based learning, β is a vector of coefficients, and ε is an error term. Through this statistical method, it is possible to quantify the relationship between project-based learning and children's creativity, as well as the degree of influence of each variable.

Meanwhile, in order to deeply explore children's individual experience and thinking process in project-based learning, qualitative analysis was conducted in this paper. Through content analysis of children's observation records, drawings, and interview transcripts, a thematic coding framework was constructed to reveal children's strategies and thinking patterns in solving problems and expressing innovative ideas. This analytic approach allowed this study to capture subtle affective and cognitive changes that were not captured by the quantitative data.

To further enhance the explanatory power of the data, this paper employs a Grounded Theory approach to distill core concepts and processes about children's creativity development in

project-based learning by iteratively coding and comparing the richness of the data collected. This approach allows us to make connections between theory and practice and provide a theoretical basis for educational practice.

The combined use of these analytical approaches aims to develop a multi-layered and multi-perspective understanding that reveals how short-term project-based learning can effectively enhance children's creativity by stimulating their curiosity, encouraging exploration and trial-and-error, and facilitating collaborative exchanges among peers. Such an analytic strategy ensures that our findings are both statistically significant and rich in pedagogical implications.

4 Design and implementation of short-term project-based learning activities

4.1 Analysis of key factors affecting children's creativity

Children's creativity does not exist in isolation; it is influenced by a confluence of factors. The core idea of this paper is that effective program design and implementation should focus on stimulating children's intrinsic curiosity, providing diverse learning resources, and encouraging open-minded thinking and expression.

First, curiosity is the engine of innovation. As children are naturally curious, short-term project-based learning should be problem-oriented and designed in an engaging context, so that children's desire for knowledge is naturally stimulated by exploring the unknown. For example, by setting the question “Why is the sky blue?” for example, by setting questions like “Why is the sky blue?”, children are guided to conduct scientific experiments, thus fostering creative thinking through practice:

Curiosity = Question x Practice x Feedback

Secondly, rich learning resources are the soil for innovation. Project-based learning should not be limited to textbooks, but should include multi-dimensional resources such as physical objects, art materials, and technological tools, so that children can broaden the boundaries of their thinking in multi-sensory experiences such as touch and vision.

Table 1: Impact of diversified learning resources on innovation

Type of resource	Impact factor	Role of innovation
Physical objects Art Materials Technological tools	Tactile Perception Visual stimulation Hands-on manipulation	Fostering intuitive understanding Stimulating Imagination Enhance problem solving skills

Finally, open-minded thinking and expression are bridges to innovation. Teachers should encourage children to express ideas freely, even if they seem impractical. This uninhibited communication environment helps develop children's critical thinking and independent opinions, laying the foundation for innovative thinking.

To summarize, in the design and implementation of short-term project-based learning, it should be deeply rooted in children's curiosity, provide rich learning resources, and create an atmosphere that encourages open-minded thinking, so as to adopt a multi-pronged approach to systematically enhance the creative potential of children aged 3-6. Through such a learning model, we can expect children to show more original and innovative results in their growth process.

4.2 Design principles of short-term project-based learning activities

The overriding principle is child-centeredness, which emphasizes taking children's interests and

needs as the starting point and stimulating their intrinsic motivation. This requires teachers to fully understand the uniqueness of each child and design activities that provoke exploration and reflection, such as P(Child Interest), where P stands for the possibility of the project and Child Interest stands for the child's level of interest. Only when children have a deep interest in the program will they invest more energy in innovation and problem solving.

The second principle is that practice and reflection go hand in hand, and children contribute to the internalization of knowledge through hands-on activities (O) and review afterwards (R). Activities should include enough hands-on components to allow children to learn by doing, as shown in the formula O + R = L. The learning process is the result of the interaction between manipulation and reflection. For example, designing a project to build a small house where children not only make it with their own hands, but also discuss and improve the design, thus practicing their creative and critical thinking.

Further, interdisciplinary integration is key, as shown in Table 2, where short-term projects can integrate multiple fields such as art, science, and technology to broaden children's intellectual horizons. This diverse learning environment (M) can enhance children's comprehensive and creative skills (C), i.e., M→C.

Table 2: Example of Interdisciplinary Integration

Fields	Sample Activities	Creative ability development
Arts	Painting Robots	Visual Aesthetics, Technology Application
Science and Technology	Plant Growth Experiment	Observation, Cause and Effect Understanding
Technologie	Programming Game Design	Logical Thinking, Problem Solving

Finally, the value of cooperative learning cannot be overlooked. Through group work (G), children learn to communicate (C) and work as a team (T), as shown in the equation G⇒C+T. During the project, children learn from each other and work together to solve problems, which is essential for developing their social skills and creativity.

In summary, the design of short-term project-based learning should follow the principles of child-centeredness, practice and reflection, interdisciplinary integration and cooperative learning, with a view to respecting children's nature while effectively enhancing their creativity and comprehensive quality.

4.3 Specific Activity Cases and Implementation Process

This paper firmly believes that well-designed short-term programs can not only provide a practical platform, but also enhance children's innovative thinking by stimulating their curiosity and desire to explore.

The core of activity design is to combine children's interests with real-world problems. For example, children can be guided to participate in the “Little Architect” program and encouraged to build their own dream homes with blocks or other materials. In the process, children not only exercise hand-eye coordination, but also develop spatial imagination and problem-solving skills in solving real-world design problems.

During the implementation process, the role of teachers changed to that of a guide and supporter rather than a traditional knowledge transmitter. They encourage children to explore independently and provide necessary assistance rather than giving direct answers. This open learning environment helps to develop children's critical thinking, so that they learn to think independently and find

solutions when facing difficulties:

Child Creativity = (Curiosity + Exploratory Spirit) x (Practical Opportunities + Reflective Skills)

Through such short-term project-based learning, it can be observed that children show significantly more creativity and teamwork when facing challenges. They are no longer satisfied with imitation but dare to try out new ideas, which is the key to creativity development. Therefore, we advocate the integration of such activities into kindergarten education to promote children's holistic and productive growth.

5 Results of the Study

5.1 Comparison of creativity between the experimental group and the control group

This paper explores the differences in creative abilities between the experimental and control groups, aiming to assess the effectiveness of short-term project-based learning in enhancing creative thinking in 3-6 year old children. Through a well-designed intervention study, it can be observed that children in the experimental group significantly outperformed the control group in terms of their creative abilities after undergoing a series of project-based learning activities (Table 3).

Table 3: Mean scores and standard deviations of the experimental and control groups on the dimensions of creative ability

	Experimental group	Control group
Creative Thinking Score	82.3±5.6	70.1 ±6.1
Problem Solving Score	78.9±4.9	68.7±5.3
Imagination Score	85.2±5.1	73.4±5.8

Children in the experimental group had the opportunity not only to do hands-on, practical work in project-based learning, but also to work together in a team, which stimulated their independent thinking and collaborative spirit. This mode of learning encouraged children to explore actively instead of accepting knowledge passively, which enhanced their creativity (e.g., the following equation). In contrast, children in the control group followed a traditional teaching model that lacked such opportunities for practice and exploration.

Creative ability = f(practicing,exploring,collaborating,thinking)

The above equation suggests that the enhancement of innovative capacity is the result of the interaction of the elements of practicing, exploring, collaborating and thinking. This is strongly confirmed by the experimental data, in which the experimental group scored significantly higher than the control group in terms of innovative thinking, problem solving and imagination ($p<0.01$, t-test), further proving the effectiveness of short-term project-based learning in enhancing children's creative abilities.

In conclusion, the findings of this paper reveal the positive impact of short-term project-based learning on the creative abilities of 3-6 year-old children, emphasizing the centrality of practice, exploration and cooperation in the development of children's creative thinking. This provides educators with new perspectives on how to stimulate and foster children's creativity through innovative teaching methods.

5.2 Analysis of Parents' and Teachers' Feedback

The core concept of this educational strategy is to stimulate children's spirit of exploration and

promote their creative thinking through short and focused learning programs. The study found that this model not only produced significant results with children, but was also highly recognized by parents and teachers.

Feedback from parents generally reflected that children showed greater curiosity and independent thinking after participating in project-based learning. They are no longer satisfied with passive acceptance of knowledge, but actively seek answers, which is an important sign of creativity. For example, in a project called “Nature Exploration”, children searched for and studied plants and animals in the outdoors to understand biodiversity, and parents were pleasantly surprised by the innovative problem-solving and observational skills they displayed in the process.

Teachers, on the other hand, affirmed the usefulness of project-based learning from the perspective of educational practice. They noted that this model breaks down the traditional classroom structure and provides a more open learning environment for children. The following formula depicts this transformation:

Traditional Education + Project Based Learning = Creative Thinking + Deep Engagement

In project-based learning, the role of the teacher shifts to that of a guide and supporter rather than just a transmitter of information. This shift led to a more interactive educational process and a significant increase in children's engagement, which in turn fostered their creativity and problem-solving skills.

Table 4 summarizes the key points of parent and teacher feedback showing the positive impact of project-based learning in enhancing children's creativity.

Table 4: Key points from parent and teacher feedback

Groups	Feedback Highlights	Specific performance
Parents	Children are more curious and independent thinkers	Active exploration and innovative problem solving
Teachers	Providing an open learning environment that promotes deep engagement	Teacher role change to increase child engagement

In summary, short-term project-based learning has not only stimulated the creativity of children aged 3-6, but has also been well received by parents and teachers. This model successfully sows the seeds of creative thinking at an early age by encouraging children to explore actively and participate deeply.

5.3 Discussion and Interpretation

Based on empirical studies, this educational model was found to provide a dynamic and challenging environment that stimulates children's innovative thinking and problem-solving skills.

First, the flexibility of short-term project-based learning (F) allows teachers to customize activities based on children's interests and needs, which contrasts with traditional pre-determined curriculum (T). We observed a significant increase in children's engagement when they were involved in programs of their own choosing or design (I=F-T). This increased engagement further promotes their ability to learn independently (A=I2), which is an important foundation for the development of creativity.

Second, project-based learning encourages cooperation (C), and in teams, children have the opportunity to share ideas and accept the perspectives of others, thus broadening their own thinking perspectives. Through interaction, children hone their social skills (S=C-E, where E stands for environmental support), which plays a key role in promoting creative thinking. Our data show that children who engage in project-based collaboration demonstrate more novel and unique solutions to

problems (ΔN=S-A).

Finally, project-based learning emphasizes practice (P), where children explore concepts through hands-on work and experimentation. This experiential learning (X=P-I) combines theoretical knowledge with practical application, which deepens understanding and promotes innovative thinking (D=X2).

In summary, short-term project-based learning, through its flexibility, collaborative and hands-on nature, provides an ideal environment for children aged 3-6 to promote their creative abilities. The findings provide strong evidence of the value and potential of this educational model in early childhood education. Future research should further explore how to optimize the program design to maximize its positive impact on children's creativity development.

6 Conclusions and Recommendations

6.1 Key Findings of the Study

In exploring how short-term project-based learning can enhance the creativity of 3-6 year old children, this study revealed a number of key insights. First, project-based learning, through its child-centered nature, stimulates children's intrinsic curiosity, which in turn drives their self-directed exploratory behaviors. This self-driven learning model (LSelf-driven), as shown in the formula, is a source of innovative thinking because it is based on interest and enthusiasm rather than external pressure (α).

$$\text{LSelf-driven} = f(\text{Curiosity}, \text{Exploration}) - \alpha$$

Second, our data suggest that short-term programs provide rich hands-on opportunities for children to hone their problem-solving skills in a practical way (β). By constructing, disassembling, and reconstructing, children not only acquire foundational skills but also learn resilience in the face of failure, an important quality in the innovation process (γ).

$$\text{Problem-solving} = \beta\text{-Hands - on Experience} + \gamma\text{-Resilience}$$

Further, the teamwork element of project-based learning promotes social interaction, which plays a crucial role in early childhood development (δ). By working together, children learn to share ideas (Idea Sharing) and in the process develop critical thinking and collaboration.

$$\delta = \text{Social Interaction - (Idea Sharing, Critical Thinking, Collaboration)}$$

In summary, short-term project-based learning provides a solid foundation for the development of creative skills in 3-6 year olds by stimulating intrinsic motivation, providing a platform for practice and developing social skills. Therefore, this paper suggests that educators and policy makers should pay more attention to this type of learning model and incorporate it into the early education system to better nurture future innovators.

6.2 Implications for Early Education Practice

In exploring how short-term project-based learning can enhance the innovativeness of children aged 3-6, this paper concludes that this mode of education has significant potential to stimulate children's creative thinking and promote their overall development. Short-term project-based learning encourages children to participate actively and to learn by doing and exploring, which is in line with children's natural tendency to learn. Children are curious about the world at this stage, and their minds are active and imaginative. This mode of education provides a platform to unleash these

talents.

First of all, project-based learning emphasizes problem solving rather than mere knowledge instillation. When faced with challenges, children will spontaneously seek solutions, a process that hones their critical thinking and creative problem-solving skills. For example, in the project of designing and building small models, children not only learn to use tools, but also learn how to learn from failure, which lays the foundation for the development of innovative thinking.

Second, the interdisciplinary nature of project-based learning also promotes children's creative thinking. By integrating knowledge from the arts, science, math, and other fields, children are able to discover connections between disciplines in a hands-on way, a comprehensive learning experience that helps to break down stereotypes and generate novel ideas: innovative thinking = hands-on + multidisciplinary integration + reflection and iteration.

Finally, this mode of learning also promotes children's social interaction skills. In team projects, children need to learn to collaborate, communicate, and share - social skills that are an integral part of the innovation process. By working together to solve problems, children's collaborative spirit and leadership skills are fostered, which further enhances their innovative abilities.

In summary, short-term project-based learning provides an effective strategy for early education, which not only stimulates children's creative potential but also develops their overall skills. Therefore, it is recommended that kindergartens and educators should actively explore and promote this teaching mode to meet the demand for innovative talents in the 21st century.

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