

Strategies for Guiding Creative Teaching of Elementary Mathematics by Young University Teachers

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Abstract: *In the context of current educational reforms, creative teaching in elementary mathematics has become a crucial means to enhance students' interest and mathematical literacy. This paper explores the strategies for guiding creative teaching in elementary mathematics by young university teachers. By analyzing the current status and challenges of elementary mathematics teaching and combining the professional competence and innovative capabilities of young university teachers, a series of guiding strategies are proposed. The research indicates that these strategies can effectively enhance the creativity in elementary mathematics teaching and improve student learning outcomes, demonstrating significant practical value.*

Keywords: *Young University Teachers, Elementary Mathematics, Creative Teaching, Guiding Strategies, Teaching Effectiveness*

Introduction

In the context of global educational reform, traditional elementary mathematics teaching methods no longer suffice to meet the modern educational demands for fostering students' innovation abilities and comprehensive qualities. Creative teaching, as a new educational concept and method, is gradually being applied to elementary mathematics classrooms to stimulate students' interest in learning and improve their mathematical thinking and problem-solving abilities. However, the implementation of creative teaching in elementary mathematics currently faces several challenges, such as insufficient creative teaching skills among teachers, a lack of teaching resources, and an imperfect evaluation system. Young university teachers, as significant driving forces in educational reform, possess abundant professional knowledge and innovative capabilities, granting them unique advantages in guiding creative teaching in elementary mathematics.

1 Current Status and Challenges of Creative Teaching in Elementary Mathematics

1.1 Current Status of Elementary Mathematics Teaching

Elementary mathematics teaching holds a significant position in the Chinese education system, aiming to cultivate students' mathematical thinking and problem-solving abilities. However, several issues in actual teaching practice need urgent improvement.

Firstly, the teaching model remains relatively traditional. Most elementary mathematics classrooms still rely on lecture-based teaching methods where teachers primarily deliver knowledge, and students passively receive it, lacking opportunities for active participation and critical thinking. While this approach ensures the transmission of knowledge and mastery of basic skills to some extent, it is not conducive to developing students' innovative thinking and practical application abilities.

Secondly, the teaching content is relatively monotonous. Elementary mathematics textbooks primarily focus on foundational knowledge with moderate difficulty. However, in actual teaching, teachers often emphasize explaining knowledge points and practicing exercises, neglecting the cultivation of students' practical application abilities and comprehensive qualities. This can lead to boredom among students, diminishing their interest and initiative in learning mathematics.

Thirdly, the evaluation methods are overly simplistic. Current elementary mathematics assessments mainly focus on exam scores, evaluating students' knowledge acquisition while ignoring their creativity and problem-solving abilities. This evaluation approach fails to comprehensively reflect students' learning status and may lead students to prioritize exam preparation over deep understanding and flexible application of knowledge.

Finally, teachers' creative teaching abilities need enhancement. Due to the long-standing influence of traditional teaching methods, some teachers tend to follow fixed teaching patterns and lack exploration and application of creative teaching methods. Additionally, some teachers lack awareness of creative teaching and do not receive adequate training and guidance, making it challenging to implement creative teaching effectively in practice.

1.2 Major Challenges in Implementing Creative Teaching in Elementary Mathematics

Despite the significant importance of creative teaching in elementary mathematics education, its implementation faces several challenges.

Firstly, there is an insufficient capacity for creative teaching among teachers. Creative teaching requires teachers to have high levels of innovation and instructional design abilities, which many elementary mathematics teachers currently lack. On one hand, some teachers lack systematic knowledge and practical experience in creative teaching theories, making it difficult to design creative teaching activities. On the other hand, the heavy workload of teachers leaves them with insufficient time and energy to explore and practice creative teaching.

Secondly, there is a lack of teaching resources and support. Creative teaching requires abundant teaching resources and diverse teaching tools, which many schools currently lack. For example, some schools have outdated classroom equipment and lack multimedia teaching devices and modern teaching tools, restricting the conduct of creative teaching activities. Additionally, schools' investment in developing and applying creative teaching resources is insufficient, leaving teachers without adequate resource support.^[1]

Thirdly, the evaluation system has limitations. The current elementary mathematics evaluation system mainly focuses on students' exam scores, neglecting the assessment of their creative abilities and comprehensive qualities. This evaluation system not only fails to fully reflect students' learning conditions but may also negatively impact creative teaching. For instance, teachers may face pressure to prioritize exam scores, limiting the implementation of creative teaching. Additionally, students' performance in creative teaching activities is difficult to evaluate using traditional exam methods, making

the evaluation system a barrier to promoting creative teaching.

Fourthly, there is a lack of understanding and support from parents and society. Implementing creative teaching in elementary mathematics requires understanding and support from parents and society. However, many parents and societal members have limited awareness of creative teaching, constrained by traditional views. Some parents are more concerned about exam scores and skeptical of the effectiveness of creative teaching, fearing it may affect academic performance. Moreover, societal support for creative teaching is insufficient, facing resistance in promoting and implementing creative teaching within the education system.

2 Professional Competence and Innovation Capability of Young University Teachers

2.1 Professional Background and Characteristics of Young University Teachers

Young university teachers are a crucial force in educational reform, possessing a solid professional background and unique teaching characteristics. They typically receive systematic higher education and professional training, demonstrating high competence in both theoretical knowledge and practical skills.

Firstly, young university teachers generally have a strong academic background and professional competence. Most have completed master's or doctoral degrees in education, mathematics education, or related fields before starting their teaching careers in universities. They have a solid grasp of educational theories and teaching methods, enabling them to effectively combine theory with practice and design scientifically sound teaching plans in creative elementary mathematics teaching.

Secondly, young university teachers exhibit strong innovation capabilities and teaching enthusiasm. Being at the early stages of their careers, they are full of energy and creativity, willing to experiment with novel teaching methods and tools. They have a strong sense of mission towards educational reform, actively participating in educational innovation and reform practices to improve teaching effectiveness and students' learning experiences.^[2]

Thirdly, young university teachers have advantages in the application of information technology and modern educational technologies. Growing up in the information age, they are familiar with computer technology and internet applications, adept at using multimedia technology, online education platforms, and digital resources to enrich teaching content and formats, enhancing classroom interactivity and engagement. These technological strengths provide robust support for their innovations in creative elementary mathematics teaching.

Additionally, young university teachers possess strong learning and adaptive abilities. In the face of rapidly changing educational environments and student needs, they can quickly learn and master new educational concepts and teaching methods, promptly adjusting their teaching strategies to meet diverse student learning needs. They are also willing to undergo training and further education, continuously enhancing their professional level and teaching capabilities.

2.2 Advantages of Young University Teachers in Creative Teaching of Elementary Mathematics

Young university teachers bring unique advantages to creative teaching in elementary mathematics, injecting new vitality and creativity into elementary mathematics education.

Firstly, they possess extensive theoretical knowledge and practical experience. Having undergone systematic academic training in education and mathematics education, they are well-versed in advanced educational concepts and teaching methods, which they can apply to elementary mathematics teaching practice. For instance, when designing creative teaching activities, young teachers can use constructivist learning theories and inquiry-based learning methods to stimulate students' interest in learning and their ability to learn independently.

Secondly, young university teachers have a strong sense of innovation and teaching enthusiasm. They are keen on exploring novel teaching methods and willing to break free from the constraints of traditional teaching models by trying diverse teaching strategies. For example, they can incorporate gamified learning, project-based learning, and situational simulations into their teaching to make mathematics lessons engaging and enjoyable, thereby improving learning outcomes.^[3]

Thirdly, young university teachers have significant advantages in applying information technology. The rapid development of modern educational technologies offers ample opportunities for creative teaching. Young teachers can proficiently use multimedia technologies, virtual reality (VR), and online education platforms to design a variety of colorful mathematics teaching resources. For instance, using VR technology, teachers can create realistic mathematical scenarios that allow students to explore mathematical problems in a virtual environment, enhancing their learning experience and comprehension.

Moreover, young university teachers possess strong teamwork and communication skills. The implementation of creative teaching requires close collaboration with other teachers, parents, and education administrators to integrate resources and collectively promote teaching innovation. Young teachers excel in communication and coordination, actively participating in team collaboration, sharing teaching experiences and innovative outcomes, and improving overall teaching quality.^[4]

Finally, young university teachers have strong adaptability and learning capabilities. Faced with various challenges in creative teaching of elementary mathematics, they can swiftly adjust their teaching strategies and continuously improve their teaching methods. For example, during the implementation of creative teaching, young teachers can use classroom observations, student feedback, and teaching reflections to promptly identify and address teaching issues, optimizing teaching design and implementation effects.

3 Guiding Strategies for Creative Teaching of Elementary Mathematics by Young University Teachers

3.1 Guiding and Cultivating Creative Teaching Concepts

Young university teachers in the context of elementary mathematics creative teaching must first guide and cultivate teachers' creative teaching concepts. Creative teaching is not just a teaching method but a teaching philosophy that emphasizes stimulating students' interest and creativity through innovative approaches to enhance teaching effectiveness.

Firstly, teachers should be encouraged to establish a student-centered teaching philosophy. Creative teaching emphasizes the central role of students, encouraging active learning through exploration and practice. Young university teachers can share successful teaching cases and research results to help elementary school teachers recognize the importance and value of creative teaching, fostering a student-centered teaching philosophy. For instance, through teaching observations, case analyses, and

showcasing teaching outcomes, teachers can personally experience and understand the practical effects and application value of creative teaching. For example, presenting a case where an elementary school teacher successfully sparked students' interest in mathematics through project-based learning can illustrate the teaching design, implementation process, and student feedback, thereby enhancing teachers' confidence and understanding of creative teaching.

Secondly, cultivating teachers' innovation awareness and thinking is crucial. Young university teachers can organize special lectures and seminars, inviting educational experts and pioneers in creative teaching to share their teaching experiences and innovative thinking. These activities not only enhance teachers' theoretical literacy but also provide practical references and inspiration. For instance, inviting teachers or educational scholars who have made significant contributions to creative teaching to share their specific practices and reflections in mathematics creative teaching can guide elementary school teachers on integrating innovative ideas into their teaching practices. Additionally, encouraging teachers to engage in teaching reflection and peer exchange can promote continuous innovation and improvement in teaching methods. Regular teaching reflection sessions can be organized for teachers to share their experiences and challenges, learning from each other to continuously refine and optimize teaching strategies.

Lastly, young university teachers should focus on the long-term cultivation and continuous development of creative teaching concepts. Cultivating creative teaching concepts is a gradual process that requires long-term accumulation and continuous reflection. To this end, young university teachers can establish creative teaching research projects, encouraging elementary school teachers to engage in research and practice, continuously reflecting on and improving their teaching concepts and methods. Additionally, creating a development archive for teachers in creative teaching can track their growth and progress, providing regular summaries and feedback to help teachers clarify their development directions and goals.

3.2 Providing Teaching Design and Resources

Effective teaching design and diverse teaching resources are key to achieving creative teaching. Young university teachers can provide systematic support and guidance in teaching design and resource provision to enhance the innovation and effectiveness of elementary mathematics teaching.

Firstly, guiding teachers in creative teaching design is essential. Young university teachers can organize workshops and training courses to detail how elementary school teachers can integrate creative teaching concepts into their teaching designs. During the training, practical cases can be used for teaching design exercises, allowing teachers to master the skills of creative teaching design through practice. For example, when teaching the concept of "fractions," a scenario like a "bakery" can be designed, where students understand fractions and their operations through cake distribution activities.

Secondly, developing and providing diverse teaching resources is crucial. Young university teachers can leverage their academic and technical advantages to develop multimedia courseware, teaching videos, virtual labs, and other resources suitable for creative elementary mathematics teaching, enriching teaching content and formats. Additionally, elementary school teachers can be encouraged to participate in the development and innovation of teaching resources, collaboratively creating and sharing resources to improve teaching quality and effectiveness.

Moreover, supporting teachers in personalized teaching design is vital. Creative teaching requires

personalized design based on students' individual differences and learning needs. Young university teachers can help elementary school teachers master personalized teaching design methods and techniques through case analysis and practical guidance. For example, how to design teaching activities of varying difficulty and formats based on students' learning levels and interests, and how to use differentiated and tiered teaching to meet different students' learning needs. Specifically, guiding teachers to design tiered assignments and activities, providing different levels of learning tasks based on students' actual situations, ensuring each student can grow and progress at their own pace. For instance, for more capable students, more challenging inquiry activities and projects can be designed, while for struggling students, more specific guidance and assistance can be provided to help them gradually master basic knowledge and skills.

3.3 Applying Teaching Methods and Technologies

Innovative application of teaching methods and technologies is crucial for realizing creative teaching. Young university teachers can provide guidance and support in this regard to elementary mathematics teachers.

Firstly, promoting advanced teaching methods is essential. Young university teachers can use demonstration classes and teaching observations to promote advanced methods such as inquiry-based learning, project-based learning, and cooperative learning, helping elementary school teachers master and apply these methods to enhance classroom interactivity and effectiveness. For instance, through project-based learning, students can apply the mathematical knowledge they have learned comprehensively while completing real-world projects, improving their problem-solving and innovation abilities.

Secondly, enhancing teachers' ability to apply information technology is important. Modern information technology offers vast opportunities and tools for creative teaching. Young university teachers can provide information technology training to help elementary school teachers master the use of multimedia technology, virtual reality, online education platforms, and other tools to enhance teaching effectiveness. For example, using virtual reality technology, teachers can create realistic mathematical scenarios where students can explore and practice in a virtual environment, enhancing their learning experience and understanding.^[5]

Additionally, encouraging teachers to innovate and apply new technologies is vital. Young university teachers can support elementary school teachers in exploring and applying new teaching technologies and tools through technical support and resource sharing. Examples include developing mathematics learning applications, designing interactive electronic textbooks, and using artificial intelligence for personalized teaching, thus increasing the technological content and innovation of creative teaching.

3.4 Teacher Training and Professional Development

Continuous teacher training and professional development are essential to ensure the effective implementation of creative teaching. Young university teachers can provide systematic support and guidance for elementary mathematics teachers in this area.

Firstly, conducting systematic creative teaching training is crucial. Young university teachers can design and implement systematic training courses on creative teaching based on the actual needs of elementary mathematics teachers, covering aspects such as creative teaching concepts, teaching design,

teaching methods, and technology applications to comprehensively enhance teachers' creative teaching abilities. For example, offering a variety of training resources and learning opportunities through summer training programs, online courses, and workshops.

Secondly, providing continuous professional development support is necessary. Since creative teaching requires teachers to constantly learn and practice, young university teachers should provide ongoing professional development support for elementary teachers. For instance, establishing professional development support networks, regularly organizing teaching seminars and experience-sharing sessions to promote teacher learning and exchange; setting up creative teaching research projects and topics to support teachers in conducting teaching research and practice innovation; and offering teaching consultation and guidance services to help teachers address problems and challenges encountered in creative teaching.^[6]

Lastly, motivating teachers' career development enthusiasm is important. Young university teachers can use various methods to stimulate elementary school teachers' career development motivation, such as establishing creative teaching awards and honors to recognize outstanding performance in creative teaching; conducting career planning and development guidance to help teachers set career development goals and plans; and providing opportunities for further education and advanced training to support teachers in participating in high-level academic conferences and training courses to enhance their professional level and teaching capabilities.

Conclusion

This study analyzes the current status and challenges of creative teaching in elementary mathematics and combines the professional competence and innovation capabilities of young university teachers to propose a series of guiding strategies. Future research should further refine specific implementation strategies and validate their effectiveness through larger-scale empirical studies. Additionally, attention should be paid to the differences across regions and schools, exploring more diverse and personalized creative teaching guidance methods to better meet the needs of elementary mathematics education and promote the comprehensive development of students.

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