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Research on Teacher Education Support Strategies in Kindergarten Science Activities Based on Eagle Frame Theory

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Abstract: In order to optimize teacher education support strategies in scientific activities in kindergartens, this article studies the support methods of teachers based on the scaffolding theory. By analyzing the core essence of the scaffolding theory, strategies such as grasping the zone of proximal development of young children, emphasizing the dynamic adjustment of scaffolding, creating real situations, and strengthening teacher child interaction are proposed, in order to provide theoretical guidance and practical reference for the development of scientific activities in kindergartens.

Keywords: Eagle frame theory; Kindergarten; Scientific field; Teacher Education Support Strategies

Introduction

The Guidelines for Kindergarten Education (Trial) clearly states that the field of science is one of the five major areas of kindergarten, which plays a unique role in stimulating children's interest in exploration and cultivating scientific literacy. However, in the scientific practice of kindergartens, there are still some problems with the educational support strategies of teachers, such as prioritizing results over processes, and improper bracket settings. The scaffolding theory provides a new perspective and path for optimizing the way teachers support.

1. The Core Essence of Eagle Frame Theory

1.1 Recent Development Zone

The zone of proximal development is one of the core concepts of the theory of scaffolding. It refers to the gap between the highest level of independent task completion for children under adult guidance and the actual development level of relying solely on their own strength to complete tasks. In this area, although children are unable to complete tasks independently, they can still complete corresponding cognitive activities with the assistance of adults or peers with stronger abilities through imitation, prompts, and other means. The recent development zone reflects the dynamism and plasticity of children's development. It is not static, but constantly changing and expanding with the age, experience, and environment of children. Through purposeful and planned teaching activities, teachers can consciously guide children into the zone of proximal development, promoting their psychological functions and cognitive abilities to a higher level.

1.2 Support function

The role of scaffolding is another core concept of scaffolding theory, which refers to the appropriate assistance and guidance provided by teachers or peers with strong abilities to learners during the learning process. This kind of assistance and guidance is like scaffolding built by construction workers, providing necessary support and guidance for the cognitive development of learners. Specifically, the scaffolding role of teachers is mainly reflected in the following aspects: first, teachers should create suitable learning situations for students, stimulate their learning interest and motivation; Secondly, teachers should provide appropriate assistance based on the actual development level of students and guide them to enter the zone of proximal development; Once again, teachers should encourage students to actively participate in learning activities and internalize knowledge through interaction and communication with others; Finally, teachers should focus on cultivating students' independent thinking and problem-solving abilities, timely removing scaffolding, and allowing students to learn independently.

1.3 Internalization process

Internalization is another core concept of the scaffolding theory, which reveals the internal mechanisms of individual cognitive development. Internalization refers to the process in which an individual transforms external activities into internal psychological activities through social interaction with others. This process is not simply knowledge transfer, but a process in which learners actively construct meaning in social interaction. In the process of internalization, language plays a crucial mediating role. Initially, learners complete tasks through external activities such as language under the guidance of teachers; With the improvement of cognitive ability, learners gradually reduce their depend-

ence on external scaffolds and begin to independently engage in internal thinking activities; In the end, the external scaffold was fully internalized into the learner's own cognitive ability, achieving a leap from social interaction to individual internalization.

2. The characteristics of early childhood science education

Early childhood science education has the characteristics of interest, intuitiveness, liveliness, interactivity, and penetration. Interest refers to presenting scientific knowledge in an interesting and vivid way, attracting the attention and interest of young children, and stimulating their enthusiasm for exploration; Intuitiveness refers to providing rich sensory experiences, allowing young children to directly perceive scientific phenomena through observation, operation, practice, etc; Lifestyle refers to selecting familiar things around young children as teaching materials to help understand the relationship between science and life; Interactivity refers to valuing the interaction between teachers and students, as well as the interaction between young children, encouraging questioning, discussion, and collaborative exploration, and promoting active knowledge construction; Permeability refers to the integration of science education into various aspects of daily life, with other fields, to form a comprehensive learning experience.

3. The Path of Optimizing Teacher Education Support Strategies in Kindergarten Science Activities Based on Eagle Frame Theory

3.1 Grasp the zone of proximal development for young children and provide suitable support

Teachers should comprehensively understand the existing experience and ability level of young children, and determine their nearest development zone based on the actual development situation of each child. This requires teachers to conduct in-depth analysis of young children's cognitive characteristics and learning needs through various methods such as observation, questioning, and homework in daily teaching, in order to achieve personalized and targeted teaching. Teachers should carefully design scientific activity content and activities based on the children's recent development zone, and provide suitable scaffolding for children. The setting of brackets should follow the principle of from easy to difficult and from simple to complex, gradually guiding young children to master scientific knowledge and exploration methods. For example, when organizing planting activities for young children, teachers can first guide them to observe the external characteristics of the seeds, then guide them to learn planting methods, encourage them to independently complete the planting process, and finally guide them to record the growth changes of the plants. In this process, teachers gradually reduce the provision of scaffolding based on the cognitive level of young children, promoting the improvement of their independent exploration ability.

3.2 Pay attention to the dynamic adjustment of brackets and promote internalization development

Teachers should adjust the type and strength of brackets in a timely manner according to the learning process of young children. In the initial stage of scientific activities, teachers can provide more direct support, such as demonstration operations, oral explanations, etc., to help young children understand and master basic scientific concepts and methods. As the activity progresses, teachers should gradually reduce the number and frequency of direct scaffolds and instead provide more indirect scaffolds, such as prompts and follow-up questions, to encourage young children to think independently and explore. Teachers should pay attention to the progression and continuity of scaffolding. The adjustment of the bracket is not achieved overnight, but a gradual and continuously deepening process. Teachers should grasp the overall context of scientific activities, introduce new scaffold elements in a timely manner on the basis of the previous activity framework, and guide young children to continuously construct new cognitive schemas based on their existing experiences. The ultimate goal of the scaffold is to enable young children to internalize scientific knowledge and methods, and develop the ability to explore independently.

3.3 Create real-life situations to stimulate children's interest in exploration

Teachers should be good at capturing the curiosity and questions exhibited by young children in their daily lives, and transforming them into the starting point of scientific activities. For example, when spring comes, young children develop a strong interest in the insects in the kindergarten. Teachers can organize children to observe and explore insects, guiding them to experience the wonders of the insect world firsthand. Teachers should provide children with rich exploration materials and tools, and create open exploration scenarios. Scientific exploration in young children requires a lot of practical operation and hands-on practice, and simple language preaching is difficult to stimulate children's interest. Therefore, teachers should provide children with various physical materials, image materials, scientific instruments, etc., and encourage them to explore the scientific world through hands-on operation and personal experience. At the same time, teachers should create a relaxed and democratic atmosphere for young children to explore, encourage them to make bold assumptions and try, and allow them to make mistakes and failures in the exploration process. Only in an open and free environment can children's curiosity and thirst for knowledge be fully stimulated. In addition, teachers should guide young children to combine exploration with games and learn science in a relaxed and enjoyable atmosphere. The learning of young children has a playful characteristic, and boring exploration activities are difficult to attract their

attention. Therefore, teachers should be good at integrating scientific exploration into game situations, and through role-playing, situational simulation and other methods, let young children explore and play in the game.

3.4 Strengthening teacher child interaction and promoting the development of scientific abilities

Teachers should guide young children to actively think and express themselves through heuristic questioning. In scientific activities, teachers should not directly impart knowledge to young children, but should encourage them to express their thoughts and guesses by asking open-ended questions. Secondly, teachers should pay attention to listening to and responding to the ideas of young children, and create an interactive atmosphere of equality and respect. Young children often come up with immature and immature ideas in scientific exploration. Teachers should learn to be tolerant and encouraging, rather than simply denying or criticizing them. Teachers should carefully listen to the voices of each child, actively respond and affirm their ideas, and make them feel valued and respected. At the same time, teachers should also guide young children to listen to and comment on each other, and cultivate their sense of cooperation and communication skills. In addition, teachers should also guide young children to apply scientific knowledge to solve practical problems, improve their hands-on operation ability and comprehensive application ability. The learning of scientific knowledge cannot stay on the surface, it must be combined with practical life in order to truly internalize the abilities of young children. Therefore, teachers should create opportunities for young children to apply scientific knowledge to solve problems, guide them to practice and experience firsthand.. Finally, teachers should attach importance to the evaluation and reflection of scientific activities, and guide young children to learn self-evaluation and regulation.

4. Conclusion

Kindergarten science activities are an important way for young children to understand the world and develop scientific abilities. As organizers and guides of activities, the scientific and effective educational support strategies of teachers directly affect the learning outcomes of young children. In practice, teachers should base themselves on the actual level of young children, dynamically adjust the scaffolding, stimulate their interest in exploration, strengthen equal interaction, and ultimately promote meaningful development of young children in scientific activities.

Reference

[1] Zhao Yi Research on the Quality of Teacher Teaching Support in Science Education Activities in Kindergarten Large Classes [D]. Guangxi Normal University, 2023

[2] Zhou Jiaqi A Study on Teacher's Teaching Support Behavior in the Exploration Phase of Kindergarten Science Education Activity Groups [D]. Northeast Normal University, 2023

[3] Pei Yaoyao A Study on the Current Status of Teacher Education Support in Kindergarten Science Activities Based on Eagle Frame Theory [D]. Liaoning Normal University, 2019