

Study on Influencing Factors and Optimization Paths of Creative Thinking Development in Early Childhood Independent Inquiry Activities

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Abstract: Creative thinking is a core ability for young children to adapt to change, solve problems, and express themselves innovatively in future society. Independent inquiry activities provide an important pathway for the development of their creative thinking. This study systematically analyzes the key mechanisms influencing the development of creative thinking in early childhood independent inquiry activities, starting from internal factors such as individual differences and emotional experiences, external factors such as family support, teacher guidance, and peer interaction, and macro factors such as socio-cultural and educational policies. Based on this, it proposes pathways to optimize the implementation of inquiry activities, including providing diverse and open materials and inquiry environments, constructing activity designs that are both structured and open, promoting the transformation of teachers' roles from knowledge transmitters to learning facilitators, strengthening teachers' professional development, promoting collaborative education between families and schools, and effectively utilizing social resources to expand inquiry experiences. This research aims to provide theoretical reference and practical guidance for the implementation and innovation of kindergarten inquiry activities, further enhance the effectiveness of cultivating children's creative thinking, and promote their all-round development.

Keywords: Early Childhood Development, Independent Inquiry Activities, Creative Thinking.

1. Introduction

In today's society, creative thinking has become one of the core competencies for talent in the 21st century, and early childhood is precisely the period for cultivating this crucial ability. As an important component of basic education, one of the core goals of early childhood education is to stimulate and develop children's creativity through active participation and self-directed inquiry activities. Although the importance of self-directed inquiry activities is widely recognized, effectively identifying the deep-seated factors influencing the development of children's creative thinking and constructing a systematic optimization path remains a challenge in the field of preschool education. This study aims to fill this gap by systematically analyzing the internal factors (such as individual differences and emotional states) and external factors (such as family environment, teacher support, and peer interaction) that influence children's creative thinking development in self-directed inquiry activities. Based on this analysis, specific optimization strategies are proposed, including enriching the learning environment, transforming the teacher's role, and strengthening collaboration between home, school, and community. This research not only provides constructive suggestions for improving children's creative thinking abilities but also offers practical guidance and theoretical support for the formulation of educational policies and the improvement of teaching methods, with the aim of cultivating innovative talents who can meet the needs of future society.

2. Concepts

Self-Directed Inquiry Activities: Self-directed inquiry activities refer to a learning method in which young children,

under the guidance of teachers, actively choose materials, design processes, and solve problems based on their own interests and abilities. The core concept lies in children's curiosity driving them to actively engage with and manipulate their surroundings, gaining experience and solving problems through practical operation and reflection. It emphasizes children's subjectivity, active participation, openness, and exploration, with the core goal of satisfying their intrinsic motivation. Self-directed inquiry activities for young children take various forms, mainly including exploratory games spontaneously organized by children during free play, material manipulation and exploration within specific learning areas during area activities, and systematic and continuous inquiry projects around a specific theme, i.e., theme-based inquiry.

Creative Thinking: Creative thinking is the ability to generate novel, unique, and valuable ideas or solutions. It has four main characteristics: fluency (generating a large number of ideas in a short time); flexibility (thinking about problems from different angles and dimensions); originality (generating unique and unusual viewpoints); and refinement (refining and perfecting existing ideas). Creative thinking plays a crucial role in early childhood development. It not only promotes children's problem-solving abilities and cultivates their innovative spirit and adaptability, but also supports their comprehensive cognitive, emotional, and social development.[1]

There is an inseparable and mutually reinforcing relationship between independent inquiry activities and the development of creative thinking. Independent inquiry activities provide an ideal practical environment, necessary environmental support, and intrinsic motivation mechanism for the development of creative thinking, and are a key pathway to stimulating children's innovative potential.

Specifically, self-directed inquiry activities systematically promote the development of creative thinking in the following ways: First, they provide abundant opportunities for practice, enabling children to break through the limitations of conventional thinking and find unconventional and unique solutions by manipulating, trying, and solving practical problems. Second, the activities are guided by children's interests and curiosity, effectively stimulating intrinsic motivation and satisfying their desire to explore. This powerful internal drive encourages children to engage more deeply in exploration, dare to take risks and challenges, and thus generate more innovative ideas. Third, during the exploration process, children will encounter various difficulties and challenges, which naturally cultivates their problem awareness, prompting them to actively think, raise questions, and try to find diverse and creative solutions. Finally, the results of self-directed inquiry are often open-ended and diverse. The activities encourage diverse expressions, allowing children to present their discoveries in different ways (such as building, drawing, performing, and using language). This multi-dimensional expression greatly cultivates their divergent thinking and unique perspectives.

3. Factors Influencing the Development of Creative Thinking in Children's Independent Inquiry Activities

Children's independent inquiry activities, as an important way to promote the development of creative thinking, are influenced by multiple factors. These factors include internal factors such as children's individual characteristics and emotional state, external support conditions such as family, teacher, and peer relationships, and macro-level constraints such as the socio-cultural environment, educational policies, and socio-economic level.[2] The interaction of these multiple factors jointly affects children's depth of participation, thinking quality, and creative performance in inquiry activities. Therefore, in-depth exploration of the key factors influencing the development of children's creative thinking helps to build a more targeted support system in practice, enhancing the educational value and implementation effectiveness of independent inquiry activities.

3.1. Internal Factors

3.1.1. Individual Differences in Children Affect

Exploration Motivation and Creative Potential

Children exhibit significant differences in personality traits, interests, and cognitive abilities. These differences directly affect their initiative and creative expression in inquiry activities. For example, extroverted children are more willing to express their ideas and try different paths, while introverted children may need more time and a sense of security to engage in thinking exploration. Interest is a crucial driving force for children's sustained exploration; the stronger the interest, the easier it is to generate deep thinking and creative associations. Cognitive ability level influences children's understanding of problems and the flexibility of their thinking. Therefore, respecting children's differences and providing diverse participation methods in independent exploration activities are important prerequisites for stimulating creative thinking.

3.1.2. Emotions and Feelings Determine Thinking Activity and Creative Performance

Children's emotional experiences and states are closely related to the development of creative thinking. Positive,

pleasant, and safe emotional experiences can enhance children's openness to thinking, making them more willing to try new methods and engage in creative expression; conversely, negative emotions such as anxiety, tension, and rejection can inhibit children's imagination and exploratory behavior, leading to rigid thinking. Emotional support comes not only from feedback from others but also from children's perception of their own abilities and self-efficacy. Only when children feel recognized and encouraged in exploration activities can their creative thinking be fully activated.[3]

3.2. External Factors

(1) The Support of the Family Environment Affects the Foundation for Cultivating Children's Creative Thinking

The family is an important starting point for the development of children's creative thinking. The openness and quality of interaction in parent-child relationships determine whether children have the psychological foundation to dare to explore and express themselves. Family education styles, family culture, and parents' understanding of creativity influence children's thinking patterns and innovative awareness. Supportive families are more likely to provide children with materials, time, and contexts to promote creative exploration; while controlling or utilitarian families may suppress children's imagination and free expression. Therefore, family support is an important component of external facilitating factors.[5]

(2) Teachers' guidance and teaching philosophy determine the effectiveness of inquiry activities. In the kindergarten environment, teachers are the organizers and guides of independent inquiry activities. Their educational philosophy, teaching methods, and understanding of creative thinking directly affect the depth of children's exploration. Encouraging, heuristic, and open-ended teaching methods can stimulate children's divergent thinking, while excessive lecturing and fixed answer-oriented approaches will limit children's creative expression. At the same time, teachers' sensitivity to children's differences, observation skills, and support strategies are also key to the development of creative thinking. Whether teachers can create tolerant, challenging, and resource-rich learning environments determines the innovative potential of inquiry activities.

(3) Peer interaction promotes the collision of ideas and the generation of creativity. Peer relationships play an important role in promoting collaboration, complementary thinking, and enhanced expression in independent inquiry activities. Peer discussions, role assignments, and clashes of viewpoints can encourage young children to move from single-minded thinking to multi-faceted thinking, fostering creative associations and problem-solving approaches. Simultaneously, a positive peer environment can enhance children's confidence and willingness to express themselves, while exclusion, competition, or comparison can inhibit it. Therefore, the quality of peer interaction directly impacts the socialization dynamics of children's creative development.

3.3. Cultural and Social Factors

3.3.1. Sociocultural Background Shapes Creative Thinking Value Orientation

Sociocultural factors have an implicit guiding role in the development of creative thinking. Different cultures' value recognition of innovation, expression, rules, and independence influences children's attitudes towards creative behavior. For example, a cultural environment emphasizing

obedience and uniformity may weaken children's tendency to express unique viewpoints, while a cultural atmosphere that supports diverse expression and innovation helps to cultivate open-mindedness and creative awareness. Therefore, the sociocultural environment is a profound factor influencing children's creative thinking.[4]

3.3.2. Educational Policies and Socioeconomic Conditions Affect Resource and Opportunity Access

Educational policies have a direct impact on curriculum structure, teaching orientation, and investment in creative cultivation. The more policies emphasize holistic education and the spirit of inquiry, the more opportunities children have for creative development. Meanwhile, socioeconomic conditions determine the richness of educational resources, materials, and activity spaces, thus affecting the quality of children's participation in creative inquiry. Higher levels of economic and policy support increase the likelihood of children gaining diverse exploratory experiences, thereby promoting the development of creative thinking.

4. Optimization Path for the Development of Creative Thinking in Children's Independent Inquiry Activities

4.1. Strategies for Optimizing Independent Inquiry Activities

(1) Providing Abundant Learning Materials and Environments to Construct Multi-Dimensional Exploration Situations

To promote the development of children's creative thinking in independent inquiry activities, the creation of the environment and the provision of materials should reflect openness, diversity, and inspiration. Materials should not only be observable, manipulable, and convertible, but also support children's recombination, imagination, and re-creation during exploration. Natural materials such as leaves, sand, and branches can stimulate children's attention to differences in texture, grain, and form; manipulable teaching aids such as building blocks, interlocking components, and pulley devices enable children to experience cause and effect relationships in construction and experimentation; art media such as color materials, clay, and textile fragments can promote expressive creation; and technological experience resources such as light and shadow devices, simple circuit materials, and sound sensors enable children to form multi-sensory connections in cross-domain experiences. Material diversity can strengthen children's observation, association, and expression abilities, providing external support for the generation of creative thinking.[6]

In terms of environmental design, emphasis should be placed on fluidity, generativity, and interactivity. Through spatial divisions such as exploration corners, experimental tables, open creative areas, material reuse areas, and thematic exploration areas, children can freely choose activity paths and continuously extend their exploration themes. The environment should be adaptable, dynamically adjusting to changes in children's interests, questions, and exploration directions, making the space a "resource that grows with them." Simultaneously, appropriately incorporating suggestive elements into the environment, such as question guide cards, recording icons, classification labels, and display

boards, can help children develop preliminary reflective awareness and expressive abilities. Furthermore, a safe, relaxed, and non-judgmental atmosphere encourages children to dare to try, dare to fail, and dare to express different viewpoints, thus avoiding the inhibition of creative expression due to psychological concerns.

Throughout the implementation process, the environment not only provides physical stimulation but also serves as a crucial medium for promoting children's open-minded thinking, exploratory behavior patterns, and innovative expression abilities. The systematic design of materials and the environment will enable children to gradually develop creative thinking qualities through activities such as perception, experimentation, reasoning, and creation, comprehensively enhancing the educational effectiveness of independent inquiry activities.

(2) Designing Inquiry Activities Combining Structured and Open-Ended Approaches to Enhance Thinking Depth The design of inquiry activities should balance structured guidance with open-ended thinking space, allowing children to maintain the freedom of independent exploration within the existing scaffolding. Structured activities emphasize the clarity of the problem context, the hierarchy of steps, and the comprehensibility of methods, helping children establish initial inquiry awareness and activity pathways; while open-ended activities encourage children to propose diverse perspectives, explore different methods, and generate creative expressions. Combining the two ensures that children are neither lost due to complete freedom nor stifled by excessive constraints.

In terms of activity organization, strategies such as problem chain guidance, hierarchical task progression, experiential learning, and thematic inquiry can be used to continuously deepen children's thinking through understanding, exploration, discovery, and expression. For example, by posing heuristic questions such as "Why is this happening?", "What else can be done?", and "Are there different results?", children can be guided from intuitive thinking to reasoning, constructive, and divergent thinking. Furthermore, the content of the activities should be connected to children's life experiences, giving the inquiry real meaning and thus enhancing participation motivation and cognitive depth. Appropriate activity design can not only increase children's participation but also promote the gradual development and maturation of their creative thinking through continuous exploration.

4.2. The Transformation of the Teacher's Role

4.2.1. From Knowledge Transmitter to Guide and Supporter, Stimulating Children's Exploration Potential

In self-directed inquiry activities, teachers should transform their roles from "answer providers" to "thinking stimulators." Teachers should be adept at stimulating children's depth of thinking and willingness to express themselves through heuristic questioning, strategic guidance, emotional support, and attentive feedback. For example, teachers can guide children to develop exploratory awareness and innovative courage through open-ended questions, delayed evaluation, and encouragement of unique expression. Teachers' feedback should emphasize positivity, inclusivity, and diversity, avoiding the suppression of children's creative expression due to inappropriate evaluation methods.

Simultaneously, teachers should create a safe, equal, and

answer-free exploration atmosphere, making children feel that their views are respected, their attempts are encouraged, and their thinking is accepted. The effective transformation of the teacher's role not only affects children's participation but also directly determines the activity level, development trajectory, and final performance of their creative thinking.

4.2.2. Strengthen Teacher Professional Development and Training to Enhance Creative Guidance Ability

Teachers' professional growth is a crucial foundation for the effective implementation of independent inquiry activities. Teacher training should cover theories of creative thinking development, inquiry-based teaching models, children's cognitive and emotional characteristics, activity observation and diagnostic skills, and learning support strategies. Simultaneously, teachers' understanding of inquiry activities and their practical abilities should be enhanced through teaching research exchanges, collaborative lesson planning, case studies, and reflective practice.[7]

Schools should also construct multi-dimensional development platforms for teachers, such as interdisciplinary collaboration mechanisms, research project support, incentive policies for teaching innovation, and the introduction of resource experts and demonstration classrooms, enabling teachers to optimize their teaching concepts and improve their professional judgment through continuous learning. Improved teacher professional development can effectively enhance the quality of their guidance in independent inquiry activities, thereby strengthening the overall effect of cultivating children's creative thinking.

4.3. The Synergistic Effect of Family and Society

4.3.1. Promoting the Integration of Family Education and School Education to Form a Joint Force for Creative Cultivation

The development of children's creative thinking not only occurs in the school environment but also extends into family life scenarios. Schools should help parents understand the importance of cultivating creative thinking through home-school collaboration activities, family inquiry projects, parent-child cooperative experiences, and exchanges of educational philosophies, guiding them to abandon exam-oriented, obedient, and controlling educational methods. Consistency between home and school in educational concepts, methods, and resource provision can enhance children's exploratory spirit, innovative awareness, and independent expression abilities.

Furthermore, families can extend the continuity of school-based inquiry-based learning by providing open-ended materials, allowing independent experimentation, respecting children's unique expressions, and discussing phenomena and problems with children. The stronger the collaboration between family and school, the more stable the support system for children's creative thinking development.

4.3.2. Effectively Utilizing Social Resources to Expand Creative Inquiry Experience Space

Social resources are of great value in expanding children's exploration areas, enriching their thinking experiences, and deepening their innovative experiences. These include community cultural spaces, science museums, libraries, nature education bases, public art venues, and vocational experience environments, all of which can serve as practical platforms for children's inquiry activities. Schools should

proactively integrate social resources to conduct visits, real-world observations, role-playing, and thematic explorations, enabling children to establish connections between perception, thinking, and innovation in real-world contexts. Social media, public awareness campaigns, and educational outreach organizations can also play a valuable role by disseminating innovative educational concepts and increasing social attention and participation, thus providing a more open social atmosphere for the development of children's creative thinking.

4.4. Establishing an Assessment and Feedback Mechanism

4.4.1. Constructing a Comprehensive Assessment System, Focusing on Process and Thinking Quality

Creative thinking assessment should differ from the traditional results-oriented model, emphasizing the inquiry process, thinking path, expression methods, and innovative tendencies. Assessment methods may include process observation records, growth portfolios, learning outcome presentations, children's self-expression, teacher evaluations, and peer evaluations, making the assessment more comprehensive, authentic, and developmental. Such an assessment system not only enables teachers to accurately grasp children's thinking state but also helps children understand their own exploration strengths and areas for improvement, thereby enhancing their reflective thinking and self-improvement abilities.

4.4.2. Implementing Timely Feedback and Strategy Adjustments to Promote the Optimization and Improvement of Inquiry Activities

Effective feedback should be targeted, encouraging, and guiding, enabling children to clearly understand the highlights and difficulties they encountered during the exploration process. Meanwhile, teachers should adjust activity design, material provision, guidance methods, and learning pace based on feedback data to better align self-directed inquiry activities with children's developmental needs and learning differences. Through a cyclical and dynamic feedback mechanism, the teaching structure can be continuously optimized, children's participation enthusiasm can be improved, and their creative thinking abilities can be continuously enhanced through positive experiences.

5. Conclusion

Children's self-directed inquiry activities are a core pathway to promoting the development of creative thinking. Their role is not only reflected in the transformation of learning methods but also in the overall upgrading of educational philosophies, support systems, and training objectives. This study, starting from the internal factors, external factors, and socio-cultural background influencing children's creative thinking development in self-directed inquiry activities, reveals the comprehensive mechanism of multiple factors, including individual differences, emotional experiences, family support, teacher guidance quality, peer interaction, and educational environment resources. Based on this, it proposes practical paths to optimize self-directed inquiry activities, including constructing a multi-dimensional material environment, designing inquiry activities that combine structured and open-ended approaches, transforming teachers' roles, enhancing professional guidance capabilities, promoting home-school collaboration and social resource

linkage, and establishing an assessment and feedback system that emphasizes process and thinking quality. Research indicates that children's divergent thinking, original expression, problem-solving abilities, and innovative awareness can only be fully developed when the educational environment truly respects their autonomy, exploratory desires, and unique expression, and provides continuous, open, inclusive, and challenging learning conditions through a systematic support network. Therefore, promoting the cultivation of creative thinking in young children is not only a task at the level of educational practice but also a strategic requirement for cultivating innovative talents for the future society. This research has theoretical implications and practical value for the field of preschool education, providing directional references for curriculum design, teacher training, home-school cooperation, and educational policy guidance, and laying the foundation for further in-depth research on the dynamic mechanisms and long-term effects of creative thinking development.

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