Journal of http://www.satursonpublishing.com/
Research in Multidisciplinary Methods and Applications
ISSN 2957-3920 (Online) ISSN 3007-7060 (Print)
Volume 4, Issue 9, September 2025

Difficulties and Countermeasures for Kindergarten Teachers in Designing Scientific Collective Education Activities

Luo Yuchen, Li Heng

Zunyi Normal University, School of Teacher Education, Zunyi, 563006, China

Abstract: In kindergartens, conducting scientific collective education activities is an important method of science education and a crucial part of the five major areas of the kindergarten. The design of scientific collective education activities is key to ensuring the smooth completion of activities. Therefore, teachers' ability to design scientific activities is very important. Only with correct design of scientific activities can teachers improve teaching quality, promote the comprehensive development of children's scientific abilities, and promote the professional growth of teachers themselves. This study focuses on kindergarten teachers in a third-tier city and uses case studies to examine the difficulties and countermeasures faced by kindergarten teachers in designing scientific collective education activities. The aim is to enrich relevant research achievements in the field of early childhood science education and help ensure the smooth implementation of collective science education activities in kindergartens

Keywords: preschool teachers, scientific collective education, educational activity design

1 INTRODUCTION

The design of scientific collective education activities in kindergartens refers to an educational activity plan that teachers formulate in advance, designed to facilitate activities and promote children's scientific development. Precise design of scientific collective education activities is the most important step in the process of scientific education activities and a prerequisite for ensuring their effectiveness. Currently, China is paying increasing attention to the design of science teaching activities in kindergartens, and research on them is also increasing. Yan Huijuan analyzed the current situation of science education activities among kindergarten teachers using kindergarten kindergartens as an example, identified influencing factors, and offered suggestions. Pan Chaonan took Harbin Kindergarten as an example to analyze the current state of science education and proposed suggestions for improving teaching quality. Li Huaiqing studied and analyzed the problems in kindergarten science education and proposed solutions. Tian Baoguo conducted research on science education activities in urban kindergartens in Zhengzhou, pointing out problems in early childhood science education regarding cognitive level, educational concepts, and management decision-making. Gan Yuye conducted case studies on science education activities in rural kindergartens and proposed specific activity design suggestions for rural kindergartens.

The above scholars have studied the current situation of science education activities and proposed suggestions from the perspective of science education design. Overall, theoretical research is mostly concentrated in economically developed regions, with case studies primarily conducted on kindergartens, while surveys on kindergarten teachers in third-tier cities are quite lacking. Therefore, this study will interview teachers working on the front lines in third-tier cities, collect typical cases of teacher science activity design, analyze and organize them, identify difficulties teachers face in designing scientific collective education activities, and, based on theories related to early childhood science education, teacher professional development theory, and policy guidelines, offer educational suggestions to help and inspire the smooth implementation of science education activities in kindergartens.

2 RESEARCH SUBJECTS AND METHODS

2.1 RESEARCH SUBJECT

Five kindergarten teachers were randomly selected from five kindergartens in Zunyi City. Using literature analysis, case studies, and interviews, the teachers of the five kindergartens were interviewed and their activity design materials analyzed. Among the five selected teachers, three were from public kindergartens and two from private kindergartens. Below is the basic information of the teachers.

Journal of http://www.satursonpublishing.com/
Research in Multidisciplinary Methods and Applications
ISSN 2957-3920 (Online) ISSN 3007-7060 (Print)
Volume 4, Issue 9, September 2025

TABLE 1: INFORMATION ON INTERVIEWED TEACHERS

Teacher ID	Gender	Education	Age
A	Female	Junior college	33
B	Female	Bachelor's degree	26
C	Female	Bachelor's degree	23
D	Female	Junior college	30
E	Female	Bachelor's degree	28

2.2 RESEARCH METHODS

2.2.1 BIBLIOGRAPHIC LAW

In the school's digital library and CNKI, relevant papers or journal materials were searched for keywords such as "science education activities," "early childhood science activity design," and "collective early childhood education activities," as well as books related to science education in the library, which were organized and analyzed as the basis for this research, thereby facilitating the framework of the paper.

2.2.2 INTERVIEW METHOD

The interview method is a method for collecting data and conducting targeted interviews. It is simple and easy to implement, widely applicable, and the interview process can be appropriately adjusted, offering considerable flexibility. The interview method is a research approach in this study, interviewing five teachers from different educational levels and kindergartens. The outline of the interview referenced the "Guidelines for Learning and Development of Children Aged 3–6," Liu Zhanlan's "Preschool Science Education," and was formulated in conjunction with Yan Huijuan's "Research on the Current Situation of Science Education Activity Design for Preschool Teachers." The main interview content focused on several aspects: the idea behind activity design, the selection of the theme content of scientific collective education activities, and difficulties encountered in process design. The interviews involved five teachers from different kindergartens and educational backgrounds, who conducted formal and informal interviews with each teacher about ten minutes

2.2.3 CASE STUDY METHOD

A case study is a thorough study of a field, individual, or specific event, focusing on what can be found special from a single case. This study mainly focuses on investigating the current status and countermeasures of scientific collective educational activity design by kindergarten teachers, gathering data through interviews with teachers and materials from the activity design of five teachers, and drawing conclusions from them.

3 PROBLEMS AND ANALYSIS IN THE DESIGN OF SCIENTIFIC COLLECTIVE EDUCATION ACTIVITIES IN KINDERGARTENS

3.1 PROBLEMS IN THE DESIGN OF SCIENTIFIC COLLECTIVE EDUCATION ACTIVITY OBJECTIVES FOR KINDERGARTEN TEACHERS

3.1.1 ACTIVITY GOALS ARE REPETITIVE AND PERSPECTIVES ARE NOT UNIFORM

From a horizontal perspective, the three key elements of the kindergarten science collective education activity goals are: scientific knowledge experience, scientific ways of thinking and methods, and scientific emotional attitudes and values. The design of overall scientific activity objectives includes the above elements. When expressing the goals of collective science education activities in kindergarten, based on the actors in early childhood education activities, two forms of expression based on the activity objectives are proposed: "developmental" goals and "educational" goals. Children are the main subjects of developmental goals, while teachers are the main subjects of educational goals. Regardless of the form used, the scientific activity objectives must be consistent before and after. Through teacher interviews and case analysis, teachers often add emotional attitude objectives to cognitive and skill objectives, and finally express emotional attitude objectives separately, resulting in repeated expressions and confusion between developmental and educational objectives, resulting in inconsistent perspectives.

Case 1: Senior Class Science Activity "Fun Colors"

Activity Objectives: (1) Understand that red, yellow, and blue can be combined into various colors.

(2) Boldly explore the coloring process to deepen understanding of color.

(3) Experience the wonder of combining red, yellow, and blue to create new colors, and awaken children's interest in color activities.

(4) Develop children's curiosity and willingness to try new things.

(5) Be willing to boldly try new things and share your feelings with peers.

Researcher: How did you design this activity objective? What problems did you encounter during the design process?

Teacher A: I design based on the "Guide" and often write a whole bunch.

Based on the text on teacher goal design and interviews with teachers, in Case One, there are five objectives: Objective (1) is a cognitive goal, Goal (2) includes a skill objective and an emotional objective, Objective (3) is designed as an emotional goal, Goal (4) includes both an emotional and skill objective,

Journal of http://www.satursonpublishing.com/
Research in Multidisciplinary Methods and Applications
ISSN 2957-3920 (Online) ISSN 3007-7060 (Print)
Volume 4, Issue 9, September 2025

and Objective (5) is an emotional objective. The goals are repeatedly designed and not expressed accurately enough. Objectives (1), (2), and (5) are development-oriented goals, with children as the main focus. Objectives (3) and (4) focus on teacher education, with teachers as the main participants. The perspectives of the statements of the objectives are inconsistent. In summary, teachers' ability to write and design scientific objectives is insufficient.

3.1.2 The Goal Design Ignores The Age Characteristics Of Young Children

The characteristics of children's age stages are an issue that cannot be ignored when designing educational activities. From a vertical perspective, the specific goals of kindergarten science collective education activities should align in direction with the goals of each age stage and unit objectives of kindergarten science education. The specific goals of kindergarten science education activities are gradually decomposed from higher-level goals. Therefore, when formulating goals for scientific collective education activities, teachers should gradually provide appropriate goals based on the age characteristics of children and the characteristics of science subjects. Refer to the main points proposed for children at each age stage in the "Guidelines." During the investigation, it was found that teachers only considered how the teacher would carry out the activity goals in designing activity objectives, making the design content too difficult for children at that age stage and ignoring the characteristics of their age stage.

Case 2: Middle Class Science Activity "Interesting Symmetry"

Activity Objectives: (1) Gain a basic understanding of axisymmetric figures, and be able to judge overall figures based on local figures.

(2) Be able to use scissors and fold in half to cut out symmetrical figures.

(3) Experience the beauty of symmetry in mathematics and cultivate children's interest in mathematics.

Middle class teacher: This is my goal for the open class activity, which I only decided after working with several teachers. But after this activity, I discovered many problems. The goals are too difficult for middle class children, which is a common challenge in our grade. We always can't grasp the children's age stage goals well, so we haven't set reasonable targets.

The Science Section of the Guidelines points out that in mathematical cognition, children aged 4 to 5 can perceive and discover the basic features of common geometric shapes, recognize some basic plane figures, such as semicircles, trapezoids, rhombuses, etc. In Case 2, "Interesting Symmetry," the goal of design (1) is to initially understand axisymmetric figures and be able to judge overall shapes based on local figures. There is no problem recognizing axisymmetric figures, but "Math Education for Preschool Children" points out that only senior kindergarten children can understand the typical features of shapes and form a "standard style" in their minds, enabling them to make correct judgments based on the characteristics of shapes. Therefore, this goal design is too difficult for middle class, neglecting the children's age level, resulting in low participation in activities and difficulties in understanding. Teachers have not grasped the children's age characteristics well and not fully understood them.

3.2 Problems Faced By Kindergarten Teachers In Designing The Content Of Scientific Collective Education Activities

3.2.1 The Selection Of Content Lacks Novelty

The curriculum content of kindergarten science education is highly autonomous in its selection. It can be said that each kindergarten's curriculum content can be different and have its own characteristics. The book "Science Education for Preschool Children" points out that the educational content in the scientific field at the kindergarten stage includes: scientific emotional attitudes and values, scientific inquiry, biology, materials and their properties, natural phenomena and weather, tools and technical design, and several other aspects. The remaining content can be adjusted according to the actual developmental situation of the children. The characteristics of preschool children's science are essential Request Educational content should be life-oriented, focusing on interest and generation, and its value should be sustainable and multi-dimensional. Therefore, the content of science education must be updated in real time to ensure novelty. In kindergartens, teachers mostly use reference books or online materials for content selection. Some kindergartens have used the same textbook for several years, with different age groups repeatedly designing the same content, lacking novelty.

Researcher: On what basis do you determine the theme of science education activities?

Teacher A: Our grade group designs based on reference books through discussion. The reference books have themes tailored for each age group, and then we make revisions based on the development of children in each class. If the content is already familiar to the children, we increase the difficulty of the relevant content. If it's something unfamiliar to the children, we break down the activities step by step.

Teacher B: Our kindergarten does not have exact reference books; the themes are all discussed and formulated by teachers, and we refer to online sources. The content mainly observes the changes of the seasons, as well as the characteristics of children's age stages and interests in them.

Teacher D: It's determined by combining reference books and guides. Then through things that interest the children; And also weather changes, seasonal changes, festivals, and so on. I've used this reference book for several years, and I've almost memorized the activities.

Interviews with teachers show that teachers use textbooks or guides as references when selecting content, and design based on children's existing experiences and interests. Overall, they rely more on textbooks and reference books. Teachers lack reflection in science education, designing only according to

Journal of http://www.satursonpublishing.com/
Research in Multidisciplinary Methods and Applications
ISSN 2957-3920 (Online) ISSN 3007-7060 (Print)
Volume 4, Issue 9, September 2025

higher-level regulations or textbook content, without reflecting on and developing the curriculum. The most common topics in science in kindergartens are animals, weather, seasons, festivals, and other common themes, which basically remain the same every year and may not change for several years. This has led to a stereotypical impact on science education and a lack of novelty in content selection. Teachers have not updated their views on science education in a timely manner, and kindergartens have not updated teaching materials to provide support.

3.2.2 Content Design Lacks Inquiry And Operability

Children are naturally driven by strong curiosity and a desire to explore; they use their senses to perceive external things and directly understand the world. Therefore, science education emphasizes allowing children to directly interact with things in the real world, allowing their senses to truly experience things and enabling them to operate hands-on. The design of inquiry and operation content includes the selection of themes, choosing themes that involve thinking and exploration, avoiding fixed knowledge and experience. Teachers must pose challenging questions and tasks to stimulate children's curiosity and willingness to act. Teachers provide children with materials for research and use, enabling them to practice hands-on activities. In kindergarten activities, teachers tend to favor cognitive activities rather than those requiring hands-on activities, generally using courseware with pictures and sounds, which children cannot engage in hands-on or inquisitive. The design of activity content lacks inquiry and operability.

Researcher: What type of content did you choose for the collective science education activities? What teaching aids are needed?

Teacher C: Generally, science-type collective education activities are combined with language and social domains. Among cognitive types, the most common teaching aids are still courseware

Teacher A: There are many cognitive topics in math, and we use the course-based courseware for hands-on activities. Some courseware can be used by children

Teacher B: There are both inquiry-based and cognitive activities. Some inquiry-based activities allow children to use their existing experiences as the basis for activities. For example, when exploring leaves, children are asked to draw pictures based on what they know about leaves

Teacher D: In the field of science, group activities in kindergarten are mostly cognitive activities. Sometimes we see interesting inquiry activities online, but we give up because there are no practical teaching aids

Interviews with teachers show that kindergartens tend to favor mathematical cognition types in their choices, while inquiry-based activities take into account the presence or absence of hands-on materials. Cognitive activities are easier to operate, while inquiry-based activities often yield unsatisfactory results. Therefore, children lack opportunities and conditions for direct contact with objects, as well as teaching aids and materials available for operation. This is also one of the factors teachers consider when choosing content. Inquiry and hands-on activities are the best methods for children to learn knowledge and experience in science, and handling physical objects is decisive for them. Using only some attractive pictures or electronic player sounds to interact with children does not achieve direct feelings and does not align with children's learning methods. Teachers lack reflection on inquiry activities, avoid questions, and choose activities that are easy to operate, without considering children's overall development. At the same time, kindergartens lack practical and usable materials, and support is limited.

3.3 Problems Faced By Kindergarten Teachers In Designing The Process Of Scientific Collective Education Activities

3.3.1 Process Design Neglects Children's Subjectivity

Collective education activities are specialized activities planned, designed, organized, and implemented by kindergarten teachers. They are an important form in kindergarten education. They are a process of supporting, encouraging, encouraging, and guiding children to learn smoothly and achieve good results. In this activity, children are the masters of learning, while teachers only play a guiding role. In practice, teachers often take the leading role. Due to the nature of science education, teachers face difficulties in teaching and children in learning. When designing activities, teachers often place teaching as the main focus to avoid this problem, leaving children very passive and children taking the central role in learning.

Researcher: What problems have you encountered in designing the implementation of collective science education activities?

Teacher E: After conducting group education activities, I found that the children's activities were relatively limited; most of the time, teachers helped them with the tasks. So the problem was not knowing how to get children to try and complete the tasks themselves

Teacher D: When I design, I wanted to create something that interests children and lets them operate it, but often fails to achieve this effect. The children's hands-on ability is too weak, so the focus is on teachers

Teacher A: As for collective science education activities, our kindergarten tends to focus more on designing mathematical cognition. The concepts are also quite obscure, and children's acceptance is low. Most of the time, teachers help with the operations

Teacher C: When I designed it, I wanted to create something that would interest children, but during implementation, children get too interested and their actions become uncontrolled

According to interviews with teachers, there is a problem in the design of the implementation of collective science education activities: most of the time, teachers take the lead, and children rarely participate in the hands. In the process of educational activities, children are the main actors; only by participating in scientific activities can they learn knowledge and experience through the activities. The main learning mode for children is to

Journal of http://www.satursonpublishing.com/
Research in Multidisciplinary Methods and Applications
ISSN 2957-3920 (Online) ISSN 3007-7060 (Print)
Volume 4, Issue 9, September 2025

directly participate and interact with things to understand things and play their central role. Science education is an open approach where children need to actively explore themselves to better master scientific knowledge. For teachers, teachers only play an auxiliary role, with the goal of guiding children to explore. In summary, teachers face difficulties in designing children's subjectivity, lacking problem-solving abilities and insufficient grasp of children's subjectivity.

3.3.2 The Method Of The Activity Process Is Too Simple

The form of activity implementation is also an important factor in design. Rich and interesting activity formats enable smooth progress, and by capturing children's interests and characteristics, activities can be designed to suit the children. The survey found problems in teachers' design and implementation methods: single implementation methods, teachers focusing only on teaching, rigid methods, and content and implementation forms all based on templates, making it difficult to carry out activities during the actual design process and children lacking interest during activities.

Case 3: Lesson Plan for Kindergarten "Water Is a Treasure"

Activity process:

(1) The teacher introduces the topic directly by discussing water with the children.

(2) Show pictures of water in daily life to gain a preliminary understanding.

(3) Appreciate the nursery rhyme "Water Is a Treasure" to help children rediscover water and human life.

(4) Let the children discuss how to save water in daily life.

(5) Let the children enjoy the song "The Faucet Doesn't Cry Anymore," encouraging them to boldly try performing with the accompaniment of the nursery rhyme.

Teacher: This is a small class science activity I conducted. I feel the design is very inactive and mainly focuses on cognitive activities. Some children have scattered attention in appreciating nursery rhymes, and the difficulty might be a bit high.

Researcher: Do you regularly attend event design training?

Teacher: Very rarely, usually meetings are held to discuss conservation and safety.

In Case 3, the teacher's activity design process is conducted in a very conventional manner, with the teacher playing a guiding role. First, introduce the theme of water, then use pictures and nursery rhymes to help children perceive, and finally discuss. In this implementation, the teacher plays a leading role, while children learn about water through viewing pictures and appreciating nursery rhymes, leaving children with little opportunity to think throughout the activity. In such activities, the focus is on "teaching," leaning toward a primary and secondary school-style teaching model. Children lack a sense of participation in the activity, which affects the effectiveness of the educational activity. The main problem is the single content of the activity process. Teachers lack training and learning opportunities in their work, and kindergartens provide few opportunities for training and learning.

3.4 Problems In The Evaluation Design Of Scientific Collective Education Activities By Kindergarten Teachers

3.4.1 The Design Of Evaluation Content Is Too Shallow

Evaluation of science education activities refers to the process of making judgments based on certain standards, aiming to assess the role of educational activities on learners and assess the teacher's educational level. Currently, the purpose of evaluating science education activities in kindergartens includes understanding learners and improving teaching, that is, understanding children's learning processes, progress, and outcomes, so that children can receive more feedback. Second, the evaluation content must help teachers improve teaching quality, assist in formulating instructional plans, and monitor the applicability and effectiveness of educational methods and strategies. The design of evaluation content should achieve the above goals. Surveys of multiple kindergartens found that the evaluation plans formulated by teachers mainly assess the activities themselves. Activities are evaluated superficially based solely on children's participation, cooperation, and teaching status.

Case 4: Science Activity "The Ugly Duckling"

Activity Evaluation: The activity sparked children's interest in literature and cultivated their listening habits through the teacher's enthusiastic storytelling. Each child had a picture book, allowing them to understand the story and experience the psychological transformation of the mischievous duckling through the animals' depictions in the book. At the same time, it increased children's interest in exploration, enabling them to pay more attention to and understand the story.

Teacher: This 'Ugly Duckling' activity is something I wrote about after hearing from our teachers. I usually evaluate activities by clarifying the logic from start to finish, then analyzing what knowledge and experience each step aims to give the children experience.

Evaluation of science education activities can include evaluations of science courses and teaching, or evaluations of children's science learning. In Case Four, teachers' evaluations mainly focused on the activity of that section, often based on their own existing experience, without any scientific evaluation. They did not deeply understand the scientific principles contained in the activities, remaining at a superficial level without in-depth evaluation of the overall goals and phases of the scientific field. This often fails to achieve the purpose of evaluation, fails to improve teaching, and fails to gain a deep understanding of learners' situations. Teachers do not realize the significance of evaluation; most focus on completing tasks.

3.4.2 The Evaluation Method Is Single

In her book "Science Education for Preschool Children," Liu Zhanlan proposes that the evaluation of preschool children's

Journal of http://www.satursonpublishing.com/
Research in Multidisciplinary Methods and Applications
ISSN 2957-3920 (Online) ISSN 3007-7060 (Print)
Volume 4, Issue 9, September 2025

science collective education activities requires "scientific discovery" evaluation. Evaluation methods should align with the goals that education and teaching aim to achieve. In science teaching evaluation, to ensure that the assessment and evaluation results have more practical value for children's scientific learning, teachers should no longer rely solely on the process of activities when evaluating. There are two most commonly used evaluation methods: formative evaluation and summative evaluation. The feedback provided by children to the teacher is formative assessment, while summative evaluation is usually conducted after the course is completed. The evaluation methods are not limited to observing or recording specific activities. In kindergartens, most evaluations are written by teachers after the activity is completed, focusing on their own or other teachers' activities. The evaluation method relies solely on the progress of the activity, lacking diverse evaluation methods.

Case 5: Science Activity: "Shenzhou Spaceship"

Activity Evaluation: In this activity, the teacher started from the children's interests, captured their interests, and thus achieved targeted goals, turning the children into masters of their learning, while the teacher was their guide and listener. Learning through play and playing through learning helps improve teaching efficiency. Education is constantly developing and accumulating experience. Through repeated activity summaries, we have become more adept.

Teacher: I compare the theme of the activity with the children to see if it matches their interests before making an evaluation.

According to Case 5 and its interviews, they mainly used observation and evaluation methods and record-keeping methods in evaluating collective education activities. This evaluation was only for the specific activity and was formative evaluation that could promote teaching. Judging by the content of the evaluation, it was mostly based on personal experience and subjective ideas, without much scientific judgment. Based on the development of activity evaluation over the years, there are now many methods for activity evaluation, including interviews, questionnaires, tests, and work analysis. The forms shown in these cases rely solely on the process of carrying out the activity, with a single evaluation approach. Teachers lack professional knowledge in evaluation, and the evaluation methods are outdated

4 Countermeasures For Teachers To Address Difficulties In Designing Scientific Collective Education Activities

4.1 Teachers Must Effectively Improve Their Ability To Design Scientific Collective Educational Activities

4.1.1 Establish The Concept Of Lifelong Learning And Emphasize The Study Of Scientific Education Theory

Regarding the current situation of teachers' scientific collective activity design, teachers should focus on teaching and nurturing students. First, focus on learning the basic theories of children's science, clarify their role in science teaching, and guide children to feel, observe, practice, discover, and seek answers in nature. At the same time, learn about science education methods through relevant kindergarten books: scientific games, experimental teaching methods, problem-solving, problem-solving, problem-solving, and discovery teaching methods. Second, attention should be paid to studying and researching theories of children's cognitive development. Children's science education should not exceed their own maturity, and overly high or unrealistic demands should not be set for children. In addition, we should draw on Vygotsky's "developmental zone" theory to create a "represent" for early childhood education to guide early education. Finally, emphasize improving basic teaching skills, widely incorporate theories from psychologists and educators, and through studying Gardner's theory of multiple intelligences, identify children's interests and talents, cultivate scientific thinking skills, and learn theory of subjective activity. Clarify that the main feature of preschool children's science activities is that children explore and understand the world around them themselves, rather than teachers taking the lead in replacing the children's central role. During science education activities, learn and practice the comprehensive and harmonious development concept, cultivate children's compassion, respect for life, perseverance, spirit of overcoming difficulties, respect for facts, appreciation of peers' value, and love protecting things around them

4.1.2 Observe And Learn More About Collective Science Education Activities

Observational learning is an important way for teachers to improve their instructional design abilities and a key means for teachers to learn from each other. Teachers can observe each other's lessons, record the teaching methods and approaches used during the activity, and children's feedback. Analyze the pros and cons of each method with peers, learn new methods for activity design, and avoid design errors. At the same time, reconstruct the teacher's activity design based on the activity scenario, identify differences between implementation and the plan, and supplement any deficiencies in the plan.

In addition, teachers can also search online for high-quality science collective education lessons that can be observed based on the characteristics of the kindergarten science curriculum. By observing and reflecting on their teaching methods and behaviors during the activities, they can achieve the goal of learning. By observing, analyzing, and summarizing, teachers can analyze and summarize the science group education activities in kindergartens, strengthening their abilities in observation, evaluation, and management, thereby improving their professional competence.

Journal of http://www.satursonpublishing.com/
Research in Multidisciplinary Methods and Applications
ISSN 2957-3920 (Online) ISSN 3007-7060 (Print)
Volume 4, Issue 9, September 2025

4.1.3 Timely Teaching Reflection

Teaching reflection is when a teacher reviews, summarizes, and refines their work after completing a teaching activity, elevating it to a process of rational understanding. As an effective means to improve teaching, teaching reflection plays a positive role in promoting teachers' professional growth and enhancing their own qualities.

Teachers should participate in teaching seminars on time and actively engage in discussion activities. Reflect on themselves, absorb others' experiences, and correct shortcomings in their teaching behavior. After activities, promptly reflect and reflect on the activities, accurately record their reflections, and reflect on their teaching from perspectives such as knowledge structure and language use. At the same time, reflect on diverse evaluation methods such as children's activity feedback and work feedback, further improve and revise the original activity design plan, and integrate educational and teaching practice theory. Through their own practical experiences, experiences, and summaries, teachers can gain new understandings and discoveries about existing teaching methods, models, strategies, and techniques, thereby gaining a fresh understanding and self-development in their own educational career. Therefore, teachers should develop the habit of timely reflection and continuously accumulate experience and improve themselves through practice. Designing scientific collective education activities faces many challenges; teachers should promptly reflect on their design and improve their activity design abilities.

4.2 Kindergartens Should Strengthen Support And Training For Teachers

4.2.1 The Kindergarten Offers A Rich Variety Of Practical Materials

Rich materials can diversify the types of educational activities, allowing every child to operate independently, while operable materials can increase children's interest and inquiry, and teachers can design effective activities. When selecting materials, the quantity and types of equipment installed in kindergartens to meet children's needs should be fully considered when selecting materials, including their age characteristics, cognitive abilities, and interests. They should also promptly adapt to the improvement of children's developmental levels and changes in interests. Select materials closely related to the theme and have certain educational value. The materials must have a certain impact on children. According to the content category, including scientific inquiry materials and science and technology activity materials, the most important is large quantity and variety.

The kindergarten also provides highly operable materials. First, children can experience the operation process through activities; Second, children are guided to identify, explore, and make through games. Scientific materials can be classified by nature into finished materials, semi-finished materials, and raw materials. Finished materials include assembly materials reflecting circuit relationships, which children can explore and manipulate. Semi-finished materials have excellent hints and cues. Children can create finished materials through their own inquiry. Finally, there are raw materials, which have multiple uses and combinations, allowing children to freely use these materials to express their imagination and creativity.

4.2.2 Kindergartens Have Strengthened Pre-Service Training For Teachers

The kindergarten's education authorities and kindergartens should formulate science curriculum teaching plans in accordance with the spirit of the "Kindergarten Education Guidelines (Trial)" and provide teachers with pre-service training in science teaching as required. According to the principle that only training can lead to employment; Organize teachers to study the "Outline" and "Regulations" using a "learning-practice-assessment" training approach to improve their understanding and understanding of science education and establish correct concepts of science education. Training methods include group study, free discussion, online communication, and a combination of self-study and lectures. Externally hired experts, scholars, and outstanding teachers conduct intensive training and learning. Teachers are organized to study relevant science curriculum standards, carefully study textbooks, and on this basis, design science education activities and teach each class well. Self-study training provides teachers with self-study awareness to promote theoretical and skill improvement. Online training allows teachers to share their opinions, insights, and experiences from centralized training and self-study on online platforms, learning from each other through online communication and discussion. Finally, kindergartens with the necessary conditions are encouraged to offer "Science Teacher" professional courses and explore various training programs for new and young kindergarten teachers.

4.2.3 Kindergartens Are Increasing Post-Service Training For Teachers In Scientific Fields

Training and learning are an excellent way for frontline educators to improve themselves. Training and learning is a very direct learning method. Through training in scientific collective education activities, teachers can better understand the goals and content of the scientific field. This can solve the problems of unfamiliarity, insufficient understanding, and insufficient knowledge in the scientific field. At the same time, post-service training can better resolve conflicts between theory and practice. Kindergartens can conduct training through lectures, discussion meetings, and participatory activities based on their own actual situation, and develop training plans to ensure timely completion of time and content. Support teachers in participating in domestic and international science education theory seminars, various professional skill enhancement trainings, and teaching skills competitions. Teachers are also required to regularly report on their learning and practice after training, hold seminars, and learn from each other. Finally, kindergartens can jointly establish learning communities, collaborate with neighboring kindergartens for communication and learning, and share theoretical and practical experiences, with the common goal of improving science education design capabilities.

5 Conclusion

Kindergarten science collective education activities are the core curriculum activities of the five major areas of kindergarten curriculum. This study mainly investigates the difficulties teachers face in designing science collective education activities and their countermeasures. It interviews and analyzes the current situation of teachers in different kindergartens in third-tier cities designing science collective education activities from four aspects: objectives, content, process, and evaluation. On this basis, the current situation and difficulties are explored, and suggestions for existing difficulties are attempted.

In the research, due to the limited individual ability level and factors such as the research subject and time, there are many shortcomings during the process. The interviews and analyses of teachers are very superficial, the results are not representative enough, and the proposed strategies have not yet been put into practice and lack practical validation. Therefore, there is significant room for improvement in all aspects of this study. Therefore, in future study and practice, special attention will be paid to the design of scientific collective education activities in kindergartens, and corresponding practical activities will be carried out to improve the shortcomings of this research.

REFERENCES

[1] Yan Huijuan. Research on the Current Situation of Science Education Activity Design for Preschool Teachers [D]. Southwest University, 2011

[2] Liu Zhanlan. Preschool Education and Children's Science Education [M]. Beijing Normal University Press, 2008

[3] Wu Zhiqin, Yang Jie. Mathematics Education for Preschool Children [M]. Southwest Normal University Press, 2020

[4] Li Huaiqing. Research on Problems and Countermeasures in Current Kindergarten Science Education [D]. Hunan Normal University, 2006

[5] Zhang Ying. A Brief Discussion on the Expression of Kindergarten Educational Activity Objectives [J]. New Curriculum (Part I), 2015

[6] Pan Chaonan. Research on the Current Situation of Science Teaching Activities in Kindergartens [D]. Advisor: Gu Zhongyu. Liaoning Normal University, 2014

[7] Zhang Jie. Textual Research on the Current Situation of Science Collective Teaching Activity Design in Shanghai Kindergartens [D]. Shanghai Normal University, 2019

[8] Gan Yeyu. Case Study on the Design of Science Education Activities in Rural Kindergartens [D]. Guizhou Normal University, 2020

[9] Xu Qionghua. A Review of the Content Selection of Kindergarten Science Education Activities [J]. Journal of Huaihua University, 2015

[10] Zhang Jing. Research on the Current Situation and Optimization Strategies of Science Education in Linxia City A Public Kindergarten [D]. Jiangxi Science and Technology Normal University, 2022

[11] Tian Baohua. Research on Problems and Countermeasures in Science Education Activities in Zhengzhou Urban Kindergartens [D]. Southwest Normal University, 2000