



Problems and Countermeasures in The Distribution of Materials for Small Class Scientific Activity Areas

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Abstract: Area corner activities are areas where teachers divide certain areas in the classroom according to children's age, characteristics, interests, and needs, combined with certain educational goals, and provide appropriate materials during the activities. These areas also allow children to choose activities independently. The science area, as a region with strong exploration in regional activities, not only serves as a medium for children to actively construct knowledge, but also as important tools for developing inquiry skills and engaging in play. Taking Z Kindergarten in Zunyi City as an example, this paper comprehensively employs observation and literature methods for research. Through investigation, it finds that the science corner has a simple and limited material structure, lacks inquiry and hierarchy, is not valued by kindergartens, and is neglected by teachers. In response to these issues, this study will propose corresponding countermeasures and suggestions to better promote the development of children's inquiry abilities

Keywords: activity materials, science district activities, inquiry skills

1 INTRODUCTION

As part of kindergarten educational activities, children are both the main participants and the main learners of the activity. Children's age characteristics are characterized by eagerness to learn, curiosity, and exploration, while materials form the foundation for all activities. The science area, as a highly exploratory area, serves as an important bridge between teachers and early childhood studies, serves as a medium for children to actively construct knowledge and cultivate their exploration abilities, and is also the driving force for the activity area. The "Guidelines for the Development of Children Aged 3 - 6" points out that "children gain indirect experiences through direct perception, hands-on operation, and personal experience in play and daily life." Currently, relevant scholars have conducted research on this area: for example, Yang Fan proposed in "A Brief Discussion on the Distribution of Science Area Activity Materials" that area activity materials are tools for children's manipulation and exploration, as well as the material foundation for learning games. Xu Wen discussed the current state of activity materials in the kindergarten science area in "Current Research Status of Science Area Activity Materials." Zhou Zijun's "Problems and Countermeasures in Science Area Activities in Kindergarten" studies and analyzes a series of problems in material placement in science area activities and

proposes relevant suggestions. Rodan discussed the materials for science area activities in small classes and proposed corresponding countermeasures, highlighting the importance of material distribution in small classes. However, current research on material distribution in small class science areas is limited. Based on this, this study focuses more on the distribution of science materials in small classes, analyzes the problems in science area material distribution, and proposes corresponding countermeasures, hoping to provide some reference for the distribution of science materials in Z Kindergarten

2 RESEARCH SUBJECT

This study focuses on the placement of materials for activities in the science area of Z Kindergarten in Zunyi City, observing the distribution status of materials in the Z Kindergarten Science Zone to provide suggestions for effective placement.

2.1 RESEARCH METHODS

To better understand the distribution of materials in small class areas, this paper adopts observation and literature methods.

2.2 BIBLIOGRAPHIC LAW

In the school's digital library, CNKI, and Chaoxing Library, by studying journals and literature related to the project, we learned about the distribution of materials for science area activities in small classes. In the library, we referred to Liu Zhanlan's "Early Childhood Science Education" and the book "Development Guide for Children Aged 3 - 6," as well as Zhou Zijun's literature "Problems and Countermeasures in Scientific Area Activities in Kindergartens." The collected materials were analyzed, organized, and summarized, laying the foundation for the problems and countermeasures in the distribution of materials for science area activities.

2.3 OBSERVATION METHOD

The main method of this study is observation, mainly drawing on Dong Na's "A Brief Discussion on the Placement of Materials in the Science Corner in Kindergartens." Based on existing research, an observation record form was developed, and during the internship, actual inspections were conducted on the kindergarten, analyzing and recording the distribution status and problems of materials in the science area. On one hand, it observed how much teachers attached importance to the science area and whether the materials were appropriate; on the other hand, objectively observed and recorded the update cycle of materials in the kindergarten, ultimately analyzing and organizing the materials, and compiling them into written materials to provide detailed case studies for this study.

3 PROBLEMS IN DISTRIBUTING MATERIALS FOR SMALL CLASS SCIENTIFIC REGIONAL ACTIVITIES

3.1 MATERIAL PLACEMENT IN THE SCIENCE AREA NEGLECTS CHILDREN'S INTERESTS

Curiosity, curiosity, and a desire for knowledge are among the characteristics of children's learning and development. Children are naturally highly curious and eager to learn, and they like to get to the bottom of any problem. Interest is the best teacher for children; only materials that match their interests are the true motivation for them to want and explore. However, when placing materials in the science area, Z kindergarten neglected children's interests. The materials provided were not what children liked, and the quantity was too small, and the forced allocation of children into the area led to decreased interest.

Case 1: The Neglected Science District

A teacher in a small class said, "Now it's time to choose activities in the area," and as soon as the teacher finished speaking, the children rushed to the area to pick out their favorite toys. The construction area and the art area were very lively. The children were all discussing what they wanted to build or draw today, while the science area was neglected. Seeing this, the teacher said to the children, "You can play in the science area too." So, Yangyang and Zeze walked into the science area together, but because there were too few materials in the science area, the materials provided weren't to the children's taste. Zeze

muttered to himself, "There's nothing fun here. I'll go play with Xixi with building blocks." After a while, Yangyang saw that no one else was nearby and left the science area. The teacher was busy with other things and didn't pay attention to the science area, making the area feel especially quiet compared to the others.

From Case One, it can be seen that the area material is one of the first factors children consider when choosing an area. If the material is something the child is interested in, the child will choose to go to that area; otherwise, they lose interest. Secondly, if the teacher ignores the children's subjectivity and forces them to go to a certain area, the children's interest in a passive situation drops sharply, and their enjoyment of exploration decreases accordingly.

3.2 THE QUANTITY OF SCIENTIFIC CORNER MATERIALS IS LIMITED AND THE STRUCTURE IS SINGLE

Children's play behavior is closely related to the distribution of materials. Materials, as tools for children's manipulation and exploration, are also the material foundation for learning and play. Only abundant game materials can stimulate children's divergent thinking. From the diagram below, it can be seen that the materials in the Z Kindergarten Science Area are generally not abundant. The materials provided by teachers are monotonous, mainly basic materials such as balances, kaleidoscopes, magnifying glasses, and so on. Opportunities for hands-on operation and exploration are limited, and the number of materials is relatively small—between 1 and 2 sets—which cannot satisfy every child and greatly limits their practical needs.



FIGURE 1: SINGLE MATERIAL STRUCTURE

From Figure 1, we can see that the teacher placed only one balance, two kaleidoscopes, and two magnifying glasses in the science area, with a single structure. Some materials on the balance scales were missing and teachers did not update them in time, which may make activities difficult. The methods children could actually operate were limited, and the materials were not challenging, causing them to lose the desire to explore over time.

3.3 THE SCIENCE DISTRICT'S MATERIALS WERE NOT UPDATED IN A TIMELY MANNER



Science area materials are a process of constant updating and adjustment. Children are interested in new things and enjoy exchanging them. Timely updates attract children's interest and increase their desire to explore. Therefore, updating and adjusting materials is key to children's practice and exploration. However, the small classes in Z Kindergarten have overlooked this issue. Science area materials are not updated in a timely manner. Children repeatedly operate or manipulate the same material in the area for a long time, repeating and playing with it repeatedly, lacking novelty, and over time losing enthusiasm. Otherwise, they will wait until the teacher presents novel materials before continuing to choose the science area; otherwise, they will not enter the science area again.

TABLE 1 STATISTICS OF MATERIAL UPDATES IN THE SMALL CLASS SCIENCE ZONE

Cycle Class	Once week a	Every two weeks	Once month a	Once per semester
Junior (Class 1).			✓	✓
Junior (2) Class				✓
Junior (Class 3).		✓	✓	✓

From Table 1, we can see: the science area materials have not changed overall. There are no classes that update once a week, only the junior (3) class updates every two weeks, while other classes update materials once a month or once a semester. Overall, material updates are long, and children repeatedly operate the same material in the science area without new stimulus. After a period of time, children gradually reduce their exploration of the science area. Therefore, materials must be updated in a timely manner.

3.4 THE PLACEMENT OF MATERIALS IN SCIENTIFIC AREAS LACKS EXPLORATION

Inquiry-based materials are an indispensable part of science corner activities. Their reasonable materials should meet several characteristics: safety, richness, layering, emotionality, and inquiry value. Among these, inquiry in the scientific field is indispensable, and the materials must be sufficient to stimulate children's thinking and encourage their participation in inquiry. However, most of the materials provided in the kindergarten are closed and highly structured, which in reality allow too little for children to operate and explore, which to some extent limits children's desire to explore and fails to meet their psychological and practical needs.

Case 2: "It's Too Simple"

A teacher in a small class noticed that Mingming had stayed in the science area for less than two minutes before leaving, wanting to go to the art area. The teacher immediately said, "Isn't there a lot of new materials in the science area today? Why do you still want to go to the art area?" Mingming didn't respond, so the teacher gave him an animal picture made of cardboard paper and asked him to identify the corresponding animal as required. Whenever Mingming pointed out the correct animal, the teacher happily said, "That's amazing," and kept repeating the process. Mingming still found it. In the end, the teacher kept praising Mingming, but Mingming said, "Teacher, this is too easy," and then ran off to the art area.

From Case 2, we find that Mingming always wants to go to the art district because the materials in the science zone are not what Mingming likes and are too simple, lacking challenge and exploration, and cannot satisfy his psychological needs. That's why he keeps thinking about going to the art area and doesn't want to stay in the science zone. It is clear that materials in the science zone should not be simple but must be exploratory.

3.5 SCIENTIFIC CORNER MATERIAL ALLOCATION LACKS LAYERING

Children's development is subject to individual differences. Therefore, materials in the science area should be distributed in a hierarchical manner from easy to difficult, from shallow to deep, to meet both individual differences and the needs of children with different abilities. However, it was found that teachers at Kindergarten Z share a common trait when distributing materials: as long as children can operate the activity, it is enough; whether the materials have layers or suitability is not considered; teachers only need to complete the task, which often leads to some children operating mechanically without truly understanding the underlying principles.

Case 3: "Magnetic Fishing"

In the preschool science experiment activity "Magnetic Fishing," the teacher first showed a magnet and introduced its properties, then began making a magnetic fishing rod (placing a pin between two fish). After finishing, the teacher placed the rod into the water and guided the children to observe. The children exclaimed in unison, "Wow, the little fish was caught! That's amazing!" Then, the teacher explained the principle behind it: a magnet uses the attraction of opposites to catch a small fish. After speaking, the teacher lets the children operate by themselves.

From Case 3, we can see that when the teacher explained the magnetic toy of the kitten fishing, the teacher only explained the principle of "opposite sex attraction," and did not address the principle that magnets have "same-sex repulsion," nor provided corresponding materials, resulting in a lack of layering in the materials. Children could only operate superficially, and the entire activity was rather monotonous, lacking a deep understanding of the mysteries and principles.

4 REASONS FOR PROBLEMS IN DISTRIBUTING MATERIALS FOR SMALL



CLASS SCIENTIFIC ACTIVITY AREAS

4.1 *TEACHERS' PROFESSIONAL KNOWLEDGE LEVELS ARE RELATIVELY LOW*

Teachers are supporters and collaborators of children's games. What kind of materials children like and what should be considered when placing them are very important for children. Which area should be best placed and what materials are most appropriate—these are all questions teachers should consider. Therefore, whether a teacher's professional ability and expertise are mature mainly depends on their understanding of the materials in the science area. However, observations show that teachers in the kindergarten do not understand the materials in the science area. As mentioned above in the "Magnetic Fishing" science activity, magnets have the principle of opposite sex attraction, but the teacher ignored the principle of same-sex repulsion during explanation, only explaining one-sidedly without deepening further, resulting in children only understanding superficially. According to the second sub-goal of the scientific field in the "Guidelines," "Having preliminary inquiry ability," the requirement for young children is to carefully observe what they like, find common traits, and exercise their initiative and initiative. Secondly, when necessary, teacher guidance and intervention are needed—even a single sentence or action can provide great help. However, in reality, teachers at Z Kindergarten do not pay enough attention to children's inquiry abilities. When children encounter difficulties, they do not provide guidance or explore mysteries together, but instead directly tell the results and ignore their developmental process and actual needs. Therefore, teachers' low professional knowledge can lead to children's interest in inquiry

4.2 *THE KINDERGARTEN LACKS FUNDING AND MANAGEMENT*

Insufficient funding in kindergartens limits the effective allocation of science area materials. Science area activity materials form the material foundation for children's operation and exploration. Some better kindergartens have science area materials but only allocate them to the educational area, without a dedicated science area. A good science corner activity requires sufficient materials, but due to Kindergarten Z's limited funding, lack of attention, and limited allocation, there is insufficient quantity and variety of area materials, making science corner activities difficult to carry out. Some teachers may want to organize area activities, but due to space and material limitations, they are willing but incapable. Secondly, regarding the kindergarten management system, a sound management system can stimulate children's enthusiasm for active exploration and ensure smooth progress of science area activities. Due to insufficient attention to the distribution of science zone materials and a lack of a clear management system, these are among the reasons for the problems in science zone material distribution.

5.3. COUNTERMEASURES FOR

DISTRIBUTING MATERIALS FOR SMALL CLASS SCIENTIFIC REGIONAL ACTIVITIES

5.1 *THE SCIENCE ZONE SHOULD HAVE ABUNDANT MATERIALS*

Material richness is part of the science corner activity. Based on the activity content, appropriate materials should be provided, allowing children to freely choose their favorite materials. Material richness is not only about quantity but also variety. No matter what kind of structural material it is, it should be reflected in the science area, not just materials with a single structure. When selecting materials, the quantity of a material can be small, but the variety must not be less than the quantity; otherwise, children's inquiry skills will not develop. Secondly, the materials have diverse functions. Diverse functions mean one object has many plays, which requires teachers to play with them. Teachers should put great effort into discovering materials, providing more low-structure and natural materials, allowing children to explore independently, find different ways to play, and develop inquiry skills through exploration. Finally, enrich the content of activity in the area corners. Different environmental materials require different activity themes as a premise. Targeted enrichment of materials should be included by collecting, organizing, and analyzing topics that interest children in daily life, and posting them in the science area, allowing children to fully understand the mysteries of nature and scientific and cultural knowledge

5.2 *MATERIALS IN THE SCIENCE AREA SHOULD BE PROVIDED BASED ON CHILDREN'S INTERESTS*

The center of area activities is the children. In the area corner, children freely choose, explore, and manipulate materials, discovering, thinking, and solving problems in the process, truly learning through play, developing, and progressing. The "Outline" points out that "be willing to observe surrounding things and phenomena, have curiosity and desire." Therefore, teachers should create a relaxed environment for children, provide rich and matching materials, give every child ample opportunity to express themselves, and guide children to develop interest and desire to explore the things and phenomena around them, promoting their satisfaction and success

5.3 *SCIENCE ZONE MATERIALS MUST BE UPDATED PROMPTLY*

Area materials are not fixed; on the contrary, they are a dynamic process of continuous renewal and adjustment. If science area materials remain unchanged, the science area will lose its appeal. Therefore, teachers should adjust science area materials at any time. Updates should match children's preferences, always paying attention to whether children are interested, whether they attract attention and active exploration, and whether the methods children use are correct. Second, the ratio of new and old



materials should be reasonable. Teachers should distribute materials step by step. Once the materials are ready, children should operate and pay attention to their behavior and reactions. If children lose interest in the materials, teachers should take measures to regain their attention or exchange materials with other classes. This not only increases children's opportunities for hands-on activities but also saves financial and material resources. Therefore, science area materials must be updated promptly.

5.4 EXPLORATORY MATERIALS ARE PROVIDED, EMPHASIZING THE CULTIVATION OF CHILDREN'S INQUIRY ABILITIES

The inquiry-based nature of material distribution is one of the characteristics of science area activities. As teachers, we must support and meet children's needs to the greatest extent, encourage them to actively use their hands and minds, and explore the mysteries together with teachers and peers through exploration and hands-on activities, experiencing the joy of discovery. For teachers, teachers provide materials to children; They are the providers of materials; For children, materials are the material foundation for their inquiry, and children gain inquiry skills through interaction with materials. Therefore, materials provided by teachers must be exploratory, allowing children to experience different inquiry processes and promote the development of inquiry skills. Teachers can work with children to create small survey plans together, encouraging and guiding them to simply record things they are interested in or science experiments they like using pictures and symbols. Through the results of these records, children gain rich knowledge and experience and broaden their horizons, enjoy different inquiry processes, and develop their inquiry abilities during the process.

5.5 MATERIALS IN THE SCIENCE ZONE SHOULD BE DISTRIBUTED IN A LAYERED MANNER

Vygotsky proposed: The gap between a child's current level and the developmental level they can reach is their optimal level. Therefore, as a teacher, we must not only understand the child's current level but also tap into their potential during development. In other words, the difficulty of providing materials should be moderate, not too difficult or too simple. If the material is difficult at first and children do not fully understand it, it often leads to failure in operation and a lack of joy in success, thereby reducing interest and desire to explore; If the material is too simple, children will find it very easy to operate and complete the task quickly, making the material feel unchallenging. Teachers should fully understand children's interests and age characteristics, and provide targeted materials in the scientific area in line with the relevant requirements of the "Guidelines" and "Outline." The materials should be layered, following the principles of combining difficulty, depth, complexity, and progression, boldly letting children operate, truly achieving both.

In summary, area activity materials provide material support for children in the activity area, and children's activities depend on materials. This paper takes Z Kindergarten in Zunyi City as the research subject. Through observation, it finds that the materials at Z Kindergarten do not match the age characteristics of children, the quantity of materials is limited, and there is a lack of hierarchy and exploration. The reasons for these problems are analyzed. Due to the short cycle of material updates, Z Kindergarten does not emphasize the setting of science corner activities, and teachers do not focus on cultivating children's inquiry abilities, children's interest in participation is low and inquiry skills are neglected. Relevant suggestions are proposed to specifically leverage the value of the kindergarten science area activities and the cultivation of children's inquiry abilities.

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6 CONCLUSION