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Early childhood teacher's awareness for mathematics education and outdoor movement activity

Park, Jihee

Doctor, Chungang University, Korea
E-mail bakjihee@hanmail.net

Abstract

The purpose of this study is to find out the teacher's awareness and needs for early childhood mathematics education and outdoor movement activities. The study participants were eight kindergarten teachers located in Korea. , in-depth interviews were conducted with teachers on 2014.04. ~ 2014.07. Interviews were held twice each, semi-structured with the order and content of the questions adjusted. As a result of analyzing and categorizing the collected data, the results were 'Early teacher's awareness of mathematics education', 'Early teacher's awareness of outdoor movement activities', and 'Educational teacher's awareness of mathematics activities linked to outdoor movement activities'. The conclusions of this study are as follows. First, the model of early childhood teacher for mathematics education and outdoor movement should be presented. Second, there is a need for ways to improve the teacher's confidence in mathematics education and outdoor movement

Keywords: Early childhood education, Mathematics education, Outdoor movement activity, teacher's awareness

1. INTRODUCTION

Early childhood is a good period to start mathematics education [1]. Young children acquire their own mathematical concepts through natural play situations and mathematical experiences of exploring surrounding objects in everyday life [2]. It is a good way for young children to form mathematical contents and systems while having a mathematical experience, and to provide a variety of mathematical experiences that can be done in daily life to a child to naturally perform mathematics education [3]. Mathematically competent teachers have a positive effect on the development of mathematics abilities in young children [4].

To make it easy for young children to get close to mathematics, learning through experience and linking with other fields are needed. Recently, there have been many cases where young children's mathematics education has been integrated and approached [5] [6]. A good area to do is outdoor activity. Young children can easily learn mathematical concepts such as numbers, spaces, and periods while participating in body-based movement activities [7]. As such, mathematics education linked to movement activities helps to improve the mathematical ability of young children.

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Corresponding Author: bakjihee@hanmail.net

Author's affiliation

Doctor, Chungang University

The outdoor environment is an extension of the indoor classroom environment, and the open space and rich surroundings enrich the mathematical experience of the infant [8]. If an early childhood teacher suggests a combination of movement and mathematics in an outdoor environment, young children will be able to touch the math activity directly, feel it, experience it as a fun play, and young children can easily learn abstract mathematical concepts while having a routine mathematical experience in the outdoor space[9].

However, most early childhood teachers have difficulty in kindergarten mathematics education and outdoor movement. Early childhood teachers do not know how to approach mathematics education and outdoor movement. The purpose of this study is to find out teachers' awareness and needs for early childhood mathematics education and outdoor movement activities. Following are the research questions.

Research question 1. How is the awareness of early childhood teachers' mathematics education?

Research question 2. How is the awareness of the outdoor movement activities of the early childhood teachers?

Research question 3. How is the awareness of the mathematics education program linked to the outdoor movement activities of early childhood teachers?

2. METHODOLOGY

2.1. Participants

Those who participated in this study were eight kindergarten teachers located in Seoul and Gyeonggi-do, and their educational experience varied from the second to the eighth year. They were 4 public kindergarten teachers and 4 private kindergarten teachers. They were two teachers in the second year, one teacher in the fourth year, three teachers in the fifth year, one teacher in the sixth year, and one teacher in the eighth year. All study participants graduated from the Department of Early Childhood Education at a 4-year university.

2.2. Data Collection

In order to find out the current status of outdoor activities and mathematics activities conducted in early childhood education institutions, and to grasp the necessity of mathematics education programs linked to outdoor activities, field observations and teacher interviews were conducted.

Through field observations, it was possible to grasp the difficulties of operating outdoor activities and mathematics activities, and discover the possibility of mathematics education in linked to outdoor movement activities. However, the operation of outdoor activities and mathematics activities may vary depending on the characteristics of the early childhood education institution and the characteristics of teachers, so in order to examine this in more detail, in-depth interviews were conducted with teachers on 2014.04. ~ 2014.07.

Interviews were held twice each, semi-structured with the order and content of the questions adjusted.

2.3. Data Analysis

Interviews were recorded with the teacher's consent and transferred. Through in-depth interviews, it was possible to grasp the difficulties and limitations that teachers felt about mathematics activities and to recognize

their awareness of outdoor activities. As a result of analyzing and categorizing the collected data, the results were 'Early teacher's awareness of mathematics education', 'Early teacher's awareness of outdoor movement activities', and 'Educational teacher's awareness of mathematics activities linked to outdoor movement activities'.

3. RESULTS AND DISCUSSION

3.1. Early teacher's awareness of mathematics education

Participants were aware of the importance of mathematics education. However, Participants were unfamiliar with the goals and methods of operation of mathematics education. The frequency of operation was lower than that of other classes, and the method of operation was limited. Participants perceived mathematics education as difficult, which led to low frequency of operation.

Math is important. Especially when they turn 7, parents think math is important. In my country, I guess that I should do well in mathematics. It also requires math activities. So, the burden is too big.

(4 year of experience, teacher Kim)

Who doesn't know what's important for math? 1,2,3,4 You can teach centuries like this ... It's difficult. First of all, it's difficult for teachers to approach it, so it doesn't really work.

(3 year of experience, teacher Jeong)

Participants were sympathetic to the need for mathematics education for young children. However, they lacked knowledge about mathematics education, and they were struggling to do mathematics-related education in the field. Participants also said that they did not deal with mathematics in the field because they hated mathematics since school days.

When I planned activity, I added math education. However, in the classroom, only a new game board was introduced. I feel it's difficult. I was not sure what to teach and how to teach it. While watching the Nuri curriculum, it was difficult to avoid it because it was difficult.

(5 years of experience, teacher Kim)

It was also a problem that teachers did not enjoy math. There were also opinions that because there are many women in kindergarten, it is generally a cause of evading math in kindergarten classrooms. In addition, mathematics activities were mainly introduced to new parishes related to mathematics, and mathematics districts were used less after being placed in the field of manipulation. There was also concern and concern about how to incorporate mathematics into classroom areas or classes, as the teacher was difficult and uninteresting in mathematics.

I didn't like math. I rather hated it. Probably not most of the female teachers? I don't really like it because I don't like it. I think it's a little wrong. I would like to have a lot of training or opportunities like this.

(4 years of experience, teacher Kim)

I introduce a lot of parishes. The game board, the dice. However, there aren't many children to choose from. It's a pity because it's a new curiosity once or twice. Math is also a little burdensome from me. I have a child who is learning at home. So, there is a lot of difference in level in one class. Math is a little vague about what to do and what to do. I'm also worried that I will teach it like a workbook.

(8 years of experience, teacher Kim)

3.2. Early teacher's awareness of outdoor movement activities

Teachers talked about outdoor activity as a fun activity for young children, and recognized the need for outdoor activity planning due to the increased outside play time. However, the outdoor movement activity was not lively conducted due to the lack of teachers' operating knowledge.

I really like going outdoors. No matter how hot the weather is, I want to go out, and even if it rains or snows. I also enjoy the movement itself. However, in kindergarten, I mainly do physical activities in the indoor auditorium with a physical education teacher. In that respect, there are some space restrictions ... It would be better to do it outdoors. So, I think outdoor movement is important and meaningful.

(4 years of experience, teacher Kim)

An outdoor movement activity is to operate exteriorly. I like it so much. It's good to go out and do something with children's body, but it's great to have the two combined. Children will also be relieved of stress and learn to have fun.

(4 years of experience, teacher Hong)

Participants, like math education, had a burden on outdoor movement. The burden of outdoor activities was linked to the problem of not deploying outdoor activities at all. Children like outdoor activities, but teachers do not know what to do outdoors. Participants thought that the movement activity was the role of an external physical teacher, not the kindergarten teacher, and participants were thinking about what activities to do and how.

No special outdoor action. When I went to outdoor spaces, children usually played. I was just looking at it without harm and mediating quarrels. However, I thought it would be good to plan something because the fight took place outside. By the way, I and children were playing sand for a short time, but this activity was not connected to action.

(4 years of experience, teacher Kim)

Children like to go out outdoors. But I'm a bit burdened. This is because the outdoor activity time in the Nuri process has increased to more than an hour. Everyday. So children can no longer just play on the slide. Children are bored too. In the end, I have to do some activity planning, but I think it would be good to do outdoor action activities. But I don't know. What can I do outside of the four seasons in the outdoor space, walk, and play in the sand?

(teacher Jeong, 3 year of experience)

Participants were mainly women, and they expressed their lack of confidence in outdoor movements, where physical activity was common. Participants had the idea that the outdoor instructor should do the outdoor movement, just as the physical or physical activity that takes place indoors is made by inviting an outside instructor.

Most kindergarten teachers are women. We can do creative body expressions. But it's true that I don't do the part of motion. So, I do movement activities when the physical education teacher comes from outside. However, physical education teachers go to the indoor auditorium with the children and do not go outdoors well. So I rarely do outdoor activities. Like a sports event? I think I'll try it if I know how. But in the current state ... well.

(5 years of experience, teacher Lee)

3.3. Educational teacher's awareness of mathematics activities linked to outdoor movement activities

Early childhood teachers were sympathetic to the need for outdoor movement. This is because the outdoor has a wide and open characteristic and can be connected to movement activities. Participants also agreed that if they were working on mathematics outdoors, children would have a more fun and interesting approach. However, teachers did not have information about outdoor activities, so if they were to provide information

about classes, they were thinking of performing math activities linked to outdoor activities.

I think children will do better outdoors. Outside, it's a spacious and open space, so I think it would be great if children would learn math naturally while doing activities. But that method or knowledge is not enough in the field. It would be better if we could inform and inform the teachers.

(4 years of experience, teacher Kim)

It's a good way to learn math through movement activities. Math is difficult, but movement is easy and fun. But it is better if it is an outdoor space. Since I do outdoor activities every day anyway, the time is more organized. It will be fun. Children have fun moving their bodies to learn and learn better.

(8 years of experience, teacher Kim)

4. CONCLUSION

The conclusions of this study, which examined the teacher's awareness of mathematics education and outdoor movement, are as follows.

First, the model of early childhood teacher for mathematics education and outdoor movement should be presented. Early childhood teachers are experiencing difficulties in selecting and using mathematical materials [10]. It is important for teachers to be good demonstrations of mathematics education and outdoor activities for young children, and to be suitable environmental providers.

Second, there is a need for ways to improve the teacher's confidence in mathematics education and outdoor movement. Just as young children gains confidence when he or she has a friend who agrees with his or her opinion, the early childhood teacher gains confidence when the young children actively participates in his or her planned play or activity. Continuing success in mathematics education and outdoor activities will also improve the confidence of early childhood teachers. Through this experience, early childhood teachers will be able to do a lot of high-quality math activities and outdoor activities.

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