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Increasing Science Education during Preschool

Guillermina Rodriguez

A Capstone Project for the Bachelor of Arts in Human Development and Family Studies

Introduction

Early science education is very important from preschool curriculum and in particular, environmental education. When children do not get science education in preschool, they are not able to learn about (STEM) skills. To help children with their environmental learning, I have created a 2-day lesson about the four different seasons of the year for 3-to-4 -year- olds at Boronda Meadows School in Salinas, California.

Need statement

Preschool age is very important during childhood because at that age children can learn a variety of skills (Barnes et al., 2018). Children can benefit from early science education because it teaches science, technology, engineering, and mathematics (skills) and new approaches to learn during each skill. In addition, science education can help children understand and make sense of natural phenomena in the world around them to develop key skills (Larimore, 2020). Some of those skills are problem solving, divergent thinking, and creativity.

Problem solving prevents negative behaviors and promotes positive social competence during preschool (Barnes et al., 2018). That is why it is important to give each child the opportunity to engage in different types of play and activities to give them the opportunity to gain different skills during their learning. Children who play using different types of objects are more able to solve their problems during the time they are playing with others (Lloyd et al., 2003). In other words, during preschool it is important to allow the children to play with a variety of toys and learning activities to give them the opportunity to learn how to solve their own problems.

Divergent thinking is a thought process to understand by exploring and playing during an early age (Fehr et al., 2016). This skill means that the preschool children need to play and explore to be able to learn different skills during that age. The development of diverging thinking happens because by exploring the environment they have the opportunity to learn a variety of skills (George, 2017). In addition, children who explore the environment are more likely to recognize different abilities of knowledge development (Brekke, 1979). In other words, children who have the opportunity to explore or play have more knowledge.

Creativity learning produces positive outcomes building relationships with other children (Fehr et al., 2016). In addition, it allows the children who are engaged in activities to be more able to socialize with others (George, 2017). That is why it is important to use science activities with them to improve their social skills. Children who receive science education during preschool have more learning strengths (Larimore, 2020). In other words, children who have the opportunity to learn science education have more skills than children who don't have that opportunity.

Without giving children science education during preschool, it is likely that children are not learning their basic abilities of learning. In order to increase their early learning, I provided a 2-day lesson of STEM skills for preschool children at Boronda Meadows School in Salinas Ca.

Theory

According to Piaget's stage theory, cognitive development has four different stages of mental development that are sensorimotor, preoperational, concrete and formal stage. Preoperational stage is one of the most important during preschool because it occurs during the

age of 2-7 year olds (Carey et al., 2015). Piaget believes that at the age children are able to take a role in the learning process. As part of this stage, children are able to learn about their physical and social development that gives them the opportunity to explore activities and engage with other children (Fischer et al., 1996). If children have the opportunity to learn sciences they learn easily during their childhood (Carey et al., 2015). For example, they can learn in different ways like looking and observing others. In addition, if children learn about science and nature they are more able to make their own decisions because they learn the importance of being involved during play (DeVries, 2000).

Consideration of diversity

My project was conducted by Google Meet with preschool students from Boronda Meadows School which is located in Salinas Ca.. According to (salinas city.esd.org.), The school has almost 800 students in all the different classes. In the class where I did my project there were just 10 students for 3-to-4-year -olds. The lesson I conducted was in English it was designed to give each child the opportunity to learn about science education. Since some children don't have the opportunity to explore and learn about sciences it is important to teach them about it. This project is for children from 3-to- 4-year-olds and is not likely to apply for another age or grade because the project is based on children.

Learning Outcomes

I provided two, 20 minute lessons to preschool children enrolled at the Boronda Meadows preschool.

By the end of my project, children will be able to:

1. Recognize each season of the year.

2. Identify the four different seasons of the year by names.
3. Put the names of the seasons in correct order using the board.

Method

Day 1

The first day, I introduced myself to the children. They already knew who I was because the teacher told them about me. After that I told them that I will be teaching a lesson for a few days. I told them that they will learn about the four different seasons of the year. First, I started reading the book, *I am a leaf* by (Jean Marzollo, 1999). During the reading, I explained to them about how each season looks and what happens during that time of the season. And during each page, I asked them different questions like what do you see in spring? What do you see in summer? What do you see in fall? and what do you see in winter?. After I finished reading the book I asked them the same questions one by one to see if they were able to recognize each season using the pictures of the book. After I got their answers, I continued teaching them about the four seasons of the year using a board showing them how each season looks. See Appendix A. The board has a tree with four different pictures and names: winter has snow and a snowman, spring has flowers, summer has green leaves, and a sun, and fall has yellow, orange, and red leaves. And I put the names of the four different seasons at the top of each picture on the board to give them the opportunity to learn about the four seasons.

Day 2

The next day, I told the class that they will continue learning about the four seasons of the year. I used the song "if you know all the seasons" to teach them to learn the four different names of the year. See Appendix B. And at the end of the song, I asked them the names of the

season to know the names they learned and see if they were able to identify them. And after that I used the board again to explain to them how each season looks and what the names are. And to know if they could put the name of each season on the board. To make that process with the children, I put the names on the board in correct order explaining to them why each name goes in each picture. And after I did that, I removed the names from the four different pictures that were on the board. And at the end I gave each child the opportunity to put the names of the seasons back on the board in correct order depending on the picture, by asking them four different questions. The four questions I used were. Where does the name of spring go? Where does the name of summer go? Where does the name of fall go? Where does the name of winter go? After that I finished my two day lessons singing the song again with the children.

Results

Learning outcome 1 was that children would be able to recognize each season of the year. This learning outcome was partially met. After I taught the children about the four seasons of the year by reading a book and explaining to them how each season looks, most of them were able to recognize each season by answering my questions. What do you see in spring? What do you see in summer? What do you see in fall? and what do you see in winter? their answers are in Table #1. On average, the answers were varied, which makes me think that the learning outcome 1 was partially met. Because some of them were able to identify some of the four seasons and others weren't.

Learning outcome 2 was that children would be able to identify the four seasons of the year by name after we sing a song together. This learning outcome was partially met. To collect

the data at the end of the song I asked each child the four names to see how many of them were able to say the names. And the answers variety from spring, summer, fall, and winter. The score was 8/10, 9/10, 7/10, 8/10 which are in Table #2.

Learning outcome 3 was that children would be able to put the names of the different seasons in correct order. I think this learning outcome was met. The children were very engaged during this activity. When I asked them one by one to identify the seasons on the board, they answered my four questions. They answered that the name of spring goes in the flower, the name of summer goes in the sun, the name of fall goes in the red, yellow, or orange leaves, and winter goes in the snow. This process means that they were able to identify the order of each season by putting each name in the correct picture. The answers were based on the picture they thought the name was. The results are in table #3.

Discussion

I believe this project was successful. The children really enjoyed the different activities. They paid attention during the reading, singing the song, and participating by putting the names on the board. Because Children were in the Piaget Preoperational stage, they understood by observing and identifying the different seasons. I think the activities about the four different seasons of the year was an important learning task for the children by having them recognize, identify and put the names of the seasons of the year. When we were singing the song they were all engaged. They were able to move their bodies and sing at the same time. It really helped the children to learn the names of the seasons because some children were able to remember and say some of the names.

If I have to do this project again I would like to do it in person. I would also like to do each session longer because I believe that two sessions of 20 minutes was not enough time to teach my project. In addition, I would like to use a worksheet with the four different names and pictures of each season to see if children are able to draw a line to match the names and pictures. I would do it before the project to know that they knew and after to know that they learned.

Overall, I think that the children learned some aspects of early science through learning about the seasons of the year. My hope is that children continue having science education to increase their learning. Since preschool age is an important development in learning, because children are in the preoperational stage that gives them the opportunity to learn a variety of things.

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Appendix A

Board



Appendix B*Sound***“If you know all the season”**

If you really know the seasons, clap your hands. If you really know the season, clap your hands.

If you really love the winter say hurray. If you really love the winter say hurray because winter is the season when you know it is freezing.




In spring you run and play show hurray. In spring you run and play show hurray because the grass is growing and show hurray.

If you really love the summer, stamp your feet. If you really love the summer, stamp your feet. In the summer you can play, sunning and camp all day.

If you really love the fall, scrape your knees. If you really love the fall, scrape your knees. When it is begging to the cold and the leaves turn red and gold and it is back to school and scrape your knees.

Appendix C

Capstone Presentation due April 20, 2021

<p>Increasing science education during preschool</p> <p>By: Guillermina Rodriguez</p>	<p>Needs Statement</p> <ul style="list-style-type: none"> • Problem solving: prevent negative behaviors. • Divergentive thinking: children understand and generate creativity ideas. • Creativity learning: produce positive outcomes and build relationships. 
<p>Theory</p> <ul style="list-style-type: none"> • Piaget theory. • Sensorimotor, preoperational, concrete and formal stage. • Preoperational Stage. 	<p>Learning outcomes</p> <ol style="list-style-type: none"> 1. Recognize each season of the year. 2. Identify the four different seasons of the year by name. 3. Put the names of the seasons in correct order using the board. 

Method

The first day

- I introduced myself to the children.
- Explain the topic of the four seasons.
- Read the book, explain it.
- Ask questions.

Questions?

- What do you see in spring?
- What do you see in summer?
- What do you see in fall?
- What do you see in winter?



At that end of the first session

I explained to the children how each season looks using the board.

- In Spring, trees have flowers.
- In Summer, trees have green leaves.
- In Fall, trees have yellow, orange, and red leaves.
- In Winter, trees don't have leaves.



The second Day

- Continue teaching about the four seasons of the year.
- Singing the song "If you know all the seasons."
- Identify the names of the seasons by name.
- Put the names in the correct order.
- Question.

Questions

- Where does the name of spring go?
- Where does the name of summer go?
- Where does the name fall go?
- Where does the name winter go?

**Learning outcome evidence**

“If you know all the seasons.”

If you really know the seasons, clap your hands. If you really know the season, clap your hands.

If you really love the winter say hurray. If you really love the winter say hurray because winter is the season when you know it is freezing.

In spring you run and play show hurray. In spring you run and play show hurray because the grass is growing and showing hurray.




If you really love the summer stamp your feet. If you really love the summer stamp your feet. In the summer you can play, sunning and camp all day.

If you really love the fall, scrape your knees. If you really love the fall, scrape your knees. When it is beginning to get cold and the leaves turn red and gold then back to school and scrape your knees.



The board



Results from learning outcome #1

Participants	Spring 6/10	Summer 8/10	Fall 7/10	Winter 9/10
Participant 1	yes	yes	yes	yes
Participant 2	no	yes	no	yes
Participant 3	yes	yes	yes	yes
Participant 4	no	yes	yes	yes
Participant 5	yes	no	no	yes
Participant 6	yes	yes	yes	yes
Participant 7	yes	yes	yes	yes
Participant 8	no	yes	yes	yes
Participant 9	yes	no	no	yes
Participant 10	no	yes	yes	no

Results from learning outcome #2

Participants	Spring 8/10	Summer 9/10	Fall 7/10	Winter 5/10
Participant 1	yes	yes	yes	yes
Participant 2	yes	yes	yes	no
Participant 3	no	yes	no	yes
Participant 4	yes	yes	yes	yes
Participant 5	yes	yes	yes	yes
Participant 6	yes	yes	no	yes
Participant 7	yes	no	no	yes
Participant 8	no	yes	yes	yes
Participant 9	yes	yes	yes	no
Participant 10	yes	yes	yes	yes

Learning from learning outcome #3

Participants	Spring 9/10	Summer 8/10	Fall 6/10	Winter 10/10
Participant 1	yes	yes	yes	yes
Participant 2	no	yes	yes	yes
Participant 3	yes	yes	yes	yes
Participant 4	yes	no	no	yes
Participant 5	yes	yes	no	yes
Participant 6	yes	no	yes	yes
Participant 7	yes	yes	yes	yes
Participant 8	yes	yes	yes	yes
Participant 9	yes	yes	yes	yes
Participant 10	yes	yes	yes	yes

Discussion

- I think this project was successful because all children were engaged and participated.
- What would I do differently?

Thank you

Questions?

Guillermina Rodriguez

Table #1*Recognizing the four different sessions of the year*

Participants	Spring 6/10	Summer 8/10	Fall 7/10	Winter 9/10
Participant 1	yes	yes	yes	yes
Participant 2	no	yes	no	yes
Participant 3	yes	yes	yes	yes
Participant 4	no	yes	yes	yes
Participant 5	yes	no	no	yes
Participant 6	yes	yes	yes	yes
Participant 7	yes	yes	yes	yes
Participant 8	no	yes	yes	yes
Participant 9	yes	no	no	yes
Participant 10	no	yes	yes	no

Table #2*Identifying the names of the season by name*

Participants	Spring 8/10	Summer 9/10	Fall 7/10	Winter 8/10
Participant 1	yes	yes	yes	yes
Participant 2	yes	yes	yes	no
Participant 3	no	yes	no	yes
Participant 4	yes	yes	yes	yes
Participant 5	yes	yes	yes	yes
Participant 6	yes	yes	no	yes
Participant 7	yes	no	no	yes
Participant 8	no	yes	yes	yes
Participant 9	yes	yes	yes	no
Participant 10	yes	yes	yes	yes

Table #3

Put the names of the seasons in correct order in the picture of the board.

Participants	Spring 9/10	Summer 8/10	Fall 8/10	Winter 10/10
Participant 1	yes	yes	yes	yes
Participant 2	no	yes	yes	yes
Participant 3	yes	yes	yes	yes
Participant 4	yes	no	no	yes
Participant 5	yes	yes	no	yes
Participant 6	yes	no	yes	yes
Participant 7	yes	yes	yes	yes
Participant 8	yes	yes	yes	yes
Participant 9	yes	yes	yes	yes
Participant 10	yes	yes	yes	yes