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Purpose and Methods

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A Detailed Example of One Method of Developing a Science Project with a Group of Four Year Olds

The following is an account of the development of a science project.

On a beautiful, crisp fall day, I decided to take a walk with the children. As usual, this suggestion was received with great enthusiasm. One of their favorite paths leads toward a shallow pond we call "The Lost Lake" which lies hidden in the bushes. This is where we went, as we had done on previous occasions. The moment we arrived, one of the boys remarked, "It looks different today. There is ice on it." Another child picked up a stone and threw it on the ice. Since there was only a thin layer of ice, the stone broke through. "How come there is ice on the pond?" asked one of the children. Another answered that it was because winter was coming and it was getting cold. Then I asked, "Who knows what happens to water when it gets very cold?" Many of the children shouted: "It turns into ice!" Then another child asked, "How come the ice broke when Bobby threw a stone?" Here another child said excitedly, "Last winter I went on some ice, and it didn't even break, and my brother went skating on it." I asked if it was winter now. A child answered, "No, it is only fall. In winter you have to wear a snowsuit all the time you are outdoors." I said, "That is right. In winter it is so cold that you have to wear a snowsuit all the time you are outdoors, and more and more water turns into ice and it gets thicker and thicker and finally you can walk and skate on it."

For a while the majority of the children continued to concentrate on the ice, picked it up, held it, broke it and commented on the fact that it was cold. The whole conversation did not take more than a few minutes. Every morning thereafter the children noticed the puddles covered with ice.

After a few days I said to a group of boys who were stepping on a layer of ice which had formed on a puddle, "What do you think would happen if we took this piece of ice into the house?"

Some said it would melt, and others said that it would turn into water. Others thought it would become snow.

I suggested that we wait and see. They eagerly filled a pail with some pieces of ice and took it indoors. They returned outdoors to their activities. After a while, I called them in.

"Shall we check and see what happened to the ice?" I called everybody to look. The children seemed to be as full of anticipation as when they are about to find out whether "the good guy" wins on television.

"It turned into water!" they all shouted.

"Do you know why?" I asked.

Most of them know that it was because it was warm inside. Then I asked them what would happen if we took the same pail of water outdoors and left it there overnight. There were many guesses by the children.

The next morning hardly any of the children forgot to check on the pail to see what had happened. A few days passed by without much discussion about the subject. Then one of the boys annoucned during a discussion period, "The thing really works even at my house!" "What thing?" I asked.

"I took a cup of water outside and left it there all night. When I looked in the morning it was ice. Then I took it in and when I came home from school it was water again." Several of the children said, "When I get home, I will do that, too!"

A little girl said, "My mother forgot the milk outside and it turned into ice and broke the bottle."

Then I asked them, "Do you know what an experiment is? It is something people do to find out something, to study something. Tomorrow, I will do an experiment with you. We are going to heat some ice in a pot over an electric burner, and we will see what happens."

The next day the experiment was carried out. I told the children to guess what might happen. The answers showed the range of concepts present in young children.

"Nothing will happen."
"It will turn into water."
"It will turn into snow."
"It will evaporate."
"It will turn into steam."
"It will go away."