

Developmental Tasks and The Study of Science

In a study of weather, sixth grade boys and girls arrive at new understandings and insight. Their teacher recognizes the relationship between their progress in the area of science and their mastery of the developmental tasks characteristic of their age.

THIRTY-ONE SOLEMN and downcast faces looked out at the rain that had started falling again. The appearance of the warm sun in the early morning after three days of intermittent rain had done much to dry the playground and raise the children's hopes, but the sudden and steady downpour following lunch seemed to dampen the spirits of all in Miss Stevens' sixth grade classroom.

"There goes our chance to play the other sixth grade team for the championship," moaned Larry who was captain of the baseball team.

"Yeh," said Ted, "twice we've used our play time during lunch to line the field for the game, and both times the darn rain has spoiled it."

Mary spoke apprehensively, "If the fog is as bad tonight as it was last night, the airport will close down, and the plane my daddy is coming on won't be able to land."

"If much more rain falls, Robinson's Creek will overflow, and the school bus may not be able to get through the flooded place in the road," exclaimed Jim with a slight tremor of excitement in his voice.

"If this keeps up," drawled Sam, "Dad never will get the plowing done."

As the class settled themselves in their seats other children spoke up and told how the weather affected their activities and those of other people.

What Will the Weather Be Like?

Jerry asked, "Miss Stevens, how do the radio and TV announcers know what the weather will be like tomorrow?"

Miss S: Can anyone help us with Jerry's question?

Ruth: My dad says the weather station at the airport sends out a weather report every hour to the radio and TV stations.

Jerry: I wish we could find out how the weatherman forecasts the weather.

Steve: I saw a TV program once that showed you how to make one of those things which measures how fast the wind is blowing.

Miss S: Does anyone know the name—

Sam (breaking in excitedly): Do you suppose we could set up a kind of weather station right here in this room?

Miss Stevens looked at Sam in astonishment. Could this be the same big, overage Sam? Isn't this the boy below grade level in reading who seldom finishes his work, but gazes out of the window? The boy who seemed to have few interests outside of fishing, tinkering with motors, and making gadgets? Isn't this the same Sam who until today has not made more than six contributions all year to the group discussion, the boy who has had such difficulty adjusting to his group, and only last week was reported for bullying other children and being rude to the teacher on playground duty?

Sam's suggestion was followed by enthusiastic comments from other class members: "Could we?" "Oh boy, that would be fun!" "Gee, that way we would know beforehand whether we could play a game."

Miss Stevens smiled and said, "It looks as if everyone is in favor of Sam's suggestion. How do you think we should get started?"

Barbara: I think we should form committees.

Sam: Aw, why should we form committees? Let's get going and make some weather instruments. We don't want to sit around all day just talking.

After some discussion the class adopted Barbara's suggestion and grouped themselves into committees on weather instruments, weather station and weather maps. Boys and girls alike clamored to work on weather instruments so that committees for

several classroom weather stations were formed. Steve's committee immediately began making arrangements for the class to visit the airport weather station. As children worked with coat hangers, milk cartons and paper cups, and as they pored over books, articles, pamphlets and pictures, Miss Stevens moved among the groups and helped them with problems that arose. The school librarian helped in finding materials suitable to Sam's reading level. The dictionary was in constant use as Sam and others built lists of new words encountered in their study of weather.

The visit to the airport weather station was a stimulating experience. Budding weather forecasters watched intently as the chief of the bureau showed them barometer, anemometer, hygrometer and thermometer, and explained how the readings are interpreted in forecasting the weather. Next they went into a room where information is compiled into a weather report. Later the class visited the control tower in groups and listened as the operator gave the weather report to pilots of incoming planes.

Finally the day for setting up the classroom weather stations arrived. Barometers, anemometers, hygrometers, thermometers, wind vanes and air current indicators of many sizes were shown and demonstrated by the children making them. Sam had made an especially accurate barometer, and the children listened with rapt attention as he talked easily and rapidly in explaining its operation. Sue became flustered when her wind vane became stuck. Sam quickly came to her rescue saying, "Just loosen this screw, and it

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works fine!" Sue smiled shyly and thanked him.

Signs of Growth

By the end of the school term, the classroom weather stations were in full operation and the first weather forecast was tacked to the bulletin board. As Miss Stevens' gaze rested on the weather instruments and the empty seats she thought about the changes that had been taking place in her sixth grade children. From her reading and her study of children, Miss Stevens had become aware of common learnings called developmental tasks which all children face at successive maturity levels in their growing up. She remembered that these learnings are posed by the culture, their accomplishment is made possible by new-found abilities of a maturing body, and they are learnings the child sees as important to his own success and happiness. She recognized also, that mastery of these developmental tasks often appears only as a byproduct of school learning, top priority being given to acquiring certain information, skills, attitudes and appreciations.

All members of this sixth grade class revealed in their study of weather a strong interest in working as groups. Miss Stevens noted that Sam was learning to adhere to certain codes and standards of the group as shown by his improvement on the playground and his change toward participating in group discussion and allowing others to participate. This helped him in the task of gaining acceptance, roles and status in the peer group.

Sam's work with boys making weather instruments was an indication

of strong identification with his own sex group, and it further revealed the progress he was making in the important task of accepting the masculine role. His eagerness to help Sue adjust her wind vane may reveal an awakening awareness of the opposite sex pointing to a developmental task which will assume increasing importance as he grows into adolescence.

Sam's relationships with adults have been difficult for some time. His father complains that he shirks responsibility in helping with the chores at home. He has been difficult for the teacher on playground duty. Even Miss Stevens' acceptance of Sam has failed to dent his strong will in ignoring her instructions and refusing to participate in class activities. In this difficult period Miss Stevens recognized that Sam was attempting to work through one of his most important developmental tasks — winning independence of adults.

This project in weather and the study of science in general probably contributes most effectively to gaining an understanding of the physical world through solving problems, doing reflective thinking and developing concepts. From the beginning the class members used the scientific method in their approach to studying weather. Beginning with their own problem certain hypotheses emerged from the initial discussion, and these were tested through visiting the weather station, making and operating weather instruments, experiments and reports from reading. From these experiences the children, with Miss Stevens' help, drew tentative conclusions in answer to their problem. The study of weather

was particularly effective in increasing the children's understanding of causal relationships. This was illustrated in their learning that lowering the temperature of air containing moisture produces rain.

Learning skills for symbolization and communication were by no means neglected. Books on weather at varying reading levels had been provided by the school librarian, so that each child developed a list of new words which he could look up in the dictionary to learn pronunciation and meaning. For Sam, making a barometer gave him additional experience in solving a problem in simple mechanics. For other children the building of weather instruments resulted in fur-

ther mastering coordination of small muscles.

Finally, the study of weather caused these children to ask questions which are basic to formulating a philosophy of life. What forces control the universe? What is man's relation to these forces? Through these experiences they saw a world of oneness, predictability and stability. Larry summed up the feeling of many when he said, "The world is so big and complicated that God must have a part in it somewhere!"

Following up Mark Twain's thought on the subject, this sixth grade class not only talked about the weather; they accomplished much in gaining an understanding of it.



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THE AMERICAN PUBLIC SCHOOL, according to Henry Steele Commager,¹ has met the demands of the past—from the beginning of the 19th until well into the 20th Century. The first task imposed upon the schools by our struggling new nation was one of providing an enlightened citizenry. The second great task imposed upon the schools

was the creation of national unity. From authors and poets, historians and painters, McGuffey readers and Webster spellers, American children built a common store of poems and stories, images and values, from which a national spirit was born. They learned a "people's common language with which to voice a people's common heritage."

The third task was Americanization.

¹"Our Schools Have Kept Us Free." *Life*, October 16, 1950, p. 46-47.

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