

Thinking Can Be Learned

To help children and youth grow in the ability to think clearly and to attack problems intelligently is certainly one of the major tasks of modern schools. Only as they have opportunities to solve problems that are real and important to them will learners have an opportunity to develop this skill. Joseph J. Goldstein, Constance Masi, Warren Vann, and Sadie Zion, participants in the Open-mindedness Study in the Philadelphia schools, tell how they are working with children in an effort to develop the skills of problem-solving.

IN DAY-TO-DAY activities of the classroom children make statements like these:

☐ "What's the use of having a United Nations—we're always going to have wars anyhow."

☐ "Miss Allen, why are we always talking about keeping clean? I know a lot of dirty children who never get sick while clean children get sick all the time."

☐ "Chinese people must be 'screwy'—they read backwards."

☐ "If we're going to talk about current events, how about what's happening right here in our own school? Like the trouble we had with substitutes last week."

Children themselves provide many real opportunities for initiating the use of the problem-solving method. And usually the problems arising from such statements are of real interest to many in the class.

It is the belief of the teachers and administrators in the Open-mindedness Study of the Philadelphia public schools that it is an obligation of all schools to help children find ways of dealing with the increasingly complex problems which are presented by a rapidly-changing type of society.

Teachers in the Study believe that a direct approach must be made by schools to help children and adults to

think critically about the many problems which confront them. It is felt that this can best be done through helping people to know and to value the use of systematic methods of solution of human relation problems as well as of those involving physical phenomena. This problem-solving method involves: recognizing and defining a problem; thinking of possible solutions; gathering pertinent data; organizing ideas and facts to show relationships; reaching conclusions; and acting upon one or more of the conclusions.

We have come also to see that this method holds little *social* benefit unless it operates within a framework of democratic practices and values. The greatest individual and social returns from the use of the method will be realized where it is used in classrooms and schools which provide a friendly and understanding environment in which children feel free to express themselves and where there is a willingness to examine emotionally held beliefs.

Standards for Choosing Problems

Illustrations of actual experiences in the classrooms of teachers in the Open-mindedness Study will serve to answer some of the more common questions

asked by teachers interested in using the problem-solving method. One of these questions is—"How can we determine the problems with which we shall deal?" What happened, for example, when Johnny said that war is inevitable—that the United Nations could have no effect. Johnny's teacher readily recognized the problem inherent in the remark and wrote on the board: *Must we have war?* Comments came thick and fast. "We've always had wars." "My father said people will always fight." "Something ought to be done about wars." "The United Nations was set up to get rid of wars."

At this point the teacher asked, "Do we want to continue to talk about this? You seem to be very much interested." Twelve-year-old Mary looked grave as she said, "We ought to be interested. It's certainly important to us." The teacher wrote on the board, *Is this problem important to us?* As the discussion continued, the children suggested other standards for choosing a problem. *Is it worth our time? Can we get facts about it? Can we do anything about it? Can everybody help to find an answer? Are we interested in this problem?* The class then measured the problem against each of the standards. It took but a short time to see that this was a question which concerned all and about which they would like to do more thinking.

An important principle is involved. The degree of success achieved by any class in dealing with a problem is directly related to the extent to which the children have been able to identify themselves with it, and to the extent to which they have had opportunity to participate in determining whether the problem is important to them.

Learning to Think Problematically

Another question often asked by teachers is—"How can we help children use the problem-solving method so that they are conscious of the procedures they are following in solving a problem?" Miss Allen, a fourth grade teacher who has been attending meetings of the Open-mindedness Study Group, has been seeking an opportunity to have her class make conscious use of the problem-solving method.

When one of her pupils posed the question, "Why are we always talking about keeping clean?" this teacher recognized that it would probably be of far greater value for the children to attempt to answer the question than to continue with plans she had made for lessons about habits of cleanliness. Discussion resulted in restatement of the problem, "Are dirty children healthier than clean children?" There was agreement that this question was worthy of class attention.

In order to help children clearly define the problem, Miss Allen asked, "What do we have to know in order to get the answer?" The class listed a series of questions, the answers to which they thought might provide a suitable conclusion. They wanted to know many things: *What causes disease? How do people get dirty? Does dirt always hurt you? Does the kind of work you do make a difference in your health? Does where you live make a difference? Does keeping clean always keep us well? Does being dirty always make us sick?*

The children now felt they could proceed to get some facts, so they discussed sources of information. In the ensuing weeks they received information from

their parents, the school doctor and nurse, the Board of Health, the City Housing Association. They read insurance company pamphlets bearing on their problem, studied U. S. Public Health Reports, and read books from their classroom and school libraries.

Soon they had a large body of facts and began to see the need for organizing the information in order to see how the facts were related. One child said, "We have a lot of facts, but they're all mixed up." It was not until the facts had been organized under a series of headings that the children felt they were able to reach some conclusions. From time to time, as the class evaluated its work, the children added items to a bulletin board poster headed "A Good Way to Solve a Problem." Their list read like this:

1. Know your problem
Do we know what we are trying to find out?
2. Get the facts
Where shall we get them?
Are they good facts?
Do the facts help to answer our problem?
3. Put the facts in order
4. Reach a conclusion
Did we look at all our facts?

At this point the matter of acting on conclusions was brought clearly before the class when a child asked, "Well, what are we going to do? What's the use of doing all this work if nothing's going to happen?"

Suggestions were made for putting the conclusions into practice. To the poster was now added the final item: "5. Act on your conclusions."

Children, in following such a procedure, can be helped to know the steps

in the problem-solving method, to make conscious use of these steps in solving a problem. It is by this process that children come to value the method as a careful, intelligent way of making decisions.

Youngsters Use the Method, Too

The problem-solving method is not limited to use with older children—children in the lower grades can become familiar with this careful way of thinking. Indeed, it is important to help young children build a basis for more intensive and conscious use of the method in the upper grades.

Ronald, in the second grade, raised a problem when he said, "Chinese people are 'screwy.' They read backwards and the boys keep their hats on in school."

The class responded to this with other statements along the same line. The teacher said, "Chinese children seem very strange to us, don't they? Would we like to find out more about them?" Since the children were anxious to do so, the teacher asked, "What are some of the things we might try to find out about the boys and girls in China?" One child said she would like to know what they eat. Another child suggested clothing. Other questions indicated a desire for more information about homes, schools, play activities, and one child asked about "customs."

The information the children got from their parents and older brothers and sisters in a preliminary search for facts pointed up for the children even further the differences which exist between Chinese children and themselves. Because so many differences had been emphasized, the teacher felt it was important to ask, "I wonder if we could

find out if there are any ways in which Chinese children are like us? Maybe we could answer both these questions.”

On the blackboard she wrote: “Are Chinese boys and girls like American boys and girls? How? Are Chinese boys and girls different from American boys and girls? How?”

A Wealth of Sources

Facts were gathered from many sources—pictures, story books, social studies books. The teacher borrowed a collection of materials about China from the Junior Red Cross. These offered opportunities for the children to handle materials from China, to hear recordings of Chinese music, and to wear Chinese clothes. A group of children went to the Chinese section of the city and asked questions of some of the storekeepers and other people in the neighborhood.

Listening to “Tea for Five,” a radio script, provided another thrill and more information. The children dramatized some of the interesting stories they read, and got the “feel” of being Chinese children. In their scrapbooks they listed and illustrated the things that they found about these people, devoting pages to food, clothing, homes, games, and

schools, thus organizing the material as it was gathered.

One day the children found on the blackboard: “Can we answer these questions now? Are Chinese boys and girls like American boys and girls? Are they different from American boys and girls?” The children read from their scrapbooks and decided that some of the facts should be listed under headings as given below.

After summarizing these and other likes and differences, the class found that they had discovered more ways in which the Chinese children were like themselves than ways in which they were different.

Some children expressed changes of attitude. Ronald said, “Before I thought they were ‘screwy’ but now I don’t.” Helen said, “I thought they were different from us and I didn’t like them, but they aren’t so different.” And Sally Ann remarked, “I didn’t like them because their skin was a different color, but Peachblossom’s (a character in a story) skin was yellow so I don’t think it makes any difference.”

It isn’t necessary for children in the lower grades to use the language of the problem-solving method in order to use the method intelligently. Continuing ex-

Same

They get hungry.
They eat rice, fish, meat, cakes.

They feel cold and need clothing.
They need a home to sleep and live in.
They like to play and have fun.
They like candy.
They go to school.
They read and write.

Different

They eat with chopsticks.
They don’t have as much variety of foods as we do.
Boys and girls dress almost alike.
Their homes look different from ours.
Boys wear little black caps in school.
They write with brush and ink. They read from right to left and up and down.
Their letters are different from ours.

perience in its use with many types of problems provides a good early training for a more conscious use of the method as the children grow older.

Action Follows Analysis

Students of junior and senior high school age can make more conscious use of the steps in problem-solving. They have the maturity necessary to analyze more effectively the processes involved in careful thinking, distinguish between facts and opinions, evaluate sources of information, and are better able to interpret conclusions in terms of action.

A discussion in current events in an eighth grade class brought forth the suggestion, "If we're going to talk about current events, how about what's happening right in our own school? Like the trouble we had with the substitutes last week."

Two substitute teachers in the art classes had received so little cooperation from the students that they had refused to complete their teaching assignments. The incident had become a matter of general discussion among the pupils so the teacher was not surprised when it was mentioned as a "current event."

Since interest was high, the class planned to investigate the matter further in order to find ways of preventing recurrences of such situations. The pupils raised a number of questions which they thought should be answered so that they could obtain a clearer picture of what had occurred. *How much experience did the substitute teachers have? Were these teachers given any help by the principal or his assistant? Did other art teachers offer any help? What did the pupils do to cause the*

teachers to leave? Have similar incidents occurred in our school?

Sources of information for getting answers to these questions seemed limited at first, but suggestions were soon made to interview the principal, teachers familiar with the situation, and pupils in some of the classes involved. After organizing the information obtained, the pupils decided to initiate a definite program for avoiding situations of this kind. They felt it was necessary to set forth clearly the responsibilities of the entire school.

The first step was to take the conclusions to the School Council for consideration. The Council decided to make recommendations to the faculty. At a faculty meeting the Council president presented the ideas proposed by the students. A committee composed of teachers and pupils then met several times to determine the next step.

As a result of this action it was proposed that discussions be held in each classroom during homeroom periods and that suggestions made by teachers and pupils be noted and brought back to the central committee. It was also suggested that a dramatization of good practices in welcoming and cooperating with substitute teachers be prepared for the assembly. The committee set up machinery for preparing a handbook of important information about the school to be given to substitute teachers. Suggestions were made concerning ways in which members of the regular teaching staff could help substitute teachers.

Every phase of the problem was carefully studied and suggestions were made of ways in which all of the school—pupils, teachers, counselors, principal—

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Soil. Three instructional guides have been issued: *English for Nebraska High Schools*; *Language Arts for Nebraska Elementary School Children*; *Suggested Activities for the Science Program in Nebraska Elementary Schools*.

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could help to alleviate a distressing situation. The committee determined to be on the alert to evaluate the consequences of their actions.

Many opportunities can be provided for pupils to participate in carrying into action the conclusions which they reach. It is through such action and evaluation that children come to value the problem-solving method.

A Way to Critical Thinking

In the foregoing discussion the concerns of the Open-mindedness Study have been indicated as threefold:

- to provide children with opportunities to think freely
- to help them to think effectively
- to help them to clarify their values and to reach conclusions consistent with their values.

It is the belief of the teachers in the Study that one of the ways progress can be made in achieving these goals is through the problem-solving method.

Participants in the Study recognize the need for many types of experimentation in problem-solving. It is only through such an expanded program of experimentation in many schools in many places that the goal of critical thinking by the great mass of our people can be realized.

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